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The Flora of the Olympic Peninsula, Washington

Albert B. Reagan
Stanford University

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THE FLORA OF THE OLYMPIC PENINSULA,
WASHINGTON

ALBERT B. REAGAN

No list of the plants of the Olympic Peninsula has ever been published, so far as the writer can learn. This paper covers observations ranging over a period of five years while the writer had charge of the Quillayute and Hoh Indians of that peninsula. His observations, here recorded, also give the uses to which the Indians of the coast apply the plants.

The peninsula is in northwest Washington. It comprises a wide coastal belt bordering both on the Pacific Ocean, the Strait of Juan de Fuca at the north and the "Sound" on the east, surrounding a central high area termed the Olympic Mountains. These mountains, as is seen by consulting a map, are wholly isolated. They might be said to occupy an eroded, domed area in the east central part of the peninsula, with a western limb extending in declining altitude to Cape Flattery at the entrance of the Strait of Juan de Fuca. The peaks in the central region range from 6,000 to 8,130 feet in height, mounts Olympus, Constance, and Meany being the higher peaks; while the ridge toward the Cape recedes to less than 1,800 feet in elevation. The domed surface causes a radial drainage in all directions; but the larger streams flow into the Pacific. The area of the peninsula is about 8,000 square miles.

This peninsula with its lofty peaks stands first in the path of the moisture-bearing southwesterly winds of the Pacific. As a result, the precipitation is very heavy; at the coast it is usually rain, in the mountains snow. The precipitation averages forty inches north and east of the mountains, as far up the Strait of Juan de Fuca as Port Angeles. West of the mountains at an elevation of 3,000 feet the precipitation averages eighty inches and in the Upper Strait-Flattery region and along the Pacific front 100 to 120 inches annually. The climate, also, is controlled by the prevailing southwesterly winds from the Pacific. Notwithstanding this, however, the valleys of the upper mountain districts are filled with glaciers. At the coast, however, especially on the Pacific front, snow is seldom seen.

Growing under this equable climate with such an abundance of rainfall (enough in amount to preserve the forest and shrubbery from general destruction by fire), the peninsula, with few exceptions, is the most densely forested region in North America, and smaller plants also do equally well. Of course, as one approaches the mountains, the forest becomes less dense till the timber line is reached; but in the reverse proportion the flowering herbs at the same time increase in number and beauty. The open country at timber line in summer is one of nature's flower gardens. The region in the lower levels is a jungle of trees, shrubs, and tangled vines, which must be seen to be appreciated.

The trees and plants most noticeable in the peninsula are fir, cedar, spruce, hemlock, red elder, Shallon, Rubus, salal, Vaccinum, Ribes, Selaginella (*S. oregona*), crab-apple, devil's club, Usnea (bearded lichens), bearberry, dogwood (*Cornus nuttallii*), and oregon grape. Here Douglas fir, tide-land spruce, and red cedar reach gigantic proportions. The available timber per township ranges from 3,000 feet B. M. per acre amid the high mountains up to 59,000 feet B. M. per acre in the Quillayute region. There is estimated to be 32,890,717 M. feet B. M. lumber in the region according to the estimate of Henry Gannett, Chief of Division of Forestry (1899)¹. This estimate has been more than doubled by Dodwell and Rixon at a later date; they give 69,000,000 M. feet B. M.² And the close measurement now used would likely double that amount. There is enough timber in the region to supply the whole United States' demand for considerable over two years.³

Below are the plant species so far identified from this region, numbering 696. Those identified by the writer will each be followed by a short description. Those preceded by "X" were identified by Mr. T. C. Frye, Professor of Botany, University of Washington at Seattle, Washington, from specimens collected and furnished him by the writer. The other plant species, unmarked, are taken from Piper's Flora of Washington.⁴

¹ Twentieth Annual Report, U. S. G. S. (1898-'99), Part V, pp. 12-37.

² Arthur Dodwell and Theodore F. Rixon, Forest Conditions in the Olympic Forest Reserve, Washington: Professional Paper, U. S. Geol. Surv., No. 7, 110 pages, 20 plates, 1 map, 1902.

³ See Reagan: Trans. Kan. Acad. Sci., 1908, p. 136, in article, "Some Notes on the Olympic Peninsula, Washington;" and "The Olympic Forest and its Potential Possibilities," Proc. Ind. Acad. Sci., 1915, pp. 419-427.

⁴ Contributions from the United States National Herbarium, vol. xl.

LIST OF SPECIES

POLYPODIACEAE. Fern Family

1. *Ceropteris triangularis* (Kaulf.) Underw. Gold Back Fern. Found near Port Angeles.

2. *Polypodium scouleri* Hook and Grev. Leather-Leaf Polypody. Granville and vicinity.

3. *Polypodium occidentale* (Hook) Maxon. Licorice Polypody. Common at Gray's Harbor, LaPush, Mora, Quillayute, Forks, East Clallam, Neah Bay.

4. *Polypodium hesperium*. Olympic mountains, Port Ludlow.

5. *Phegopteris alpestris* (Hoppe) Mett. Beech Ferns. Olympic mountains.

6. *Phegopteris dryopteris* (L.) Fee. Common along the beach of the whole coast; Port Ludlow.

7. *Adiantum pedatum alcuticum* Rupr. Maiden-Hair Fern. Common in shady places in rocky areas along the coast and elsewhere.

8. *Pteridium aquilinum pubescens* Underw. Bracken Fern. Grows on the "prairies" and burned over places, especially in the middle upland area. It is the fern of Forks Prairie. It has also been carried to the beach with feed and appears in the old graveyard near where the old (Mr. Wesley Smith) school house used to be at LaPush. The writer has seen it in the upland regions. At Forks Prairie it grows as high as a horse. The burning of this fern year by year was what kept up these prairies and extended their area.

The Indians burned the prairies over for the purpose of clearing out the area so they could shoot the deer and elk when they came to feed on the young sprouts. The prairies, about ten in number, probably were started as camping sites which were gradually extended by the annual burnings. They also dug the roots of these ferns and pounded them into a pulp which they dried. This they made into a sort of dough when it was needed and baked it into a blackish bread, which they claim was good eating. Unluckily, the writer appeared too late on the scene to see any of this fern-paste bread.

9. *Pellaea densa* (Brack) Book. Common throughout western and northern Clallam and Jefferson counties.

10. *Cheilanthes gracillima* D. C. Eaton. The writer saw this fern in every part of the region from the Olympic mountains to the coast line.

11. *Cryptogramma acrostichoides* R. Br. Clallam county and western Jefferson county.

12. *Struthiopteris spicant*. The Deer Fern. Common in Jefferson and Clallam counties west of the mountains.

13. *Asplenium trichomanes* L. Spleenwort. Quinault and other places up the coast.

14. *Polystichum lonchitis* (L.) Roth. Holly Fern. Common in the Olympic mountains.

15. *Polystichum munitum* (Kaulf.) Presl. Chammissos's Shield Fern. It is a crown-shaped fern. Common in the dense red fir woods.

16. *Polystichum munitum imbricans* (D. C. Eaton) Maxon. Common in the west half of the peninsula.

17. *Dryopteris spinulosa dilatata* (Hoffm.) Underw. Wood Fern. Common in Clallam county and western Jefferson county.

18. *Filix fragilis* (L.) Underw. Common west of the mountains, and in the upper Soleduck river region, also in the upper Bogachiel country.

19. *Botrychium onondagense* Underw. Common in the Olympic mountains.

EQUISETACEAE

20. *Equisetum laevigatum* Braun. The Scouring Rush. Abundant along the coast.

Description:— Plant from two to four and even five feet in height, stems all alike, evergreen, usually simple but sometimes branched, evenly 15-to-20-grooved; sheaths appressed, elongated, with twenty-two linear-awl-shaped caducous teeth; plant, perennial; spike tipped with a rigid point; fruit produced in summer; stomata in regular rows; stem rising from a subterranean rootstock.

The Indians of the coast dig the rootstocks of this rush and eat them. They have a sweetish, not bad taste and are considered a great delicacy by them. They also dry them for future use. They also gather them to be eaten during several of their medicine ceremonies as they are said to be "good medicine."

21. *Equisetum scirpoides* Michx? A plant like this species is often seen in the region.

22. *Equisetum hyemale* L. A plant much like No. 20 above, but stem roughly tuberculate, dark green. The Indians eat the rootstock of this plant, also.

LYCOPODIACEAE

23. *Lycopodium selago*. L. Common.

24. *Lycopodium sitchense* Rupr. Common.

25. *Lycopodium clavatum* L. Common west of the mountains; Port Ludlow.

SELAGINELLACEAE

26. *Selaginella struthioloides* (Persl.) Underw. Near the coast.

Note: There are most likely many more species of Vascular Cryptogams represented in this region than are given above; but these are all that have so far been determined. A special study of the Pteridophyta there would undoubtedly develop interesting results.

It might also not be out of place to mention that the fern is the weed of the region and in the prairie sections is one of the hardest weed pests to get rid of. It is about an equal of the Canadian and Russian thistles. The bracken fern is the harder fern to eradicate. At Quillayute Prairie ferns have taken whole farms.

TAXACEAE. Yew Family

27. *Taxus brevifolia* Nutt. Western Yew. The writer saw this tree twice in the region; once in the Olympic mountains and once in the middle-up-lands. It is said to occur also near Port Ludlow. This was a valuable tree in the old times. From it the Indians made their bows and arrows. It was with a bow of this wood that the swamp wren is alleged to have shot an arrow to the heavens, over which the Great Bear and the Little Bear and all the other "animals" of the starry vault ascended from earth

to heaven in the long ago. And as the arrow broke they have never been able to descend. This wood is used much in the Indian ceremonies.⁵

PINACEAE. Pine Family

28. *Juniperus communis sibirica* (Burgsd.) Rydberg. Dwarf Juniper.

Description: A rather prostrate alpine shrub; leaf buds naked; scales of fruit opposite, few in number; fruit berry-like and fleshy; dark blue, 1- to 3- seeded.

This is a very common plant in the Olympic mountains in the middle-upper headwaters of all the western and northern streams of the region. It is quite common at the Soleduck hot springs and in the "Frozen Lake" country.

29. *Juniperus scopulorum* Sargent. Rocky Mountain Juniper. Common in the Olympic mountains and at the Soleduck hot springs.

Description: This is a tree with fruit similar to No. 28 above. It is erect in growth, and has non-resinous, often glaucous leaves of two forms.

30. *Chamaecyparis nootkatensis* (Lamb) Spach. Alaska Cedar. This tree is found on all the mountain ridges below 3500 feet. It is a conspicuous tree on the ridges above the Soleduck hot springs and on the divide between the Soleduck and Bogachiel rivers. It is often called Yellow Cedar. It is also more abundant in the swamp regions near the Pacific coast, bordering the rivers near their mouths. It is a tree of medium height for this region, but exceeds the Red Fir in girth. Its greatest development is usually where it stands the heaviest. It averages 140 feet in height and 50 inches in diameter. This tree is subject to rot; half of the stand is injured by this disease.

The juice of the bark of this tree and that of the Giant Cedar is used by the Indians in dyeing basket straw. The other coloring matters used by them are burned yellow clay, black earth, blood, soot and charcoal.

31. *Thuja plicata* Donn. Giant Cedar, Red Cedar. This tree is found in all parts of the peninsula, except in the high mountain districts. It is of larger growth near the coast, where it often measures forty to fifty feet, and in the Elwa valley even eighty feet in circumference. It yields about 10 per cent of the timber of the whole area.

Description: This tree differs from *C. nootkatensis*, No. 30. in its wood

⁵ Yew wood also plays an important part in the myths of the Indians of the region. Once when the god Kwatte (Kwaïettie) was going back and forth over the earth adjusting the things of creation that he had made he came upon a crowd of loafers and immediately took them to task. At that time, as you must know, (so the myth goes) all things, both animals and plants, were human beings. As he approached them, he seized Mr. Seal, who was known as a liar and a thief, and, tying his feet together, he hurled him into the great waters, saying: "For your untruthfulness and thieving you shall always be compelled to live in the water with your feet tied thus." To another person, he said: "You are known as a very tough person. You henceforth shall be tough yew wood and the people of earth shall use you for material for bows and arrows." To another he said: "You are soft and lazy. From now on you shall be the white spruce of the forest and shall always be used as kindling." To another he said: "You are very large, light and have durable qualities. You shall be the giant cedar. Your trunk shall furnish the material for the canoes of the children of men. In this way the seal got into the sea and the yew, spruce and cedar were created (changed) by order of the Creator.

being reddish in color, in its larger size in circumference-measurements, and in the scales of its cones being oblong, not plicate. It is not diseased so badly as the Alaska Cedar.

Of this giant cedar the Indians make their dug-out canoes, canoes ranging from the size of a little river canoe to an ocean-whaling canoe that will hold ten whale hunters, or three tons of freight. These canoes are in each case made from a single piece (section) of log and the canoe is in each case one continuous piece when finished, except just the front totem (river deer) part. In making these canoes in the old time it was a slow process of burning and scraping with clam shells, and a possible chiseling with some wedge-shaped stone. Today they are hewed out with ax and Indian adz.

The Cedars are used for many purposes by the Indians of the coast. The juice of the green bark is used as medicine, after being boiled. The outer bark is used in making and roofing houses and wigwams. In the old times they also shredded the inner bark of this species and wove it into a sort of cloth. Of this cloth they made skirts for the women, and other wearing apparel both for the men and women. They also lined their cradles with this bark and wrapped their babies up in it before tying them in the cradles. A peculiar raincoat was made from this bark to be worn by the men while fishing in stormy weather. The headbands worn in many of their ceremonial dances also are made of this bark.

32. *Pinus monticola* Dougl. Western White Pine. This tree is found on the western slopes of the Olympics, above 500 feet elevation, usually in swamps and wet places.

Description: Cones oblong-cylindrical; scales of cones unarmed; leaves five in each fascicle.

33. *Abies nobilis* Lindl. Lovely Fir, Noble Fir. This tree is found at considerable elevation, but rarely at an elevation less than 1500 feet.

Description: This is a tall, silvery-barked, noble-looking tree. It differs from the other firs principally in the color of its bark and in its having cones with conspicuous reflexed bracts.

34. *Abies lasiocarpa* (Hook) Nutt. Alpine Fir, Subalpine Fir. This tree is found only on the higher parts of the mountains, rarely below 5,000 feet.

Description: A tree of sixty to eighty feet in height; bark pale, thin, smooth, ash-gray in color; leaves dark green above, with two resin-ducts about equidistant between the upper and lower faces; cones oblong-cylindrical, puberulent, with bracts concealed.

35. *Abies amabilis* (Dougl.) Forbs. Lovely Fir, Amabilis Fir. This tree is found only on the high ridges adjacent to the mountains, rarely below 1,200 feet elevation. It is one of the large lumber-producing trees of the region, producing more than 11,000,000 M. feet B. M.

Description: This tree is distinguishable from *A. lasiocarpa* above by its cones not being puberulent and by the greater length of the cones.

36. *Abies grandis* Lindl. White Fir. This tree is occasionally found in the Soleduck hot springs region.

37. *Pseudotsuga mucronata* (Raf.) Sudw. Douglas Fir, Red Fir. This tree grows in abundance. It reaches its greatest development in the Quillayute-middle upland region. In its growth, however, it extends up

the mountain slopes to the altitude of 3,500 feet. In the high mountains and in the neighborhood of the Pacific coast, this species is practically entirely wanting. It grows to its greatest dimensions where it stands the heaviest. Throughout the region it averages 240 feet in height; 77 feet clear of limbs, with a diameter of 55 inches. This tree is everywhere free from disease. The stand of timber of this species is estimated to be more than 15,000,000 M. feet B. M., or about 24 per cent of the merchantable timber of the whole region.

Description: Tree large; in youth, sprucelike and pyramidal, more spreading in old age; leaves somewhat two-ranked by a twist at base.

38. *Tsuga heterophylla* (Raf.) Sarg. Western Hemlock. This tree is found throughout the region.

Description: This is a lowland tree, with cones one to two cm. long.

39. *Tsuga mertensiana* (Bong.) Carr. Black Hemlock, Merten's Hemlock. This tree is found almost everywhere in the forest from the shore line up to 4,500 feet elevation. With the Western Hemlock above, it is by far the most abundant tree of the region, being found in every part of it to timber line. It is not so large a tree as the other merchantable trees, either in height or diameter and the amount of clear trunk is less also. In the high mountain regions the tree is greatly affected by disease, but as the shore line is approached the percentage of diseased trees diminishes to the minimum. This tree with the Western Hemlock will yield 26,000,000 M. feet B. M.

Description: Characteristically, this tree differs from the Western Hemlock, No. 38, in its having appreciably longer cones.

The Indians use the bark of this tree in tanning hides. Hemlock bark tea is used also as an emetic. Spruce and hemlock limbs are shredded and pounded and then while steamed are twisted into ropes. Roots of these trees are used in the same way. Halibut hooks are made from the roots of these trees while they are steamed.

40. *Picea sitchensis* (Bong.) Traut. Sitka Spruce. This species is found only in the neighborhood of the coast and is seldom found thirty miles inland. It is densest a little way back from the coast, as the immediate coast seems to be too damp for its development. The tree averages 225 feet in height, 81 feet of which is often clear of limbs. The diameter exceeds five feet on the average. This tree seems to be less affected by disease than any other merchantable tree of the region. It aggregates over 4,000,000 M. feet B. M. in merchantable timber.

Description: Trees tall, pyramidal, with soft, white, tough timber; leaves flattened, somewhat two-ranked, and spirally arranged around the branchlets.

41. *Picea engelmanni* Parry. Engelmann Spruce. This spruce is scattered here and there only and is in too small quantities, usually, to be of value in a merchantable way.

Description: Tree subalpine, with height averaging about ninety feet; branches horizontal; bark thin, scaly, reddish to purplish brown; branches pubescent; leaves quadrangular.

Remarks: Species numbers 30 to 41 above complete the list of merchantable timber trees of the region. The timber by species, as we have seen, is approximately as follows: Spruce, 6 per cent; cedar, 10 per

cent; Lovely fir, 18 per cent; Red fir, 24 per cent; hemlock, 42 per cent.

In making the estimate above, it is well to mention that 5 per cent of the timbered area has been burned over, or about 180 square miles; 8 per cent of the region, or 260 square miles, is naturally timberless, lying just at timber line and consequently consisting almost entirely of alpine meadows; and 4 per cent, or 150 square miles, consists of rocks and ice, being in the high mountain regions.⁶

SPARGANIACEAE. Burweed Family

*42. *Sparganium minimum* Fries. The specimen here identified is the first from this region. The writer obtained it from the region of the Soleduck hot springs.

POTAMOGETONACEAE

43. *Potamogeton lonchites* Tuck. Pond Weed. Clallam county.

NAIADACEAE

44. *Ruppia maritima* L.

45. *Zostera marina* L. Eelgrass. Grays Harbor.

SCHEUCHZERIACEAE

46. *Triglochin maritima* L. Clallam county.

POACEAE: Grass Family

47. *Stipa minor* (Vasey) Scribn. In Olympic mountains.

48. *Alopecurus geniculatus flavus* (Smith) Sonder.

49. *Phleum pratense* L. Timothy, escaped from cultivation.

50. *Phleum alpinum* L. Mountain Timothy. Olympic mountains, South Bend.

51. *Polypogon monspeliensis* (L) Desf. Common in Olympics.

52. *Polypogon littoralis* Smith. Common in the mountain districts.

53. *Calamagrostis vaseyi* Beal. In Olympics.

54. *Calamagrostis aleutica* Trin. On sand spits — seen at Granville.

55. *Calamagrostis langsдорffii* Trin. In Olympic mountains; Tatoosh mountains.

56. *Agrostis humilis* Vasey. Redtop. This species is found in the Olympic mountains. It also follows the coast. Specimen above was

⁶ Below are some of the Quillayute Indian names of the plants found in this region that might be of interest to readers:

Tree, hah-bah'uh, plural form, hah-bay-bah 'uh (the "uh" a grunt); Red Fir, kaly-hayts; Red Cedar, to-dilth; Sitka spruce, yak-tau; Mertens hemlock, te'e-thlu; vine maple, top-tse-yo-yo-put; blackberry, bu-dah-ba'uh; strawberries, to-be-yah; red elderberry, tse-bah, or che-lits-shalts-tse-wit; red huckleberry, te-thloth-oht; black-brown huckleberry, to-wah-duk; thimble berry, tah-hah'chilth; crow berry, kah-i-yok-ke-dah'lut; grass, klohohb; fern that grows on the prairie (the Bracken Fern), hkah-kwah 'put; soft fern that grows in the timber, hah'polk-pulth; bunch ferns, pil-la-pil-lah; common maple, hkaks-to-ah'put (also the name of a very short fern); cottonwood, koh'oh-bohk'; alder, kah-kuhl'e-yah'; dogwood, che-chah'pulth; salal, kood-put; salmon berries, kood; Oregon crabapple, tse-yoh-yo'h-ke-dah-put ("put" equals shrub or brush); bear berry, ah'ke'te-put; kinnikinnik, kah'be-ik'wh (-bah); red elderberry, tsu-bah-put; tree, bah, also chilts; salmon berry (or berries), chu-ah'thlu'wah-put (another name for this berry); horse tails (the plant), bah-ah'wh, also tots-tse; yew wood, he-yah'; la cammas (*Scilla Fraseri* and allied species), kwahl 'lu.

identified by the writer from grass growing in the agency yard at LaPush.

Description: Plant with palet present; leaves flat, short, usually smooth.

57. *Agrostis alba* L. Common at LaPush, probably brought in with hay.

Description: Plant with palet present; leaves flat, short, usually smooth.

58. *Agrostis microphylla* Steud. Common near Crescent lake.

59. *Agrostis ampla* A. S. Hitchcock. In Olympic mountains.

60. *Agrostis exarata* Trin. In Olympic mountains.

61. *Agrostis rossae* Vasey. In Olympic mountains.

62. *Agrostis hyemalis* (Walt.) B. S. P. Prel. Common.

63. *Agrostis oregonensis* Vasey. Lake Sutherland; Copalis.

64. *Aira caryophylla* L. Common.

65. *Aira praecox* L. Olympic mountains.

66. *Merathrepta intermedia cusisckii* (Williams). In Olympics.

67. *Deschampsia cespitosa* (L.) Beauv. In Olympic mountains.

68. *Deschampsia atropurpurea* (Wahl.) Scheele. In Olympics.

69. *Deschampsia elongata* (Hook.) Munro. In Olympic mountains.

70. *Trisetum spicatum* (L.) Richter. In Olympics.

71. *Trisetum canescens* Buckl. Common.

72. *Trisetum cernuum* Trin. Common in Olympic mountains.

73. *Koeleria cristata* (L.) Pers. In Olympic mountains.

74. *Melica harfordii* Boland. Clallam county.

75. *Melica subulata* (Griseb.) Scribner. Clallam county.

76. *Pleuropogon refractum* (A. Gray.) Vasey. In Olympics.

77. *Poa leptocoma* Trin. Olympic mountains.

78. *Poa howellii* Vasey and Scribn. Clallam county.

79. *Poa pratensis* L. Kentucky Bluegrass. Common along roads in Clallam county, probably escaped from cultivation.

Description: Tall perennials, with open, oblong panicles; stem with running rootstocks.

80. *Poa sandbergii* Vasey. Olympic mountains.

81. *Poa paddensis* Williams. Olympic mountains.

82. *Poa saxatilis* Scribn. and Williams. Olympic mountains.

83. *Distichlis spicata* (L.) Greene. Olympic mountains.

84. *Festuca megalura* Nutt. Clallam county.

85. *Festuca bromoides* L. Port Crescent.

86. *Festuca rubra* L. Clallam county; Port Angeles; West Point.

87. *Festuca occidentalis* Hook. Clallam county.

88. *Festuca ovina supina* (Schk.) Hack. Olympic mountains.

89. *Festuca elator* L. Port Crescent.

90. *Festuca subuliflora* Scribn. Port Crescent.

91. *Festuca subulata* Trin. Olympic mountains.

92. *Panicularia fluitans* (L.) Kuntze. Quinalt river; Montesano.

93. *Panicularia pauciflora* (Presl.) Kuntze. Olympic mountains.

94. *Puccinellia distans* (L.) Parl. Clallam county.

95. *Bromus marginatus seminudus* Shear. Brome Grass. Olympic mountains; Montesano.

96. *Bromus marginatus latior* Shear.

97. *Bromus sitchensis* Trin. Olympic mountains.

98. *Bromus pacificus* Shear. Clallam county.

99. *Bromus eximius umbraticus* Piper. Olympic mountains.

100. *Bromus richardsonii pallidus* (Hook.) Shear. Olympic mountains.
101. *Bromus racemosus commutatus* (Schrud.) Hook. Clallam county.
102. *Hordeum nodosum* L. Olympic mountains.
103. *Elymus glaucus* Buckl. Olympic mountains.
104. *Elymus borealis* Scribn. Olympic mountains.
105. *Elymus virescens* Piper. Olympic mountains. In damp low, wet places in coniferous woods at 3,000 feet altitude. near head of Duckaboose river; known only from the Olympics.
106. *Elymus arenarius* L. Clallam county.
107. *Sitanion rigidum* J. G. Smith. Olympic mountains.
108. *Sitanion glabrum* J. G. Smith. Olympic mountains.
109. *Sitanion planifolium* J. G. Smith. Olympic mountains.

CYPERACEAE. Sedge Family

110. *Scripus cespitosus* L. Olympic mountains.
111. *Scirpus robustus* Pursh. Clallam county.
112. *Scirpus microcarpus* Presl. Clallam county.
113. *Eleocharis palustris* (L.) Roem. and Schult. Spike Rush. Clallam county.
114. *Rhynchospora alba* (L.) Vahl. Granville.
115. *Carex* sp.
116. *Carex ablata* Bailey. Sedge. Olympic mountains.
117. *Carex amplifolia* Boott. Olympic mountains.
118. *Carex aurea* Nutt. Clallam county; Port Ludlow.
119. *Carex bolanderi* Olney. Clallam county.
120. *Carex circinata* C. A. Meyer. Olympic mountains.
121. *Carex cryptocarpa* C. A. Meyer. Clallam county; Hoods canal.
122. *Carex festiva horneri* Piper. Olympic mountains.
123. *Carex festiva pachystachya* (Cham.) Bailey. Olympic mountains; Montesano.
124. *Carex flava rectorostrata* Bailey. Clallam county.
125. *Carex gymnoclada* Holm. Clallam county.
126. *Carex illota* Bailey. Olympic mountains.
127. *Carex interrupta* Boeckl. Quinault.⁷
128. *Carex kelloggii* W. Bott. Olympic peninsula; Olympic mountains.
129. *Carex leptalea* Wahl. Clallam county.⁸
130. *Carex macrocephala* Willd. Clallam county; Grays Harbor.
131. *Carex magnifica* Dewey. Clallam county; Montesano.
132. *Carex mertensii* Prescott. Clallam county.
133. *Carex mirata* Dew. Clallam county.
134. *Carex multimoda* Bailey. Olympic mountains.
135. *Carex phaeocephala* Piper. Olympic mountains.
136. *Carex pyrenaica* Wahl. Olympic mountains.
137. *Carex rossii* Boot. Clallam county.
138. *Carex scirpoidea* Michx. Olympic mountains.

⁷ This place, Tahola, and Granville are on the coast about twenty miles north of Grays Harbor.

⁸ Clallam county usually refers to the lower country to the northwest and west of the Olympic Mountains. It is quite likely that most of the species mentioned as existing in Clallam county will be found also in Jefferson and in Chehalis counties and about the Quinault Indian reservation.

- 139. *Carex scopulorum* Holm. Olympic mountains.
- 140. *Carex sitchensis* Prescott. Shoalwater Bay, near Port Angeles.
- 141. *Carex spectabilis* Dew. Olympic mountains.
- 142. *Carex stipata* Muhl. Olympic mountains.

ARACEAE. Arum Family

143. *Lysichiton camtschatcense* (L.) Schott. Skunk Cabbage. Common in wet places everywhere from the mountain districts to the sea shore. The plant reaches its greatest development near the coast.

Description: A plant resembling a cabbage somewhat; but with larger leaves and no "head." Leaves large, ovate, cordate; fruit a globular, oval to oval-elongated mass, composed of an enlarged spongy spadix, enclosing the spherical seeds just beneath the surface; surface roughened with the persistent fleshy sepals and pyramidal styles. The plant has a strong odor. It grows from a thick rootstock and is a perennial herb.

In the spring the bear feeds on this plant. The Indians also use its leaves. When roasting the cammas ("La 'Cammis", as the Indians call it), they cover the cammas heap which they have collected with layers of leaves of this plant. This they cover with a light layer of dirt and then over all they pile considerable wood. This they ignite and keep burning till the cammas is cooked beneath it. Sometimes a pit is used for this baking process. The natives say that the cabbage leaves give a good flavor to the cammas fruit; but a white man would hardly think so. The natives also wrap red elderberries in leaves of this cabbage when preparing them by the native baking process described above. They also wrap fruits, usually cooked fruits, in the leaves of this plant and then bury the whole in the muck of some swampy region; this was their way of "canning" fruit. The old people told the writer that it would "keep."

JUNCACEAE. Rush Family

- 144. *Juncus effusus hesperius* Piper. Clallam county; Montesano.
- 145. *Juncus filiformis* L. Clallam county.
- 146. *Juncus subtriflorus* (Meyer) Coville. Olympic mountains.
- 147. *Juncus parryi* Engelm. Clallam county.
- 148. *Juncus bufonius* L. Clallam county; South Bend.
- 149. *Juncus covillei* Piper. Clallam county.
- *150. *Juncus mertensianus* Bong. Clallam county. Common in the Olympic mountains. The writer collected the specimen here identified from the vicinity of the Soleduck hot springs.
- 151. *Juncoides piperi* (Coville). Olympic mountains.
- 152. *Allium cernuum* Roth. Clallam county; Olympic mountains.
- 153. *Allium crenulatum* Wiegand. Olympic mountains; headwaters of the Quilcene river, etc.
- 154. *Allium acuminatum* Hook. Olympic mountains; Clallam county.

Description: Bulb without rootstock; scape not flattened, slender; leaves slender, usually scarcely exceeding the scape; ovary obscurely crested; perianth rose colored; perianth-segments serrulate, tips acuminate, recurved, rigid in fruit; stamens included; plant usually about ten inches high.

The Indians collect bulbs of the *A. cernuum* and *A. acuminatum* and

eat them raw, as we do an onion. They also roast them (bake them), as mentioned above, in a bake pit. Some of the Indians call these plants "La 'Camas", probably because they prepare them in the same way as they do the camas, as mentioned previously.

155. *Quamasia quamash* (Pursh) Coville. Camas (or Cammas), called by the Indians "La 'Camas"—pronounced as one word with accent on the first syllable, lac'a-mas. Common wherever there is an open area, most abundant in the "prairies", especially Quillayute Prairie. *Scilla fraseri* is also another plant from which the Indians use the bulb-roots and call "La Camas," as has been previously mentioned. The bulbs are very similar to those of the *Quamasia* and are prepared in the same way.

The Indians have many myths about this plant, but space will not permit relating them here.

Description: A bulbous-root plant, perennial; scape stout, over a foot in height; flowers dark blue, irregular, lower segment deflexed, segments not connivent in age, persistent; seeds shining; flowers slightly one sided in a simple raceme.

*156. *Lilium parviflorum* (Hook) Holzinger. Lily. Clallam county; Olympic mountains. The specimen here identified was obtained by the writer in the "Frozen Lake" country to the west of the Soleduck hot springs.

157. *Fritillaria lanceolata* Pursh. Clallam county.

158. *Erythronium giganteum* Lindl. Common at Chimacum.

*159. *Erythronium montanum* S. Watts. Clallam county; Olympic mountains; Soleduck hot springs. Specimen obtained by the writer was secured in the vicinity of the "Frozen Lake" country.

*160. *Erythronium parviflorum* (S. Wats.) Gooding. Clallam county; Olympic mountains; Soleduck hot springs; "Frozen Lake" country. The writer obtained the specimen identified by Mr. Frye from the Soleduck hot springs region, at a point three miles west from said springs, elevation 3,000 feet.

161. *Veratrum viride* Ait. False Hellebore. Common in Clallam county, also in wet places in the Soleduck, "Frozen Lake" country.

Description: Perianth-segments entire to serrulate, oblanceolate, thickened on the side at base; panicles slender, drooping; flowers green.

162. *Veratrum caudatum* Heller. In wet meadows at Montesano and along the Chehalis river in Chehalis county.

163. *Tofieldia intermedia* Rydberg. Clallam county; Olympic mountains. The writer obtained the specimen identified from Soleduck hot springs.

164. *Stenanthium occidentale* A. Gray. Olympic mountains; Clallam county.

165. *Xerophyllum tenax* (Pursh) Nutt. Bear Grass; Squaw Grass; Basket Grass. It is common in Clallam county, but more abundant towards Tahola (Granville), Quinault and Grays Harbor. It is much used by the natives in basket making throughout the peninsula, though other grasses are also used in basket weaving. The basket making industry makes a living for the natives for about half of each year, it is so extensive. The Quillayute Indians obtain their "straw" from Quinault. The "straw" when used in weaving, is pared and scraped, also cut to the de-

sired width by native implements. It is then neatly woven into baskets of all sizes, the smaller sizes being preferred. They are then sold. There is always a ready market for them.

Description: A grasslike leaved plant; stem two to five feet high; perianth-segments one-half inch long.

166. *Zygadenus elegans* Pursh. Olympic mountains.

167. *Zygadenus venenosus* S. Wats. Clallam county.

CONVALLARIACEAE. Lily of the Valley Family

168. *Trillium ovatum* Pursh: Wake-Robin. Common in Clallam county; Port Ludlow.

Description: Leaves foliaceous; branches not threadlike; leaves three in a whorl, sessile or nearly so, rhombic-ovate; plant producing one flower; flower peduncled, white becoming rose, fragrant.

*169. *Clintonia unifolia* (Schult.) Kunth. Clallam county; Olympic mountains; Soleduck hot springs; "Happy Lake" country. "Frozen Lake" region. The writer obtained the specimen here identified by Mr. Frye in the "Frozen Lake" region, but on the ridges there.

170. *Vagnera sessilifolia* (Baker) Greene. False Solomon's Seal. Clallam county; Skokomish river.

Description: Flowers few, large, in racemes; leaves spreading, flat; berries blue-black.

171. *Vagnera amplexicaulis* (Nutt.) Greene. Clallam county.

Description: Flowers small, numerous, in close panicles; styles nearly as long as the ovaries; filaments and segments similar; fragrant.

*172. *Unifolium bifolium kamschaticum* (Gmel.). Wild Lily of the Valley. Common in Clallam county; Olympic mountains; Soleduck hot springs; and the "Frozen Lake" country. The specimen identified for the writer by Mr. Frye was obtained in the "Frozen Lake" region by the writer in August. Another specimen, identified by the writer, was obtained near the Soleduck hot springs. The plant is common in the vicinity of LaPush.

Description: Zigzag stem three to fourteen inches high, otherwise like the common "Lily of the Valley."

173. *Disporum smithii* (Hook.). Near Hoquiam; upper Nisqually valley.

174. *Disporum oregonum* (S. Wats.) Benth. and Hook. Clallam county.

IRIDACEAE. Iris Family

175. *Hydastylus brachypus* Bicknell. Near Granville.

ORCHIDACEAE. Orchid Family

176. *Corallorhiza multiflora occidentalis* Lindl. Coral Root. Clallam county.

177. *Corallorhiza mertensiana* Bong. Clallam county.

178. *Ophrys caurina* (Piper) Rydberg. Clallam county.

179. *Peramium decipiens* (Hook.) Rattlesnake Plantain. Clallam county.

180. *Piperia unalaschensis* (Spring) Rydberg. Clallam county.

181. *Piperia multiflora* Rydberg. Near Grays Harbor.

- 182. *Piperia michaeli* (Greene) Rydberg. Near Grays Harbor.
- 183. *Limnorchis stricta* (Lindl.) Rydberg. Clallam county.
- 184. *Limnorchis dilatata* (Pursh) Rydberg. Olympic mountains.
- 185. *Limnorchis leucostachys* (Lindl.) Rydberg. Clallam county.
- 186. *Epipactus gigantea* Dougl. Clallam county.

SALICACEAE. Willow Family

- 187. *Salix lasiandra* Benth. Willow. Clallam county.
 - 188. *Salix piperi* Bebb. Near Hoquiam.
 - 189. *Salix hookeriana* Barratt. Grays Harbor; Grays Harbor City.
 - 190. *Salix barclayi* Anders. Olympic peninsula; Olympic mountains.
- Specimen here was obtained in the "Frozen Lake" country near the Soleduck hot springs.

Description: Low alpine shrubs, with leaves glaucous beneath and glabrous above.

- 191. *Salix commutata* Bebb. Olympic mountains.

Description: Same as 190 above; but with leaves pubescent on both sides.

- 192. *Salix commutata mixta* Piper. Olympic mountains.

- 193. *Salix sitchensis* Sanson. Clallam county.

Description: Leaves entire, very silky beneath; stamen one; catkins appearing before the leaves.

The Indians use the small willow limbs somewhat in basket making. The limbs are split with the teeth, then pared and scraped to the proper thickness and width, then woven into baskets. Spruce roots and limbs are used in the same way and make very durable baskets.

- 194. *Populus trichocarpa* Torr. and Gray. Common along all streams in their lower courses.

Description: Large tree; rough barked; petiole terete; capsule hairy, globose.

BETULACEAE. Birch-Alder Family

- 195. *Alnus sinuata* (Regal) Rydberg. A tree resembling this tree very much was found on the slopes of the foothills above the Soleduck hot springs and in the "Frozen Lake" country.

- 196. *Alnus oregona* Nutt. Red Alder. This tree is common in the coast region, especially in the rich river valleys. It is a red wooded tree, a foot or more in diameter. It makes the best fire wood the region can afford for durable fires and for permanent heat in stoves and furnaces. After the tree is cut down the roots rot in a very short time. As a consequence, the land where they grow is easily cleared. Besides this the soil where they grow is the best in the region. This soil is also usually free from ferns, as ferns do not grow on "alder bottoms."

In the old times the Indians placed the canoes of the dead, canoes containing corpses, up in alder trees among the leafy branches where they tied them securely with spruce root ropes. The writer saw several such "burials." The Indians seemed to prefer the alder to other trees for such interment.

Description: A low, very much branched tree, often very crooked and sometimes even decumbent; leaves rusty pubescent on veins beneath, doubly dentate and often slightly lobed, dull in color; peduncles shorter than cones; winter buds acute.

URTICACEAE. Nettle Family

197. *Urtica Iyallii* S. Wats. Nettle. Common everywhere in clearings and along the seacoast region. It reaches its best development on James Island.

Where it grows the thickest, the squaws pull up the roots by hand and there make their best gardens. The roots are twisted into ropes by the natives and in the old time were woven into cloth and mats, and made into baskets. Both the whites and Indians of the region use the tops for greens.

Description: This plant differs from the other nettles principally in having its leaves opposite, and possessing stinging hairs. It has a very rank growth along the coast. Its leaves are also thicker and more deeply cordate there.

ARISTOLOCHIACEAE. Birthwort Family

198. *Asarum caudatum* Lindl. Wild Ginger. Common.

Description: Leaves smooth, broadly cordate, usually mottled with white; flowers usually hidden under leaves; calyx bell-shaped, the acuminate lobes brownish to purple, spreading; flower peduncled close to the ground; plant a stemless herb with creeping rootstock.

POLYGONACEAE. Buckwheat Family

199. *Oxyria digyna* (L.). Hill. Mountain Sorrel. Common

Description: A rather stout, fleshy plant of about twelve inches high; flowers in scarious-bracted fascicles, on short capillary pedicels; outer sepals narrow and often carinate; sepals often reddish.

200. *Rumex acetosella* L. Sheep Sorrel. Probably brought to the region with feed and forage.

Description: Plant small; leaves hastate; flowers dioecious; inner sepals shorter than the granular akene; pedicels jointed with the flower.

201. *Rumex persicarioides* L. Yellow Dock. Common.

Description: A coarse annual plant; leaves somewhat lanceolate; flowers not dioecious; sepals with slender teeth; outer sepals often with tubercles; pedicels very short.

This plant is sometimes used as medicine and as greens by the Indians.

202. *Polygonum paronychia* Cham. and Schlecht. Common.

203. *Polygonum minimum* S. Wats. Olympic mountains. Specimen identified was obtained near the Soleduck hot springs.

Description: A very low and slender, ascending knotweed, more or less scabrous-puberulent; stems terete, reddish; flowers axillary; style 3-parted; leaves rather broad, little reduced upward; flowers tinged with rose color.

204. *Polygonum douglasii* Greene. Specimen here described was obtained near the Soleduck hot springs. It was seen also in the "Happy Lake" country and in the "Frozen Lake" region.

Description: A plant resembling No. 203 above, but with leaves narrowing decidedly upward; fruiting pedicels reflexed; flowers campanulate.

205. *Polygonum nuttallii* Small. Olympic mountains. Specimen examined by the writer was obtained in the "Frozen Lake" region about three miles west of the Soleduck hot springs.

Description: A plant very similar to No. 204 above, but with flowers in interrupted, but rather close spikes; style 3-parted; filaments dilated.

*206. *Polygonum bistortoides* Pursh. Clallam county. Specimen identified was obtained near LaPush.

207. *Eriogonum ovalifolium* Nutt. Olympic mountains.

208. *Eriogonum vineum* Small. Olympic mountains.

CHENOPODIACEAE. Goosefoot Family

209. *Salicornia ambigua* Michx. Found near Port Angeles; Port Ludlow; Port Townsend.

210. *Atriplex patula littoralis* Gray. Near Port Angeles.

211. *Chenopodium rubrumhumile* (Hook) S. Wats. Goosefoot. Port Townsend; Port Angeles; Shoalwater Bay.

NYCTAGINACEAE. Four O'Clock Family

212. *Abronia umbellata* Lam. Common everywhere; Port Angeles; Clallam county; Point-no-point.

213. *Abronia latifolia* Esch. Shoalwater Bay; Port Townsend; Port Angeles; Clallam county, and westward to Grays Harbor.

PORTULACACEAE. Purslane Family

214. *Lewisia columbiana* (Howell) Robinson. Olympic mountains.

215. *Claytonia lanceolata* Pursh. Olympic mountains.

216. *Claytonia asarifolia* Bong. Olympic mountains.

216½. *Claytonia sibirica* L. Miner's Lettuce. The writer obtained the specimen, which Mr. Frye identified for him as here given, from a point three miles west from the Soleduck hot springs. This is the first mention of this species in the region of the mountains. It is also found at Montesano and Skokomish river.

SILENACEAE. Pink Family

217. *Silene antirrhina* L. Catchfly. Clallam county.

218. *Silene menziesii* Hook. Clallam county.

219. *Silene douglasii* Hook. Olympic mountains.

220. *Silene douglasii brachycalyx* Robinson. Chehalis county.

*221. *Silene macounii* S. Wats. Olympic mountains. The writer obtained the specimen here identified in the "Frozen Lake" region near the Soleduck hot springs.

222. *Cerastium arvense* L. Olympic mountains; Skokomish river.

223. *Alsine borealis* (Bigel) Britton. Chickweed. Olympic mountains; Skokomish river.

224. *Alsine crispa* (Cham. and Schlecht.) Holzinger. Olympics.

225. *Sagina occidentalis* S. Wats. Olympic mountains.

226. *Moehringia macrophylla* (Hook) Torr. Clallam county.

227. *Ammodenia peploides* (L.) Rupr. Shoalwater Bay.

228. *Arenaria capillaris nardifolia* (Lebeb.) Regel. Olympics.

229. *Arenaria verna rubella* (Wahl.) S. Wats. Olympic mountains.

230. *Arenaria sajanensis* (Willd.) Schlecht. Olympic mountains.

231. *Tissa macrotheca* (Hornem.) Britt. Port Angeles.

232. *Tissa marina* (L.) Britt. Clallam county.

233. *Tissa rubra* (L.) Clallam county.

RANUNCULACEAE. Buttercup Family

234. *Anemone hudsoniana* (DC.) Richards. Olympic mountains.
 235. *Anemone drummondii* S. Wats. Olympic peninsula.
 236. *Anemone lyallii* Britton. Clallam county; Olympic mountains.
 237. *Anemone quinquefolia* L. Granville; Skookum river.
 238. *Pulsatilla occidentalis* (S. Wats) Freyn. Clallam county.
 239. *Thalictrum occidentale* A. Gray. Clallam county.
 *240. *Trautvetteria grandis* Nutt. Clallam county; Chehalis county.
 The specimen here identified was obtained at LaPush.
 241. *Myosurus major* Greene. Mouse Tail. Clallam county.
 242. *Ranunculus flammula unalascensis* (Bess.) Ledeb. Buttercup.
 Clallam county.
 243. *Ranunculus sukadorfii* A. Gray. Olympic mountains.
 244. *Ranunculus eschsholtzii* Schlecht. Olympic mountains.
 245. *Ranunculus bongardi* Greene. Clallam county.
 246. *Ranunculus bongardi greenei* (Howell). Hoquiam; Port Ludlow.
 The specimen identified here was obtained three miles west of the
 Soleduck hot springs.
 247. *Ranunculus occidentalis* Nutt. Near Montesano.
 248. *Ranunculus oreganus* (A. Gray) Howell. Near Montesano.
 249. *Caltha biflora*. DC. Syst. Olympic mountains.
 250. *Trollius laxus* Salisb. Globe Flower. Olympic mountains.
 251. *Actaea spicata arguta* (Nutt.) Torr. Clallam county.
 Description: Leaves compound, 2- to 3- ternate; flowers in racemes;
 berries red.
 252. *Cimicifuga elata* Nutt. Clallam county.
 253. *Aquilegia formosa* Fisch. Columbine. Clallam county; Monte-
 sano.
 Description: Outside petals yellow tinged, spurred; leaves compound;
 flowers usually regular.
 *254. *Delphinium scopulorum glaucum* A. Gray. Larkspur. Olympic
 mountains. The specimen here identified was obtained from near the
 Soleduck hot springs between these springs and the "Frozen Lake" re-
 gion.
 255. *Delphinium bicolor* Nutt. Olympic mountains.
 256. *Delphinium columbianum* Greene. Clallam county; Montesano.

BERBERIDACEAE. Barberry Family

257. *Berberis nervosa* Pursh. Oregon grape. Common everywhere.
 Used by the Indians as a medicine.
 Description: Small shrubs, with yellow flowers in bracteate racemes;
 wood yellow; stems simple, but only a few inches high; leaves one to two
 feet in length, rigid, eleven to seventeen leaflets, palmately nerved; sepals,
 petals, and stamens six each; carpel one, forming a berry.
 *258. *Achlys triphylla* (Smith) DC. Syst. Sweet After Death. Common.
 Specimen here identified by Mr. Frye was obtained by the writer near the
 Soleduck hot springs. The writer also identified the plant from a speci-
 men obtained near LaPush.

Description: Leaves 3-parted; scape ending in a slender spike of minute
 flowers. The plant is also called "Vanilla Leaf."

PAPAVERACEAE. Poppy Family

259. *Bikukulla formosa* (Andr.) Coville. Dutchman's Breeches. Common in Clallam county.

Description: Flowers drooping on a scape; corolla flattened heart-shaped, two-spurred at base (inflorescence thyrsoid in general); racemes compound; persistent petals united, rose to pink color; filaments lightly united.

260. *Capnoides acouleri* (Hook.) Kuntze. Near Montesano; Little Hoquiam river.

BRASSICACEAE. Mustard Family

261. *Draba stenoloba* Ledeb. Olympic mountains

262. *Draba glacialis* Adams. Olympic mountains.

*263. *Dentaria tenella* Pursh. The specimen here listed was obtained near LaPush. This is the first mention of its being found in the Olympic peninsula.

264. *Cardamine breweri* S. Wats. Near Quinault.

265. *Cardamine angulata* Hook. Hoquiam; Montesano.

*266. *Cardamine kamtschatica* (Regal) Schultz. Olympic mountains. The specimen here listed was obtained by the writer from the foothill peaks overlooking Soleduck hot springs to the westward, at a distance of about four miles from the springs.

267. *Cardamine oligosperma* Nutt. Near Hoquiam.

268. *Arabis glabra* (L.) Bernh. Rock Cress. Clallam county.

269. *Arabis drummondii* A. Gray. Clallam county.

270. *Arabis lyallii* A. Wats. Olympic peninsula; Olympic mountains.

*271. *Roripa nasturtium* (L.) Rusby. The specimen here listed was obtained near LaPush. It is the first report of this plant from this region.

272. *Roripa curvisiliqua* (Hook.) Bessy. Montesano.

273. *Erysimum asperum* (Nutt) DC. Syst. Clallam county.

274. *Erysimum arenicola* S. Wats. Olympic mountains.

275. *Smelowskia calycina* C. A. Meyer. Clallam county.

276. *Brassica campestris* L. Turnip. Escaped occasionally from cultivation in abandoned homestead clearings.

277. *Brassica nigra* (L.) Koch. Black Mustard. Common weed at LaPush, being brought there with feed and forage.

The Indians use this plant both as greens and as medicine.

Description: Leaves petioled, cauline leaves not auricled or clasping; pods 4-angled, three-fourths inch long; beak of pod very short.

278. *Brassica arvensis* (L.) B. S. P. Prsl. Charlock. A common weed at LaPush, having been brought to the place with forage and feed.

Description: This plant is very similar to No. 277, above, but with beak of pod long, about equalling the fertile portion.

279. *Brassica alba* L. White Mustard. Escaped from cultivation in the school flower garden at LaPush. It was also seen to be a weed in several homestead clearings in the region.

This mustard and the other Brassicas above are used both as greens and as medicine by the natives.

Description: Pods bristly ascending on a spreading pedicel; leaves pinnatifid; seeds pale.

280. *Lepidium menziesii* DC. Syst. Peppergrass. Clallam county; Hoquiam; LaPush; common in all cleared places in the lower and middle country. It is eaten raw by the natives and also used to flavor stews.

Description: Plant hispid to pubescent; petals none, or occasionally present; pods glabrous, not margined except for very short teeth near the summit; basal leaves pinnately parted, pubescent; flowers white; pod emarginately 2-winged at the summit; cells 1-seeded.

DROSERACEAE. Sundew Family

281. *Drosera rotundifolia* L. Sundew. Clallam county.

Description: Leaf blades rounded, two to six lines broad; petiole long; petals one-sixth of an inch long.

GRASSULACEAE. Stonecrop Family

*282. *Sedum* Sp. Stonecrop. Specimen here referred to this genus was obtained at the Soleduck hot springs in August.

283. *Sedum spathulifolium* Hook. Clallam county.

284. *Sedum divergens* S. Wats. Olympic mountains.

285. *Sedum douglasii* Hook. Olympic mountains.

286. *Sedum stenopetalum* Pursh. Olympic mountains.

SAXIFRAGACEAE. Saxifrage Family

287. *Leptarrhena amplexifolia* (Sternb.) Ser. Olympic mountains.

288. *Therofon majus intermedium* Piper. Chehalis county.

289. *Therofon elatum* (Nutt.) Greene. Olympic mountains.

290. *Saxifraga tolmei* Torr and Gray. Saxifrage. Common in Olympic mountains.

Description: Stems producing perennial branches densely beset with small leaves; leaves entire, evergreen and coriaceous; peduncles two inches long; carpels three or four.

291. *Saxifraga bronchialis* L. Olympic mountains.

292. *Saxifraga cespitosa* L. Olympic mountains; Mt. Storm King.

293. *Saxifraga mertensiana* Bong. Olympic mountains. Specimen identified was found on Observation Point west of the Soleduck hot springs.

Description: Leaves many lobed, usually dentate; pedicels often bulbiferous; scape and leaves from scaly, granulate bulb; calyx free, rotate.

294. *Saxifraga odontophylla* Piper. Olympic mountains.

295. *Saxifraga nelsoniana* D. Don. Olympic mountains.

296. *Saxifraga bongardi* Presl. Olympic mountains; Soleduck hot springs.

297. *Saxifraga marshallii* Greene. Olympic mountains; Skokomish valley.

*298. *Tiarella trifoliata* L. Clallam county. Specimen identified here was found near the village of LaPush.

299. *Tellima grandiflora* (Pursh.) Dougl. Monatesno; Clallam county.

300. *Tellima parviflora* Hook. Olympic mountains.

301. *Chrysosplenium scouleri* (Hook.) Rose. Hoquiam; Quinault.

302. *Mitella pentandra* Hook. Olympic mountains; Skokomish valley. Specimen identified here was obtained near the "Frozen Lakes" west of the Soleduck hot springs.

303. *Mitella ovalis* Greene. Hoquiam; Quinault.

304. *Mitella trifida* Graham. Olympic mountains; head waters of the Soleduck river.

Description: Calyx lobes obtuse; leaf lobes rounded; petals small, 3-5-parted. Plant usually grows in the shade.

305. *Heuchera micrantha* Dougl. Clallam county; near LaPush.

Description: Scape, or few leaved flowering stems a foot or so in height; leaves two to four inches in diameter, leaf lobe rounded; herbage pubescent, at least the under leaf surface; flowers in a loose panicle (or panicles); calyx acute at base, lobes erect; stamens exerted; styles slender.

306. *Heuchera racemosa* S. Wats. Olympic mountains; Clallam county.

307. *Heuchera cylindrica* Dougl. Montesano; near LaPush; Skokomish.

Description: Flowers in a spikelike panicle, one-fourth to one-half inch long; petals minute; calyx green; leaves thickish, not subcoriaceous or glabrous; plant hirsute or villous-pubescent.

*308. *Leptaxis mienziesii* (Pursh) Raf. Montesano; Clallam county. Specimen identified was obtained near LaPush.

309. *Parnassia fimbriata* Konig. Olympic mountains.

Description: Leaves reniform to cordate.

GROSSULARIACEAE. Currant Family

310. *Ribes lobbii* A. Gray. Currant; Gooseberry. Common.

Description: Flowers three-fourths inch long, dark purple to white; anthers oval, very obtuse, white; calyx tube campanulate to cylindrical; berries warty, glandular. The flowers of this plant are one to four on a pedicel. The leaves are plicate in the bud and the stems of the plant are armed with spines.

311. *Ribes divaricatum* Dougl. Montesano; Hoquiam; Hoh; Port Ludlow.

Description: A plant very similar to No. 310 above, but differs from it in having greenish flowers, broader calyx lobes and smooth berries.

312. *Ribes lacustre* (Pers.) Poir. Olympic mountains; "Happy Lake" country; Soleduck hot springs region and westward to the Bogachiel-Soleduck divide; Port Ludlow.

Description: Plant low; leaves downy to nearly glabrous; flowers in a peduncled raceme, numerous, nodding; calyx tube saucer shaped; berries black (sometimes shading into light red), glandular.

313. *Ribes bracteosum* Dougl. Hoquiam; Montesano; LaPush; Clallam county.

314. *Ribes howellii* Greene. Olympic mountains; Soleduck hot springs, and westward.

Description: A plant resembling *R. bracteosum* above; but differing from it principally in having its racemes pendant.

315. *Ribes sanguineum* Pursh. Red Flowering Currant. Common in the middle and lower reaches of the region.

Description: Leaves obtusely 3-lobed to 5-lobed; flowers red, varying towards white; the many flowered racemes drooping.

Currants are used by the natives and were extensively so used in the old times. They were eaten raw, stewed, and "canned" in the muck in skunk cabbage leaves for future use. They, however, were never relished

as are the salmon berries; Indians usually do not like sour things as well as sweet. Consequently, the sweeter salmon berry is the more palatable.

HYDRANGEACEAE. Hydrangea Family

316. *Whipplea modesta* Torr. Chehalis county.
317. *Philadelphus gordonianus*. Lindl. Crescent lake.

ROSACEAE. Rose Family

318. *Opulaster opulifolius* (L.) Kuntze. Ninebark. Common in Clallam county; Chehalis county; Montesano. Specimen obtained at LaPush.

Description: A shrub with rose-colored to purplish flowers; leaves palmately lobed; capsules glabrous, much exceeding the calyx; carpels usually five or fewer.

*319. *Lutka pectinata* (Pursh) Kuntze. Common in Olympic mountains. Specimen identified by Mr. Frye for the writer was obtained on one of the ridges on the Soleduck-Bogachiel divide to the west of the Soleduck hot springs. The writer also identified the plant from a specimen obtained in the "Frozen Lake" country to the west of the above springs.

Description: A shrub, caespitose, creeping; branches erect; leaves palmately lobed; thrice or twice palmately 3-cleft; flowers racemose; stamens included, united at base; fruit a capsule; carpels few.

320. *Schizonotus discolor* (Pursh) Raf. Ocean Spray. Clallam county; LaPush; Port Ludlow. Specimen identified was from near LaPush.

Description: A low, diffuse shrub with grayish brown bark, pubescent; leaves as in No. 319 above, lobes sometimes dentate; panicle of dingy white flowers, much branched, tomentose, stamens not united at base; stamen-disk adherent, entire; ovules two.

321. *Spiraea hendersoni* (Cnaby) Piper. Olympic mountains.

322. *Spiraea douglasi* Hook. Clallam county. Specimen obtained near Beaver.

Description: Shrub with dark purplish flowers in dense pyramidal panicles; leaves tomentose beneath, serrate or incised. The plant grows in wet places.

323. *Spiraea menziesii* Hook. Montesano; Chehalis river.

324. *Spiraea pyramidata* Greene. Olympic mountains. Specimen was obtained near the Soleduck hot springs. This is the first mention of this plant from the Olympic region. The writer also identified a specimen of this species from a point three miles west of the same springs.

Description: This plant differs from No. 322 above principally in its flowers being white and in its leaves being glabrous beneath.

*325. *Spiraea densiflora* Nutt. Olympic mountains; Soleduck hot springs; "Frozen Lake" country. Specimen identified for the writer by Mr. Frye was obtained in the latter region. The writer identified another specimen from the Soleduck hot springs section.

Description: Alpine shrub, usually growing in low flats on the protected side of high peaks just below timber line; inflorescence a flat topped, much crowded corymb; flowers red.

326. *Aruncus aruncus* (L.) Karst. Goats Beard. Clallam county; LaPush; Beaver; near the Soleduck hot springs; Skokomish valley.

Description: Herbs with compound leaves; smooth, usually five feet in height; flowers dioecious; stamens exserted.

327. *Rubus lasiococcus* A. Gray. Chehalis county; Clallam county; LaPush.

Description: A stout, trailing, unarmed herb; leaves mostly 3-5-lobed; fruit tomentose.

328. *Rubus nivalis* Dougl. Olympic mountains. Common on ridges near Oberg's place.

Description: Biennial, trailing shrub, frutescent; leaves cordate, 3-lobed; sharply toothed, glabrous; petioles and veins of leaves armed with prickles, fruit red.

329. *Rubus macropetalus* Dougl. Dewberry. Common; Clallam county; Beaver; Montesano; Hoquiam; Strait of Juan de Fuca.

Description: This plant differs from *R. nivalis* in having dull leaves, 3- to 5-foliolate, and black colored berries.

The natives gather these berries, which they eat raw or stewed, though the next berries mentioned, especially the Salmon Berry, are more desired and are also more plentiful.

330. *Rubus parviflorus* Nutt. Thimble Berry. Common everywhere. The berry is eaten by both Indians and whites, though it is not desired so much as the more abundant Salmon Berry.

Description: An erect shrub five to seven feet high; leaves 3- to 5-lobed; stem perennial, unarmed; fruit dark to light red, thimble-shaped when removed from the plant.

331. *Rubus spectabilis* Pursh. Salmon Berry. Common everywhere and the most abundant edible wild fruit of the region. It is likely that whole train loads of it go to waste in the region annually, as the woods in many sections are yellow with the ripening berries in the maturing season.

Description: Flowers large, red-purple; fruit salmon-egg color, ranging from yellow to crimson; leaves 3- to 5-foliolate; stems prickly; biennial.

The natives gather these berries and eat them uncooked, stew them in various ways and also "can" them, as we have seen. The "canning" formerly was by wrapping the raw berries, or the cooked products, as desired, in skunk cabbage leaves and burying same beneath the muck of some nearby swamp. Then when needed, they were dug up and used. The natives say they kept fairly well that way, but it is not likely a white man would like them "canned" that way. They also "canned" them in hairseal ponches which were hung in the smokehouses and "dried" or came to a state resembling Limberg cheese, at least in smell. They, with the ponch bag, were then sliced and eaten without further preparation, or were stewed or broiled. This berry was also dried in the sun. Then when needed, it was stewed much as dried corn is prepared for eating. The Indians now can the berry as their white sisters do.

332. *Rubus strigosus* Michx. Red Raspberry. The specimen identified was obtained near the Soleduck hot springs. This is the first mention of it in the region.

333. *Rubus leucodermis* Dougl. Blackcap. Clallum county; Beaver prairies; near LaPush.

Description: Leaflets white-tomentose beneath; leaves 3- to 5-foliolate; prickly stems, glaucous; flowers white; berry cap-shaped, black.

334. *Rubus laciniatus* Willd. Evergreen Blackberry. On ridges near Oberg's place and at Beaver.

Description: Leaves 3- to 5-foliolate; stems prickly; flowers white; berry cylindrical, black.

The blackberries are not in such favor among the people of the coast as they are in many other parts of the country. One reason is that the berry is much inferior to our eastern blackberry. The same is true of the raspberries. Another reason is that the large and much better flavored Salmon Berry is so much more plentiful. The natives, however, use the berry. Besides eating it as picked, they dry it. It seems to have been more used formerly than now.

335. *Rosa gymnocarpa* Nutt. Common.

Description: Stem slender; calyx-lobes deciduous, leaving fruit naked; flower small; fruit oblong.

336. *Rosa nutkana* Presl. Common.

Description: Flowers large, 2-3 inches broad, solitary; calyx-lobes persistent, stipules broad; fruit globose; spines stout.

337. *Rosa pisocarpa* A. Gray. Rare. Port Ludlow.

Description: Flowers in corymbs; fruit globose.

The fruit of the rose is gathered and eaten raw, also roasted.

338. *Potentilla gracilis* Dougl. Olympic mountains; Port Townsend.

339. *Potentilla villosa* Pall. Olympic mountains.

340. *Potentilla flabellifolia* Hook. Clallam county.

341. *Sibbaldia procumbens* L. Olympic mountains.

342. *Fragaria chiloensis* (L.) Buch. Common in all the untimbered, nonswampy places, especially near the coast, growing even on the sandy beaches at LaPush.

Description: Leaves thick, dark green, shining, strongly reticulate beneath, broadly obovate in shape; plant densely villous in general, with silky hairs; flowers large; fruit ovate; akene deeply pitted.

The natives search the whole region for this strawberry. Its greatest development on the west side of the mountains seems to be at Quillayute Prairie. To this prairie the Indians go in great numbers annually to pick them. They now sell most of those they pick to the white settlers. What they do not sell they eat without cooking. Formerly a sort of "pie" was made in skunk cabbage leaves. They were also stewed in trays.

343. *Argentina anserina* (L.) Rydberg. Hoquiam; Clallam county.

Description: A creeping plant; leaves and peduncles radical; leaflets usually seven, with smaller ones between now and then; petals yellow; styles attached at or below the middle of the ovary; runners to plant long; flowers solitary on scapelike peduncles; plant generally white tomentose and silky-villous; leaves all radical; plant is called "Silver-Weed."

344. *Dasiphora fruticosa tenuifolia* (Wild.) Rydberg. Olympic mountains.

345. *Drymocallis valida* Greene. Olympic mountains.

346. *Drymocallis glandulosa* Rydberg. Olympic mountains; Soleduck hot springs region.

Description: Perennial, erect, about two feet in height; leaves pinnate; leaflets five to nine, coarsely serrate; flowers yellow, cymose; calyx one-

third inch long, usually villous, with coarse hairs, longer than the petals, lanceolate to ovate in form; style attached at or below the middle of the ovary; stamens twenty-five in one row; bractlets shorter than the leaf lobes; herbage very glandular.

347. *Drymocallis wrangelliana* (Fisch. and Lall.) Rydberg. Clallam county; Olympic mountains; near the Soleduck hot springs.

Description: This plant resembles No. 346 very much; but is non-glandular, and has broadly ovate sepals.

*348. *Geum macrophyllum* Willd. Near Soleduck hot springs; Clallam county. Specimen here identified was obtained near the former place.

349. *Sieversia ciliata* (Pursh). Clallam county; Olympic mountains.

Description: Flowers purplish to pale purplish; styles plumose; akene-tails feathery.

MALACEAE. Apple Family

350. *Amelanchier florida* Lindl. Serviceberry. Common.

Description: Small shrub with pale twigs; leaves tomentose beneath when young, serrate only toward the apex; flowers racemose; calyx tube campanulate, limb 5-parted, persistent; petals five, oblong, ascending; carpels three to five; fruit berry-like, purplish, edible. This plant is readily distinguishable by its pale twigs and white, racemose flowers.

351. *Pyrus diversifolia* Bong. Crabapple. Common from the head of Hoh river, especially its western branches, to the beach. At LaPush it grows in a semiswampy region to the east of the Wesley Smith (government) school house. There are several patches of this species growing at Quillayute Prairie. The largest area, covering, the writer judges, two acres, is to be found on Ollie Smith's farm, two miles east of Quillayute post office. The Indians eat the fruit of this plant, it being the only sour thing that the writer knows of their eating with a relish. They also use the bark of its roots as medicine, sometimes also the bark of its trunk and limbs. The bark is pounded up and a tea-preparation is made from it. It is used in bowel trouble.

Description: A crooked, very much branched shrub to a low tree, growing in dense clusters so as to smother out other vegetation, and usually growing in dense thickets in bottom lands that are exceptionally wet. The thicket on Ollie Smith's place is an exception to this rule as the location is dry. Furthermore, it is the writer's opinion that the soil there is not the best. The plant also has a wide range extending from the foot of the glaciers in Glacial creek at timber line to the coast. Flowers corymbose; fruit oblong, fleshy; carpels papery; leaves simple. The flowers of this species are white or tinged a little with rose.

352. *Pyrus occidentalis* S. Wats. Mountain Ash. Common.

Description: Leaves pinnate; leaflets dull, serrate near apex; flowers corymbose; fruit globose, purple, glaucous; carpels papery.

A tree of this species grows just south (east) of the Clallam-LaPush wagon road between the road and the Soleduck river opposite the "fill" and cut on the first ridge toward Clallam Bay from the west and about a half mile east of the Harvy Lesure place.

AMYGDALACEAE. Almond Family

353. *Prunus emarginata villosa* Sudw. Cherry. Common; Clallam county; Montesano; Port Ludlow.

Description: A tree (shrub) six to eight feet high; bark of tree cherry color, of branches, chestnut brown; branches of tree slender; leaves oblong-obcordate to oblanceolate; inflorescence a 6- to 12-flowered corymb; flowers white, one-half inch broad; fruit globose, bright red; leaves somewhat villous. The fruit is edible.

354. *Osmaronia cerasiformis* (Torr. and Gray) Greene. Montesano, Clallam county.

Description: This plant is known as the "Oso Berry." It is a shrub about fifteen feet in height; leaves broadly lanceolate, short petioled; flowers greenish in racemes, appearing with the branchlets from the buds; fruit a blue-black drupe, bitter.

FABACEAE. Bean Family

355. *Thermopsis montana ovata* Robinson. Chehalis county.

*356. *Lupinus micranthus* Dougl. Near LaPush. This is the first mention of this plant in the peninsula.

Description: Slender plant a foot in height, villous; flowers bluish purple in dense racemes; bracts shorter than the calyx; standard short and sometimes marked with bluish lines.

357. *Lupinus lepidus* Dougl. Clallam county. Common.

Description: Perennial herb, low, slender, silky; leaves distant, not glabrous above; lower petioles long; peduncle and racemes long; flowers small; petals violet; ovules three to six; keel ciliate.

358. *Lupinus littoralis* Dougl. Common near the seashore.

Description: Long vined, decumbent to procumbent; leaflets nearly an inch long, cuneate-oblong to obovate; bracts conspicuous, persistent in fruit; racemes short; flowers blue violet or tinged with yellow; keel ciliate; calyx large; ovules about twelve.

359. *Lupinus subalpinus* Piper and Robinson. Olympic mountains. The writer's specimen was obtained near the Soleduck hot springs.

Description: A somewhat decumbent, spreading-villous plant with simple stem; racemes terminal, large, showy; standard glabrous; keel glabrous; pods linear-oblong, obliquely sharp pointed, about 9-seeded.

360. *Lupinus polyphyllus* Lindl. Montesano.

361. *Lupinus rivularis* Dougl. Clallam county; Chehalis county; common.

Description: A plant somewhat resembling *L. littoralis*, with stipules very slender; leaflets seven to ten; petioles short; racemes about two feet in length; bracts setaceous, exceeding the calyx; flowers usually purple, shading sometimes into white; keel slightly ciliate.

362. *Trifolium longipes* Nutt. Clallam county.

363. *Trifolium pratense* L. Red Clover. Cultivated somewhat.

364. *Trifolium repens* L. White Clover. Common everywhere.

This clover undoubtedly has been brought into the region with forage and seed grain.

Description: A clover with stems creeping and flowers white.

365. *Trifolium hybridum* L. Alsike Clover. Common along roads and in many fields.

Description: This plant differs from *T. repens* mostly in having procumbent stems and pink flowers.

366. *Trifolium fimbriatum* Lindl. Grays Harbor; Clallam county.

367. *Trifolium tridentatum* Lindl. Clallam county.

368. *Medicago sativa* L. Alfalfa. This plant has been tried at several places in the peninsula with fair success as a forage plant. It was first tried at Sequim Prairie near Dungeness.

369. *Hosackia gracilis* Benth. Montesano.

370. *Hosackia crassifolia* Benth. Chehalis county; Montesano.

371. *Hosackia parviflora* Benth. Montesano; Chehalis county.

372. *Hedysarum occidentale* Greene. Olympic mountains.

Description: Leaves unequally pinnate, without tendrils; flowers in a spicate raceme, purple; pod a loment.

The specimen identified by the writer was obtained near the Soleduck hot springs.

373. *Aragallus gracilis* A. Nelson. Locoweed. Olympic mountains.

374. *Aragallus monticola* (A. Gray) Greene. Olympic mountains.

375. *Phaca hookeriana* Torr. and Gray. Milk vetch. Olympic mountains.

376. *Vicia americana* Muhl. Vetch. Montesano; Clallam county.

Description: Perennial plant, glabrous, one to five feet high; leaflets eight to sixteen, very variable; peduncles 4-18 flowered; flowers violet to bluish-purple.

377. *Vicia gigantea* Hook. Montesano; Clallam county. Common.

Description: A plant similar to *V. americana*; stout, usually four to ten feet high; peduncles mostly many flowered; flowers dull-purplish to ochroleucous-tawny.

378. *Vicia sativa* L. Common Vetch. Common in Clallam county.

Description: An annual, stout; leaflets oblong-ovate; axillary peduncles, short, 1- to 2-flowered, nearly sessile, flowers about an inch long, violet; pods brown.

379. *Lathyrus littoralis* (Nutt.) Endl. Shoalwater Bay near Port Angeles.

380. *Lathyrus nuttallii* S. Wats. Olympic mountains; near Soleduck hot springs.

Description: Herbage glabrous, or nearly so; plants erect; leaves with tendrils (reduced); leaflets oblongovate, pubescent beneath; flowers reddish purple, one-half inch in length; pod on a short stipe.

381. *Lathyrus polyphyllus* Nutt. Common in Chehalis county.

Description: Climbing plants; leaves with tendrils; leaflets thin, six to ten pairs, not sessile; stipules large, glabrous; racemes several, many flowered; flowers blue-purple; pod not on a stipe.

382. *Lathyrus maritimus* (L.) Bigel. Clallam county, growing adjacent to the seashore; Port Ludlow.

Description: A plant very similar to *L. polyphyllus*; leaflets firm, three to five pairs, ovate-oblong, glabrous; flowers close on a peduncle that does not exceed the leaves in length; flowers purple.

GERANIACEAE. Geranium Family

383. *Geranium bicknellii* Briton. Common in Clallam county.

Description: An annual with small purple flowers of a rather pale tint; inflorescence loose; peduncles long; seeds reticulately ridged.

384. *Erodium cicutarium* (L.) L'Her. Olympic mountains; "Happy Lake" country; "Frozen Lake" region; Soleduck hot springs.

Description: This plant is known by the names "Filaria, Alfilaria, Pin-Clover." It is a hairy, much branched, decumbent plant with pinnate leaves and pinnatifid leaflets; flowers small, peduncled in the axils of the smaller leaves.

OXALIDACEAE

385. *Oxalis oregana* Nutt. Montesano; Skokomish valley. It is common in Clallam county, principally in the coast forest where the underbrush is not dense. It is known as "Redwood Sorrel."

Description: An acaulescent plant; scapes 1-flowered; flowers white to pinkish; capsule ovoid.

The Indians use this plant as medicine. They pound it up and apply it as a salve.

CALLITRICHACEAE. Water Starwort Family

386. *Callitriche verna* L. Near Hoquiam.

387. *Callitriche bolanderi* Hegelm. Clallam county.

EMPETRACEAE. Crowberry Family.

388. *Empetrum nigrum* L. Crowberry. Common.

Description: A low, spreading, procumbent evergreen; leaves linear-oblong, scattered; foliage resembling that of the heaths; flowers scattered and solitary in the axis; sepals three, petal-like; fruit drupaceous of the *Arctostaphylos* type, black.

This is the first mention of this plant in the peninsula.

CELASTRACEAE. Stafftree Family

389. *Pachistima myrsinites* (Pursh) Raf. Olympic mountains; near Soleduck hot springs.

Description: A low, much branched evergreen; leaves about an inch and a half long or less, numerous; flowers greenish; petals and sepals four each, each an inch and a half broad.

ACERACEAE. Maple Family

390. *Acer macrophyllum* Pursh. Oregon Maple. Common in Clallam county. The largest number of this species was seen near the Soleduck hot springs. It is found principally in the river bottoms and in the low localities with rich soil, just above the marsh areas around the lakes of the region.

Description: This is the large-leaved maple; leaves six to ten inches in diameter, deeply three-cleft; flowers in racemes, fragrant, yellow; fruit hispid to densely hairy; wings one and one half inches long, smooth. The tree averages about ten inches in diameter.

The Indians use the wood of this tree in making slugs for wood cutting; also in the old times it was used some in making bows and arrows and harpoon shafts. Canoe paddles are made from this wood. The Vine Maple, next below, was also similarly used. Wooden swords used formerly in war and now in the ceremonies were usually made from the maple.

391. *Acer circinatum* Pursh. Vine Maple. Common everywhere from timber line to the coast, growing usually on rich soil, often in low, wet places.

Description: A small, erect to decumbent tree; leaves three to five inches broad, 7 to 9-lobed, lobes sharply serrate; corymbs on slender 2-

leaved branchlets, 10-to 20-flowered; sepals reddish purple; petals shorter than the sepals, greenish; fruit glabrous; fruit-wings widely spreading.

RHAMNACEAE. Buckthorn Family

392. *Rhamnus purshiana* DC. Cascara Sagrada. Common. The Indians at LaPush use this plant for medicine. They pare off the bark of the root or trunk, make a tea of it, first pounding the bark before steeping it, and then give it for almost any sort of a disease. Its principal use is as a cathartic. They use it as a remedy for gonorrhoea, taking it internally. Also for an injection for this disease they use hot sea water. The Indian's use of the cascara sagrada, however, is not along any scientific line, even for an Indian. If a little is good more is better. The herb man is just as likely to give his patient a 5-pound pail full of the tea to drink as not; provided he thinks it is the remedy needed. Deaths are often caused by thus overdosing the patient.

As an instance, while the writer was in charge at LaPush one of the old people got sick from eating too much spoiled fish. He needed a cathartic. The herb-woman, in this instance, made a 5-pound pail almost full of very strong cascara sagrada tea and gave it to him. He drank it all, or most of it, then died two minutes afterwards in trying to throw it up. He was strangled to death. The writer appeared on the scene just as the aged man drank the last of the tea, and saw him strangle to death.

Description: A small tree with simple, undivided leaves; leaves elliptical, three to seven inches long, deciduous, downy beneath; flowers with minute petals, mostly perfect; seeds convex on the back.

393. *Ceanothus sanguineus* Pursh. Buckthorn. The only plant seen was near the Soleduck hot springs.

Description: A small shrub; branches reddish; leaves thin, 3-nerved from base, alternate, glandular serrate; petioles slender; flowers white in large clusters; fruit uncrested.

This species has not been previously reported from this region.

MALVACEAE. Mallow Family

394. *Malva rotundifolia* L. Mallow. Port Crescent.

395. *Malva moschata* L. Musk Mallow. Montesano.

396. *Sidalcea hendersonii* S. Wats. Hoquiam.

HYPERICACEAE. St. Johnswort Family

397. *Hypericum anagalloides* Cham. and Schlecht. Montesano.

398. *Hypericum bryophytum* Elmer. Olympic mountains.

399. *Hypericum perforatum* L. Collected near the Soleduck hot springs. This is the first mention of this species in the region.

VIOLACEAE. Violet Family

400. *Viola langsdorffii* Fischer. Violet. Port Crescent.

Description: An acaulescent plant of the stoloniferous type; flowers large, violet; stipules large.

401. *Viola palustris* L. Clallam county; Olympic mountains; "Happy Lake" country; "Frozen Lake" country; Soleduck hot springs region; LaPush.

Description: Rootstocks long and filiform, extensively creeping; leaves

heart-shaped-kidney-form, serrate; flowers small, pale lilac with purple streaks; lateral petals beardless.

402. *Viola sempervirens* Greene. Olympic mountains.

403. *Viola glabella* Nutt. Common.

Description: A non-stoloniferous plant; leaves large, cordate-reniform, bright green, thin, acuminate, flat; flowers yellow.

404. *Viola flettii* Piper. Olympic mountains.

405. *Viola howellii* A. Gray. Olympic mountains.

406. *Viola adunca* Smith. Common. Clallam county.

Description: Herbage nearly glabrous; leaves cordate, not dissected, brown dotted beneath; stipules usually serrate; flowers blue-violet.

407. *Viola retroscabra* Greene. Olympic mountains. Seen by the writer near the Soleduck hot springs.

Description: A plant very similar to *V. adunca*; but with herbage retrose pubescent.

ONAGRACEAE. Evening Primrose Family

408. *Circaea alpina* L. Olympic mountains; Skokomish valley.

409. *Epilobium* Sp. Willow Herb. Collected at the Soleduck hot springs.

410. *Epilobium spicatum* Lam. Soleduck hot springs.

Description: An annual; stem erect, simple, round; leaves mostly alternate; petals clawed, ovate, purple-lilac.

411. *Epilobium angustifolium* L. Fireweed. Clallam county. Common.

Description: This plant is very similar to *E. spicatum* above. It is very conspicuous in the burned over areas near Crescent and Port Angeles.

412. *Epilobium latifolium* L. Common in the Olympic mountains; "Happy Lake" country; "Frozen Lake" region; Soleduck hot springs.

Description: A plant very similar to Nos. 410 and 411 above; but shorter, less erect, often branching; bracts leaf-like; style glabrous.

*413. *Epilobium luteum* Pursh. Clallam county. Specimen here identified was obtained on the trail from Crescent lake to the Soleduck hot springs.

Description: Flowers small; pale yellow.

414. *Epilobium paniculatum* Nutt. Clallam county. Common.

Description: Annual with round stem, usually tall, very slender; leaves slender, mostly alternate, often fascicled; flowers small; petals obcordate, pinkish white.

415. *Epilobium adenocaulon* Haussk. Olympic mountains; Montesano.

416. *Epilobium brevistylum* Barbey. Olympic mountains.

Description: Leaves sessile, hoary to glaucous, mostly opposite; petals small, obcordate, pinkish; capsule sessile.

417. *Epilobium anagallidifolium* Lam. Olympic mountains.

418. *Epilobium oregonense* Haussk. Olympic mountains; Tatoosh mountains.

419. *Epilobium hornemanni* Reichenb. Olympic mountains.

420. *Epilobium fastigiatum* (Nutt.) Olympic mountains.

421. *Epilobium fastigiatum glaberrimum* (Bailey)? A plant much resembling this species was found near Crescent.

422. *Epilobium clavatum* Trelease. Olympic mountains.

Description: Plant producing stolons; leaves broad, firm, pale green,

423. *Epilobium leptocarpum macounii* Trelease. Olympic mountains.

424. *Epilobium mirabile* Trelease. Olympic mountains; Soleduck hot springs.

Description: A stolonless plant with branched stems; leaves ascending, broadly ovate-lanceolate, obtuse, slightly denticulate; inflorescence somewhat glandular; flowers suberect, crowded; capsules short stalked, curved, fusiform.

425. *Epilobium delicatum tenue* Trelease. Olympic mountains.

Description: Plant a perennial; stems low, simple; herbage not pubescent; leaves petioled, broadish, spreading, obtuse; flowers pinkish white; seeds papillate.

*426. *Godetia caurina* Abrams. Olympic mountains; Clallam county.

HALORAGIDACEAE. Water Milfoil Family

427. *Hippuris montana* Ledeb. Horsetail. Olympic mountains.

428. *Myriophyllum verticillatum* L. Water Milfoil. Lake Crescent.

ARALIACEAE. Ginseng Family

429. *Echinopanax horridum* (Smith). Devil's Club; A horrid pest. Everywhere.

It was used in the torture dances of the natives in the long ago.

Description: A shrub about ten feet in height, with stems and foliage covered with long, very sharp, spiny prickles; plant creeping at base, leafy at summit; leaves very large, palmately lobed; inflorescence a long raceme of capitate umbels; fruit red, resembling the sumac in appearance, but more berry-like.

APIACEAE. Celery Family

430. *Sanicula septentrionalis* Greene. Olympic mountains.

431. *Daucus pusillus* Michx. Wild Carrot. Clallam county; Port Ludlow.

This species was eaten by the Indians in the old times. It was usually eaten uncooked.

432. *Caucalis microcarpa* Hook and Arn. Clallam county.

433. *Washingtonia purpurea* Coult and Rose. Chehalis county; Clallam county.

434. *Washingtonia brevipes* Coult and Rose. Clallam county; Chehalis county.

435. *Washingtonia ambigua* (A. Gray) Coult and Rose. Soleduck hot springs.

436. *Heracleum lanatum* Michx. Cow Parsnip. Common from timber line to the coast in general. It reaches its greatest development on James island near LaPush on the old clamshell mounds of the ancient village of the Quillayutes.

The Indians gather the young shoots of this plant and eat them as greens. They will go for miles for a mess of these shoots. They eat them raw and cooked.

Description: A very large plant, strong-scented, erect, branching, grooved, wooly when matured; leaves usually 2-ternately compound; leaflets somewhat heart-shaped; inflorescence a many rayed umbel; involuclers many-leaved; calyx-teeth small to obsolete; fruit orbicular-elliptical seeds flat and thin.

437. *Angelica genuflexa* Nutt. Montesano; Olympic mountains. Port Ludlow.
438. *Angelica lyallii* S. Wats. Olympic mountains.
439. *Comioselinum gmelini* (Cham. and Schlecht) Coult. and Rose Mason county; Port Ludlow; Straits of Juan de Fuca.
440. *Lomatium nudicaule* (Pursh) Coult. and Rose. Olympic mountains.
441. *Lomatium utriculatum* (Nutt.) Coult. and Rose. Olympic mountains.
442. *Lomatium martindalei angustatum* Coult. and Rose. Olympic mountains.
443. *Leptotaenia dissecta* Nutt. Clallam county.
- Genus *Cicuta*. Water Hemlock
444. *Cicuta douglasii* (DC.) Coult. and Rose. Straits of Juan de Fuca.
- Description: A tall, branching marsh perennial with stout, hollow stems; roots thick, fascicled, very poisonous; leaves bipinnate; leaflets thickish, lanceolate to ovate-lanceolate, serrate to cleft, strongly reticulate beneath; flowers white in summer; calyx-teeth small, acute; fruit orbicular.
445. *Cicuta vagans* Greene. Montesano; Clallam county. Common.
- Description: This plant is very similar to *C. douglasii*, but with thinner leaflets which are of a linear-lanceolate type, less strongly reticulate and less sharply serrate.
446. *Oenanthe sarmentosa* Presl. Water Parsley. Olympic mountains; Port Ludlow; Montesano; Grays Harbor; Skokomish valley. Common.
- Description: Leaves compound to decomposed; flowers in umbels, white; fruit glabrous, short; carpels not flattened dorsally.
447. *Lilaeopsis occidentalis* Coult. and Rose. Clallam county.
448. *Ligusticum apiifolium* (Nutt.) A. Gray. Montesano; Cheralis county.
449. *Ligusticum scoticum* L. Shoalwater Bay.
450. *Glehnia littoralis* (A. Gray) Schmidt. Clallam county.

CORNACEAE. Dogwood Family

451. *Cornus occidentalis* (Torr. and Gray) Coville. Montesano; Clallam county.
452. *Cornus nuttallii* Audubon. Dogwood. Common. This plant is characterized by blooming in both fall and spring.
- Description: A small tree (rarely a shrub); flowers in headlike cymes, surrounded by an involucre of four to six large, white, often reddish, petal-like bracts two to three inches long and abruptly acute; petals four, oblong-ovate, greenish; stamens four, with slender filaments; styles slender; stigma capitate-truncate; fruit a large cluster of red berries.
- *453. *Cornus canadensis* L. Buck Berry. Common. The specimen identified by Mr. Frye for the writer was obtained near the Soleduck hot springs. This is the first mention of this plant in the peninsula.

PYROLACEAE. Pyrola Family

- 453½. *Chimaphila umbellata* (L.) Nutt. Olympic mountains.
- *454. *Chimaphila menziesii* (R.Br.) Spreng. Princes Pine. Specimen obtained from near the Soleduck hot springs, between them and the "Hap-

py Lake" country. This is the first mention of the species in the region.

455. *Pyrola secunda* L. Clallam county.

456. *Pyrola picata dentata* (Smith) Clallam county; Skokomish valley.

457. *Pyrola bracteata* Hook. Clallam county.

MONOTROPACEAE. Indian Pipe Family

458. *Allotropa virgata* Torr. and Gray. Olympic mountains.

459. *Pterospora andromedea* Nutt. Clallam county.

460. *Monotropa uniflora* L. Indian Pipe. Clallam county.

Description: Stems white (to flesh-color), smooth; flowers single, nodding, polypetalous; petals three to six, concave at base; sepals two to five, bractlike; style tubular.

461. *Hypopitys hypopitys* (L.) Small. Clallam county.

Description: A plant resembling *M. uniflora*, but with tawny to flesh colored stem; petals numbering four, except in terminal flowers.

462. *Hemitomes congestum* A. Gray. Near Mount Storm King; Crescent lake; Port Crescent.

Description: A plant much resembling *M. uniflora* and *H. hypopitys* above, but with flowers capitate; corolla tube longer than the lobes; sepals two to four; petals united; filaments and style hairy.

ERICACEAE. Heather Family

463. *Arbutus menziesii* Pursh. Madrona. Elwah valley.

Description: A red barked tree; leaves three to five inches long; calyx small; corolla white, broad-ovoid; fruit a many-seeded berry of an orange-red color. The leaves of this tree are evergreen, coriaceous; the bark of the branches is shed annually; the flowers droop.

464. *Arctostaphylos tomentosa* (Pursh) Dougl. Manzanita. Olympic mountains.

Description: An erect shrub some six feet in height. This plant resembles *A. menziesii*; but differs from it in its diminutive size and in the following; bristly branchlets, narrow to ovate pale leaves, flowers in small racemes, and fleshy fruit 1-to 10-seeded.

465. *Arctostaphylos uva-ursi* (L.) Spreng. Kinnikinnick. Common in the Olympic mountains. Specimen identified was collected on the ridge about three miles northeast of the Soleduck hot springs between the north and main forks of that river.

This plant is much used by the coast Indians. The leaves are dried and smoked by them, as tobacco is smoked by the eastern Indians. This plant has strong narcotic properties, such that it makes the smoker drunk, if he indulges much—the thing that the Indians will do if possible. The plant is also much used in the ceremonies and dances. It also is now often mixed with common tobacco and smoked. Dire results often come of using this plant to excess.

Once at LaPush an old Indian got drunk on the narcotic inhaled while smoking the leaves of this plant. As a result of being drunk, he fell in the fire, burned his feet almost off, burned his hands badly, also burned his nose completely off, also a part of his lips. In this condition he lived many years.

As previously mentioned, this plant is used in the religious ceremonies

of the coast Indians. It is common to see some of the bunches of this plant hanging up in an Indian house on the Northwest Coast just as one will see bunches of tobacco hanging up in a backwoods Kentucky home.

Description: A prostrate, creeping shrub, rising a foot or two above the ground; herbage green, glabrous; leaves oblong-spatulate, tapering to petiole, retuse at apex; flowers one-sixth inch long; otherwise similar to *A. tomentosa*.

466. *Cassiope mertensiana* (Bong.) G. Don. Olympic mountains.

Description: A shrub a foot high or thereabouts; leaves keeled, not furrowed on back, scalelike in four ranks, two inches in length; flowers nodding; anthers awn-tipped; fruit a dry, many-seeded capsule.

*467. *Phyllodoce glanduliflora* (Hook.) Coville. Olympic mountains.

*468. *Phyllodoce empetriformis* (Smith) D. Don. Olympic mountains. Specimen here identified by Mr. Frye for the writer was obtained in the "Frozen Lake" country.

469. *Rhododendron albiflorum* Hook. Common in Olympic mountains.

*470. *Menziesia ferruginea* Smith. Olympic mountains; Hoquiam; common everywhere from the mountains to the seashore. Specimen was obtained near the Soleduck hot springs.

Description: Leaves oblong to broadly oblanceolate, acute, rusty-hairy; bracts thin, deciduous; leafbuds scaly; corolla gamopetalous, globose, 4-toothed; fruit a dry capsule, splitting between the cells.

471. *Gaultheria shallon* Pursh. Salal. Common everywhere from timber line to coast, reaching its greatest development near the coast where the plant reaches a height of ten feet and makes such a dense underbrush as to make the woods impenetrable.

The fruit of this species is eaten by both whites and natives. It is both eaten directly from the vine and stewed and is made into sauce and also into jelly. The roots and bark are also used as medicine. In the old times the fruit was cooked and preserved much like that of the salmon berry, as previously described.

Description: Leaves evergreen, two to four inches long, serrulate; flowers drooping, axillary in slender but stiff, often branching bracteate, viscid racemes; corolla urceolate; filaments hairy; fruit a black, somewhat sweetish drupe.

472. *Gaultheria ovatifolia* A. Gray. Olympic mountains. Specimens obtained by the writer were secured near the Soleduck hot springs at an altitude of 2,400 feet.

Description: A plant very similar to *G. shallon*; leaves broadly ovate to subcordate; corolla campanulate; filaments glabrous.

*473. *Cladothamnus pyrolaeflorus* Bon. Specimen obtained from near the Solduck hot springs. Found previously in the Cascades and on Mt. Baldie near Lake Quinault.

VACCINIACEAE. Blueberry Family

474. *Vaccinium ovatum*. Blueberry. Common everywhere.

Description: An erect shrub; leaves ovate or narrow-ovate, serrate, evergreen; flowers clustered; corolla cylindrical to urceolate to ovoid-globose, deeply 4-cleft, lobes reflexed, pale rose color; filaments hairy.

475. *Vaccinium deliciosum* Piper. Olympic mountains. Common near the Soleduck hot springs.

Description: Leaves deciduous, thick, pale and glaucescent; flowers solitary; corollas globose, mostly 5-lobed; calyx obscurely lobed; plant a shrub about three feet in height.

476. *Vaccinium macrophyllum* (Hook.) Common in Olympic mountains.

Description: A plant similar to *V. deliciosum* but taller, with leaves serrate, and with blackish berries with bloom.

477. *Vaccinium ovalifolium* Smith. Blue Huckleberry. Common in the lower country from Montesano to the Strait of Juan de Fuca.

Description: A smooth plant four to twelve feet; branchlets angled; leaves entire; berries blue with bloom.

478. *Vaccinium parvifolium* Smith. Red Huckleberry. Common from timberline to coast.

Description: A smooth plant about five to eight feet; branchlets green, jointed, sharply angled; berries red.

Note: The huckleberries and blueberries of this region are picked and much used by both natives and whites. The berries are eaten raw with cream and sugar, stewed and eaten as sauce, also canned. In the old times the Indians cooked and "canned" them as they did the salmon berry, previously mentioned. It is a common thing to see people picking these berries for winter use. The berries are very plentiful.

479. *Oxycoccus oxycoccus* (A. Gray). Western Cranberry. The only specimen the writer has seen of this plant was from Beaver, Washington, though he is informed that it grows everywhere in the swampy districts. The fruit seen was a very bright red and much larger than that of the eastern cranberry. This is the first mention of this species in the region.

Description: A trailing, slender, viny plant, in many respects resembling the *Vaccinium* species above; leaves evergreen; flowers umbellate; corolla deeply 4-cleft, the lobes spreading; berry large, bright red.

PRIMULACEAE. Primrose Family

480. *Dodecatheon jeffreyi* Van Houtte. Olympic mountains.

481. *Douglasia laevigata* A. Gray. Olympic mountains.

482. *Trientalis latifolia* Hook. Star Flower. Common at Montesano; Hoquiam and northward; Skokomish valley.

483. *Trientalis arctica* Fisch. Clallam county. Common.

Description: A bog plant; leaves scattered along the stem, retuse to obtuse, an inch or so in length.

PLUMBAGINACEAE

484. *Statice armeria* (L.) Thrift. Port Crescent.

OLEACEAE

485. *Fraxinus oregana* Nutt.? A plant resembling this species has been reported from this region; but the writer has not seen it.

GENTIANACEAE. Gentian Family

486. *Gentiana calycoza* Griseb. Olympic mountains. Specimen was obtained near the Soleduck hot springs.

487. *Nephrophyllidium crista-galli* (Menzies) Gilg. Wreck Creek prairie south of Granville.

CONVOLVULACEAE

488. *Convolvulus soldanella* L. Shoalwater Bay; Copalis.

Description: Stems twining freely; leaves triangular-sagittate, acute, not fleshy; bracts cordate-ovate to sagittate; flowers solitary; calyx inclosed by two broad bracts; corolla funnel-form, large, limb entire; stigmas two.

CUSCUTACEAE

489. *Cuscuta squamigera* (Engelm.) Dodder. Port Angeles; Port Ludlow.

POLEMONIACEAE. Phlox Family

490. *Phlox condensata* (A. Gray) E. Nelson. Olympic mountains.
 491. *Phlox diffusa* Benth. Olympic mountains.
 492. *Gilia bicolor* (Nutt.) Montesano.
 493. *Gilia gracilis* (Dougl.) Hook. Montesano; Clallam county.
 494. *Gilia capitata* Hook. Port Townsend.
 495. *Navarretia squarrosa* (Esch.) Hook and Arn. Clallam county.
 496. *Collomia linearis* Nutt. Clallam county.
 497. *Collomia heterophylla* Hook. Montesano; Port Ludlow; Clallam county in general.
 498. *Polemonium humile* Roem. and Schult. Clallam county.

HYDROPHYLLACEAE. Waterleaf Family

499. *Romanzoffia sitchensis* Bong. Olympic mountains.

Description: An annual; part of leaves basal, opposite, especially the lower leaves; flowers scattered or in loose clusters; approaching a cymed raceme; cymes bractless; calyx usually convolute in bud, enlarging in fruit; corolla longer than the stamens; style and stigma entire; ovary and fruit-pod globose, 1-celled, lined with a pair of expanded placentae.

500. *Hydrophyllum tenuipes* Heller. Waterleaf. Hoquiam; Quinault; Skokomish valley; Clallam county in general.

501. *Nemophila parviflora* Dougl. Clallam county.
 502. *Phacelia heterophylla* Pursh. Clallam county.
 503. *Phacelia nemoralis* Greene. Clallam county; Shoalwater Bay; Skokomish.
 504. *Phacelia serica* (Graham) A. Gray. Clallam county; Mount Steele.

BORAGINACEAE. Borage Family

505. *Mertensia laevigata* Piper. Olympic mountains.
 506. *Mertensia platyphylla* Heller. Near Montesano; Skokomish river.
 507. *Mertensia leptophylla* Piper. Olympic mountains; Clallam county.
 508. *Amsinckia intermedia* Fisch. Port Ludlow.
 509. *Amsinckia lycopsoides* Lehm. Clallam county; Port Ludlow.
 510. *Allocarya scouleri* (Hook and Arn.) Greene. Clallam county.
 511. *Allocarya stipitata* Greene. Clallam county; Mason county.

MENTHACEAE

*512. *Prunella vulgaris* L. Healall. Common in Clallam county:

Specimen was obtained near the Soleduck hot springs.

513. *Nepeta cataria* L. Catnip. Escaped from cultivation on abandoned claims.

514. *Marrubium vulgare* L. Reported in Clallam county, but not seen

*515. *Stachys ciliata* Dougl. Montesano; Chehalis county; Skokomish valley; Clallam county; Olympic mountains; Lake Quinault. The specimen was obtained near the Soleduck hot springs.

516. *Stachys pubens* (A. Gray) Heller. Montesano; Hoquiam; Port Crescent.

517. *Lycopus uniflorus* Michx. Copalis; near Tahola.

518. *Mentha canadensis* L. Common in Clallam county.

Description: Villous; leaves oblong-ovate to approaching the oblong type; flowers in dense whorl-like clusters, all axillary; upper axils flowerless; corolla small, nearly regular, 4-lobed, upper lip plain; calyx 5-toothed; stamens four, antheriferous; ovary 4-parted.

519. *Mentha canadensis borealis* Michx. Chehalis river.

Description: A plant similar to No. 518 above, but with serrate, acute leaves, nearly glabrous.

520. *Mentha piperita* L. Peppermint. Escaped from cultivation. At LaPush and elsewhere.

Description: A glabrous plant, with a very pungent taste; leaves ovate-oblong-lanceolate; acute, sharply serrate; spikes narrow, loose.

SCROPHULARIACEAE. Figwort Family

521. *Scrophularia californica* Cham. Figwort. Common. Hoquiam; Montesano; western Clallam county.

Description: Leaves all opposite (to whorled); stems square; flowers on peduncles, dull purple, one-third inch in length; corolla erect, not spurred, front lobe reflexed; antheriferous stamens two or four, the fifth sterile stamen present; sterile stamen represented by a gland on the upper side of the corolla tube.

522. *Collinsia tenella* (Pursh). Clallam county.

523. *Pentstemon menziesii* Hook. Olympic mountains; Clallam county.

524. *Pentstemon menziesii davidsonii* (Greene). Olympic mountains.

525. *Pentstemon ovatus* Dougl. Clallam county.

526. *Pentstemon procerus* Dougl. Olympic mountains.

527. *Pentstemon diffusus* Dougl. Olympic mountains; Clallam county; Skokomish valley.

*527½. *Chelone nemorosa* Dougl. Turtlehead. Olympic mountains; Clallam county. Specimen was obtained on the divide between the Soleduck hot springs and Bogachiel river about four miles west of the springs. The species has been found also on Skokomish river.

528. *Synthyris pinnatifida lanuginosa* Piper. Olympic mountains, elevation about 5,000 feet.

529. *Synthyris schizantha* Piper. Olympic mountains.

530. *Synthyris rotundifolia* A. Gray. Near Chehalis.

531. *Veronica peregrina* L. Speedwell. Clallam county.

Description: A low annual; leaves usually opposite to alternate, crenate; flowers in the axils of the leaves; corolla rotate, 4-lobed; stamens two with anthers; flowers small; petals white. The plant usually grows in wet places.

532. *Veronica alpina* L. Olympic mountains.

Description: A perennial with terminal, peduncled racemes; leaves broad, an inch long, shorter than the internodes, sessile; corolla small; capsule elliptic, emarginate.

533. *Veronica cusikii* A. Gray. Clallam county.

Description: A plant similar to *V. alpina*, but with stem erect, probably averaging four inches in height, leafy; leaves longer than the internodes; peduncle naked, 3- to 9-flowered; flowers blue.

*534. *Mimulus langsdorfii* Donn. Monkey Flower. Montesano; Skokomish river; Grays Harbor; LaPush. Specimen was obtained at the latter place.

535. *Mimulus implexus* Greene. Olympic mountains.

536. *Pedicularis groenlandica surrecta* (Benth.) Piper. Clallam county.

537. *Pedicularis bracteosa* Benth. Olympic mountains; Soleduck hot springs.

*538. *Pedicularis racemosa* Dougl. Clallam county. Specimen collected at LaPush.

*539. *Castilleja* sp. Collected at the Soleduck hot springs.

540. *Castilleja levisecta* Greenman. Port Ludlow.

541. *Castilleja oreopola* Greenman. Olympic mountains; Clallam county.

542. *Castilleja angustifolia bradburii* (Nutt.) Fernald. Olympic mountains.

543. *Castilleja angustifolia abbreviata* Fernald. Olympic mountains; Clallam county.

544. *Castilleja miniata* Dougl. Olympic mountains; Quinault.

545. *Castilleja dixonii* Fernald. Quinault; Grays Harbor.

546. *Orthocarpus castilleoides* Benth. Grays Harbor; Copalis.

547. *Orthocarpus imbricatus* Torr. Olympic mountains.

548. *Orthocarpus pusillus* Benth. Montesano; Clallam county.

Description: A slender, diffusely spreading plant; leaves 3-5-parted into filiform lobes, often brownish; minute flowers nearly all axillary; corolla white; corolla lip conspicuously 3-saccate, teeth minute or small; tube slender.

549. *Digitalis purpurea* L. Foxglove. Everywhere, escaped from cultivation.

Description: A tall stem with terminal spike of rose-white flowers, often spotted. A common weed.

OROBANCHACEAE. Broomrape Family

550. *Thalesia uniflora* (L.) Britton. Clallam county.

Description: A scape from a scaly, fleshy rootstock; calyx lobes slender, subulate, longer than the tube; corolla usually violet tinged; anther cells separated below, the base mucronate.

551. *Thalesia fasciculata* (Nutt.) Britton. Olympic mountains. Specimen collected near the Soleduck hot springs.

Description: A plant resembling *T. uniflora*, but differing from that species in its calyx lobes being triangular and shorter than the tube; corolla yellow.

PINGUICULACEAE

552. *Pinguicula vulgaris* L. Olympic mountains.

PLANTAGINACEAE. Plantain Family

553. *Plantago maritima* L. Plantain. Common in Clallam county; LaPush; Ozette.

Description: A seaside plant; leaves linear to filiform, fleshy; spike dense, cylindrical; corolla-tube pubescent; corolla lobes spreading in fruit; seeds two to four.

RUBIACEAE. Madder Family

554. *Galium aparine* L. Montesano; Skokomish river.

555. *Galium kamtschaticum oreganum* (Britton). Clallam county.

556. *Galium boreale* L. Montesano.

557. *Galium trifidum pacificum* Weigand. Hoquiam; Clallam county.

558. *Galium cymosum* Weigand. Montesano, Port Crescent; Skokomish river.

*559. *Galium triflorum* Michx. Three-Flowered Bed Straw. Clallam county; Skokomish river. Specimen was obtained in the "Frozen Lake" region.

CAPRIFOLIACEAE. Honeysuckle Family

560. *Linnaea americana* Forbes. Twin-Flower. Common in Clallam county.

Description: A creeping herb with peduncled flowers in pairs; corolla funnel-form, one-third inch in length; style elongate; stamens four; fruit dry.

*561. *Symphoricarpos racemosus* Michx. Snowberry; Waxberry, Montesano; Clallam county; LaPush; Soleduck hot springs. Specimen was obtained at the latter place.

Description: Leaves very variable, smooth; corolla campanulate, hairy, narrow at base.

562. *Lonicera ciliosa* (Pursh) Poir. Honeysuckle. Montesano; Skokomish valley.

563. *Lonicera involucrata* Banks. Hoquiam.

564. *Lonicera sempervirens* Ait. Trumpet Honeysuckle. Cultivated; grows in the common yard at LaPush.

Description: A twining shrub; flowers in sessile whorled clusters from the axils of the upper leaves; calyx tube persistent on the orange berry; corolla trumpet-shaped; stamens and style little exerted.

565. *Lonicera utahensis* S. Wats. Olympic mountains.

Description: Bracts small, narrow; leaves green on both sides; peduncles short; corolla whitish, its lobes subequal; berries red.

566. *Sambucus glauca* Nutt. Elder. Common everywhere, but reaches its greatest development along streams and in localities adjacent to the seashore, but back from the shore a short distance. This, however, is not the most abundant elderberry in the region. See next species below.

Description: A shrub with white pith; leaves smooth, large; inflorescence a flat-topped cyme (or cymes), one-sided; fruit black with white bloom. This plant is much like the eastern elder, *S. canadensis*.

567. *Sambucus callicarpa* Greene. Red Elder (berry) tree. This is the common elder of the region from timber line to seashore and is very prolific, especially in river bottoms.

It is the fruit of this plant that the Indians use as sauce. They gather the berries, dig a pit, heat a lot of cobble stones in the pit by burning large quantities of wood in it, then over the rocks and the live coals they place a thick layer of skunk-cabbage leaves. Then on these they place a bushel or more of the berries, cover the whole with another thick layer of

leaves of the same plant and place a thick coat of dirt over the whole. They then pile wood on the heap and ignite it and keep up this fire for about a day. The berries, being cooked in this way, are taken from the improvised "oven" and are ready for use, being seasoned, with the flavor of the skunk cabbage leaves. The ancients also cooked the elderberry in the same manner in the old times, as many ancient oven-pits dug up by the writer attest, the imprint of the refuse berries still being left over the layer of ashes. When it is wished to preserve the berries of this plant for winter use, the cooked product is wrapped in skunk-cabbage leaves and buried in the muck in some swampy place, to be dug up when needed. The advanced Indian of the coast now cans the berries in glass cans, the same as the white people can fruit.

The flavor of this berry either raw or cooked does not suit the taste of the white man; it is too strong and bitter.

The bark and roots of this plant are used as medicine by the natives. The tea made from steeping the bark or roots is given to women during confinement.

Description: A plant similar to *S. glauca*, but larger, with pyramidal inflorescence and red to chestnut colored berries.

VALERIANACEAE. Valerian Family

*568. *Valeriana sitchensis* Bong. Olympic mountains. Specimen was obtained in the "Frozen Lake" region.

569. *Valeriana sitchensis scouleri* (Rydberg). Port Crescent; Olympic mountains.

570. *Valerianella anomala* A. Gray. Hoquiam.

571. *Valerianella samolifolia* (DC.) A. Gray. Port Crescent.

DIPSACEAE

572. *Dipsacus sylvestris* Mill. Teasel. Port Crescent.

CUCURBITACEAE. Gourd Family

572½. *Micrampelis oregana* (Torr. and Gray) Greene. Montesano.

CAMPANULACEAE. Bluebell Family

*573. *Campanula scouleri* Hook. Montesano; Olympic mountains; Clallam county. Specimens were obtained on the divide between the Soleduck and Bogachiel rivers at timber line at a point four miles west of the Soleduck hot springs. Other specimens were collected and identified by the writer. These were collected near the headwaters of the main branch of the Soleduck river on the ridge four miles north of Mount Carrie. The plants were found in bloom in August of each year the writer visited the Olympic region.

Description: A perennial; leaves ovate-lanceolate; petioles short; pedicels long; calyx lobes not connivent in fruit; corolla deeply lobed, lobes spreading; style filiform, longer than the corolla; capsule short, opening by two or three holes in the sides; seeds flattened.

574. *Campanula rotundifolia* L. Common in Clallam county. Specimens were also obtained in the region west of the Soleduck hot springs at the summit of the Soleduck-Bogachiel divide.

Description: This is a plant much resembling *C. scouleri*; stem leaves linear; cauline leaves linear, entire; basal leaves orbicular cordate, not

entire; herbage glabrous generally; corolla bright blue, an inch long; style shorter than the corolla.

575. *Campanula piperi* Howell. Olympic mountains; Mount Storm King; headwaters of the Soleduck river. The writer found "meadows" of this plant in bloom in August of each year he visited the region.

Description: This plant is much like *C. rotundifolia*, differing from it principally in its having its basal and cauline leaves spatulate-lanceolate, dentate.

576. *Rapuntium dortmanna* (L.) Presl. Lobelia. Lake Crescent.

CICHORIACEAE. Chicory Family

577. *Tragopogon porrifolius* L. Salsify; Oyster Plant. Escaped from cultivation in government school garden at LaPush.

578. *Scorzonella laciniata* (Hook.) Nutt. Montesano.

579. *Hypochaeris radicata* L. Gosmore. Chehalis county.

580. *Leontodon autumnale* L. Fall Dandelion. Scattering, introduced with forage-feed.

Description: Leaves laciniate-toothed, somewhat pubescent; peduncles thickened at the summit, scaly-bracteate.

581. *Agoseris gracilentia* (A. Gray) Greene. Olympic mountains.

582. *Agoseris apargioides* (Less.) Greene. West Port.

583. *Taraxacum taraxacum* (L.) Karst. Common Dandelion (in the eastern states). It was undoubtedly brought into the region in forage-feed and in feed and seed grain. It is only scattering now.

Description: Leaves radical, pinnatifid to runcinate, smooth (pubescent sometimes when young); flowers yellow; outer involucre reflexed.

584. *Crepis nana* Richards. Olympic mountains.

585. *Crepis occidentalis* Nutt. Olympic mountains.

586. *Hieracium albiflorum* Hook. Hawkweed. Montesano; Grays Harbor.

587. *Nabalus hastata* (Less.) Heller. Olympic mountains; mouth of Queets river.

ASTERACEAE. Aster Family

588. *Grindelia oregana* A. Gray. Port Ludlow; Copalis.

589. *Chrysopsis oregana* (Nutt.) A. Gray. Olympic mountains.

590. *Hoorebekia lyallii* (A. Gray). Olympic mountains.

591. *Solidago corymbosa* Nutt. Goldenrod. Olympic mountains.

*592. *Solidago lanceolata* L. The specimen was obtained near the Soleduck hot springs. This is the first mention of this species in the region.

593. *Solidago purshii* Porter. Mason county.

594. *Solidago glutinosa* Nutt. Shoalwater bay.

595. *Erigeron speciosus* DC. Olympic mountains.

596. *Erigeron compositus trifidus* (Hook.) A. Gray. Olympic mountains.

597. *Erigeron philadelphicus* L. Reported to have been seen near Port Townsend.

598. *Erigeron canadensis* L. Mason county.

599. *Erigeron arcis debilis* A. Gray. Olympic mountains.

600. *Eucephalus paucicapitatus* (Robinson) Greene. Olympic mountains.

601. *Aster major* (Hook.) Porter. Skokomish.
602. *Media madioides* (Nutt.) Port Ludlow.
603. *Jaumea carnosa* (Less.) A. Gray. Shoalwater bay; Port Townsend.
- *604. *Eriophyllum lanatum* (Pursh) Forbes. Olympic mountains; Skokomish. Specimen here identified was obtained near the Soleduck hot springs.
- *605. *Achillea millefolium lanulosa* (Nutt.) Piper. Port Crescent; near the Soleduck hot springs. The specimen examined by Mr. Frye for the writer was obtained in the latter place.
606. *Cotula coronopifolia* L. Hoquiam; Port Angeles. It is a brackish marsh plant.
607. *Tanacetum huronense* Nutt. Grays Harbor; Olympic mountains.
608. *Artemisia borealis wormskioldii* Besser. Olympic mountains.
609. *Artemisia tilesii* Ledeb. Olympic mountains.
610. *Artemisia suksdorfii* Piper. Montesano.
611. *Arnica latifolia* Bong. Olympic mountains.
612. *Arnica betonicaefolia* Greene. Olympic mountains; Mount Storm King.
613. *Arnica parryi* A. Gray. Olympic mountains.
614. *Arnica amplexicaulis* Nutt. Olympic mountains.
615. *Arnica macounii* Greene. Olympic mountains.
616. *Petasites speciosa* (Nutt.) Piper. Port Ludlow.
617. *Petasites frigida* (L.) Fries. Olympic mountains.
618. *Luina hypoleuca* Benth. Olympic mountains; Skokomish; Mount Storm King.
619. *Senecio flettii* Wiegand. Olympic mountains; headwaters of the Quilcene river.
620. *Senecio fastigiatus* Nutt. Mason county.
621. *Senecio lugens* Richards. Olympic mountains.
622. *Senecio ductoris* Piper. Olympic mountains.
623. *Antennaria lanata* (Hook) Greene. Olympic mountains.
624. *Antennaria racemosa* Hook. Clallam county; Olympic mountains.
625. *Antennaria howellii* Greene. Olympic mountains; Mason county.
626. *Antennaria media* Greene. Olympic mountains.
627. *Antennaria concinna* E. Nelson. Mount Storm King; Olympic mountains; Clallam county.
628. *Antennaria rosea angustifolia* (Rydberg) E. Nelson. Olympic mountains.
629. *Gnaphalium purpureum* L. Montesano.
630. *Gnaphalium palustre* Nutt. Everlasting. Montesano; Clallam county.
631. *Gnaphalium microcephalum* Nutt. Everlasting. Port Townsend; Port Ludlow.
632. *Adenocaulon bicolor* Hook. Olympic mountains.
633. *Centaurea melitensis* L. Port Townsend.
634. *Carduus arvensis* (L.) Robs. Thistle. Near Port Crescent, also in the Olympics.

Description: A slender perennial about two feet high, growing from a creeping rootstock, or roots that spread wonderfully; leaves oblong-lanceo-

late, slightly woolly beneath, sinuate-pinnatifid, prickly margined; flowers rose-colored.

This is the first mention of this species in the region.

635. *Carduus lanceolatus* L. Bull Thistle. A common pest in open bottom lands and in cultivated fields at LaPush and elsewhere in the region. This, also, is the first mention of this species in the region.

Description: Leaves decurrent on the stem, pinnatifid, prickly, rough and bristly above, hairy, and prickly beneath; flowers purple.

636. *Carduus edulis* (Nutt.) Greene. Montesano.

637. *Arctium minus* Schk. Burdock. Common at LaPush.

Description: A stout plant growing to a height of three to four feet; leaves large, roundish-ovate, occasionally cut-toothed, smooth above, somewhat floccose-tomentose beneath; peduncles short, slightly cottony beneath. inner scales purplish tipped, equalling the flower; flowers purple.

638. *Saussurea americana* DC. Eaton. Olympic mountains.

SOME SEA ALGAE AND KELP COMMON AT LAPUSH

639. *Nereocystis luetkeana*.

640. *Chondrus crispus*.

641. *Fucus vesiculosus*.

642. *Odonthalia gmelinii*? *

ADDENDA

643. *Cinna latifolia* (Trev.) Grieseb. Near Montesano.

644. *Holcus lanatus* L. Velvet Grass. Near Montesano.

645. *Merathrepta americana* (Scribn.) Near Montesano.

646. *Poa confinis* Vasey. West Port; Port Angeles; Montesano; Port Discovery; Clallam county.

647. *Poa triflora* Gilib. Montesano.

648. *Panicularia americana* (Torr.) MacMillan. Montesano.

649. *Bromus eximius robustus* (Shear). Montesano.

650. *Lolium temulentum* L. Montesano.

651. *Lolium perenne* L. Montesano.

652. *Eleocharis obtusa* Schultes. Near Montesano.

653. *Juncus tenuis* Willd. Montesano.

654. *Juncus acuminatus* Michx. Montesano.

655. *Juncus ensifolius major* Hook. Montesano.

656. *Juncus parviflorus* (Erch.) Coville. Montesano; Skokomish valley.

657. *Iris tenax* Dougl. Montesano.

658. *Sisyrinchium idahoense* Bicknell. Montesano.

659. *Ophrys cordata* L. West Port; Skokomish.

660. *Razoumofskyia douglasii tsugensis* (Rosendahl). Port Ludlow.

661. *Polygonum lapathifolium* L. South Bend.

662. *Clattonia parviflora* Moc. Skokomish river.

663. *Alsine obtusa* (Engelm.) Rose. Skokomish river.

664. *Ranunculus cymbalaria* Pursh. Port Ludlow.

665. *Saltha asarifolia* DC. Marsh Marigold. Granville.

666. *Vancouveria hexandra* (Hook.) Morr. and Dec. Chehalis county.

* The Indians used the large kelp as fishing lines in catching halibut and other fish on the "banks" off Cape Flattery.

667. *Arabis hirsuta* Scop. Skokomish valley.
668. *Roripa pacifica* Howell. Hoquiam.
669. *Mitella caulescens* Nutt. Skokomish valley.
670. *Ribes laxiflora* Pursh. Olympic mountains; Chehalis county.
671. *Fragaria crinita* Rydberg. Mount Storm King.
672. *Fragaria bracteata* Heller. Skokomish river.
673. *Comarum palustre*. Port Ludlow.
674. *Lupinus aridus* Dougl. Mason county.
675. *Trifolium flavulum* Greene. Port Ludlow.
676. *Trifolium microdon* Hook. and Arn. Port Ludlow.
677. *Hosackia decumbens* Benth. Mason county.
678. *Vicia americana linearis* (Nutt.) S. Wats. Port Ludlow.
679. *Acer douglasii* Hook. Hoodspport.
680. *Hypericum scouleri* Hook. Montesano.
681. *Epilobium alpinum* L. Skokomish river.
682. *Sanicula menziesii* Hook. and Arn. Port Ludlow.
683. *Carnum gairdneri* (Hook. and Arn.) A. Gray. Mason county.
684. *Coelopleurum longipes* Coult. and Rose. Hoodspport.
685. *Glaux maritima* L. West Port.
686. *Crypthanthe muriculata* (A. DC.) Greene. Mason county.
687. *Collinsia grandiflora pusilla* A. Gray. Skokomish valley.
688. *Mimulus lewisii* Pursh. Skokomish river.
689. *Mimulus moschatus* Dougl. Skokomish river.
690. *Galium trifidum subbiflorum* Wiegand. West Port.
691. *Equisetum variegatum* L. Common.
692. *Sparganium androcladum* (Engelman).
693. *Potamogeton nuttallii* Cham. and Schlecht. Near Montesano.
694. *Panicum occidentale* Scribn. Montesano.
695. *Agrostis pallens* Trin. Near Copalis.
696. *Poa confinis* Vasey. West Port; Port Angeles; Clallam county.

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