

THE SEED PLANTS, FERNS, AND FERN AL-
LIES, OF THE HIGHER REGIONS OF THE
OLYMPIC MOUNTAINS.

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This list has been prepared from lists made by Professors Piper and Henderson, also from collections made by the writer, who has made five trips collecting in different parts of this region. The plants of the last expedition are not yet fully determined, hence are only partially included in this list. This last collection was made in the vicinity of Port Angeles and Mount Angeles. This mountain has by far the richest flora. Plants which are considered rare in other localities of the Olympics, are found here in profusion. It is also the most accessible region. An altitude of 6,000 feet can be reached in a day from the city of Port Angeles.

It is conceded by botanists, who have collected in both the Cascade Mountains and the Olympics, that the flora of the two regions is quite similar. The following plants, said to be missing from the Olympic region, were seen in the highly elevated region of Mount Olympus: *Saxifraga tolmiei*, *Lupinus lyallii*, *Gentiana calycosa* and *Eucephalus ledophyllus* with the possible exception of the last.

Few people have ever visited Mount Olympus, which lies back from civilization about seventy miles. No report has been made of its flora. The region has several glaciers. Some of these are mere remnants showing in the best possible manner recent striae, others are five miles or more in length, having quite large moraines, with their characteristic flora. It was near these old moraines that the above plants were seen. A fuller knowledge of the flora of the Olympic region will, doubtless, show a greater similarity. The spruce (*Picea*

Sitchensis) so abundant near the west coast, was not seen in the Mount Olympus region, nor was the White Barked Pine (*Pinus albicaulis*). The other coniferous trees common in the Cascades were also common here, forming symmetrical clusters through the beautiful grassy meadows.

Around our camp near the headwaters of the Elwha River was a peculiar blending of plants of low altitude with those of high. *Spiraea donglasii* and *Spiraea densiflora* were growing side by side, as were *Hypericum scouleri* and *Hypericum anagalloides*. *Hypericum scouleri* is not a common mountain plant in the western part of Washington. *Senecio flettii*, a high altitude plant, had found a congenial home in an old orchard, at the base of Mount Angeles. Another example was that of *Luina hypoleuca* growing low down on an old deserted ranch. Many other examples might be given. Professor Piper assigns excessive rainfall as the cause of this strange mixture of low and high altitude plants.

The following plants are known only from the Olympics: *Elymus virescens*, *Allium crenulatum*, *Erysimum arenicola*, *Arabis* sp. new, collected at the base of Mount Olympus, *Viola flettii*, *Synthyris pinnatifida lanuginosa*, *Spiraea hendersoni*, *Epilobium mirabile*, *Polemonium amoenum*, *Mertensia leptophylla*, *Castilleja angustifolia abbreviata*, *Campanula piperi*, *Aster paucicapitatus* and *Arnica betonicaefolia*.

The above list is, doubtless, very incomplete. Some of these, named as peculiar to the Olympics, may be found on some of the high peaks forming the foot hills on the western slope of the Cascades. Many of these peaks have not been thoroughly explored. Vast areas in the Olympics still remain for botanical exploration.

I have followed the order of arrangement and names of plants as given in Professor Piper's Flora of the State of Washington:

- Ceropteris triangularis* (Kaulf.) Underw.
Polypodium occidentale (Hook.) Maxon.
Polypodium hesperium Maxon.
Phegopteris alpestris (Hoppe.) Mett.
Phegopteris dryopteris (L.) FLe.
Adiantum pedatum aluticum Rupr.
Pteridium aquilinum pubescens Underw.
Pellaea densa (Brack.) Hook.
Cheilanthes gracillima D. C. Eaton.
Cryptogramma acrostichoides R. Br.
Struthiopteris spicant (L.) Weiss.
Asplenium trichomanes L.
Athyrium cyclosorum Rupr.
Polystichum lonchitis (L.) Roth.
Polystichum munitum (Kaulf.) Presl.
Polystichum munitum imbricans (D. C. E.) Maxon.
Polystichum aculeatum lobatum.
Dryopteris spinulosa dilatata (Hoffm.) Underw.
Filix fragilis (L.) Underw.
Botrychium silaifolium Presl.
Botrychium lanceolatum (Gmel.) Angr.
Botrychium onondagense Underw.
Equisetum hiemale L.
Equisetum arvense L.
Equisetum telmateia Ehrh.
Equisetum fluviatile L.
Lycopodium selago L.
Lycopodium sitchense Rupr.
Lycopodium clavatum L.
- Selaginella struthioloides* (Presl.) Underw.
Selaginella rupestris (L.) Spring.
 Isoetes, this genus is doubtless represented in the many mountain lakes which the writer has not examined.
Taxus brevifolia Nutt.
Juniperus communis siberica (Burgsd.) Rydberg.
Juniperus scopulorum Sargent.
Chamaecyparis nootkatensis (Lamb) Spach.
Thuja plicata Donn.
Pinus monticola Dougl.
Pinus contorta Dougl.
Pinus albicaulis Engelm?
Abies nobilis Lindl.
Abies lasiocarpa (Hook.) Nutt.
Abies amabilis (Dougl.) Forbes.
Abies grandis Lindl.
Pseudotsuga micronata (Raf.) Sndlw.
Tsuga heterophylla (Raf.) Sarg.
Tsuga mertensiana (Bong.) Carr.
Picea sitchensis (Bong.) Trant & Meyer.
Sparganium minimum Fries.
Potamogeton lonchites Tuck.
Potamogeton robbinsii Oakes.
Ruppia maritima L.
Stipa minor (Vasey.) Scribn.
Alopecurus geniculatus fulvus (Smith.) Sonder.
Phleum alpinum L.
Polypogon monspeliensis (L.) Desf.
Polypogon littoralis (With.) Smith.
Cinna latifolia (Trev.) Griseb.



***XEROPHYLLUM TENAX.* COMMONLY CALLED INDIAN BASKET GRASS.
FOUND IN HIGH ALTITUDES**

- Calamagrostis vaseyi* Beal.
Calamagrostis aleutica Trin.
West Coast.
Calamagrostis lansdorffii. Trin.
Agrostis humilis Vasey.
Agrostis alba L.
Agrostis pallens Trin.
Agrostis ampla Hitchcock.
Agrostis rossae Vasey.
Agrostis hyemalis Walt.
Aira praecox L.
Merathrepta intermedia cusickii
Williams.
Deschampsia caespitosa (L.)
Beanv.
Deschampsia atropurpurea
(Wahl.) Scheele.
Deschampsia elongata (Hook.)
Munro.
Trisetum spicatum (L.)
Richter.
Trisetum canescens Buckl.
Trisetum cernuum Trin.
Koeleria cristata (L.) Pers.
Melica subulata (Griseb)
Scribner.
Pleuropogon refractum (Gray.)
Vasey.
Poa leptocoma Trin.
Poa sandbergii Vasey.
Poa paddensis Williams.
Poa saxatilis Scrib & Williams.
Distichlis spicata (L.) Greene.
Festuca ovina supina (Schur.)
Hack.
Festuca subulata Trin.
Panicularia pauciflora (Presl.)
Kuntze.
Paniculoria nervata (Wild.)
Bromus marginatus seminudus
Shear.
Bromus marginatus latior
Shear.
Bromus sitehensis Trin.
- Bromus eximius umbraticus*
Piper.
Bromus richardsonii pallidus
(Hook.) Shea.
Hordeum nodosum L.
Elymus glaucus Buckl.
Elymus borealis Scribn.
Sitanion rigidum Smith.
Sitanion glabrum Smith.
Sitanion planifolium Smith.
Scirpus ceospitosus L.
Carex ablata Bailey.
Carex amplifolia Boott.
Carex bolanderi Olyney.
Carex circinata Meyer.
Carex festiva horneri Piper.
Carex festiva pachystachya
(Cham.) Bailey.
Carex illota Bailey.
Carex kelloggii Boott.
Carex mertensii Prescott.
Carex multimoda Bailey.
Carex phaeocephala Piper.
Carex scirpoidea Michx.
Carex scopulorum Holm.
Carex spectabilis Dew.
Carex stipata Huhl.
Lysichiton camtschatcense (L.)
Schott.
Juncus effusus hesperius Piper.
Juncus subtriflorus (Meyer.)
Colville.
Juncus parryi Engelm.
Juncus mertensianus Bong.
Juncoides parviflorum (Ehrh.)
Coville.
Juncoides piperi Coville.
Allium cernuum Roth.
Allium crenulatum Wiegand.
Allium acuminatum Hook.
Lilium parviflorum (Hook)
Holzinger.
Erythronium montanum Wats.
Erythronium parviflorum

- (Wats) Gooding.
Lloydia serotina (L.) Sweet.
Veratrum viride Ait.
Tofieldia intermedia Rydberg.
Stenanthium occidentale Gray.
Xerophyllum tenax (Pursh)
 Nutt.
Xygadenus elegans Pursh.
Trillium ovatum Pursh.
Clintonia uniflora (Schult)
 Kunth.
Vagnera sessilifolia (Baker)
 Green.
Vagnera amplexicaulis (Nutt)
 Green.
Unifolium bifolium kamtschaticum (G mel).
Streptopus roseus Michx.
Corallorhiza mertensiana Bong.
Cytherea bulbosa (L) House.
Ophrys caurina (Piper)
 Rydberg.
Ophrys convallarioides (Sw)
 Wight.
Peramium decipiens Hook.
Piperia unalaskensis (Spreng.)
 Rydberg.
Piperia elegans (Lindl.)
 Rydberg.
Limnorchis dilatata (Pursh)
 Rydberg.
Limnorchis leucostachys (Lndl)
 Rydberg.
Salix lasiandra Benth.
Salix scouleriana Barratt.
Salix barclayi Anders.
Salix commutata Bebb.
Salix sitchensis Sanson.
Populus trichocarpa Torr &
 Gray.
Alnus sinuata (Regel) Rydberg.
Alnus oregona.
Urtica lyallii Wats.
Razoumofskyia douglasii
tsugensis?
Asarum caudatum Lindl.
Oxyria digyna (L) Hill.
Polygonum minimum Wats.
Polygonum douglasii Greene.
Polygonum nuttallii Small.
Polygonum bistortoides Pursh.
Polygonum newberryi Small.
Eriogonum ovalifolium Nutt.
Eriogonum vineum Small.
Eriogonum pyrolaefolium
coryphaeum Ton & Gr.
Lewisia columbiana (Howell)
 Robinson.
Claytonia lanceolata Pursh.
Claytonia asarifolia Bong.
Claytonia siberica L.
Claytonia parviflora Moc.
Spraguea multiceps Howell.
Silene acaulis L.
Silene douglasii Hook.
Silene macounii Wats.
Cerastium arvense L.
Alsine borealis (Bigel.)
 Britton.
Alsine calycantha (Ledeb.)
 Rydberg.
Alsine crispa (Cham &
 Schlecht.) Holzinger.
Alsine washingtoniana
Sagina occidentalis Wats.
Moehringia macrophylla
 (Hook.).
Arenaria capillaris nardifolia
 (Ledeb.) Regel.
Arenaria verna rubella (Wahl.)
 Wats.
Arenaria nuttallii Pax.
Arenaria sajanensis Wild.
Anemone hudsoniana (D. C.)
 Richards.
Anemone drummondii Wats.
Anemone lyallii Britton.

- Anemone quinquefolia* L.
Pulsatilla occidentalis Wats.
 Freyn.
Thalictrum occidentale Gray.
Trautvetteria grandis Nutt.
Ranunculus suksdorfii Gray.
Ranunculus eschsholtzii Schleet.
Caltha biflora D. C.
Trollius laxus Salisb.
Actea spicata arguta (Nutt)
 Tor.
Aquilegia formosa Fisch.
Delphinium scopulorum
 glaucum Gray.
Delphinium bicolor Nutt.
Achlys triphylla (Smith) D. C.
Bikukulla formosa.
Draba stenoloba Lebed.
Draba glacialis Adams.
Cardamine kamtschatica
 (Regel) Schulz.
Arabis drummondii Gray.
Arabis lyallii Wats.
Erysimum asperum (Nutt)
 D. C.
Erysimum arenicola Wats.
Smelowskia calycina Meyer.
Sedum spathulifolium Hook.
Sedum divergens Wats.
Sedum douglasii Hook.
Sedum stenopetalum Pursh.
Leptarrhena amplexifolia
 Sternb.) Ser.
Therofon elatum (Nutt)
 Greene.
Saxifraga tolmiei Torr & Gray.
Saxifraga caepitosa L.
Saxifraga bronchialis L.
Saxifraga mertensiana Bong.
Saxifraga odontophylla Piper.
Saxifraga nelsoniana D. Don.
Saxifraga bongardi Presl.
Saxifraga rufidula.
Tiarella unifoliata Hook.
Tellima parviflora (Pursh)
- Mitella pentendra* Hook.
Mitella breweri Gray.
Mitella trifida Graham.
Heuchera racemosa Wats.
Heuchera glabra.
Parnassia fimbriata Konig.
Ribes lacustre (Pres) Poir.
Ribes laxiflorum Pursh.
Ribes lobii Gray.
Ribes howellii Greene.
Lutkea pectinata (Pursh)
 Kuntze.
Spiraea hendersoni (Canby.)
 Piper.
Spiraea douglasii Hook.
Spiraea densiflora Nutt.
Aruncus aruncus L. Karst.
Rubus lasiococcus Gray.
Rubus pedatus Smith.
Rubus nivalis Dougl.
Rubus parviflorus Nutt.
Rosa gymnocarpa Nutt.
Potentilla gracilis Dougl.
Potentilla villosa Pall.
Potentilla flabellifolia Hook.
Potentilla cascadiensis Rydberg.
Sibbaldia procumbens L.
Fragaria sp.
Dasiphora fruticosa tenuifolia
 (Wild.) Rydb.
Drymocallis valida (Greene).
Drymocallis glandulosa
 Rydberg.
Drymocallis wrangelliana
 (Fisch & Lall.) Rydberg.
Sieversia ciliata (Pursh.).
Amelanchier florida Lindl.
Pyrus occidentalis.
Pyrus sitchensis.
Lupinus lyallii Gray.
Lupinus subalpinus Piper &
 Rob.
Lupinus sp.

- Hedysarum occidentale Greene. Angelica genuflexa Nutt.
 Aragallus gracilis Nelson. Angelica lyallii Wats.
 Aragallus monticola Gray. Lomatium utriculatum (Nutt.)
 Phaca hookeriana Torr & Gr. Coult. & Rose.
 Lathyrus nutallii Wats. Lomatium martindalei angustum
 Erodium cicutarium L L'Her. Coult. & Rose.
 Empetrum nigrum L. Oenanthe sarmetosa Presl.
 Pachistima myrsinites (Pursh.) Cornus stolonifera Michx.
 Raf. Cornus canadensis L.
 Acer macrophyllum Pursh. Chimaphila umbellata (L.)
 Acer douglasii Hook. Nutt.
 Acer circinatum Pursh. Chimaphila menziesii (R. Br.)
 Rhamnus purshiana D. C. Spreng.
 Ceanothus sanguineus Pursh. Moneses uniflora Gr. (L.)
 Hypericum anagalloides Cham. Pyrola minor L.
 & Schlect. Pyrola secunda L.
 Hypericum scouleri Hook. Pyrola picta dentata Smith.
 Viola sempervirens Greene. Pterospora andromedea Nutt.
 Viola howellii Gray (?) Monotropa uniflora L.
 Viola flettii Piper. Hypopitys hypopitys (L.) Small.
 Viola adunca Smith. Hemitomes congestum Gray.
 Viola retroscabra Greene. Arctostaphylos tomentosa
 Circaea alpina L. (Pursh.) Dougl.
 Epilobium. sp. Arctostaphylos uva-ursi (L.)
 Epilobium luteum Pursh. F. Spreng.
 Epilobium brevistylum Barbey. Cassiope mertensiana (Bong.)
 Epilobium anagallidifolium Lam. Don.
 Epilobium oregonense Haussk. Phyllodoce glanduliflora
 Epilobium hornemanni Reichenb. (Hook.) Coville.
 Epilobium fastigiatum Nutt. Phyllodoce empetriformis
 Epilobium clavatum Trelease. (Smith.) Don.
 Epilobium lepiocarpum macounii Kalmia glauca microphylla
 Trelease. Hook.
 Epilobium mirabile trelease Rhododendron californicum
 Epilobium delicatum tenue Hook.
 Trelease. Rhododendron albiflorum Hook.
 Hippuris montana Ledeb. Menziesia ferruginea Smith.
 Echinopanax horridum (Smith.) Gaultheria shallon Pursh.
 Dec. & Planch. Gaultheria humifusa (Grahm.)
 Sanicula septentrionalis Greene. Rydberg.
 Washingtonia leibergeri Coult. & Gaultheria ovatifolia Gray.
 Rose. Vaccinium deliciosum Piper.
 Heracleum lanatum Michx. Vaccinium macrophyllum Hook.

- Vaccinium ovalifolium* Smith. *Thalesia uniflora* (L.) Britton.
Vaccinium parvifolium Smith. *Thalesia fasciculata* (Nutt.)
Dodocatheon jeffreyi Van Britton.
Houtte. *Pinguicula vulgaris* L.
Douglasia laevigata Gray. *Linnaea americana* Forbes.
Gentiana calycosa Greseb. *Lonicera utahensis* Wats.
Menyanthes trifolia L. *Sambucus glauca* Nutt.
Apocynum androsaemifolium L. *Valeriana sitchensis* Bong.
Phlox condensata (Gray.) *Campanula scouleri* Hook.
Nelson. *Campanula rotundifolia* L.
Phlox diffusa Benth. *Campanula piperi* Howell.
Collomia debilis (Wats.) *Agoseris alpestris* (Gray.)
Greene. *Agoseris*.
Romanzoffia sitchensis Bong. *Agoseris aurantiaca* (Hook.)
Hydrophyllum albifrons Heller. Greene.
Phacelia sericea (Graham) *Crepis nana* Richards.
Gray. *Crepis occidentalis* Nutt.
Mertensia laevigata Piper, *Hieracium albiflorum* Hook.
Lamb. *Hieracium gracile* Hook.
Stachys ciliata Dougl. *Chrysopsis oregana* (Nutt.)
Collinsia tenella Pursh. Gray.
Pentstemon menziesii Hook. *Hoorebekia lyallii* Gray.
Pentstemon davidsonii. *Solidago corymbosa* Nutt.
Pentstemon procerus Dougl. *Erigeron speciosus* D. C.
Pentstemon diffusus Dougl. *Erigeron salsuginosus* (Rich-
ards.) Gray.
Chelone nemerosa Dougl. *Erigeron compositus trifidus*
Synthyris pinnatifida lanuginosa (Hook.) Gray.
Piper. *Erigeron aureus* Greene.
Veronica alpina L. *Erigeron acris debilis* Gray.
Veronica cusickii Gray. *Eucephalus ledophyllus* (Gray)
Mimulus lewisii Pursh. Greene(?)
Mimulus alpinus Gray. *Eucephalus paucicapitatus* (Rob-
Pedicularis *groenlandica* inson.) Greene.
surrecta (Benth.) Piper. *Eriophyllum lanatum* (Pursh.)
Pedicularis bracteosa Benth. Forbes.
Pedicularis racemosa Dougl. *Achillea millefolium lanulosa*
Castilleja crispula (?). (Nutt.) Piper.
Castilleja oreopola Greenman. *Artemisia borealis wormskioldis*
Castilleja angustifolia bradburii (Nutt.) Fernald. Besser.
Castilleja angustifolium abbrevi- *Artemisia tilesii* Ledeb.
ata Fernald. *Arnica latifolia* Bong.
Castilleja miniata Dougl. *Arnica mollis* (?).
Orthocarpus imbricatus Torr. *Arnica parryi* Gray.

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| Arnica betonicaefolia Greene. | Antennaria racemosa Hook. |
| Arnica macounii Greene. | Antennaria media Greene. |
| Petasites frigida (L.) Fries. | Antennaria concinna Nelson. |
| Luina hypoleuca Benth. | Antennaria rosea angustifolia |
| Senecio flettii Wiegand. | (Rydberg.) Nelson. |
| Senecio lugens Richards. | Adenocaulon bicolor Hook. |
| Senecio triangularis Hook. | Saussurea americana D. C. |
| Antennaria howellii Greene. | Eaton |