

THALLOPHYTES AND BRYOPHYTES  
FROM THE  
OLYMPIC MOUNTAINS.

T. C. FRYE.

The following is a list of the algae, fungi, lichens, liverworts and mosses collected on a trip with the "Mountaineers" in the summer of 1907. Our party left Port Angeles August 3, reached the Elwha River at MacDonald, and thence followed its right bank up to the mouth of Godkin Creek. From there the trail crossed the river several times, before reaching the junction of the west, middle and north forks, near which was "Mountaineers' Camp." From here side trips were made up the three forks. About five days were spent here in collecting. A trip was then made up the north fork of the Elwha River, through Queets-Elwha Pass into the Queets River valley, to a camp near the base of the rock which splits the Humes Glacier into two roughly equal parts. About here, three days were spent in collecting, one trip extending across Queets River towards Queets Glacier. From here also, a trip was made to the summit of Mt. Olympus, on which several plants were found. On the return, Port Angeles was reached August 19, thus the whole trip was made in sixteen days.

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ABBREVIATIONS

\*Not before reported from the Olympics. The basis for this is Henderson's account of his and Piper's collections, in *Steel Points*, Vol. 1, No. 4, pp. 160-198, 1907. Portland, Oregon.

E. Elwha River Valley.

Q. Queets River valley.

H. Near the front of Humes Glacier, from its base downward for about 1,000 feet.

†Not before reported from Washington.

§Not before reported in America.

||Found no place in Washington except in the Olympics.

## ALGAE

## OSCILLATORIACEAE

- \*1. *Phormidium autumnale* (Agardh.) Gomont.  
E, west of Mountaineers' Camp, 4000 feet, in glacial streamlet as slimy threads on rocks.

## VOLVOCEAE

- \*2. *Sphaerella nivalis* (Bauer) Sommerf. Red Snow.  
In Queets-Elwha Pass, on Mt. Noyes and on Mt. Queets. These plants are spherical reddish cells, and apparently find sufficient heat for life on and in the snow; is not uncommon on Mt. Rainier.

## ULVACEAE

- \*3. *Prasiola mexicana*  
On rocks near surface of water in Elwha River, about 4 miles above the mouth of Lillian Creek; forming attached leaf-like expansions up to  $1\frac{1}{2}$  inches long and  $\frac{3}{4}$  inches wide; not slimy like the usual condition common about Seattle.

## CHETOPHORACEAE

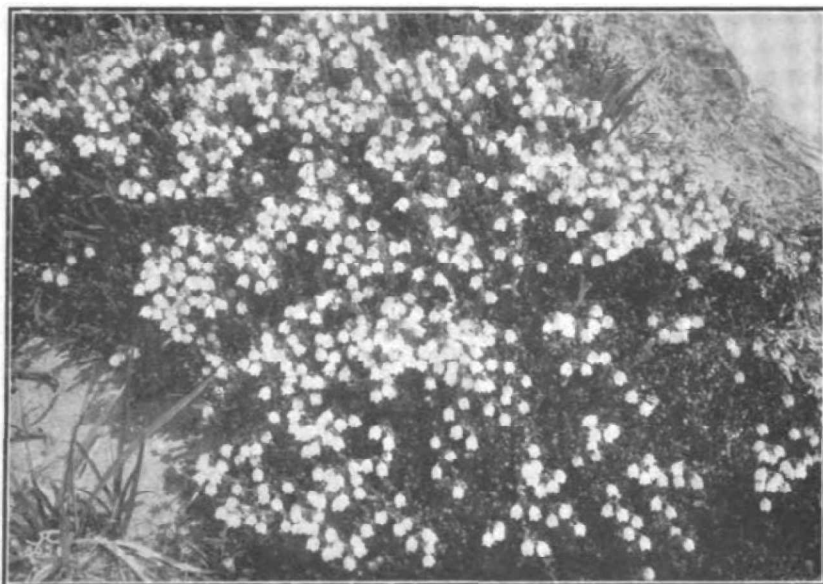
- \*4. *Trentpohlia aurea*  
E, in bottom, 8 miles above Humes, on fork of living *Alnus oregona*. This resembles patches of brown or rusty hairs about  $\frac{1}{8}$  inch long.

## HYDRURACEAE

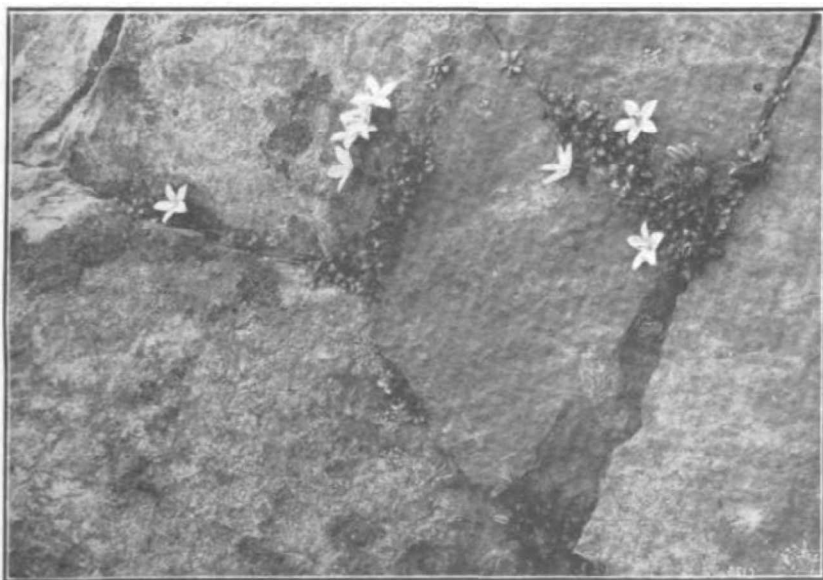
- \*5. *Hydrurus foetidus* (?) (Vill.) Kirchner.  
As slimy covering on rocks in west fork of Elwha River, west of Mountaineers' Camp, 4000 feet.

## FUNGI

- \*6. *Capnodium salicinum* (?) (A. & S.).  
Q, H, 5000 feet, on living *Abies amabilis*, as a black wool on the twigs, (No. 16).



*CASSIOPE MERTENSIANA.* THE WHITE HEATHER COMMON TO THE CASCADES  
AND THE OLYMPICS



*CAMPANULA PIPERI.* A RARE HARE-BELL FOUND IN THE OLYMPICS

## LICHENS

## CALICIACEAE

7. *Sphaerophorus globiferous* (L.) Tuck.  
E, in bottom 8 miles above Humes, 2000 feet,  
(No. 8).

## CLADONIACEAE

8. *Pilophorus cereolus* var. *hallii* Tuck.  
Q, H, on dry rock, 5000 feet, (No. 26).
9. *Stereocaulon tomentosum* (Fr.) Th. Fr.  
E, near mouth of Godkin Creek, 2300 feet, on  
soil, (No. 83).
10. *Cladonia bellidiflora* (Ach.) Schaer.  
E, near Mountaineers' Camp, on soil, 4000  
feet, (No. 12). Q, H, 5000 feet, on soil,  
(Nos. 80, 82).
11. *Cladonia rangiferina* (L.) Web.  
Specimen with locality label not yet returned,  
(No. 25).
- \*12. *Cladonia pyxidata* var. *prolifera* Arn.  
Q, H, 5000 feet, on soil, (No. 32).
- \*13. *Cladonia pyxidata* var. *chlorophaea* Aigret.  
Q, H, 5000 feet, on soil, (No. 47).
- \*14. *Cladonia fimbriata* (L.) Fr.  
Q, H, 5500 feet, on rocks, (No. 48).
15. *Cladonia pyxidata* (L.) Fr.  
Q, H, on rocks, 5500 feet, (No. 84).
16. *Cladonia gracilis* var. *elongata* Wain.  
Q, H, 5000 feet, on soil, (No. 91).

## LECIDEACEAE

- \*17. *Biatora russula* (Ach.) Mont.  
Q, H, 5000 feet, on trees, (No. 53).
- \*18. *Biatora vernalis* (?) (L.) Fr.  
Q, H, 5000 feet, on trees, (No. 69).
- \*19. *Lecidea enteroleuca* Fr.  
Q, H, 5000 feet, on rocks, (No. 18).

- \*20. *Lecidea atrobrunea* (DC.) Schaer.  
From the summit of Mt. Olympus, 8200 feet,  
on rocks, (No. 46).
- \*21. *Umbilicaria angulata* Tuck.  
Q, H, 5500 feet, on rocks, (No. 42).
- \*22. *Umbilicaria rugifera* Nyl.  
From the summit of Mt. Olympus, 8200 feet,  
on rocks, (No. 44).
- 23. *Rhizocarpon geographicum* (L.) DC. *Buellia*  
*geographica* (L.) Tuck.  
From the summit of Mt. Olympus, 8200 feet,  
on rocks, (No. 72).

## GRAPHIDACEAE

- 24. *Graphis scripta* (L.) Ach.  
E, along Lillian Creek, on bark of living Hem-  
lock, 1500 feet, (No. 22).
- \*25. *Graphis elegans* (Sm.) Ach.  
E, 1200 feet, on bark of living Alder; in bot-  
tom between Anderson's and Humes', (No. 9);  
also 3 miles below Camp Elkhorn, 1800 feet,  
(No. 28).

## PARMELIACEAE

- \*§26. *Lecanora haematomma* Ehrh.  
Q, H, 5500 feet, on rocks, (No. 41).
- \*27. *Lecanora pacifica* Tuck.  
Q, H, 5500 feet, on back of *Alnus oregona*,  
(No. 67).
- \*28. *Lecanora pallescens* var. *tumidula* (Pers.) Schaer.  
E, between Godkin Creek and Mountaineers'  
Camp, 2500 feet, on living Alder, (No. 1).  
Q, H, 5000 feet, on dead branches of trees,  
(No. 36).
- \*29. *Lecanora pallida* (Schreb.) Schaer.  
E, 3 miles below Camp Elkhorn, 1800 feet, on  
bark of living Alder, (No. 52).

- \*30. *Parmelia hyperopta* Ach.  
On trees. E, at Camp Elkhorn, 2000 feet, in damp bottom, (No. 73); also Q, H, 5000 feet, (No. 49).
- \*31. *Parmelia physoides* var. *enteromorpha* (Ach.) Tuck.  
E, at Camp Elkhorn, 1800 feet, on fallen Alder, (No. 11).
- \*31. *Cetraria nitidiuscula* Merrill.  
Q, H, 5000 feet, on Huckleberry bushes, (No. 14).
32. *Cetraria glauca* (L.) Ach.  
E, at Camp Elkhorn, 2000 feet, on trees, (No. 85).
- \*33. *Cetraria glauca* var. *coralloidea* Wallr.  
E, at Camp Elkhorn, 2000 feet, on trees, (No. 21).
- \*34. *Cetraria glauca* var. *stenophylla* Tuck.  
E, at Camp Elkhorn, 1800 feet, on trees, (No. 60).
35. *Alectoria jubata* (L.) Tuck.  
Q, H, 5000 feet, on Lovely Fir, (No. 50).
36. *Alectoria sarmentosa* Nyl.  
Q, H, 5000 feet, on trees, (No. 37).

## VERRUCARIACEAE

- \*37. *Thelotrema lepadinum* Ach.  
E, at Camp Elkhorn, 2000 feet, on trees in damp bottom, (No. 39).
- \*38. *Dermatocarpon miniatum* (L.) Fr.  
Q, H, 5500 feet, on rocks, (No. 71).
- \*39. *Dermatocarpon miniatum* var. *aquaticum* (Weis) Fink. *Endocarpon fluviale* Ach.  
Q, H, 5000 feet, on rocks in streamlet, (No. 13).

## COLLEMACEAE

- \*40. *Hydrothyria venosa* (Russell) Tuck.  
Q,  $\frac{1}{2}$  mile from Queets-Elwha Pass, 5000 feet, along streamlet, (No. 15).

## PANNARIACEAE

41. *Peltigera venosa* (L.) Hoffm.  
Q, H, 5000 feet, on soil, (No. 17).
42. *Peltigera aphthosa* (L.) Hoffm.  
E, near Mountaineers' Camp, 4000 feet, on soil,  
(No. 50).
- \*43. *Peltigera canina* (L.) Hoffm.  
On soil. Q, H, 5000 feet, (No. 19); also E,  
near Mountaineers' Camp, 4000 feet, (No. 16).
- \*44. *Peltigera canina* var. *membranacea*  
On soil. E, near mouth of Godkin Creek,  
2500 feet, (No. 33); also Q, H, 5000 feet,  
(No. 10).
- \*45. *Solorina saccata* var. *spongiosa* Nyl.  
Q, H, 5500 feet, on soil, (No. 87).
- \*46. *Solorina crocea* (L.) Ach.  
Q, H, 5000 feet, on soil-covered rocks, (No.  
23).
47. *Sticta pulmonaria* var. *linita* Nyl.  
Q, H, 5000-5500 feet, on rocks more or less  
covered with soil, (Nos. 20, 40).

## LIVERWORTS

## MARCHANTIACEAE

- §48. *Clelia hyalina* (?) (Somm.) S. O. Lindb.  
Along west fork of Elwha River west of  
Mountaineers' Camp, on wet soil, 5500 feet,  
(No. 63).
- ||49. *Cryptomitrium tenerum* Aust.  
E, west of Mountaineers' Camp, 4000 feet, on  
rocky soil under loose boulders of talus slope,  
(No. 33).
- §50. *Asterella lindenberghiana* Corda. *Hypenanthron*  
*lindenberghiana* (N. ab E.) O. Kuntze.  
On wet soil over rocks. Q, H, 4000 feet,  
(Nos. 63, 71); also on wet mossy rock wall of

west fork of Elwha River west of Mountaineers' Camp, 5000 feet, (No. 12).

- \*51. *Asterella gracilis* Underw.  
Q, H, on wet soil-covered rocks, 5500 feet, (No. 53).
- 52. *Conocephalum conicum* Underw.  
Q, H, on wet rocks, 5000 feet, (No. 27). This is a common form in western Washington in places wet the year round.
- \*||53. *Preissia quadrata* (Scop.) Nees. *Chromiocarpon quadratus* (Scop.) S. O. Lindb.  
Q, H, 5000 feet, on damp soil over rocks, (Nos. 26, 41).
- \*54. *Marchantia polymorpha* L.  
Q, H, on wet soil, 5000 feet, (No. 45); also on wet banks and springy places from MacDonald to Mountaineers' Camp in E.

#### METZGERIACEAE

- \*55. *Riccardia latifrons* (Lindb.) Lindb.  
E, on decaying logs in damp woods, about 7 miles above Humes, 1800 feet, (No. 4); and between mouth of Godkin Creek on Mountaineers' Camp, 2200 feet, (No. 1). A common form in lower altitudes west of the Cascade Mountains.
- \*§56. *Pallavicinia blytii* (Moerck) Lindb.  
Q, H, 5000 feet, on wet rocks, (No. 56).
- \*‡57. *Pallavicinia flotoiwiana* (Nees) Lindb.  
Q, H, on wet rocks, 5000 feet, (No. 20).
- \*58. *Pellia neesiana* (Gott.) Limpr.  
5000 feet, on wet soil and wet rocks; Q, H, (Nos. 20, 25, 64); and in west fork of Elwha River west of Mountaineers' Camp, (Nos. 11, 54); also E, a few miles above mouth of Lillian Creek, in bottom, on soil, 2500 feet, (No. 8).



- \*59. *Pellia endiviaefolia* (Dicks.) Dum.  
E, along middle fork, northwest of Mountaineers' Camp, at base of highest fall, on wet rocks on which clung a thin layer of soil, 4500 feet, (No. 82).

## JUNGERMANNIACEAE

- \*||60. *Gymnomitrium concinnatum* var. *intermedium* Limpr.  
Q, H, 5000 feet,, on damp rock wall of canyon, (Nos. 38, 80, 87).
- \*61. *Gymnomitrium obtusum*  
Q, H, 5500 feet, on rocks, (No. 48).
- \*62. *Marsupella emarginata* (Ehrh.) Dum.  
Q, H, 5000 feet, (No. 34); and along middle fork of Elwha River above Mountaineers' Camp, 4500 feet, just at foot of highest cascade, (No. 44).
- \*63. *Nardia hyalina* (Lyll) S. O. Lindb.  
E, along west fork, west of Mountaineers' Camp, 5000 feet, on wet soil, (No. 54).
- \*64. *Nardia scalaris* (Schrader) Grand Berm.  
Q, H, 5500 feet, on wet clay, (No. 46).
65. *Jungermannia cordifolia* Hook. *Apolozia cordifolia* (Hook.) Dum.  
Above Mountaineers' Camp, along north fork of Elwha River, 4000 feet, on wet rocks in streamlet, (No. 74). Q, H, on wet rocks, 5000 feet, (No. 56); and near Queets Glacier, (No. 15).
- \*||66. *Jungermannia riparia* var. *potamiphia* Muell.  
E, along west fork west of Mountaineers' Camp, 4500 feet, (No. 10); on middle fork, northwest of Mountaineers' Camp, near base of highest cascade, 4000 feet, (No. 67); in Q, H, 5000 feet, (Nos. 28, 59); and near base of Queets Glacier (No. 15).

- \*67. *Jungermannia lanceolata* L.  
E, about 7 miles above Humes, on rotten log,  
1800 feet, (No. 4).
- \*68. *Lophozia alpestris* (Schleich.) Evans.  
E, about 3 miles above the mouth of Godkin  
Creek, on soil, 2500 feet, (No. 9); and along  
north fork of Elwha River, above Moun-  
taineers' Camp, on rock, wet with seepage,  
4000 feet, (No. 84).
- \*69. *Lophozia incisa* (Schrad.) Dum.  
Q, about  $\frac{1}{2}$  mile from Queets-Elwha Pass,  
along alpine rivulet, 5000 feet, (No. 24); also  
E, about 7 miles above Humes', on rotten log,  
1800 feet, (No. 4).
- \*||70. *Lophozia porphyroleuca* (N. ab. E.) Schiffn.  
*Lophozia ventricosa* (Dicks.) Dum.  
E, between mouth of Godkin Creek and Moun-  
taineers' Camp, 2500-3500 feet, on rotten log,  
(Nos. 1, 30); also Q,  $\frac{1}{2}$  mile from Queets-  
Elwha Pass, along alpine rivulet, 5000 feet,  
(No. 24).
- \*||71. *Lophozia floerkei* W. & M.  
E, near Mountaineers' Camp, 3500 feet, on  
soil in woods, (No. 37).
- \*72. *Lophozia minuta* (Crantz) Schiffn.  
Q, H, 5000 feet, on wet rocks, (No. 19).
- \*‡73. *Lophozia Baueriana* Schiffn.  
Q, H, 5500 feet, among rocks, (No. 286).  
This plant was not before known in America  
except from New England.
- \*74. *Plagiochila asplenoides* (L.) Dum.  
E, near mouth of Godkin Creek, 2500 feet, on  
log in woods, (No. 43).
- \*75. *Chilocyphus polyanthus* (L.) Corda.  
E, in streamlets, 3 miles above Humes, 1800  
feet, (No. 23); also at Camp Godkin near  
mouth of Godkin Creek, 2500 feet, (No. 62)

- Q, H, 5000 feet, on wet rocks, (No. 65); also on wet logs, near Queets Glacier, (No. 18).
- \*76. *Cephalozia bicuspidata* (L.) Dum. *Eucephalozia bicuspidata* (L.) Schiffn.  
E, between Humes and Mountaineers' Camp, on rotten logs, 1500-3500 feet, (Nos. 1, 4, 76); also along west fork of Elwha River, 5000 feet, on wet rocks, (No. 54). Q, H, 5000 feet, on wet rocks, (No. 22). A common form in lower altitudes west of the Cascade Mts.
- \*77. *Cephalozia lunulaefolia*  
E, between the mouth of Godkin Creek and Mountaineers' Camp, 2500-3500 feet, on rotten logs, (Nos. 1, 30).
- \*78. *Kantia succica* A. & P.  
E, a few miles above mouth of Godkin Creek, 2500 feet, on rotten log and in damp woods, (No. 1).
79. *Kantia trichomanes* (L.) G. & B.  
E, 7 miles above Humes, 1800 feet, on rotten log in woods, (No. 4).
- \*80. *Lepidozia reptans* (L.) Dum.  
E, on rotten logs in woods, 7 miles above Humes', 1800 feet, (No. 4); and near the mouth of Godkin Creek, 2300 feet, (No. 76).
- \*81. *Blepharostoma trichophyllum* (L.) Dum.  
Q, H, 5000 feet, on wet rocks, (No. 20).
82. *Ptilidium californicum* (Aust.) U. & C.  
E, at Camp Elkhorn, (No. 49), and a few miles below it, (Nos. 21, 4), 2000 feet, on bark of trees in damp river bottom. Q, H, on trees, 5000 feet, (Nos. 39, 75).
- \*83. *Diplophyllum taxifolium* (Wahl.) Dum.  
E, on soil, 2500-4000 feet, (Nos. 9, 31, 57).  
Q, H, on wet rocks, 5000 feet, (Nos. 20, 36).



*PULSATILLA OCCIDENTALE.* THE COMMON  
MOUNTAIN ANEMONE

- \*84. *Diplophyllum albicans* (L.) Dum.  
Q, H, 5000 feet, on wet rocks, (No. 19).
- \*85. *Scapania curta* (Mart.) N. ab E.  
Q, H, 5000 feet, on rocks thinly covered with soil, (Nos. 52, 85).
- \*86. *Scapania subalpina* Dum.  
Along west fork of Elwha River, west of Mountaineers' Camp, 5000 feet, on rocks, (No. 12).
- \*87. *Scapania undulata* (L.)-N. ab E.  
Q, H, 5000 feet, on wet rocks, (Nos. 35, 47).
- 88. *Scapania bolanderi* Dum.  
E, near mouth of Godkin Creek, 2500 feet, on rotten log, (No. 70); also on soil-covered rocks near Mountaineers' Camp, 4000 feet, (No. 57).
- \*89. *Scapania umbrosa* (Schrad.) Dum.  
E, about 7 miles above Humes, on rotten log in river bottom, 1800 feet, (No. 4).
- 90. *Scapania* sp.  
Q, H, 5000 feet, on wet rocks, (No. 88).
- \*91. *Radula complanata* (L.) Dum.  
E, between Anderson's and Camp Elkhorn, 1000-2000 feet, on Maples and Alders, (Nos. 17, 50, 61, 89); on soil among rocks, west of Mountaineers' Camp, 5000 feet, (No. 11); Q, H, 5000 feet, on damp rocks, (Nos. 16, 32).
- \*92. *Radula bolanderi* Gottsche.  
E, 7 miles above Humes', 1800 feet, on living *Alnus oregona*, (No. 13); near Mountaineers' Camp, 4000 feet, on soil-covered rocks, (No. 57).
- \*93. *Porella rivularis* (Nees) Trevis.  
E, on trees and damp rocks, at Camp Elkhorn, 2000 feet, (No. 83); near mouth of Godkin Creek, 2500 feet, (No. 86); along north fork of Elwha River above Mountaineers' Camp, 4000 feet, (No. 60).

94. *Porella navicularis* (Lehm. & Lindenb.) Lindb.  
E, at Camp Elkhorn, 2000 feet, on trees,  
(No. 89); along north fork above Mountaineers' Camp, 4000 feet, on wet rocks, (No. 14).  
This is one of the most conspicuous and common of the liverworts in western Washington, in low altitudes.
- \*95. *Frullania nisquallensis* Sulliv.  
E, bark of trees, in damp places, near Humes' house, 1200 feet; at Camp Elkhorn, 1200-2000 feet.

## ANTHOCEROTACEAE

- \*96. *Anthoceros fusiformis* Aust.  
Along north fork of Elwha River about half mile from Queets-Elwha Pass, 5000 feet, on springy soil, (No. 68); Q, H, 5000-5500 feet, on wet soil, (Nos. 29, 66).

## MOSESSES.

## SPHAGNACEAE (Peat Moss Family).

- \*97. *Sphagnum squarrosum* Pers. A Peat Moss.  
Q, H, 5000 feet, on springy soil in meadow, (No. 589). E, about 4 miles above the mouth of Godkin Creek, in swamp in bottom, 2500 feet, (No. 522).

## ANDREAEACEAE

- \*98. *Andreaea crassinervia* Bruch.  
In Queets-Elwha Pass, 5500 feet, on rocks, (No. 599). Mixed with the following species.
- \*99. *Andreaea blytii* Schimp.  
In Queets-Elwha Pass, 3500 feet, on rocks, (No. 580); also Q, on rocks dividing Humes Glacier at its base, 5500 feet. Smaller than *A. crassinervia*. This is a Greenland species.

## DICRANACEAE

- \*100. *Dicranella cerviculata* Schimp.  
E, along north and middle forks, 4000 feet, in rock crevices, (Nos. 503, 586). Q, H, 5500 feet, on thin soil over rocks, (No. 628).
101. *Dicranum fuscescens* Turn.  
E, between mouth of Godkin Creek and Mountaineers' Camp, 2800 feet, on tree bases and logs, (No. 462). This is quite common to 3000-4000 feet, and is a common low altitude moss in western Washington.
- \*102. *Ceratodon minor*  
E, 2 miles above Humes, on soil in burned woods, 1300 feet, (No. 517).

## POTTIACEAE

- \*103. *Barbula vinealis* Brid.  
E, about 5 miles above the mouth of Lillian Creek, on wet, sandy soil of river bank near water line, 1500 feet, (No. 616).
- \*104. *Tortula ruralis* (L.) Ehrh.  
E, in orchard between Anderson's and Humes', 1000 feet, on rocks, (No. 495).
- \*105. *Tortula aciphylla* B. & S.  
Q, H, 5500 feet, on rocks, (No. 601).
106. *Encalypta ciliata* Hoffm.  
E, between Anderson's and Humes', on log in bottom, 1000 feet, (No. 494); also along west fork of Elwha River, west of Mountaineers' Camp, on soil, 6000 feet, (No. 588). Q, H, 5500 feet, on soil, (No. 607).

## GRIMMIACEAE

107. *Scouleria aquatica* var. *nigrescens* Kindb.  
E, about 5 miles above the mouth of Lillian Creek, 1800 feet, on submerged rocks in the river, (No. 570). This is a coarse black moss rather common in clear water of rapid rocky streams of Washington.

108. *Grimmia apocarpa* var. *rivularis* W. & M.  
E, about 3 miles below Camp Elkhorn, on rocks in river near low water line, 1500 feet, (No. 608). Q, H, on rocks, 5000 feet, (No. 504).
- \*†109. *Grimmia apocarpa* var. *alpicola* (?) H. & T.  
E, about 3 miles below Camp Elkhorn, in flowing water, on rocks, 1500 feet, (No. 519).
- \*110. *Grimmia muehlenbeckii* Schimp.  
E, between Anderson's and Humes' in an old orchard, on rocks, 1000 feet, (No. 584); also 4000 feet along west fork, west of Mountaineers' Camp, on rocky soil of talus slope, (No. 486); and north of Mountaineers' Camp, along north fork, on rocks, (No. 621).
- \*111. *Grimmia montana* B. & S.  
Q, H, 5500 feet, on soil-covered rocks, (No. 618).
112. *Racomitrium aciculare* (L.) Brid.  
E, at Camp Elkhorn, 2000 feet, on rocks near water level along river, (No. 595); near Mountaineers' Camp, 4000 feet, on rocks in streamlet, (No. 560).
113. *Racomitrium varium* (Mitt.) L. & J.  
E, about 5 miles above the mouth of Lillian Creek, 1800 feet, on rocks in river at low water level, (No. 576).
- \*114. *Racomitrium nevii* (Muell.) Wats.  
E, along north fork, north of Mountaineers' Camp, 4500 feet, on dry rocks, (No. 470).
115. *Racomitrium heterostichum* (Hedw.) Brid.  
Q, H, 5500 feet, on dry rock, (No. 530).
- \*116. *Racomitrium sudeticum* B. & S.  
Q, H, on rocks 4500-5500 feet, (Nos. 574, 603, 617?).
117. *Racomitrium canescens*  
E, north of Mountaineers' Camp, 4000 feet, on rather dry soil, (No. 606).



118. *Racomitrium canescens* var. *ericoides* B. & S.  
E, observed near mouth of Godkin Creek,  
(No. 506), and about Mountaineers' Camp,  
(Nos. 575, 587, 1906), 2500-5000 feet, on dry  
rocky or sandy soil. Q, H, on rocky soil, 5500  
feet, (No. 600). This is a common form on  
similar soil at low altitudes in the Puget  
Sound region.
- \*119. *Racomitrium canescens* var. *lutescens* Brid.  
E, between Anderson's and Humes', in orchard,  
on rocks, 1000 feet, (No. 582).
- \*‡120. *Racomitrium canescens* var. *muticum* Kindb.  
E, west of Mountaineers' Camp, on rock talus  
slope, 5000 feet, (No. 605).
- \*121. *Racomitrium patens* (Dicks.) Hueb.  
E, at Mountaineers' Camp, on dry rocks, 3500  
feet, (No. 592). Q, H, on rocks, 5500 feet,  
(Nos. 555, 625).

## ORTHOTRICHACEAE

- \*122. *Zygodon lapponicus* B. & S.  
Q, H, 5500 feet, on rocks, (No. 615).
- \*123. *Orthotrichum papillosum* Hampe.  
E, at Camp Elkhorn, 1800 feet, on trees,  
(No. 490).

## FUNARIACEAE

- \*124. *Funaria hygrometrica*  
E, from sea-level to Camp Elkhorn, 2000 feet,  
on dry soil. This is the most common moss  
on soil within a few years after a forest fire.

## MNIACEAE

- \*125. *Mnium subglobosum*  
Q, H, 5000 feet, on wet soil, (No. 562).
- \*126. *Mnium glabrescens*  
E, near mouth of Godkin Creek, 2500 feet, on  
soil near river, (No. 544).

127. *Mnium venustum* Mitt.

E, sea level to Camp Elkhorn, 2000 feet, on soil and trees in river bottom, (Nos. 577, 596, 598).

## RHIZOGONIACEAE

128. *Rhizogonium menziesii* (Muell.) *Mnium menziesii* Muell.

E, in bottom, about 5 miles above the mouth of Lilliam Creek, on rotten log, 1800 feet, (No. 488). This is a common moss on logs in very damp woods, in the low altitudes of western Washington. I have heard it popularly called the palm-tree moss.

## AULACOMNIACEAE

129. *Aulacomnium androgynum* (L.) Swaegr.

E, on logs in woods in drier regions, from Port Angeles to Humes, sea-level to 1000 feet. This is a very common low altitude moss, and is by far the most common bearing gemmae.

## BARTRAMIACEAE

\*130. *Bartramia ithyphylla* (Hall) Brid.

E, along west fork west of Mountaineers' Camp, 5500 feet, on soil among rocks of talus slope, (No. 505). Q, H, 5500 feet, on wet rocks, (No. 579).

\*131. *Philonotis fontana* Brid.

E, (Nos. 471, 485, 500, 626), and Q, (No. 565); 2500-5500 feet, along borders of alpine riverluts. This is one of the most conspicuous mosses of these altitudes. It is light green, and often marks the course of riverlets by its light color so they can be traced through the grass at a distance of approximately a hundred yards.

## POLYTRICHACEAE

\*132. *Catharinea undulata* (L.) W. & M.

E, near the mouth of Godkin Creek, 2300 feet,

- on clay soil, (No. 581). This is a common form on clay of uprooted trees in low altitudes in western Washington.
- \*133. *Oligotrichum incurvum* (Huds.) Broth.  
E, along west fork at base of Mt. Queets, 4000 feet, on soil, (No. 526).
- \*134. *Polytrichadelphus lyallii* Mitt.  
E, near Mountaineers' Camp, 3500-4500 feet, on dry rocky soil of meadows, (Nos. 469, 473, 483, 564). Also on summit of Mt. Olympus, alt. 8200 feet, on rocks, (No. 624). Rather common in the locality, largely taking the place of the *Polytrichums*. It is found only in high altitudes in western Washington.
- \*135. *Pogonatum contortum* (Menz.) Lesq.  
E, about 4 miles above the mouth of Godkin Creek, on rather damp clay soil in bottom, 2600 feet, (No. 525).
- \*136. *Pogonatum capillare* (Rich.) Brid.  
E, along west fork, west of Mountaineers' Camp, 4500 feet, on dry soil of rocky meadow, (No. 611).
137. *Pogonatum alpinum* var. *arcticum*  
E, west of Mountaineers' Camp, 4000 feet, on dry soil of meadow along west fork, (No. 479). Q, H, on wet soil, 5500 feet, (No. 528); and in crevices of damp rocks, 5000 feet, (No. 509).
- \*138. *Polytrichum piliferum* Schreb.  
E, along west fork, 4000 feet, on dry soil of thin meadow, (No. 510). Q, H, 5500 feet, on dry soil, (No. 590). On the summit of Mt. Olympus, 8200 feet, on rocks, (No. 553). Leaves with whitish hair-tips.
139. *Polytrichum juniperinum* Willd.  
This common moss of low altitudes was not noticed above Camp Elkhorn, at 2000 feet, but

occurs from there, (No. 475), down to sea-level at Port Angeles.

FONTINALACEAE

140. *Fontinalis neo-mexicana*  
E, 4 miles above Godkin Creek, in streamlet, 2600 feet, (No. 585).

NECKERIACEAE

141. *Neckera douglasii*  
E, from MacDonald's Bridge to Camp Elkhorn, 300-2000 feet, on trees. This is a common low altitude form in very damp ravines in western Washington. Leaves acute.
142. *Neckera menziesii*  
E, near Humes', 1000 feet, on trees. This is common in very damp woods in low altitudes in western Washington. Leaves obtuse.

LEUCODONTACEAE

143. *Antitrichia curtipendula* Brid.  
E, in the gorge of Lillian Creek near its mouth, on living *Tsuga heterophylla*, about 1400 feet, (No. 515).
- \*144. *Antitrichia californica* Sull.  
E, on trees in bottom between Anderson's and Humes', 1000 feet, (No. 496).
145. *Porotrichum bigelowii* (Sull.)  
E, along north fork, north of Mountaineers' Camp, 4000 feet, on wet rocks, (No. 1876).

LESKEACEAE

146. *Heterocladium heteropteroides*  
Q, H, 5000 feet, on rocks, (No. 501).
- \*147. *Heterocladium heteropteroides* var. *filescens* Best.  
Q, H, 5000 feet, on rocks, (No. 502).
- \*148. *Claopodium bolanderi* Best.  
E, on dry rocky soil; along north fork, 4000 feet, (No. 630); along west fork, 5000 feet, (No. 563). Q, H, 5000 feet, on rocks, (No. 512).



*PHLOX DIFFUSA.* MOUNTAIN PHLOX, GROWING IN HIGH ALTITUDES

149. *Cladopodium crispifolium*  
E, near the mouth of Godkin Creek, on tree trunks, 2300 feet.
- \*150. *Pseudoleskea atrovirens* B. & S.  
E, along north fork, north of Mountaineers' Camp, 4000 feet, on wet rocks, (No. 499).
- \*151. *Pseudoleskea rigescens* Lindb.  
E, along north fork, north of Mountaineers' Camp, 4000 feet, on bark of dead *Alnus oregona*, (No. 480).

## HYPNACEAE

152. *Camptothecium lutescens* B. & S.  
E, on trees near Humes', 1000 feet, (No. 561); also at Camp Elkhorn, 2000 feet, (No. 594); also along west fork west of Mountaineers' Camp, on soil, 1000 feet, (No. 487).
- \*153. *Camptothecium illii* var. *tenue* Kindb.  
E, at Camp Elkhorn, 2000 feet, on trees, (No. 493).
154. *Camptothecium megaptulum*  
This fine large moss of higher altitudes was seen in E, about 2 miles above Lillian Creek, 1500 feet, on soil. It often grows with *Hylocomium robustum* and so it was here.
- \*155. *Brachythecium albicans* B. & S.  
Q, H, 5000 feet, on wet rocks, (No. 543).
- \*156. *Brachythecium lamprochryseum* Kindb.  
E, at Camp Elkhorn, on soil in dry sandy bayou, 2000 feet, (No. 597).
- \*157. *Brachythecium rutabulum* B. & S. (?)  
E, near the mouth of Godkin Creek, 2500 feet, on soil in bottom, (No. 545).
158. *Eurhynchium oreganum*  
E, near Camp Elkhorn, on soil in bottom, 2000 feet, (No. 518). This is our most common moss at low altitudes in western Washington, growing on ground, logs, and tree bases, its

lateral branches giving it somewhat the appearance of a long narrow feather.

159. *Eurhynchium stoloniferum*  
E, near Camp Elkhorn, on soil in river bottom, 2000 feet, (No. 516).
160. *Plagiothecium denticulatum* B. & S.  
Q, H, 5000 feet, on wet rocks, (No. 513). E, up to 3000 feet, on logs in damp woods.
161. *Plagiothecium undulatum* B. & S.  
E, up to Camp Elkhorn.
162. *Amblystegium filicinum* De Not.  
E, along north fork, north of Mountaineers' Camp, 4000 feet, on gravel in dry streamlet, (No. 542).
163. *Hypnum uncinatum* Hedw.  
E, about 5 miles above the mouth of Lilliam Creek, on wet soil near water level on river bank, about 1500 feet, (No. 520); near mouth of Godkin Creek, 2500 feet, on log, (No. 569).
- \*164. *Hypnum imponens* Hedw.  
Q, H, 5000 feet, on damp soil, (No. 492).
- \*165. *Hypnum subimponens* Lesq.  
E, H, 1000 feet, in bottom on trees, (No. 497).
166. *Hypnum circinale* Hook.  
On logs in woods from near Port Angeles to Camp Elkhorn, sea-level to 2000 feet.
167. *Hypnum ochraceum* Turn.  
E, at Camp Elkhorn, 2000 feet, on soil near water line of river, (No. 532); and along west fork, west of Mountaineers' Camp, 4000 feet, on wet rocks covered with thin soil, (No. 1877). In Q, H, on rocks in damp hollow, 5000 feet, (No. 622).
- \*168. *Hypnum bestii* R. & B.  
E, at Camp Elkhorn, 2000 feet, on soil of river bank near water level, (No. 554).

- \*169. *Hypnum palustre* Huds.  
Q, H, on rocks in damp ravine, 5000 feet,  
(No. 623).
170. *Hylocomium robustum*  
E, along west fork, west of Mountaineers'  
Camp, 5000 feet, on soil, (No. 478); also  
about 2 miles above Lillian Creek, 1500 feet.  
Q, H, 5500 feet, on soil, (No. 567). This  
occurs only in higher altitudes, 1000 feet and  
upwards. It resembles *Hylocomium triquetrum*  
but is less branched, the leaves not so  
much standing out from the stem and more  
secund.
171. *Hylocomium triquetrum* B. & S.  
E, from sea-level to 3500 feet, on ground and  
logs, in very damp shady woods, (Nos. 461,  
529, 572, 591). A common moss in wet  
hollows in western Washington, coarse, large-  
leaved, not much branched.
172. *Hylocomium loreum* B. & S.  
E, from sea-level to 3500 feet, habitat same as  
*Hylocomium triquetrum*, but moss not so  
abundant, and plants only about half as wide,  
(Nos. 459, 489).
173. *Hylocomium splendens*  
E, in damp hollows on ground and logs, from  
sea-level to 3500 feet; broad, much-branched,  
with new years' growths always from the  
upper side of the old stem at about its middle.

#### SUMMARY

Of the plants collected, any which may be new are either not yet definitely settled as such, or are not yet named or described; they are therefore not included in the list. Concerning the 173 listed, 114 have not before been reported from the Olympic Mountains; of these,



5 are algae, 1 is a fungus, 27 are lichens, 39 liverworts, and 42 mosses; 15 are known from no locality in Washington other than the Olympic Mountains; of these, 1 is a lichen, 12 are liverworts, and 2 are mosses; 9 were not before known to occur in Washington; of these, 1 is a lichen, 6 are liverworts, and 2 are mosses; 4 have not before been found in America; of these, 1 is a lichen, and 3 are liverworts.

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