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LIST OF CANADIAN HEPATICÆ

BY

WM. HY. PEARSON

MONTREAL:
WM. FOSTER BROWN & CO.
1890.
LIST

OF

CANADIAN HEPATICÆ

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PREFACE.

The following list is the result of the microscopical examination of a large collection of Hepaticæ made by Mr. Macoun in different parts of Canada, and of those in my possession from the herbarium of the late Mr. Austin; in order to make the list as complete as possible I have added all records known to me of species found in Canada and northwards, including those mentioned in G. L. N. Syn. Hep. (1884); Mitten, The "Bryologia" of the Survey of the 49th Parallel of Latitude, Pro. Linn. Soc., Vol. VIII. (1846); Stephani Hepaticæ von der Halbinsel Alaska, Bot. Juhr., Vol. VIII. (1886) and Delamare, Renauld et Cardot's "Flora Miquelonisia" (1888) (Hepaticæ determined by Stephani.)

The striking feature of the flora is its great similarity to that of Northern Europe, as Dr. Spruce intimated in his note on Arnellia fennica.

In my descriptions I have adopted the terms used by Dr. Spruce in his monograph "On Cephalozia" 1882.)

WM. HY. PEARSON.

ECCLES, ENGLAND.
LIST OF CANADIAN HEPATICÆ.

By W. H. Pearson.

Frullania Selwyniana, n. sp.

Small, reddish brown, irregularly dichotomously branched, innovant branches produced repeatedly from below the female bracts. Leaves imbricate, rotund, slightly papillose, with lines of moniliform cells; lobule \( \frac{1}{4} \)th smaller than the leaf, galeate, wide mouth, erect or a little divergent from the stem; style wanting or very minute; cells small to rather minute. Underleaves about \( \frac{1}{4} \) smaller than the leaves, rather broader than the stem, oval, to a \( \frac{1}{4} \) acutely bifid, segments acutate, slightly unidentate. Inflorescence monoicous, terminal on short branches. Bracts 3 pairs, the innermost about twice the size of the leaves, unequally lobed, complicate, lobe obtusate, irregularly dentate-serrate; lobule acute with a large segment near the middle, margin distantly ciliate-dentate; second bracts similar, only smaller and less dentate; third bracts subentire. Bracteole free, bifid to below the middle, sinus and segments acute, margin ciliate-dentate. Perianth small, subemersed, pyriform, smooth, trigonous, antical face plane, postical broadly carinate, apex rostellate. Male bracts 3 pairs, on short lateral branches immediately below the female, globose.

Hab.—On trees, Ste. Anne's River, Gaspé, 19th August, 1882. (Macoun.)

Obs.—I take the pleasure of naming this distinct and beautiful little species in honor of Dr. Selwyn, C.M.G., the able and distinguished Director of the Geological and Natural History Department of Canada, under whose auspices this list is published. It differs from Frullania polysticta Lindl. in the absence of the large irregularly interposed cells, in the lobule of the bracts being much smaller than the lobe.
(not of equal size), and in the margin of the under leaves being unidentate near the middle, from \textit{Frullania fragilisfolia} Tayl., in being monoicons, and in the irregularly ciliate-dentate lobule of the bracts, which has a large segment near the middle.

Measurements.—Fronds \(\frac{1}{2}\) to \(\frac{3}{4}\) inch long, \(5\) to \(75\) mm. wide, stem \(1\) m. diam., leaves \(4\) mm. long x \(3\) mm. broad, \(3\) mm. x \(25\) mm., lobule \(15\) mm. high x \(1\) mm. broad, cells \(0.5\) mm. x \(0.15\) mm. x \(0.015\) mm., underleaves \(175\) mm. long x \(15\) mm. broad, sinus \(0.5\) mm., \(2\) mm. x \(1.75\) mm., \(2.5\) mm. x \(15\) mm., lobule \(45\) mm. long x \(22.5\) mm. broad at the base of the juncture, bract lobe \(75\) mm. long x \(4\) mm. broad, lobule \(6\) mm. long x \(2.5\) mm. broad, \(85\) mm. x \(35\) mm. lobule \(75\) mm. x \(45\) mm.

Description of PI 1.—Fig. 1. Plants nat. size. 2. Plant x 24, antical view. 3. Portion of stem x 64, postical view. 4. Portion of leaf x 240. 5-7. Underleaves x 64. 8. Bract x 64. 9. Bract x 31. 10. Second bract x 64. 11. Bracteole x 31. 12. Perianth x 31. 13. Cross section of the perianth x 31.

2. \textit{Frullania Virginica}, Gottsch.

Hab.—New Brunswick. (James, \textit{Herb. Austin, cum per.}) Hastings Co., Ont., May, 1868. (Macoun, \textit{Herb. Austin})


Hab.—On trees, Vancouver Island, May, 1875. (Macoun)


Obs.—Several forms are in the collection, but as the characters are more or less variable in the different organs on the same stems, I have not thought them worthy of ranking even as varieties. In the drawings taken under the prism are given several figures showing this.

In one compact form the perianths were often more rounded with the lobule of the bract obtusate (fig. 8-9-10), in another, the perianth was slightly keeled antically (fig. 17), and almost bicarinate postically (fig. 16-17), and some lobules of the bracts uni-bidentate at the base (fig. 14).
5. Frullania Tamarisci, (L.) Radd.

Hab.—"Vancouver Island and Orcas Island. Collected also by Menzies and Douglas on the N.W. coast. The specimens are very slender, and at first sight would scarcely be supposed to belong to the same species as the European forms; the leaves are rounded, in the fertile stems acute, in the male plants with the point inflexed and the colored cells in some of the leaves are only found after careful search. No American examples have yet been met with which can compare with the British in size." (Mitt.) Miquelon Island. (Delamare.)

6. Frullania Asagrayana, Mont.


7. Frullania Asagrayana, Mont. var.

Hab.—On rocks, Pirate's Cove, Nova Scotia, 1883 (111). (Macoun.) On rocks, Vancouver Island, 1885 (139). On trees, V. I., 1885 (140) (Dawson.)


Hab.—On rotten wood, Nanaimo, Vancouver Island, 4th June, 1887 (86). On trees in woods, Comox, V. I., 29th July, 1887 (57). (Macoun.)


Hab.—On the bark of cedars, Mount Mark, 26th July, 1887 (102). ♀ and young ♀ Vancouver Island, 26th May, 1887 (22). (Macoun.) Alaska. (Krause.)

10. Frullania Chilcootiensis, Steph.
   Alaska.  (Krause.)

   Hab.—On trees, Ste. Anne's River, Gaspé, 22nd Aug., 1884 (15). On rocks, Ottawa, 1885 (129). On the base of trees, Nanaimo, Vancouver Island, 4th June, 1887 (85). (Macoun) British Columbia. (Lyell.) "A few fragments only." (Mitt.) Island of Miquelon. (Delamar.)

12. Radula commutata, Gottsch.
   I picked out from some other species a sterile gemmiparous Radula, which will probably be this.
   Hab.—On rocks, on the banks of the Moira, Belleville, 1865. (Macoun.)

13. Radula tenax, Lindb.
   Hab. On the bark of trees, Vancouver Island, 1885 (146). (Dawson.)

   Alaska.  (Krause.)

15. Radula arctica, Steph.
   Alaska.  (Krause.)

   Hab.—On rotten wood, Vancouver Island, 1885 (162). (Dawson.)
   Obs.—Mr. Mitten published prior to Austin a Radula spicata ("Bonplandia," 1862), but according to Stephani this is synonymous with Radula formosa (Meißen). Nees (1827). Gottsch, not aware of the Radula of Austin, took drawings of it and named it Radula Bolanderi, under which name it was published by Stephani. I add the following interesting letter from Herr Stephani with reference to the matter:
   "Mr. Mitten lent me his Radula. I had no permission to keep them,
and it was so very little that I could not well even take off a leaf for the sake of the form and the texture; but I have made careful drawings and I am absolutely sure that his R. spicata is the same as R. formosa. In my notes I have put down that it is not even a form but altogether corresponds to the original plant of Nees, of which I enclose a specimen to keep. When I wrote the article on Radula, I was not aware that Austin had published a plant, which he called R. spicata. Some years later I got the book of Mr. Underwood, who gives an enumeration of all the known American Hepaticce. I at once recognized the R. spicata Austin, named in this book (with Austin's description) to be Gottsche's Radula Bolanderi, and so your specimens prove it to be. I have described this plant on page 12 of my article on Radula. I suppose Mr. Austin has the priority, and as the name of Mitten must fall, Austin's name of Radula spicata has to stand for R. Bolanderi, G., who knew it long before Austin recognized this plant, but never published a description of it; he got the plant from Mr. Bolander of San Francisco, and I have got it from Gottsche and from numerous other localities of Western and Southern United States.

Description of Pl. IV.—Fig. 1. Plants natural size. 2-3. Portions of stems with perianths, x 24. 4. Portions of stem with 3 spike, x 24.

17. Lejeunea serpyllifolia, (Dicks.) Libert.

Hab.—On moss and rocks along the Moira, Belleville, 1865. On cedar trees, Ste. Anne's River, Gaspé, 19th Aug., 1882. (Macoun.) Island of Miquelon. (Delamare.)

Var. Americana, Lindb.

Hab.—On earth along the Moira River at Belleville, Ont. (Macoun.)

18. Lejeunea Biddecomiae, Aust. MSS.

Hab.—On trees, Canada. (Macoun, Herb. Aust.)

Obs.—I add some interesting notes by Dr. Spruce:

"As to Lejeunea Biddecomiae, when I first examined it, I hoped it might be kept apart from L. calcarea by the much wider leaves; but I have lately gone over these plants and their exotic allies, and I find European forms of L. calcarea scarcely distinguishable from the American plant. When I first noticed the styliiform appendage to the leaves, I took it to be a unicentral (one-legged) stipule; but as I could never find the other leg, I afterwards held it (with Lindberg) to be a special organ, and placed it in Cololejeunea. Careful study of all the Drepano-
lejeunea has now convinced me that my first impression was right, and that L. calcaria is really a near ally of L. hamatifolia, etc.; for, in many of these, it is not uncommon to find one leg wanting to the stipule, and the remaining leg connate with the base of the adjacent leaf, exactly as in L. calcaria. I enclose my notes on *Lejeunea Biddlecomie*, of which you may use what you like." (R. Spruce, 1888.)

*Lejeunea Biddlecomie*, Aust. — *L. calcaria* var., Florida. On rotting wood. (Miss Biddlecome.)

Closely allied to *Drepanolejeunea calcaria*, but twice the size. Leaves more dimidiate, semi-ovate-lanceolate, postical margin straight or sub-concave, surface less sharply muricate, margins often merely crenulate (from the cells being obtuse, not acute), or muricate-serrulate only at keel and point; *lobule* only ½ (not ⅓) of leaf; *stylus* longer (6-8 cells long), often so erect and appressed to the stem as to escape notice, but sometimes really obsolete.

*Perianth*, much like that of *L. calcaria*, but not so rough.

♀ *Bracts* variable, when expanded broader than long.

*Antheridia* solitary in axis of a few upper leaves of a branch; these leaves (or bracts) have a proportionately much larger lobule than stem-leaves, but are still far from equilobed.

*Note*.—The *stylus* is probably a unicrural stipule, very slightly connate at base to adjacent leaf. (R. Spruce, 1884.)

"Such is doubtless its true character, and it proves *L. calcaria* to be a congener of *L. hamatifolia*, i.e., a *Drepanolejeunea*, not a *Cololejeunea*, as I had considered it in Hep. A. A. I long ago noted that one leg of a bipartite (or two-legged) stipule was sometimes wanting, both in *Drepanolejeunea* and *Leptolejeunea* (elliptica, etc.) Others have noted the same thing. (See *Syn. Hep.* 31! *Lej. hamatifolia*, β & γ: "Stipule of 2 minute divergent crura, each 2 cells long. Sometimes the stipules are simply subulate." Also of *L. dactylophora*: "Stipules subulate, lower bifid, upper entire. I have a fine patch of *L. calcaria*, gathered in the Ardennes by Mme. Libert herself; it cannot (I think) be specifically separated from *L. Biddlecomie*." (R. S., 1888.)

Description of Pl. V.— Fig. 1. Portion of stem, antical view, x 64. 2. Portion of stem, postical view, x 64. 3-8. Leaves x 85. 9. Portion of leaf x 290. 10. Styli x 85. 11, 12. Bracts x 85. 13. Bracteole x 85. 14. Antheridia x 85.


Hab.—Observatory Inlet, British Columbia. (Dr. Scouler, Herb.
LIST OF CANADIAN HEPATIGE.

20. Porella platyphyloidea, (Schweintz.)

Hab.—On trees, Vancouver Island, 9th May, 1887 (19). (Macoun.)

These specimens agree in every particular with original ones from Schweintz. Fort Colville. (Lyall.)

21. Porella laevigata, (Nees.)

Hab.—Kettle Falls, Columbia River. (Lyall, in Herb. Mitt.) On rocks, Fraser Canyon, above Yale, B.C., 1875 (Macoun.)

22. Porella platyphylla, (L.)


23. Porella rivularis, (Nees.)

Hab.—On trees, along the Fraser River, 1872. (Macoun, Hb. Aust.)


Hab.—On rocks, Nanaimo River, Vancouver Island, 26th April, 1887 (59). On rocks, Cedar Hill, V.I., 9th May, 1887 (18). (Macoun.)


Mount Benson alt. 3,000 ft., Vancouver Island, 8th June, 1887 (77). (Macoun.)


Hab.—On old logs, Comox, Vancouver Island, 29th April, 1887 (73). (Macoun.) Vancouver Island, 1875. (Macoun, Herb. Aust.)

Obs.—Having met with perianths of this beautiful species I have no hesitation in referring it to Ptilidium.

Hab.—On logs, Gaspé, Q., 10th August, 1882. *(Macoun.)*


Hab.—Miquelon Island. *(Delamare.)*

31. *Trichocolea tomentella*, (Ehrh.) Dum.

Hab.—Miquelon Island. *(Delamare.)* Common in tamarack swamps, Ontario. *(Macoun.)*


Hab.—On rotten wood, Vancouver Island, 1885 (164). *(Dawson.)* On earth, at Comox, V.I., May, 1887 (39). *(Macoun.)* Alaska. *(Krause.)* British Columbia. *(Lyall,)* as *Mastigobrium ambiguum* by Mitten. *(Bazzania ambiguia Lindenh. according to Austin, is to be referred to this species "Steph." Hedwigia, 1886.)*


34. **Bazzania denudata**, (Torrey.) B. Gray.

Hab.—Miquelon Island. (Delamare.) This species is also referred to *Bazzania deflexa* N., by Austin. (Aust. Hep. Bor. Amer., p. 20.)

35. **Cephalozia (Eucephalozia) catenulata**, (Haben.)


36. **Cephalozia (Eucephalozia) multiflora**, Spruce.


Hab.—On rotten wood, Ottawa, 1884 (70). On earth and rocks, Ottawa, 1884 (80). On Sphagnum, close to the snow, Rocky Mountains; alt. 7,500 ft., July 22, 1885 (151). On old logs, Nanaimo, Vancouver Island, 6th June, 1887 (47). (Macoun.)

Obs. Dr. Spruce in his admirable monograph, "On Cephalozia," surmises that his *Cepha. crassiflora* may be the same as Austin's *C. pleniceps*, and from the examination of a number of specimens, I arrive at the opinion that they are the same species.

38. **Cephalozia (Eucephalozia) bicuspidata**, (L.) Dum.


39. **Cephalozia (Eucephalozia) Lammersiana**, (Haben.) S.

Hab.—On rotten logs, Selkirk Mountains, B.C., July, 1885 (153). (Macoun.)
40. **Cephalozia (Eucephalozia) extensa**, (Tayl.) Spruce.

Hab.—On rotten wood and earth, Comox, Vancouver Island, April, May, 1887 (5, 33, 37, 38, 42, 44, 45, 46, 48, 53, 55, 58, 61, 65, 69, 71, 74).

41. **Cephalozia (Eucephalozia) curvifolia**, (Dicks.) Dam.

Hab.—On logs, Belleville, 1882 (230a). On rotten wood, Ste. Anne's River, Gaspé, 22nd August, 1882 (32), *cum per.* On rotten wood, Ottawa, 1885 (134). (Macoun.)

42. **Cephalozia (Eucephalozia) fluitans**, (Nees.) Spruce.

Hab.—Salt Lake, Anticosti, 1883 (118). (Macoun.) Canada as Cephalozia Francisci var. *fluitans*, (Austin), Miquelon Island (Delamare), as Jumonvilia *fluitans*, Lindb., and new to America (1887), it is the Cephalozia obtusiloba of Lindb., and is recorded as Cephalozia Francisci var. *fluitans*, by Underwood. "Cat. North Amer. Hep. p. 96, 1883."

43. **Cephalozia (Odontoschisma) Sphagni**, (Dicks.) Spruce.

Hab.—Miquelon Island. (Delamare.) On logs, at Belleville, Ont. (Macoun.)

44. **Cephalozia (Odontoschisma) denudata**, (Mart.) Spruce.

Hab.—Ottawa, 1883 (245). (Macoun.) Miquelon Island. (Delamare.)


Hab.—On damp ground north shore of Lake Superior, Canada. (Macoun.)

Obs.—As Dr. Spruce unites Odontoschisma with Cephalozia, and there is a Cephalozia Macounii, I have, with Mr. Macoun's approval, attached the name of the late C. F. Austin to it, as suggested by Dr. Spruce.

46. **Cephalozia (Cephaloziella) divaricata**, (Sm.) Dum.


"*Dioica* caespitosa eflagellifera; *caule* tenue pellucido flexuoso radicelloso erebinius ramoso. *Folia* viridia, contigua vel subimbricata, late patentia euneata parum complicato-carinata, ad vel paulo ultra ½ bifida, sinu lato obtuso lunato, lobis patulis subdivergentibus late subulatis (basi 2-4 cell, latis) pro more acutis; *cellulis* parvis sub-quadritatis subpellucidis. *Foliola O. Bracteae* 2-3 juga tristichae appressae libere vel subconicatae, vix ad ½ usque 2-3 lobe irregulariter spinulose. *Perianthia parenula* albida leptoderma, obovato-vel-ovato-fusiformia, obtusa trigona, ore subconstricto setuloso ciliatove. *Andraecia* caulis ramis apicem mediumve tenentia.

Measurements—F. .15 x .10, per .75 x .25 mm." R. Spruce, "On Cephalozia," p. 68.

Hab.—On rotting wood, near Belleville, Ont., 1865, 1867, 1870. (*Macoun.*)

48. **Cephalozia (Cephaloziella) Sullivantii**, (Aust.) Spruce.

(9. *diricirata* Sulliv. Muse. Allegh. 239; on rotten wood in Canada) "quoad habitum et minutiam *C. microme* nostre persimilis, et cellulis antem premiunatis et perianthiis ore hand 6-laciniatis longe aliena *Cephaloziella* vera videretur *C. Macounii* affinis sed longe minor et stipulifera mihi tamen solum e specimenbus mancis male cognita."


Hab.—On rotten elm logs, in swamps at Belleville, Ont. (*Macoun.*)

49. **Cephalozia (Prionolobus) minima**, Austin MSS.

Dioicae, acerocarpos, green, eflagelliferous, minute. Stems thick, short, simple, capitate, 5 cells in diameter, cortical cells 10-15-seriate. Leaves obovate, broadly ovate or sub-quadrate, sub-carinate, margin quite entire, upper leaves larger, crowded, bifid to ½, segments acute or acutate, broad or narrow. Cells 4-6 sided, very minute, (016 mm.), trigones wanting, walls moderately thick. Underleaves everywhere present, lower ones entire, broadly subulate; upper larger, bifid, segments subulate. Bracts 3 pairs, larger than the leaves, subquadrate, bilobed down to ½, spinulose-dentate with a large tooth near the base on each side; bracteoles similar, only smaller. Perianth oblong-oval, composed of a single layer of cells, mouth rather wide, sub-entire.

Male stems more slender, with the antheridia on short postical branches, antheridia 3-4, solitary, very small, roundish.
Obs.—Near *Cephalozia dentata*, (Raddi) but differs from it in the entire stem leaves, in addition to other characters.

Hab.—Grows on rotten wood and old logs, Belleville, Ont., 1868. (Macoun, *Hb. Austin*.)

Measurements—Stems 1-2 mm. long, .3 mm. diam., leaves .15 mm. long x .1 mm. broad, seg. .05 mm., .15 mm. long x .1 mm. broad; seg. .075 mm., .125 mm. long x .1 mm. broad, seg. .05 mm.; cells .0167 mm.; upper underleaves .1 mm. long x .06 mm. broad; seg. .05; innermost bract .25 mm. x .3 mm., seg. .125 mm., .225 mm. x .3 mm., seg. .1 mm.; 2nd bract .225 mm. x .175 mm., seg. .1 mm.; bracteole .175 mm. long x .175 mm. broad; seg. .125 mm., pistillidia .075 mm. x .03; antheridia .04 mm.

Description of Pl. VI.—Fig. 1. Plants nat. size. 2. Young stem x 35. 3-12. Leaves x 85. 13. Portion of leaf x 200. 14-16. Folioles magnified. 17. Upper foliole x 85. 18. Innermost bracts and bracteole x 85. 19. Innermost bract x 85. 20. 2nd bracts and bracteole x 85. 21. 2nd bracts x 85. 22. 3rd bracts x 85. 23. Pistillidia x 85. 24. Antheridia x 85.

50. *Cephalozia* (*Prionolobus*) *dentata*, (Raddi.)

Hab.—Galton Mountains, British Columbia. (*Lyall*.)

51. *Hygrobiella laxifolia*, (Hook.) *Spruce*. Var. *clavuligera*,


52. *Pleuroclada albescens*, (Hook.) *Spruce*.


53. *Pleuroclada islandica*, (Nees.)


54. *Anthelia julacea*, (Lighf.) *Dum*.


55. *Blepharostoma trichophyllum*, (L.) *Dum*.

29th July, 1885. On rocks, at Ottawa, 10th October, 1884 (68). (Macoun.) Cascade Mountains. (Lyall.) Miquelon Island. (Delamare.)

56. **Chandonanthus setiformis**, (Ehrh.) Mitt.


57. **Kantia trichomanis**, (L.) Gray.

Hab.—On earth or logs, Gaspé Coast, 2nd August, 1882 (24, 49). On earth in woods, Lake Nipissing, 29th May, 1884 (23). On rotten wood, Carlton Place, near Ottawa, 30th May, 1884 (22). On rotten logs, British Columbia (41). (Macoun.) Miquelon Island. (Delamare.)

58. **Geocalyx graveolens**, (Schrad.) Nees.


Hab.—Observatory Inlet, N. W. Coast of America. (Douglas.)


61. Scapania irrigua, Nees.


62. Scapania compacta, (Roth.) Var. grandis,

Hab.—Greenland (Curie et Breutel in *Hb. Flotov.*) (*Syn. Hep.* p. 64.)

63. Scapania nemorosa, (L.)

Hab.—On rocks, Mount Arrowsmith, Vancouver Island, 17th June, 1887 (94). (*Macoun.*) British Columbia. (*Lyall.*) Miquelon Island. (*Delmarce.*) Alaska. (*Krause.*)

64. Scapania undulata, (L.)

Hab.—Observatory Inlet. (*Herb. Torrey.*) On stones in brooks, 1869 (215). On boggy ground near a glacier, Selkirk Mountains, August 24th, 1885 (167). Mount Arrowsmith, Vancouver Island, 5,000 ft., 17th July, 1887 (95), (*Macoun.*) Rocky Mountains. (*Lyall.*) Miquelon Island. (*Delmarce.*)

65. Scapania uliginosa, Nees.


66. Scapania curta, (Mart.)

67. Scapania brevicaulis, Tayl.

Hab.—North America. (Drummond in Hb. Hook.)

68. Scapania glaucocephala, (Tayl.)


69. Scapania convexa, (Scop.)

Jungermania umbrosa, Schrad.

Hab.—On rotten wood, Mount Mark, Vancouver Island, 3,000 ft., 25th July, 1887, ♀ and ♂ cum per. (101). (Macoun.) Miquelon Island. (Delamar.)

Scapania subalpina, Ness. In a large tuft on rocks 20 miles north of Michipicoutin, 27th July, 1869 (31). (Macoun.) [Named thus by Austin, but appears to be a form between S. nemorosa and S. undulata.]

70. Diplrophyllum albicans, (L.) Dum.

Hab.—On earth, Pictou, Nova Scotia, 1883 (97a). On rocks, Mount Benson, Vancouver Island, 8th June, 1887 (91). On rocks, Mount Arrowsmith, V.I., 17th July, 1887 (96). (Macoun.) Rocky Mountains. (Bourgeau.) Fort Colville. (Lyall.) Miquelon Island. (Delamar.)

Obs.—This species, about the commonest in Europe, appears to be rare in America, as all the specimens that I have seen, except these recorded refer to Diplrophyllum texiform. It is at once recognized by the presence in the two lobes of a pseudo-nerve, which is often colorless, and consists of a series of from 4 to 6 elongated cells, a cross-section of the leaf shows the cells to be of equal diameter as the others, only with the outer walls thickened considerably.
Description of Pl. IX.—Fig. 1. Stem x 24 (97a). 2. Cross-section of leaf x 85 (France, Du Buysson). 3. Bract x 24 (France, Du Buysson). 4. Perianth x 24 (France, Du Buysson).

71. **Diplophyllum taxifolium**, (Wahlenb.)

Hab.—On rocks, St. Anne’s River, Gaspé, 20th August, 1882 (88). On moss, Pirat’s Cove, Strait of Canso, 1883 (99). (Macoun.) On rotten logs, Vancouver Island, 1885. (Dawson.) On rocks, Nanaimo River, V.I., 26th April, 1887 (60). (Macoun.)


Obs.—This has been usually considered as a variety of the previous species, but Prof. Lindberg regards it as quite distinct, with which opinion I agree; its neater habit, the direction of the postical lobe being more horizontal than in *Diplophyllum albicans*, and the absence of the false nerve, although traces of elongated cells near to the base are sometimes observable, sustain this view.

Description of Pl. IX.—Fig. 5. Fertile stem x 24 (88). 6. Bracts x 24 (88). 7. Perianth with bract x 24 (88).

72. **Diplophyllum minutum**, (Crantz.)


73. **Diplophyllum argenteum**, (Tayl. Hb.) Spruce.

“Folia transversa, superiografia equitantia, ad \( \frac{3}{4} \) complicato-biloba, lobis lanceolatiis euneiminatis, antico postico subequilongo sepium duplo angustior, margine grosse serrata, basi crenulata. Braehe 3-jugae, confertissimae, intimae subobtusae ad \( \frac{3}{4} \) 2-4-lobe laciniato-spinulose. Per. emersum ovato-fusiforme, ab ipsa basi obtuse 12-plicatum, ore in cilia numerosissima flexuosa intexta fissum, quasi-tomentosum.”

(Spruce Hep. Amaz. et And. page 417.)

Hab.—On rotten wood, Vancouver Island, 1885 (162). (Dawson.) N.W. coast of America. (Dr. Scouler in Herb. Taylor.) Observatory Inlet, (Dr. Scouler in Herb. Torrey.) N.W. coast of America. (Menzies, 1791 in Herb. R. Spruce.)

74. **Jungermania polita**, Nees.

Hab.—On earth, along the coast, Gaspé, 21st July, 1882 (170 pp.). (Macoun.)
75. Jungermania Groenlandica, Nees.
Greenland (Brentel et Curie in Hb. Flotoviano N. 2). (Syn. Hep. p. 114.)

76. Jungermania Kunzeana, Huben.
Hab.—Amongst mosses, Peace River, 1872 (194). On rotten wood, British Columbia, 1875, $6$ and $\varnothing$ cum per. (189). On rocks, Lake Nipigon, 17th July, 1884 (77). Peat bogs, Nipigon River, 3rd July, 1884 (73, 78). (Macoun.)


78. Jungermania saxicola, Schrad.

79. Jungermania Helleriana, Nees.
Hab.—Near Lake Superior, 1869 (217). On logs, Vancouver Island, 1875 (210). (Macoun.)

80. Lophocolea bidentata, (L.) Dum.
Hab.—Vancouver Island, 6th May, 1875 (33). On dead wood, Comox, V.I., 27th July, 1887 (75). (Macoun.)

81. Lophocolea heterophylla, (Schrad.)
Hab.—On rotten wood, Ottawa, 1884 (130). On rotten logs, Nipigon River, 6th July, 1884. (Macoun.) Canada. (Hb. Austin.) Fort Colville. (Lyall.) "The few fragments supposed to belong to this species in Lyall's collection are merely sufficient to indicate the presence of something very nearly allied if not identical." (Mitt.) Miquelon Island. (Delaware.)

82. Lophocolea minor, Nees.
Hab.—On rocks, Belleville, 1867 (201). British Columbia, 1875.
18

GEOLOGICAL SURVEY OF CANADA.

(240). Ottawa, 1883 (243). On rocks, near Ottawa, 1884 (29). (Macoun.)


Hab.—On rotten wood, Ottawa, 1883 (247). On rotten logs, Nipigon River, Ontario, July 6, 1884 (61). (Macoun.)


85. Harpanthus Flotowii, Nees.

Hab.—Greenland. (Syn. Hep. p. 170.) Rocky Mountains. (Bourgeau.)

86. Chiloscyphus polyanthus, (L.) Corda.

Hab.—On logs, at Truro, Nova Scotia, 13th June, 1883 (173). On dead wood, Comox, V.I., 29th April, 1887 (56, 70). On rocks in streams, Nanaimo, V.I., 3rd June, 1887 (79). (Macoun.) Near Fort Colville. (Lyall.) Miquelon Island. (Delamare.)

87. Chiloscyphus adscedens, Hook. and Wils.

Hab.—On rotten wood, Belleville, 1868 (207). (Macoun.) West of the Fraser River, B.C., June, 1875. (Hb. Austin.) Vancouver Island, 3rd May, 1887 (413). (Macoun.)

88. Mylia Taylori, (Hook.) Gray.

Hab.—On logs subject to inundation, Ste. Anne’s River, Gaspé, 16th August, 1882 (58). On logs and in swamps, Mount Albert, Gaspé, 26th August, 1882 (44), with perianths. On the summit of
Mount Albert, Gaspé, 27th August, 1882 (83). On dead wood and in
wet places, Pirate's Cove, Nova Scotia, 1883 (108, 109, 115). (Macoun.)
Hep. p. 82.) (Du Preaux in Hb. Mouc.) Cascade Mountains. (Lyall.)
Miquelon Island. (Delaware.)

89. Mylia anomala, (Hook.)

Hab.—Peace River. Rocky Mountains, 1872 (186). Peat bog,
Anticosti, 1883 (107), with perianths. (Macoun.)

90. Arnellia fennica, (Gray.) Lindb. (Jung. Fennica, Gottsb.)
Southyba fennica, Lindb., olim.)

Hab.—On rocks. Lake Manitoba, 1881 (182). On earth and logs,
Rocky Mountains, 23rd July, 1885 (156). (Macoun.)

Obs.—New to America. I add the following interesting note from
Dr. Spruce:—“Many thanks for the Canadian specimens of Southyba
fennica. It is one more link in the chain of facts that prove the essential
uniformity of the hepatic flora of the whole North Temperate
Zone. My friend, Alfred Wallace, has been on a lecturing tour in
America. I did not ask him to gather me any hepatics, but he has
sent me two; the one from the Sierra Nevada (alt. 9,000 ft.) is Jung.
ventricosa; the other, from the Rocky Mountains (alt. 14,000 ft.), is
Jung. barbata.” Both these are among the commonest European
species.

91. Plagiochila porelloides, (Torrey.) Lindeb.

Hab.—Vancouver Island, 1875 (5). Ste. Anne’s River, Gaspé,
August, 1882 (27, 55, 56, 57). On earth along brooks, Yarmouth, N.S.,
25th June, 1883 (189). On stones along brooks, Belleville, 16th June,
1884 (94). On overflowed ground, Sudbury Junction, 28th May,
1884 (95). On rocks, Dog Island, Lake Nipigon, 17th July, 1884 (96).
On earth near water, Vancouver Island, April, May, 1887 (28, 34, 48,
57). (Macoun.)

Description of Pl. XI.—Fig. 1. Plant nat. size. 2. Branch x 11.
346. Leaves x 11. 7. Outer bract x 17. 8, 9. Bracts x 17. 10.
Perianth x 11 (all 57).

92. Plagiochila porelloides var. nodosa, (Plag. nodosa,
Lindeb.)

Hab.—North America. (Drummond Hb. Hook.) Mountain ravines,
Canada. (vide Austin.)
93. **Plagiochila asplenioides**, (L.)
   Hab.—Fort Colville.  (*Lyall in Herb. Mitt.*)

94. **Leptoscyphus interruptus**, (Nees.)  *Mitt.*

95. **Jungermania cordifolia**, Hook.

96. **Jungermania cordifolia**, var. **Vahliana**,
   **Jungermania tersa**, Nees.
   Hab.—Galton Mountains.  (*Lyall, fide Mitt.*)
   [I believe that this species is to be referred to **Jungermania cordifolia** (*Hook*) or to **Jungermania riparia** (*Taylor*), original specimens from Nees having been found to be both these.]

   Hab.—On wet earth, Vancouver Island, 3rd May, 1887 (40). On stones in brooks, V. 1., 19th May, 1887 (7), with perianths.  (*Macoun.*)  On stones in the Colville River, Fort Colville.  (*Lyall.*)

98. **Liochloena lanceolata**, Nees.
   Hab.—Mooyie River, British Columbia.  (*Lyall in Herb. Mitt.*)
   Miquelon Island.  (*Delamare.*)

99. **Cymnocolea inflata**, (Huds.)  *Dum.*

100. **Jungermania autumnalis**, De C.  (*Jungermania Schraderi, Mart.*)  (*Jungermania subapicalis*, Nees.)*
   Hab.—Lake Superior, 1863. On rotten wood, Ottawa, 1884 (185), *cum per.* On wet earth, Vancouver Island, 3rd May, 1887 (40a).


Obs.—This is a somewhat variable species, the commonest form in Canada being that described by Dr. Taylor as *Jungermania setulosa*; it is larger, less gemmiparous, with leaves more frequently tridentate than in the common European form.


103. **Jungermania lycopodioides**, Wallr.


Hab.—On rocks, common, Rocky Mountains, 29th July, 1885 (159). On rocks and earth, Morley, 14th June, 1885 (158). On earth, Nanaimo, Vancouver Island, 4th June, 1887 (89). On rocks, Mount Mark, Vancouver Island, 3,000 feet, 27th July, 1887 (76). (Macoun.)

Kettle Falls, Columbia River. (Lyall vide Mitt.)

105. Jungermania Floerkii, var. alpina.

Hab.—On earth, Rocky Mountains, 7,000 feet, 20th July, 1885 (155). (Macoun.)

Obs.—In this form the basal postical teeth entirely disappear, or only a single tooth is apparent; the underleaves are built with one or rarely, two teeth at each side of the base; its nearest ally is Jun. Kunzeana Huben.

106. Jungermania Floerkii, var.

Hab.—Greenland. (Carrie.) (Syn. Hep. 124.)


(Macoun.)

111. **Jungermania capitata**, Hook.

Hab.—On rotten wood, British Columbia, 1875 (238), *cum per.* On rotten wood, Selkirk Mountains, B.C., 21st August, 1881 (161).

(Macoun.)

112. **Jungermania bicrenata**, Lindenb.

Hab.—On earth, Lake Nipissing, 29th May, 1884 (82). (Macoun.)


Hab.—On stones in brooks, Lake Superior, 1869 (215). On earth, Mount Mark, Vancouver Island, 26th July, 1887 (107). (Macoun.)

114. **Jungermania ventricosa**, Dicks.


(Macoun.)

116. **Jungermania ventricosa**, Dicks. var. **longiflora**, Nees?

Hab.—On logs in woods, Gaspé, 8th August, 1882 (28). (Macoun.)

117. **Jungermania ventricosa**, Dicks. var.

Hab.—On rocks, Vancouver Island, 9th May, 1887 (21). (Macoun.)
118. **Jungermania Müller**, Nees.
   Hab.—On earth, along the Gaspé Coast, 21st Aug., 1882 (170 pp.).
   (Macoun.) Miquelon Island. (Delitmare.)

119. **Jungermania Müller**, Nees. var. maritima.
   Hab.—File Hills, near Qu’Appelle, July, 1879 (116). On earth, along
   the Gaspé Coast, 8th August, 1882 (53). (Macoun.)

120. **Jungermania Vahlana**, Nees.
   "Caule radiculoso, inter muscos repente, stolonifero apice adscendente;
   foliis conflertis, flavo-fuscis, ovato-quadratis, erecto-patulis sub-
   complicatisque v. patenti-dulcis subsquarrosis ad medium usque bilobis
   v. rarius trilobis, lobis ovatis obtusis (permatocystidias interdum apice
   subhirtis et irregulariter dentatis), prope basin dorsalem subde-
   currentem dente v. lobulo dentiformi ornatis; amphigastriis majoribus
   versiformibus, aliiis simplicioribus indivisis, ovato-lanceolatis, utrunque
   basin versus dente linearis acutis (in gemmis), aliiis bifidis, profunde
   bipartitis, lobis lanceolato-acuminatis, basi uno alterove dente armatis
   (in caulibus); fructification ignota. Gottsche in litt.; N. v. Es. in
   mser. Specimina depicta in simo Baals Revier Greenlandiae leg. bent.
   Dr. J. Vahl."—Lindeberg, S. O. *Revisio critica Iconum in opere Flora
   Danica muscorum illustrantium* (Acta Socient. Fennicae, X, Helsingfors

121. **Jungermania anacamptia**, Tayl. (Jung. Michauxii. tide
   *Mitt.*)
   Hab.—North America. (Drummond, Hb. Hook.)

122. **Jungermania colpodes**, Tayl.
   Hab.—North America. (Drummond, Hb. Hook.)

123. **Jungermania crenulata**, Sm.
   (Macoun.) Greenland. (Vahl.) (Syn. Hep. p. 674.)

124. **Nardia compressa**, (Hook.) Gray.
   Hab.—Greenland. (Vahl.) (Syn. Hep. p. 12.)

125. **Nardia scalaris**, (Schrad.)
   Hab.—On earth, Nanaimo, Vancouver Island, 6th June, 1887 (83).
   (Macoun.)
LIST OF CANADIAN HEPATICÆ.

Obs.—First record for America of this somewhat common European species.

126. Marsupella emarginata, (Ehrh.). Dum
   Hab.—Mount Benson, Vancouver Island, 3000 feet altitude, 8th June, 1887 (46). Mount Mark, Vancouver Island, 3000 feet altitude, 26th July, 1887 (106). (Macoun.) Miquelon Island. (Delamare.)

127. Marsupella emarginata, (Ehrh.) var.
   Hab.—Mount Benson, Vancouver Island, 8th June, 1887 (90). On earth, Nanaimo, Vancouver Island, 4th June, 1887 (88). (Macoun.)

128.—Marsupella emarginata, Var. aquatica.

129.—Marsupella sphaceiata, (Gieseeke.)
   Hab.—On rocks, Yarmouth, Nova Scotia, 1883 (121). (Macoun.) Greenland. (Vahl.) (Syn. Hep. p. 7.) Alaska. (Krause.) Miquelon Island. (Delamare.)

130.—Marsupella sparsifolia, (Lindb.)
   Hab.—On wet rocks, Nanaimo, Vancouver Island, (78). Mount Arrowsmith, Vancouver Island, 4800 feet altitude (103). (Macoun.)
   Obs.—First record for America.

131. Cesia corallioides, (Nees.) Gray.
   Hab.—Alaska. (Krause.)

132. Cesia obtusa, Lindb.
   Hab.—Near Frederickshaab, Greenland. (Vahl.)

133. Cesia concinnata, (Dick.)
   Hab.—Mount Benson, Vancouver Island, 3rd June, 1887 (45). Mount Mark, Vancouver Island, 3,000 ft. altitude (92). (Macoun.) Alaska. (Krause.)

134. Fossombronia longiseta, Aust.
   Hab.—On earth, Vancouver Island, 9th May, 1887 (26). (Macoun.)

135. Fossombronia pusilla, (L.) Radd.?
These specimens are imperfect and destitute of spores; they all agree in having the strong smell of pusilla, to which I doubtfully refer them.

Hab.—Portage la Loche (Methy Portage), lat. 57°, 1875.  

Hab.—On earth, Gaspé Coast, August, 1882 (1 and 2).  

138. **Pellia endiviaezaolia**, (Dick.) Radd.  
Hab.—On earth in ditches, Nanaimo, Vancouver Island, 2nd June, 1887 (80).  

139. **Pellia epiphylla**, (L.)  
Hab.—Miquelon Island.  

140. **Aneura latifrons**, (Lindb.)  
Hab.—Anticosti, 1883 (117.) On rotten wood, Comox, Vancouver Island, 29th April, 1887 (62, 63 and 64). On rotten wood, Nanaimo, Vancouver Island, 3rd June, 1887 (81).  

141. **Aneura sessilis**, (Sprengel.) Dum.  
Hab.—On moss and earth, Carleton Place, near Ottawa, 30th May, 1884 (6).  

142. **Aneura pinguis**, (L.) Dum.  
Hab.—Amongst mosses in peat swamps, Ont., 1874 (222). On moss, St. Mary’s River, Anticosti (112). On sticks in pools, Vancouver Island, 1887 (30).  

143. **Aneura palmata**, (Hedw.)  
Hab.—On rotten stumps, at Belleville, 17th Sept., 1874 (221). Ottawa, 1883 (235 and 236). On old logs, Vancouver Island, 20th May, 1887 (9).  

144. **Aneura multifida**, (L.) var. **ambrosioides**.  
Hab.—On earth in pools, Vancouver Island, 3rd May, 1887 (29).
145. **Metzgeria pubescens**, (Schrank.) Radd.

Hab.—On boulders, Rocky Mountains, 5,000 ft. alt., 29th July, 1885 (137). (Macoun.) British Columbia. (Lyall.) Alaska. (Krause.)

146. **Metzgeria myriopoda**, Lindb.

Hab.—On rocks, near Ottawa, 1885 (129). (Macoun.)

147. **Metzgeria conjugata**, Lindb.

Hab.—Ottawa, 1883 (241). (Macoun.) At the base of trees, Vancouver Island, 1885 (138). (Dawson.) On earth, along a river at Comox, V.I., (35, 50). (Macoun.)

148. **Marchantia polymorpha**, (L.)

Hab.—On earth in swamp, Gaspé, 1882 (3). On earth, Vancouver Island, 29th May, 1887 (1). (Macoun.) Saskatchewan and Rocky Mountains. (Bourgeau.) Fort Colville and Sinkynakwateen. (Lyall.) Alaska. (Krause.)

149. **Fimbriaria violacea**, Aust.

Hab.—On wet soil, Selkirk Mountains, 2nd August, 1885 (131). (Macoun.)

150. **Fimbriaria pilosa**, (Wahlenb.) Tayl.

Hab.—On the upper slopes of the Rocky Mountains, 21st July, 1885 (133). On earth, at Comox, Vancouver Island, 29th April, 1887 (72); British Columbia. (Macoun.) Greenland. (Vahl.) (Syn. Hep. 558.)

151. **Fimbriaria tenella**, Nees.

Hab.—On earth, Vancouver Island, 9th May, 1887 (23). (Macoun.)

152. **Clevea hyalina**, (Somm. Lindb.

Hab.—On earth, near a glacier, Selkirk Mountains, 5000 feet, 21st Aug., 1885 (135). Rocky Mountains, 7500 feet, 21st July, 1885 (132). (Macoun.) Rittenh. Greenland (1265). (J. Vahl.)


Hab.—Marshes, at Belleville, 7th August, 1873 (218). (Macoun.)


On mud at Belleville, 1870 (220), 1871 (219).
   Hab.—In a lake, Vancouver Island, 27th May, 1887 (3). (Macoun.)
   Canada, fide Underwood.

156. Riccia lutescens, (Schwein.)
   Hab.—Canada, fide Underwood.

157. Anthoceros laevis, (L.)
   Hab.—Canada, fide Underwood.

158. Anthoceros punctatus, (L.)
   Hab.—Canada, fide Underwood. Leamy’s Lake, near Ottawa, Ont., 1889. (Macoun.)

159. Anthoceras laciniatus, (Schwein.)
   Hab.—Canada, vide Austin. (Bull. Torrey Bot., vol. VI., April, 1875.)

160. Anthoceros fusiformis, Aust.
   Hab.—On earth, Vancouver Island, 1885 (136). (Dawson.) On damp earth, V.I., 27th May, 1887 (2). Roadside, Nanaimo, V.I., 9th July, 1887 (97). (Macoun.) Observatory Islet. (Seoul, vide Austin.)

161. Notothylias orbicularis, (Schwein.) Sulliv.
   Hab.—Canada, vide Underwood.

162. Duvalia rupestris, (Nees.)
   Hab.—Calcareous or slaty rocks, Belleville, Ontario. (Macoun.)

163. Reboulia hemisphaerica, (L.) Radd.
   Hab.—Canada to Hudson Bay, vide Underwood.

164. Preissia commutata, Nees.
   Hab.—On calcareous earth, Gaspé Coast, 10th Aug., 1882 (4). (Macoun.) Alaska. (Krause.)

   Hab.—On earth, by brooks near Ottawa, 1884, (5) On earth at Ottawa, 15th May, 1885 (171). (Macoun.) British Columbia, near Fort Colville. (Lyall.) Alaska. (Krause.)
Frullania Selwyniana.
Frullania Eboracensis.
Frullania Nisquallensis.
Radula spicata.
Lejeunea Biddlecomiae
Cephalozia minima
Scapania Bolanderi
Scapania glaucocephala.
Diplophyllum albicans.

Diplophyllum taxifolium.
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