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THE CRYPTOGAMIC FLORA OF OTTAWA.

BY PROF. JOHN MACOUN, M.A., F.L.S., F.R.S.C.

Continued from October No.

71. **B. pomiformis**, Hedw.

Crevices of damp and dripping rocks near Gilmour's Mill, Chelsea, Que. ; collected on damp limestone ledges on the cliffs facing Gatineau Point, Rockcliffe Park, April 22nd, 1896. Fruiting.

XXV. PHILONOTIS, Brid.

72. **P. fontana**, Brid.

By springs at Kingsmere, and Kirk's Ferry, Que.

XXVI. LEPTOBRYUM, Schimp.

73. **L. pyriforme**, Schimp.

Rather common on burnt soil in swamps and along ditches. Casselman and Carleton Place ; border of Dow's Swamp, Oct. 12th, 1884.

XXVII. WEBERA, Hedw.

74. **W. nutans**, Hedw.

On rotten logs and stumps in swamps and wet woods ; common. Dow's Swamp, Kingsmere and Casselman ; common in McKay's Bush ; collected on old logs in Beechwood Cemetery, May 12th, 1896. Fruiting. Mer Bleue June 15th, 1892.

75. **W. albicans**, Schimp.

On wet limestone rocks under the cliffs at the end of the Electric Road, Rockcliffe Park. Nov. 9th, 1896.

XXVIII. BRYUM, Dill.

76. **B. pendulum**, Schimp.

On wet earth at Ottawa ; woods north of Beechwood Cemetery, October 20th, 1884.

77. **B. bimum**, Schreb.

Common in wet woods and swamps. Borders of the Mer Bleue, June 15th, 1892.

78. **B. intermedium**, Brid.

Crevices of damp rocks and old walls. In the old quarry in Rockcliffe Park and along the cliffs by the Ottawa. May 12th, 1896.

79. **B. argenteum**, Linn.

Very common on roadsides and on desiccated soil in old pastures and waste places. On earth along St. Louis Dam, October 24th, 1884.

80. **B. cæspiticiu**m, Linn.

On earth in pasture fields and open thickets ; open places in Rockcliffe Park, May 7th, 1896 ; in old pastures near Hintonburg, Oct. 4th, 1884.

81. **B. capillare**, Linn. Var. **heteroneuron**, C. M. & Kindb.

On roots of trees in McKay's Bush near the lake, May 24th, 1888.

82. **B. Duvalii**, Voit.

In ditches and on wet rocks. In a springy place at the end of the Electric Railway, Rockcliffe Park.

83. **B. pseudo-triquetrum**, Schwæger.

In wet woods and swamps. Swamp north of Beechwood Cemetery ; also in Dow's Swamp.

84. **B. Ontariense** Kindb.

Intermediate between *B. roseum* and *B. Beyrichii* (Hsch.), C. Mueller. Comal leaves very numerous ; lingulate, abruptly and short acuminate, revolute to $\frac{2}{3}$ or $\frac{3}{4}$, yellow-margined above with great confluent teeth ; costa stout, excurrent. Capsule pale, with a distinct, curved collum half as long, teeth papillose and hyaline above ; archegonia numerous ; lid convex short-apiculate, not oblique.

Hitherto confounded with *B. roseum*, and quite common throughout Ontario ; generally in a barren state. On old logs and sometimes on limestone rocks in maple woods around Ottawa. Beechwood Cemetery, Rockcliffe Park, Carleton Place and Eastman's Springs ; on logs in Dow's Swamp, October 10th, 1889.

85. **B. Laweri**, Ren. and Cardt.

On rocks opposite the island in the Gatineau River, Gilmour's Park, Chelsea, Que., Sept. 9th, 1889.

XXIX. MNIUM, Linn.

86. *M. cuspidatum*, Hedw.

Quite common on earth at the roots of trees in dry woods. On earth in woods Patterson's Creek, Stewart's Bush, Carleton Place, and Beechwood Cemetery ; on earth in Rockcliffe Park, April 28th, 1896.

87. *M. rostratum*, Schwægr.

On a large boulder on "Pine Hill," Rockcliffe Park, April 16th, 1896. Barren.

88. *M. Drummondii*, Br. and Sch.

In damp or swampy woods, near High Rock, Lièvre River, above Buckingham, Que., May 19th, 1884.

89. *M. affine*, Bland.

On earth in swamps and along brooks. On roots of trees along the brook west of West End Park, October 10th, 1884.

90. *M. rugicum*, Laur.

Rather common, growing in the wettest part of Dow's Swamp. Sept. 16th, 1889.

91. *M. orthorrhynchum*, Br. and Sch.

On damp limestone rocks near McKay's Lake, Aug. 26th and Oct. 12th, 1889.

92. *M. pseudo-lycopodiodes*, C. Muell.

On the bases of trees in cedar and black ash swamps. In Dow's Swamp and at Casselman ; in the swamp north of Beechwood Cemetery, May 7th, 1896. Fruiting ; on rocks in a brook, Meeche's Lake, near Chelsea, Que., Sept. 23rd, 1893.

93. *M. inclinatum*, Lindb.

On old stumps in Dow's Swamp ; on damp limestone rocks along McKay's Lake, April 22nd, 1896 ; old fruit. Old stumps in Dow's Swamp, Sept. 16th, 1889.

94. *M. spinulosum*, Br. and Sch.

On earth at the bases of trees, chiefly hemlocks. Wet woods north of Beechwood Cemetery ; woods near Carleton Place ; on the bank of the Lièvre River at Buckingham, Que., May 14th, 1896. Fruiting.

95. *M. stellare*, Hedw.

On old stumps in cedar swamps. In Dow's Swamp, May 2nd, 1896. Old fruit.

96. **M. punctatum**, Hedw.

On earth in cedar swamps and along small brooks in woods. In Dow's Swamp ; also by a brook near Meeche's Lake, north of Chelsea, Que., Sept. 23rd, 1893.

XXX. AULACOMNIUM, Schwægr.

97. **A. palustre**, Schw.

Very common in swamps. Mer Bleue and at Casselman.

XXXI. TIMMIA, Hedw.

98. **T. megapolitina**, Hedw.

On roots of trees by brooks in wet woods and on wet rocks. On roots of trees in Dow's Swamp, May 2nd, 1896, by a brook west of West End Park ; and on wet rocks south end of McKay's Lake, Oct. 16th, 1884.

XXXII. ATRICHUM, Beauv.

99. **A. undulatum**, Beauv.

On damp sandy earth in cool woods and wet sandy pastures. Common in McKay's Woods, Beechwood Cemetery, Mer Bleue and Casselman ; woods rear of Cowley's Farm, Hintonburg, April 18th, 1896. Fruit old.

XXXIII. POGONATUM, Beauv.

100. **P. brevicaule**, Beauv.

Along a ditch cut along the road leading through West Casselman. May 12th, 1891.

101. **P. alpinum**, Röehl.

On damp sandy slopes and amongst rocks east side of Rideau River, near Hog's Back, May 7th, 1897.

XXXIV. POLYTRICHUM, Linn.

102. **P. gracile**, Menz.

Not uncommon in the Mer Bleue, near Eastman's Springs, June 15th, 1891.

103. **P. Ohioense**, Ren. and Card.

On earth in woods near Casselman, east of the Nation River. May 16th, 1891.

104. **P. juniperinum**, Willd.

In old pastures and on old pine stumps in fields and by roadsides ; quite common. At the base of stumps north of Beechwood Cemetery, May 12th 1896.

105. **P. commune**, Linn. Var. **Canadense**, Kindb.

Differs principally in the low stem, about 6-8 cm. high, the pedicel not much longer, the blackish capsule much shorter than in the type which probably is very rare in Canada and only once examined by Kindberg.

In wet places at Britannia, Oct. 11th, 1892 ; also in hollows in the pine woods by the lake, east of Aylmer, Que., Sept. 11th, 1892 ; wet pastures at Casselman, June 12th, 1892.

XXXV. BUXBAUMIA, Hall.

106. **B. aphylla**, Linn.

On rocks at Chelsea, eight miles from Ottawa, Que. (Dr. Fletcher.)

XXXVI. FONTINALIS, Dill.

107. **F. antipyretica**, Linn.

On stones in the brook running through the Beaver Meadow west of Hull.

XXXVIII. DICHELYMA, Myrin.

108. **D. pallescens**, Bruch and Schimp.

On the bases of trees and twigs in water-holes near St. Patrick's Bridge ; also very abundantly in the woods subject to spring floods around Leamy's Lake, Hull, Que., Nov. 9th, 1896. Fruiting.

XXXIX. NECKERA, Hedw.

109. **N. pennata**, Hedw.

Quite common on trunks in swamps or wet woods around Ottawa. On trunks north of Beechwood Cemetery, also in Dow's Swamp ; on trunks "Pine Hill," Rockcliffe Park, April 16th, 1896.

110. **N. oligocarpa**, Bruch and Schimp.

On ledges of limestone rocks opposite Gatineau Point, Rockcliffe Park, May 7th, 1896.

XL. LEUCODON, Schwægr.

111. **L. sciuroides**, Schwægr.

Common on trunks in all old woods. Dow's Swamp, Carleton Place, Eastman's Springs and Casselman ; in McKay's Woods, May 7th, 1896. Barren.

XLI. HOMALIA, Brid.

112. **H. Macounii**, C. M. and Kindb.

H. trichomanoides, Lesq. and James Mosses of N. America, 245. Very nearly allied to *Homalia trichomanoides*; differs in the leaves being longer, rather lingulate, the lowest basal cells yellow, the perichetial leaves more suddenly narrowed to the very short acumen, the segments of the peristome cleft between the articulations.

On the bases of trees on the south end of Cowley's Farm, west of Hintonburg; on limestone rocks east end of McKay's Lake; on the cliffs facing Gatineau Point, Rockcliffe Park, May 7th, 1896.

XLII. MYURELLA, Bruch and Schimp

113. **M. julacea**, Bruch and Schimp.

On old stumps in cedar swamps. In the swamp north of the Experimental Farm; also in Dow's Swamp.

114. **M. Careyana**, Sulliv.

On ledges of limestone rocks, east of the creek in the Beaver Meadow west of Hull, Que.; crevices of wet limestone rocks at the north end of Rockcliffe Park near the old mill, May 7th, 1896; on rocks at Meeche's Lake, Sept. 23rd, 1893.

XLIII. LESKEA, Hedw.

115. **L. polycarpa**, Ehrh.

Very abundant on the bases of trees in the inundated flats between Leamy's Lake and the mouth of the Gatineau River. Nov. 9th, 1896.

116. **L. nervosa**, Myrin.

On trunks in McKay's woods; on boulders at the east end of Rockcliffe Park, near the old saw mill, May 7th, 1896; also at Carleton Place.

XLIV. ANOMODON, Hook. and Tayl.

117. **A. rostratus**, Schimp.

Very common on the roots of trees in swamps and on the faces of perpendicular, damp rocks. Seldom fruiting. On rocks in Rockcliffe Park, April 22nd, 1896.

118. **A. attenuatus**, Heuben.

Quite common on the bases of trees in black ash swamps and wet woods. Fruiting abundantly in the autumn. On trees in Rockcliffe Park, April 16th, 1896.

119. **A. obtusifolius**, Br. and Sch.

Abundant on the bases of trees in black ash swamps and wet woods around Ottawa. Fruiting in the autumn. On trunks south end of Cowley's Farm, near Hintonburg, April 18th, 1896.

120. **A. apiculatus**, Bruch and Schimp.

On decaying logs and flat limestone rocks in McKay's Woods, opposite the entrance to Beechwood Cemetery ; on limestone rocks, Rockcliffe Park, April 22nd, 1896.

121. **A. viticulosus**, Hook. and Tayl.

Very common on limestone rocks near McKay's Lake and along the Ottawa west of Hull, and on damp ledges in woods along the Beaver Meadow west of Hull, Que. ; on damp rocks facing the river, Rockcliffe Park, April 22nd, 1896.

122. **A. heteroideus**, Kindb.

Plants densely tufted, green, finally fuscous or blackish. Stem creeping, subpinnate, much branching and furnished with numerous small, flagelliform branchlets, densely beset with very small, oblong, obtuse and nerveless leaves ; paraphyllia broad. Stem-leaves subdistant, decurrent, appressed when dry, open-erect when moist, from a broadly ovate base suddenly narrowed to a long, subulate or sublinear acumen, entire, faintly papillose ; margins revolute at the base ; branch-leaves more attenuate ; cells round-oval, the marginal of the base quadrate ; costa vanishing below the acumen. Dioecious. Fruiting specimens not found. This species resembles *Leskea nervosa* in habit.

On flat limestone rocks and the roots of trees in McKay's Woods, opposite the entrance to Beechwood Cemetery ; on limestone rocks at Meeche's Lake, near Chelsea, Que., Sept. 23rd, 1893.

XLV. PLATYGYRIUM, Bruch and Schimp.

123. **P. repens**, Bruch and Schimp.

On old logs in woods at Eastman's Springs, Casselman and Carleton Place ; on old logs in woods north of Beechwood, May 7th, 1896.

Var. **orthoclados**, Kindb.

Branches elongate and not curved. All basal leave-cells orange. Segments linear, not completely free at base, smooth or denticulate at one side, not shorter than the teeth.

On old logs at the south end of Skead's Farm, west of Hintonburg, May 15th, 1885.

XLVI. PYLAISIA, Bruch and Schimp.

124. **P. polyantha**, Bruch and Schimp.

On rotten logs at Carleton Place ; on trees in McKay's Woods, Oct. 12th, 1884.

125. **P. Selwynii**, Kindb. Ott. Nat. II., 156.

Differs from *P. intricata* in the denser, darker green tufts, the leaves broader, short-acuminate, reflexed to the acumen at one border or at both, the short alar and marginal cells more numerous, the capsule short-oval, the segments adhering to two-thirds of the teeth.

Very abundant on old cedar fences along the Richmond Road, three miles west of Ottawa ; also on fences west of Hintonburg, April 18th, 1896. Mr. A. J. Grout reduces this species to *P. intricata*, and believes it to be merely a more compact form.

126. **P. intricata**, Bruch and Schimp.

Common on logs and trunks, in woods and on old cedar rails around Ottawa ; on fence rails and trunks and branches in Rockcliffe Park, April 28th, 1896.

127. **P. velutina**, Bruch and Schimp.

On old logs in Dow's Swamp, Sept. 25th, 1889.

XLVII. ENTODON, C. Mueller.

128. **E. acicularis**, C. M. and Kindb.

Tufts compact, brown-yellow or variegate with green. Stems much divided, very radiculose ; branches very short and turgid, not attenuate. Leaves imbricate, with difficulty loosed from the stem, scarcely open when moist, finally golden-yellow, from the ovate-oblong base suddenly narrowed to a fine aciculiform or subulate point, denticulate nearly all around ; cells not chlorophyllose, linear-lanceolate or fusiform, the alar not well defined ; costa generally wanting. Barren.

On limestone rocks in woods near McKay's Lake, May 2nd, 1885 ; also by an old lime-kiln at Britannia, Oct. 11th, 1890.

In a late revision of the genus Mr. A. J. Grout has reduced this species also to a form of the next.

129. **E. cladorrhizans**, (Hedw.)

On old logs in Rockcliffe Park and McKay's Woods, April 16th, 1896 ; on stones and logs at Britannia ; and very abundant on old logs in woods at Carleton Place. Fruiting abundantly in autumn.

XLVIII. CLIMACIUM, Web. and Mohr.

130. **C. Americanum**, Brid.

On the ground in swamps about wet woods around Ottawa. Seldom fruiting, but frequent in woods along the Beaver Meadow, Hull.

Que. ; on earth in the swamp north of Beechwood Cemetery, May, 1885.

131. **C. dendroides**, Web. and Mohr.

In a swamps on the east side of the Beaver Meadow west of Hull, near the north end, Oct. 24th, 1891. Fruiting abundantly.

XLIX. PTEROGONIUM, Swartz.

132. **P. brachypterum**, Mitten.

On a small maple trunk in a piece of woods along the west side of McKay's Lake. Fruiting. April 28th, 1896. This determination is doubtful.

L. THUIDIUM, Schimp.

133. **T. minutulum**, Bruch and Schimp.

On old logs in McKay's Woods ; also in woods at Ironsides ; on stumps and rocks, Rockcliffe Park, April 22nd, 1896.

134. **T. scitum**, Aust.

On beech trunks in McKay's Woods ; on beech trees on the south end of Cowley's Farm, west of Hintonburg, April 18th, 1896.

135. **T. gracile**, Bruch and Schimp.

On old logs in woods at King's Mountain, near Chelsea, Que. ; abundant on rotten logs at Leamy's Lake, near Hull, Que., Nov. 9th, 1896. Fruiting.

136. **T. recognitum**, (Hedw.) Lindb.

On old logs around the Mer Bleue ; in Dow's Swamp and in a swamp at Stittsville ; on rotten wood, "Pine Hill," Rockcliffe Park, April 16th, 1896.

137. **T. delicatulum**, Mitt.

On earth in the Mer Bleue and in the swamp north of Beechwood Cemetery ; on earth in Dow's Swamp, May 2nd, 1896.

138. **T. abietinum**, Bruch. and Schimp.

Quite common on exposed limestone rocks at Carleton Place ; also abundant around the cliffs of Rockcliffe Park. April 22nd, 1896. Always barren.

139. **T. Blandovii**, Bruch and Schimp.

In damp woods at Britannia ; in the Mer Bleue ; also on earth in Dow's Swamp.

LI. CAMPTOTHECIUM, Schimp.

140. **C. nitens**, Schimp.

Abundant in the Mer Bleue ; also in Dow's Swamp, June 4th, 1884.

LII. BRACHYTHECIUM, Schimp.

141. **B. laetum**, Brid.

A common species on stones in woods around Ottawa ; on boulders in woods at the south end of Cowley's Farm, west of Hintonburg, April 18th, 1896. Fruiting.

142. **B. digastrum**, C. M. and Kindb.

Tufts largely cohering, olive-green, not shining. Stem rigid, sub-pinnate or irregularly branching, radiculose below ; branches sub-julaceus, obtusate. Stem-leaves when dry loosely appressed or sub-imbricate, crowded, patent or subsecund when moist, decurrent, not auricled, plicate, biventrose, ovate and short-acuminate with the acumen flexuous or when dry serpentino-corrugate, borders more or less recurved but not reflexed, subentire or faintly denticulate above ; lower basal cells wide and sub-rhombic, the alar rather quadrate-rectangular and not very distinct, the upper confluent, small, very chlorophyllose, the inner median sublinear, the others oblong-lanceolate ; costa thick and subflexuous, long and vanishing near the acumen. Branch leaves ovate-oblong, more distinctly revolute at the borders, denticulate at the acumen and narrower areolate. Female flowers small, inner perichetial leaves filiform-acuminate with the acumen arcuate, long-costate and denticulate. Capsule asymmetric sub-cylindric, curved ; lid long-conic ; pedicel smooth 1-2 cm. long. Peristomial teeth conic-connivent when moist, dark red-brown below, very much longer than in the middle open segments ; cilia nodulose not appendiculate, annulus none. Monoecious.. Habit of *Leucodon julaceus*.

On rocks in McKay's Woods near south end of the lake, Oct. 12th, 1889. Fruiting.

143. **B. acuminatum**, (Beauv.)

On earth in McKay's Woods between the old entrance to Beechwood Cemetery and the lake ; also on logs at Carleton Place.

144. **B. salebrosum**, Bruch and Schimp.

On stones in damp woods north of Beechwood Cemetery, Oct. 16th, 1884 ; on stones at the rear of Cowley's Farm, west of Hintonburg, April 18th, 1896.

145. **B. acutum**, (Mitt.) Sulliv.

On earth in wet woods north of Beechwood Cemetery ; also in damp woods along the Beaver Meadow west of Hull, Que., Oct. 12th, 1891.

146. **B. platycladum**, C. M. and Kindb.

Tufts densely cohering, bright green, shining. Stem irregularly branching ; branches short, obtuse, complanate. Leaves loosely imbricate or patent, nearly flat, long-decurrent, distinctly auriculate, faintly striate, broad, ovate, suddenly and generally short-acuminate ; borders not recurved, faintly sinuate or sub-entire below the middle, more distinctly denticulate above ; cells pale, the upper narrow, the lower near the base dilated, the alar large and well defined ; costa short, reaching little above the middle. Capsule sub-oval, faintly curved ; teeth dark-yellow, entire at the borders ; cilia not appendiculate ; lid unknown ; pedicel rough, about 2 cm. long, or shorter. Perichetial leaves long, filiform-acuminate, the point arcuate. Dioecious.

Differs from *B. rutabulum* principally in the long-decurrent auricled leaves and the dioecious inflorescence ; from *B. rivulare* in the peristome, etc.

On stones in the bed and along the sides of a brook, north of the Parry Sound Railway, west of West End Park, May 21st. 1885.

Mr. F. A. Grout, of Columbia College, New York, who has just completed a monograph of *Brachythecium*, refers the above species to *B. rutabulum* (L.) var. *flavescens*, Brid.

147. **B. Donnellii**, Aust.

On limestone rocks in McKay's Woods, near the Lake, Sept. 25th, 1889.

148. **B. velutinum**, Bruch and Schimp.

On earth in Gilmour's Park, Chelsea, Que., Sept. 9th, 1889 ; on the bases of trees in Dow's Swamp, May 2nd, 1896.

149. **B. intricatum**, Hedw. (New to America.)

On rocks by a brook near Meeche's Lake, north of Chelsea, Que. Sept. 23rd, 1893.

150. **B. Starkii**, Bruch and Schimp.

On stones in the brook north of the Parry Sound Railway and west of West End Park ; on the bases of trees along the Beaver Meadow west of Hull, Que., Oct. 16th. 1884.

151. **B. œdipodium**, (Mitt.)

On old log's in woods Gilmour's Park, Chelsea, Que. Sept. 9th, 1889 ; on rocks in woods west of Hull, Que., Oct. 20th, 1891 ; on earth in Beechwood Cemetery, Oct. 12th, 1889.

152. **B. curtum**, Lindb.

On stones in damp places McKay's Woods, Oct. 12th, 188

153. **B. reflexum**, Bruch and Schimp.

On boulders along a brook near Meeche's Lake, north of Chelsea, Que., Sept. 23rd, 1893.

154. **B. rivulare**, Bruch and Schimp.

On stones and roots in springs north of Beechwood Cemetery, Oct. 12th, 1889.

155. **B. populeum**, Bruch and Schimp.

On rock's in Gilmour's Park, Chelsea, Que. Sept. 9th, 1889; on rocks in McKay's Woods, Oct. 12th, 1889; and on boulders "Pine Hill" Rockliffe Park, April 16th, 1896; on rocks at Meeche's Lake, north of Chelsea, Que. Sept. 23rd, 1893.

156. **B. plumosum**, Bruch and Schimp.

On boulders in McKay's Woods, May 28th, 1884; on rocks in woods, Meeche's Lake, north of Chelsea, Que. Sept. 23rd, 1893.

LIII. EURHYNCHIUM, Schimp.

157. **E. strigosum**, (Hoffm.) Bruch and Schimp.

On earth and stones in woods; common. In McKay's Woods; on earth in Dow's Swamp, May 2nd, 1896; on old logs in Beechwood Cemetery, Oct. 12th, 1889; on earth in woods at Meeche's Lake, Sept. 23rd, 1863.

158. **E. Novae-Angliæ**, (Lesq. and James.)

On old logs in woods at Meeche's Lake, Que. Sept. 23rd, 1893.

159. **E. Sullivantii**, (Spruce.) Lesq. and James.

On limestone rocks along the east side of the creek in the Beaver Meadow west of Hull, Que. May 16th, 1885.

160. **E. hians**, (Hedw.) Lesq. and James.

On earth in woods near McKay's Lake, Oct. 12th, 1889. This specimen is still doubtful.

LIV. RAPHIDOSTEGIUM, Lesq. and James.

161. **R. recurvans**, (Schwægr.) Lesq. and James.

Very common on the bases of leaning trees in woods. Beechwood Cemetery and McKay's Woods, April 28th, 1896; old woods at Carleton Place.

LV. RHYNCHOSTEGIUM, Schimp.

162. **R. deplanatum**, Schimp.

On flat limestone rocks in McKay's Woods, May 2nd, 1885; also on flat rocks and earth Carleton Place Sept. 26th, 1889; on earth in Beechwood Cemetery, Oct. 12th, 1884.



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