

from which I started, met with the first signs of the result of the described ice storm, many trees being denuded of their tops and branches, and numerous small trees being still in a bent position; but as higher ground was reached the trees were not broken or torn, showing that snow, and not rain, had fallen upon them, nor was there anything in the trees on the cross road between the upper part of the East River and the west branch of the St. Mary's, nor upon the head waters of the Liscomb River, which showed that the ice storm had there prevailed. My driver from Caledonia Settlement to St. Mary's informed me that he had been in the woods on the Lower Liscomb during this storm, lumbering, and he, as well as other men, were afraid to leave their camp in consequence of falling limbs rendering it dangerous to do so.

Returning up the east branch of the St. Mary's river the effects of the storm were strongly visible, a great number of trees having suffered from the weight of their unusual burden, large limbs of birches and other trees, some fully six inches in diameter, being broken off close to the stems. In this district small trees were bent to the earth by the weight of the ice, and the roads were for a day or two, or until the trees were cut off, impassable. On this branch of the St. Mary's after the storm, the scene when the sun shone on the ice-laden trees must have been exceedingly beautiful, particularly on the borders of the long lake through which St. Mary's River flows.

R. MORROW.

ART. X.—LICHENS OF NOVA SCOTIA. BY A. W. MACKAY, B.A.
B. SC., PRINCIPAL OF PICTOU ACADEMY.

(Read, May 9, 1881.)

LICHENOLOGY is the botanical field of romance, in it tales are told of beautiful blue and green algals under the tyrannous grasp and mastery of fungi which live upon them and cannot live without them. From the researches of DeBary, Famintzin, Baranetzky, Schmendener especially, Barnet and Reese, a lichen

appears to be a compound plant consisting of a parasitic fungus infesting, enveloping and modifying an algaoid host. The *fungus* is the dominant element, the *alga* is the omnipresent *gonidial layer* of the older lichenologists.

The reproductive system of the lichen is essentially fungoid ^{of the} *ascomycetous* group. The *gonidia*, on the other hand, have in many cases been shown to be a species of *algæ*; analytically, by freeing them from the investing fungi, when they develop into well known forms of *algæ*; synthetically, by sowing the spores of a lichen ~~fungus~~ on an appropriate species of *algæ*, when a genuine lichen-thallus is produced.

According to Schwendener, *Peltigera*, *Pannaria*, *Leptogium* and *Collema* are *ascomycetous* fungi parasitic on species of the *Nostocaceæ*; *Graphis* and *Verrucaria* on *Chroolepidæ*; *Uronea*, *Evernia*, *Physcia* and *Cladonia* on a species of *Parmellaceæ*.

Lichens are found everywhere, and they can be preserved in the Herbarium with the least possible trouble. These facts should be a great stimulus to collectors. Many of them can also be easily determined with nothing more than the assistance of an ordinary lens; although among the crustaceous and pustular species in particular, high powers are required to make out the characters of the reproductive organs upon which the classification is based.

In the following pages, I give, at the request of our honored President, simply, a list of species with the localities in which they have been observed. It will be seen that my work in this department has been nearly exclusively, as yet, confined to western Pictou. There are two or three doubtful species included and so marked, several others are withheld.

Lichens of Pictou, *et al.*, Nova Scotia. (Provisional list, arranged according to Tuckerman's *Genera Lichenum*.)

TRIB. I.—PARMELIACEI (*Fr.*, *Eschw.*) *Tuck.*

FAM. 1.—USNEEI, *Fr.*

GEN. I.—RAMAFINA, *Ach. DeNot.*

1. *R. calicaris*, *Fr.* Common on trees, old fences, &c., Pictou. Also, *var. fastigiata*, *Fr.* and *var. farinacea*, *F.*

2. *R. pusilla*, Poir. Not common on forest trees, Pictou.

GEN. II.—CETRARIA, Ach., Fr.

3. *C. ciliaris*, Ach. Common on old bark, P.
 4. *C. lacunosa*, Ach. Frequent on old hemlock bark, North Dalhousie. Pictou.

Var. Atlantica Tuck. Frequent on withered twigs of *Coniferæ*, Pictou.

5. *C. glauca* Ach. Common on old fence logs, &c., Pictou.
 6. *C. juniperina*, Ach. Rare. On twigs of some *coniferæ*,

GEN. III.—EVERNIA, Ach., Mann.

7. *E. prunastri* Ach. (?) Very rare. On dead wood, Pictou.

GEN. IV.—USNEA (Dill.) Ach.

8. *U. barbata*, Fr. Very abundant. On coniferous trees, etc.
var. florida, Fr. Common, Pictou.
var. dasypoga, Fr. Not uncommon, P.

GEN. V.—ALECTORIA, Ach., Nyl.

9. *A. jubata*, Fr. Common on dead dead wood, Pictou.
var. chalyheiformis, Ach. On fence logs, Pictou, common on portions of the Magdalen Islands.

FAM. 2.—PARMELISI.

GEN. VI.—THELOSCHISTES (Norm.) Tuck.

10. *T. parietinus* (L., Duff.) Nyl. Very common. On northern exposure of neglected wooden buildings, on fences, trees, &c. Pictou.

GEN. VII.—PARMELIA, Ach., De Not.

11. *P. perforata* Ach. On maple trees, Pictou.
 12. *P. perlata*, Ach, (?) On maple trees, North Dalhousie, Pictou.
 13. *P. tiliacea*, Ach. On trees, Pictou.
 14. *P. Borreri*, Ach. On spruce trees, Pictou and Truro.
 15. *P. Saxatilis*, Ach. Common on old fences, trees and rocks, Pictou.
 16. *P. Physodes*, Ach. Very common on trees, &c., Pictou.
 17. *P. caperata*, Ach. On old bark, on trees, Pictou.
 18. *P. conspersa*, Ach. On granite boulders, N. W. Arm, Halifax and Pictou.

19. *P. ambigua*, Ach. On trees, Pictou.

20. *P. olivacea*, Ach. Very common on bark of trees, Pictou.
GEN. VIII.—PHYSICIA (D.C.) Fr.) *Th. tr.*

21. *P. stellaris* (L.) Nyl. Common on trees and sometimes on rocks, Pictou. Also, *var. hispida*, Fr. On trees and rocks, Pictou.

22. *P. obscura*, (Eboh.) Nyl. On trees, North Dalhousie, Pictou; Truro.

FAM. 3.—UMBILICARIÆ.

GEN. IX.—UMBILICARIÆ (Hoffm.)

23. *U. pustulata*, Hoffm. On rocks. Bedford and North West Arm, Halifax.

24. *U. Dillenii*, Tuck. On rocks, North West Arm, Halifax.

25. *U. erosa*, Hoffm. On a granite boulder, Pictou.

26. *U. Michlenbergii*, Ach. On rocks, Bedford, N. W. A., Halifax.

FAM. 4.—PELTEGEREI.

GEN. X.—STICTA (Schreb.) Delis., Fr.

27. *S. crocata*, Ach. Rare. On elm trees in intervale, North Dalhousie, Pictou. Very pretty.

28. *S. pulmonaria*, Ach. Very common, on trees. Pictou.

29. *S. scrobiculata*, Ach. Not uncommon, on trunks of trees, Pictou.

30. *S. glomerulifera*, Delis. Frequent on maple trees, Pictou.

GEN. XI.—*Nephroma*, Ach.

31. *N. laevigatum*, Ach. With mosses on damp rocks, N. W. Arm, Halifax.

GEN. XII.—PELTIGERA (Willd., Hoffm.) Fee.

32. *P. aphthosa*, Hoffm. Common with mosses on shady moist banks in the wood. Pictou.

33. *P. canina*, Hoffm. Frequent; with the preceding. Pictou and Halifax.

34. *P. polydactyla*, Hoffm. Not rare. Found in situations similar to those of *aphthosa* and *canina*, Pictou.

FAM. 5.—PANNARIEI.

GEN. XIII.—PANNARIA (Del.) Tuck.)

35. *P. hypnorum*, Fr. On decaying mosses, North Dalhousie, Pictou.

36. *P. triptophyalla*, *ch.* (?) On bark of a maple tree, North Dalhousie, Pictou.

37. *P. brunnea* (*Sw.*) *Mass.* On the ground, Pictou.

FAM. 6.—COLLEMEI.

GEN. XIV.—COLLEMEI (*Hoffm.*), *Fa. Fe.*

38. *C. leptalium*, *Tuck.* On trees, North Dalhousie, Pictou.

39. *C. flaccidum*, *Ach.* On trees, Pictou.

40. *C. nigrescens* (*Huds*) *Ach.* On trees, North Dalhousie, Pictou.

GEN. XV.—LEPTOGIUM, *Fr. Nyl.*

41. *L. tremelloides*, *Fr.* On trees, North Dalhousie, Pictou ; N. W. Arm, Halifax.

42. *L. myochroum* (*Ehrh.*) *Schær.* *var. saturninum* (*Dicks*), *Tuck.* On trees, North Dalhousie, Pictou.

FAM. 7.—LECANOREI.

GEN. XVI.—PLACODIUM (*D.C.*) *Naeg & Kopp.*

43. *P. vitellinum.* (*Eboh.*) *Ach.* On granite boulders, Pictou.

44. *P. cerinum*, *Ach.* On trees, North Dalhousie, Pictou.

45. *P. aurantiacum* (*Lightf.*) Not uncommon on trunks of willows and poplars, North Dalhousie, Pictou ; and on old board fences, Pictou.

GEN. XVII.—LECANORA, *Ach.*

46. *L. rubina*, *Ach.* (?) On exposed dead wood, Pictou.

47. *L. pallescens*, *Fr.* On hemlock bark, Pictou.

48. *L. subfusca*, *Ach.* Very common. On bark of trees everywhere.

49. *L. Hageni*, *Ach.* On exposed and weathered bones, shore of Pictou Island. On calcareous boulders, Pictou.

50. *L. Pallida*, *Schær.* On bark of maple, North Dalhousie, Pictou ; common.

51. *L. varia*, *Fr.* On weathered wood and boulders, Pictou. Also, *var. polytropa.* *Fr.*

52. *L. albella*, *Ach.* On bark of maple, N. Dalhousie, Pictou.

53. *L. elatina*, *Ach.* On old bark, Pictou. Also, *var. oerophæa*, *Tuck.*

54. *L. cinerea*, (*L.*) On granite boulders, Pictou. Also *var. discreta*, *Fr.*

55. *L. cervina* (Pers.) Smf. On boulders, Pictou.
 GEN. XIX.—RINODINA. Mass. Stitz.
56. *R. sophodes* (Ach.), Mass. On bark of trees, North
 Dalhousie, Pictou. Also,
var. polyspora. (Th. Fr.) Pictou.
 GEN. XX.—PERTUSARIA, D. C.
57. *P. pertusa*, Ach. Common; on bark of trees, Pictou.
58. *P. leioplaca*, Ach. Not uncommon; on bark of trees,
 Pictou, Halifax.
59. *P. velata*, Turn. Common on bark of trees, Pictou.
 GEN. XXI.—CONOTREMA, Tuck.
60. *C. urceolatum*, Tuck. Not rare; on bark of trees (maple)
 Pictou.
 GEN. XXII.—THELOTREMA, (ACH.) Eschw.
61. *T. lepadinum*, Ach. On all bark of trees, N. Dal., Pic-
 tou.

TRIB. II. — Lecidiacei. (Fr.)

FAM. I.—CLADONIEI (Zenk., Kbr.) Th., Fr.

- GEN. XXIII.—STEREOCAULON, Schaer.
62. *S. tomentosum*, Fr. On boulders. P.
63. *S. corralloides*, Fr. On boulders. P.
64. *S. paschale*, Laur. Common; on rocks and boulders.
 Pictou.
65. *S. condensatum* (Laur). On granite boulders. P.
 GEN. XXIV.—CLADONIA, Hoffm.
66. *C. pyxidata*, Fr. On decaying wood. P.
67. *C. fimbriata*, Fr. On decaying wood. P.
var. radiata, Fr. Also.
68. *C. gracilis*, Fr. On decaying wood and vegetable mould,
 Pictou and Halifax.
69. *C. turgida*, Hoffm. On a ridge of gravel, called "Boar's
 Back," Pictou.
70. *C. furcata*, Flk. On the ground Pictou, Halifax.
71. *C. squamosa*, Hoffm. Very common; on decaying wood
 Pictou.
- Var cuspiticia*. Decaying wood. P.

72. *C. rangiferina*, Hoffm. Very common; on ground P., Hx.
Var. alpestris. Also, Pictou.
73. *C. uncialis*, Fr. On the ground N. W. Halifax.
74. *C. cornucopioides*, Fr. On decaying wood and mould, Pictou.
75. *C. macileuta*, Hoffm. On decaying wood, Pictou.
76. *C. cristatella*, Tuck. On decaying wood and vegetable mould; common.

FAM. 2.—LECIDEEL.

GEN. XXV.—BÆOMYCEE, *Fee*.

77. *B. roseus*, Pers. Very common; on barren ground, Pictou.
78. *B. byssoides*, Fr. On granite boulder in shade, N. Dal. and Pictou.
79. *Æruginosus*, Scop. On decaying wood in shade, Pictou.

GEN. XXVI.—BIATORA, *Fr.*

80. *B. decoloranzs*, Fr. On ground, N. Dal., Pictou.
81. *B. vernalis*, Fr. On calcareous boulders, Pictou.
82. *B. exigua* (Chaub), Fr. Common; on bark of trees, N. Dal. and P.

83. *B. atropurpurea*, Mass. On bark of trees, Pictou.

84. *B. rubella*, Fr. *Var schweinitzii*, Tuck. On bark of trees Pictou.

85. *B. umbrina*, Ach. On granite boulders, Pictou.

86. *B. chlorantha*, Tuck. On hemlock bark, N. Dal., P.

GEN. XXVII.—HETEROTHECIUM (H). *Tuck.*

87. *H. pezzizoideum*, (Ach.) H. On birch and hemlock bark, N. Dal., P.

88. *H. grossum* (Pers). *Tuck.* On bark of trees, Pictou.

GEN. XXVIII.—LECIDEA (Ach., *Fr.*)

89. *L. contigua*, Fr. Common; on stones and rocks, N. Dal. and P.

90. *L. melanchheima*, Tuck. On old weathered wood, Pictou.

91. *L. spilota*, Fr. On rocks, N. W. Arm, Hx.

GEN. XXIX.—BUELLIA (DeNot). *Tuck.*

92. *B. parasema* (Ach.), Kbr. Common; on bark, wood and stone, Pictou.

93. *B. Retraea*, *Fl. Tuck.* On granite boulders, Pictou.

TRIB. III.—Graptidiacei (*Eschw., Nyl.*)

FAM. I.—OPEGRAPEI. *Stitz.*

GENS. XXX.—OPEGRAPHA (*Humb.*) *Ach., Nyl.*

94. *O. varia* (*pers.*), *Fr.* On the bark of the maple, Pictou.

XXXI.—GRAPHIS. *Ach., Nyl.*

95. *G. scripta*, *Ach.* Common; on birch and hemlock bark Pictou.

FAM. 2.—ARTHONIEI. *Kbr.*

GEN. XXXII.—ARTHONIA. *Ach., Nyl.*

96. *A. patellulata*, (*Nyl.*) Rare; on bark of trees, Pictou.

TRIB. IV.—Caliciacei.

FAM. 1.—SPHÆROPHOREI.

GEN. XXXIII.—SPHÆROPHORUS. *Pars.*

97. *S. globiferous* (*L.*), *D. C.* Common, especially on the rough bark of the trunks of *Abies Canadensis*, Pictou and North Dalhousie, P.

FAM. 2.—CALICIEI.

GEN. XXXIV.—ACOLIUM (*Fee.*) *DeNot.*

98. *A. tigilare* (*Ach.*) *DeNot.* On weathered wood, fence palings, Pictou.

GEN. XXXV.—CALICIUM, *Pers., Ach., Fr.*

99. *C. lenticulare* (*Hoffm., Ach.*) On weathered wood, North Dalhousie, Pictou. Rare.

GEN. XXXVI.—CONIOCYBE, *Ach.*

100. *C. furfuracea* (*h.*) *Ach.* Found growing on the roots of an overturned tree in a moist spot in the forest: Carriboo, Pictou.

TRIB. V.—Verrucariacei (*Fr., Fee.*) *Stitz.*

FAM. 1.—VERRUCARIEI.

GEN. XXXVII.—VERRUCARIA (*Pers.*) *Tuck.*

101. *V. maura* (*Wahl*), *Th., Fr.* Sandstone rocks on seashore, Cape John, Pictou Co.

102. *V. rupestris*, *Schrad.* Conglomerate rocks, N. Dal., Pictou Co.

GEN. XXXVIII.—PYRENULA (*Arch., Nægke, Nepp. Tuck.*)

103. *P. punctiformis* (*Ach.*), *Neg.* On the bark of maple trees; N. Dal., P.

104. *P. glabrata* (*Ach.*) *Mass.* On the bark of the birch, N. Dal., P.

ART. XI.—NOTES ON THE GEOLOGY OF POINT PLEASANT.

BY A. CAMERON.

FORMATIONS.

The formations described in these notes may be stated thus:

I. Cambrian Metamorphic, belonging to the great gold formation of Nova Scotia.

II. Post Pliocene, or glacial drift.

ROCKS.

I. *Cambrian Metamorphic.* The rocks of this series are slates, which extend over the whole peninsula.

The first exposure we notice is at the old "Lime Kiln," Pleasant Street. In this we note the following points:—

1. Lines of bedding.
2. Slaty cleavage.
3. Jointed structure, result of metamorphism.
4. That the dip is to the south, and the strike approximately east and west.

In the shore exposure of the bank below the old three gun battery we find the most interesting exposure of the series. Before we reach this the strata dip regularly to the south, but here we find the strata much disturbed, and just a little to the south we find the synclinal axis, with strata having northerly and southerly dips, the argillite strata in the middle being bent, the lines of strata being shown by a number of parabolic curves. Proceeding farther to the south we find the series dipping regularly to the north.

LIFE OF PERIOD.

No remains of life have been found in these rocks. On "Black