

of science, showed us an extremely interesting specimen of a bird that is apparently fast following the Dodo, and may soon become extinct, if not so already. In *Calluna* we have probably an example of a species on the verge of extinction as an American species, while maintaining a vigorous and abundant growth in Europe. If so, may not Europe be indebted to America for *Calluna*, and not America to Europe? But I must not open up so important a question as the origin and history of our species, while so little is known of the botany of the Maritime Provinces of British America.

In a letter from Professor Asa Gray, of Harvard, October 4, 1864, to whom I had sent a specimen of the *Calluna* from St. Ann's, he remarks: "I am much interested in the smallness of the amount of the plant in your station,—just as in that in this State,—confirming my view that it is now a mere remnant of what was once more diffused."

ART. IV. NOTE ON LEMANIA VARIEGATA OF AGARDH. BY GEORGE LAWSON, L.L.D., Ph. D., *Professor of Chemistry and Natural History in the Queen's University of Canada.*

[Read December 5, 1864.]

THE correction of errors in science is a very slow process. In the first part of the second volume of Bishop Agardh's "Species Algarum," published in 1828, an alga said to have been found "in *fluviis America borealis*," was described under the name of *Lemania variegata*. Agardh's original description of the plant appears, however, to have been published in the Stockholm Transactions in 1814, to which I have no means of access at the present time. The specimen upon which the species was founded had been given to Agardh by Olaf Swartz, his first master in Algology, who obtained it from the collector, the Rev. Dr. Muhlenberg, of Lancaster, in Pennsylvania. Not having been met with by subsequent observers, *Lemania variegata* has been looked upon as a long-lost plant.

In a parcel of specimens of cryptogamic plants sent to me in August 1862, by Mr. John Macoun, of Belleville, Canada West, a

*Read before the Botanical Society of Edinburgh, 9th April, 1863.

most zealous and successful explorer, I at once recognized a *Lemania*, remarkable for its extremely rigid, prominently monoliform, curved filaments, attenuated towards the base and apex, and regularly marked throughout by alternate bands, dark and white,—agreeing, in fact, very well with Agardh's description of *L. variegata*. I doubted not that the Belleville plant was conspecific with that of Agardh, and probably the identical form described in the "Species Algarum." Accordingly, I gave a description of the plant in the Edin. New Phil. Jour., N. S., vol. xviii. No. 1, July 1863. My description was scarcely published when an opportunity presented itself of my personally visiting the habitat for the *Lemania*, River Trent, along with its discoverer Mr. Macoun, and a careful examination led to a modification of my views. The plant is indeed apparently the same as that described by Agardh, but it is certainly not different specifically from *Lemania torulosa*, with which Harvey had indicated the probable identity of Agardh's plant (*in Nereis*.)

Lemania, Bory.

Generic character.—Fronds bristle-like, rising in clusters from a common adherent base, cartilaginous or corneous, continuously tubular, more or less nodose (brown, dull green, blackish or parti-coloured), the tube membrane composed of two distinct closely adherent strata of cells, those of the outer stratum minute, irregularly polygonal, closely united pavement-wise in radiating groups, those of the inner stratum rounded and not conformable, much larger than the others. Spores (so called by authors) in seriated stalked tufts, inside the swollen joints of the tube, and arising either from a central axis (according to Dr. W. J. Thomson), or from the inner peripheral layer of cells, or from both.

This genus, named *Lemania* by Bory, in honour of M. Lemain of Paris, "a modest naturalist not less learned in botany than in the other branches of science," embraces three species of aquatic algæ of very remarkable aspect and structure, which grow attached to stones, rocks, wood, &c., in the bottoms of shallow, rapid, fresh-water streams. Unlike most fresh-water algæ, they have dense, compact tissue, giving them firm consistence; they are rich in nitrogen, and when burned yield ammoniacal vapors. The plant

usually consists of a little tuft of stiff erect or curved bristle-like fronds, which adhere by a common discoid root to submerged objects. The minute structure of these plants has been illustrated very fully by authors at different times, from Vaillant (1727) downwards, with singularly conflicting results. The most recent and perhaps most valuable contribution that has been made to the history of *Lemania*, is the remarkably lucid description of Dr. W. J. Thomson, in the Transactions of the Botanical Society of Edinburgh, vol. vi. page 243, to which I would refer observers as an excellent basis for further inquiry, although I have been unable (probably from my specimens being too matured) to confirm some of Dr. Thomson's results. Mr. Thwaites of Ceylon has carefully studied the early developement of the frond, and states that the spores at first vegetate into slender confervoid filaments, with long joints containing spirally arranged endochroms. The filaments constitute a sort of prothallus or pro-embryo, the initial state of the plant. After a time thick branchlets, the germs of the perfect and permanent frond, spring from the cells of the confervoid filament; they are at first wholly dependent upon the cell from which they rise, but soon acquire rootlets at their base, and, rapidly elongating, grow into the densely cellular, opaque, cartilaginous bristle-like tubes, so characteristic of the mature plant in this genus.

1. *L. fluviatilis*, internodes longer than nodes = (*Confervia fluviatilis lubrica setosa*, Equiseti facie, Horse-tail River Conferva, *Dillenius*, Hist. Musc., tab. vii. fig. 47. *Conferva fluviatilis*, *Linn.*, *Mohr*, *Roth.*, &c. *Polysperma fluviatilis*, *Vauch.* *Chantransia fluviatilis*, *DC.* *Lemania corollina*, *Bory.* *Nodularia fluviatilis*, *Lyngb.*) This is the more common British species which I gathered in quantity in a stream on the Ochil Hills, near Stirling, in 1857. It has also been recorded as growing near Bangor (*Dillenius*), in Winterbourne Stream, Lewes (*W. Borrer*); at Hamsell, and at the waterfall at Harrison's rocks (*E. Jenner*); Aberdeen, abundant (*Professor Dickie, M.D.*); Ireland, frequent (*D. Moore*); Scandinavia, Germany, France, Corsica; Sackville river, Nova Scotia, adhering to stones.
2. *β. tuberculosa* = (*Nodularia fluviatilis ramosa*, *Lyngb.*) Denmark.
3. *γ. media* = (*Conferva fluviatilis*, *Dillw.*, E.B., t. 1763). England.
4. *δ. fucina* = (*Lemania fucina*, *Bory.* *Chantransia dichotoma*, *DC.*) France, chiefly in Bretagne.
5. *ε. subtilis* = (*Lemania subtilis*, *Agardh*, in Act. Holm. 1814, t. 2, f. 4, *Kutzing.*) Sweden, &c.

6. *L. torulosa*, internodes equalling the nodes = (*Conferva fluviatilis nodosa* Fucum æmulans, Sea Horse-tail-like *Conferva*, *Dill. Hist. Musc. tab. vii. fig. 48.* *Conferva torulosa*, *Roth., Mohr., Dillw., &c.* *Lemania incurvata*, *Bory.*) Recorded as occurring in mountain streams near Ludlow, Salop (*Dillenius*), Anglesea (*Rev. H. Davies*); also in France, Germany, Kentucky, United States (*Dr. Short* in *Harvey, Nereis*).
7. *β. usneoides* = (*Conferva usneoides*, *Wallr.*) Saxony.
8. *L. variegata* = (*Hippuris fluviatilis petræa nuda Virginiensis*, *Pluk.*) Belleville, Canada West (*J. Macoun.*) United States, Pennsylvania? (*Muhlenberg*).

Probably *L. fluv.*, *α. subtilis*, and *L. torulosa*, *β. usneoides*, may be found, on investigation, to be well-marked species. The various forms deserve a careful examination, and I would beg to direct the attention of British botanists to the subject.

ART. V. ON THE LAND BIRDS OF NOVA SCOTIA.
BY A. DOWNS.

[*Read Jan. 9, 1865.*]

To the casual visitor, Nova Scotia would appear to be very deficient in bird life, and to a certain extent this condition is apparent even to the settler, for in certain seasons of the year and in winter, the interior districts seem altogether deserted by members of the feathered tribe. The lumberer will tell you that his monotonous life in the woods at the latter season, is rarely cheered by the presence of birds, and save and except the peeping cry of the black cap, and Hudson's Bay tit, and the brown creeper, with an occasional harsh note from the Canada jay, or a "chip" from the red squirrel, no sound beside the creaking branches of the maple, or the melancholy sough of the pine, is heard to break the death-like silence which reigns around. An English settler will not fail to notice the difference which exists between the scarcity of birds around his country house here and in the old country. Here a few blue birds or titmice are the only specimens seen about dwellings, while in England flocks of vociferous sparrows are feeding in the yard, and many a black bird, thrush, hedge-sparrow, and green linnet, haunt the garden and orchard, taking their toll from the gooseberry and currant bushes.