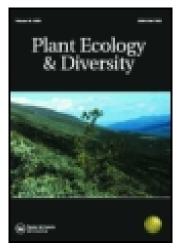
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Transactions of the Botanical Society of Edinburgh

Publication details, including instructions for authors and subscription information: http://www.tandfonline.com/loi/tped18

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To cite this article: W. Lauder Lindsay M.D. F.R.S.E. F.L.S. (1870) III. Supplementary Notes on the Lichen-Flora of Greenland, Transactions of the Botanical Society of Edinburgh, 10:1-4, 296-305, DOI: 10.1080/03746607009468695

To link to this article: http://dx.doi.org/10.1080/03746607009468695

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III. Supplementary Notes on the Lichen-Flora of Greenland. By W. LAUDER LINDSAY, M.D., F.R.S.E., F.L.S.

Since the publication of my catalogue of the Lichens of Greenland in the last Part of the Society's Transactions,* my friend Robert Brown, F.R.G.S., has pointed out to me, that in the said catalogue I have omitted all reference to a list of the lichens of Greenland, published in 1830 by the Chevalier Sir Charles Louis Giesecké of Dublin; † and Mr Brown has further done me the favour of making and sending me a copy of the said list, adding to it a short biography of Giesecké, which is both of use and interest as bearing on the circumstances of all his collections of Greenland plants, including the lichens. My omission arose from my ignorance, at the time, of the existence of such a list, and my too implicit trust in Th. Fries' "Lichenes Arctoi " as a compendium of all lists of Greenland Lichens up to 1860.[†] But, inasmuch as my catalogue cannot be considered complete without reference to, or incorporation of, so prominent a list as that of Giesecké, and in so far, further, as it appears desirable to render my catalogue as complete as may be up to the present date, § I now hasten to supply my omission by quoting Giesecké's list, adding my own comments thereto-comments which are mainly directed to an attempt to discover the modern synonymy of his species. Apart altogether from the subject of Greenland and its lichen-flora, Giesecké's list enables me to indicate the comparatively little value that can be attached to the earlier lists of lichen-species belonging to the Pre-Microscope era of Lichenology, especially where the name of the authority for, or nomenclator of, the said species is not given; as well as the extreme, and sometimes insuperable, difficulty of ascertaining their modern synonyms or equivalents.

+ In an article on "Greenland," in "Brewster's Edinburgh Encyclopædia," vol. x. (1830), pp. 495-6.

‡ Vide page 32 of my former paper.

2 Personal inquiries made quite recently (in October 1869) in Denmark, by Mr Brown, show that the Catalogue in question is the only separate list extant of the Lichens of Greenland.

^{*} Vol. x. (1869), p. 32.

I am indebted to Mr Brown for the following information regarding Giesecké-his Greenland collections, and "He was born in 1761, at his list of Greenland lichens. Augsburg, and after a rather adventurous life, studied under Werner, and settled down at Vienna as a dealer in Eventually entering the service of Denmark, he minerals. repaired to Greenland, and made large collections of minerals Afraid of his collection being and minor ones of plants. captured (for we were then at war with Demark), he went over the ground a second time, and made a duplicate set. His fears were realised, for the vessel containing his first collection was captured by the English cruisers, and the collection sold for a mere trifle at Leith. It was bought by Mr Thomas Allan, who found in it Sodalite, Allanite, Cryolite, &c. In the meantime, Giesecké, who had been delayed, by communication being temporarily cut off with Greenland, arrived in Leith; and with great good nature assisted in arranging his confused collection, which was of immense extent. I have been informed by Dr Hoff, assistant in the Mineralogical Museum of Copenhagen, who has himself visited Greenland, that though Allan supplied out of Giesecké's cabinet many of the mineralogical collections of the day, yet he always understood that Giesecké purchased back from Allan a great portion of his own collection. Following the Duke of Marlborough's maxim of 'quartering himself on the enemy," he settled down as Professor of Mineralogy to the Royal Dublin Society, where he remained till his death, in March 1833. The old energy had, however, evaporated by that time, and beyond a few papers on mineralogy and geography,* and the article referred to,* he published nothing. He left a voluminous journal, which is now in Copenhagen, and a copy in Dublin (written in German). But his collections, in a chaos of non-assortment, are still lying in Dublin. His collection was so rich in duplicates, that sub-collections from him are in the British Museum, and Copenhagen and other museums; but most of his plants are in the British Museum, or (I believe) in the Museum of the University of Dublin, or

^{*} Trans. Roy. Soc. Edin., vol. ix. p. 263; Appendix to Scoresby's "Voyage to Greenland," &c.

⁺ Vide foot-note, + page 284.

the Royal Dublin Society. He was a knightcommander of Dannebrog; hence the knightly prefix by which he was known." His list of Greenland plants contains, says Mr Brown, a number of errors. "Giesecké must then have been a man nearly seventy, and as he was latterly in bad health, and always rather lazy, the errors may be understood." The *species* in his list of Greenland lichens, Mr Brown adds, "appear to have been determined by Dr Taylor of Dublin,* though it is not so expressly stated."

Giesecke's List of Greenland Lichens, with their (approximate, probable, or) modern Synonymy.

- 1. Lecidea sanguinaria.⁺ Doubtless of Linnæus and subsequent authors. Does not occur in Greenland, according to Th. Fries (Lich. Arctoi, p. 223).
- 2. L. fusco-lutea. Doubtless of Acharius, Schærer, and Hooker = Lopadium, Mudd, Brit. Lich., p. 190, and Lecanora, Dicks., of my catalogue.
- L. pustulata. Probably Umbilicaria pustulata, Hffm., which, however, does not occur in Arctic countries, according to Th. Fries (L. Arct., p. 168). Most likely the plant so named is U. Pennsylvanica, Hffm., of my catalogue.
- Lepraria botryoides. Doubtless of Acharius; English Botany, p. 41, t. 1973 ⁺= L. viridis, T. and B.; a Protophyte of the genus Protococcus (= P. viridis, Kütz., Hepp No. 233, = Chlorococcum vulgare, Grev., in Kew Herbarium).
- 5. L. Iolithus. Doubtless also of Acharius; Engl. Bot. p. 42, t. 1978; another Protophyte of the genus Protococcus.
- Gyrophora hyperborea = Lichen proboscideus, L. Either Umbilicaria hyperborea, Ach., or U. proboscidea, L., of my catalogue. They are given as separate species by Mudd, Brit. Lich., pp. 117 and 118.
- 7. G. erosa. No doubt Umbil. erosa, Web., of my catalogue.
- 8. G. cylindrica. No doubt Umbil. cylindrica, L., of my catalogue.
- 9. G. hirsuta. No doubt Umbil. hirsuta, Ach., of my catalogue.

* Author of vol. ii. of the "Flora Hibernica," which includes the Musci, Hepaticæ, and Lichens.

+ These names are given as published by Giesecké, and copied by Brown. It will be observed that in no case is the author of the specific name mentioned !

[‡] All quotations from the "English Botany" of Smith and Sowerby are from the second edition (1844), vols. x. and xi.

- Endocarpon tephroides. No doubt of Acharius = Dermatocarpon cinereum, Pers., and Endocarpon cinereum, Mudd, Brit. Lich., p. 268. Does not occur in Greenland, according to Th. Fries (L. Arct., p. 256).
- Isidium defraudans. Probably of Acharius = Lecanora poliophæa, Ach. and Whlnb. Does not occur in Greenland, according to Th. Fries (L. Arct., p. 114).
- 12. Urceolaria calcarea. No doubt Lecanora calcarea, L., of my catalogue.
- 13. Parmelia tartarea. No doubt Lecanora tartarea, L., of my list.
- 14. P. candelaria. Probably Physcia candelaria, Ach., which, however, is not at all mentioned in Th. Fries' "Lich. Arctoi."
- 15. P. brunnea. No doubt Pannaria brunnea, Sw., of my list.
- 16. P. subfusca. No doubt Lecanora subfusca, L., of my list.
- 17. P. gelida. No doubt Squamaria gelida, L., of my list.
- 18. P. stellaris. No doubt Physcia stellaris, L., of my list.
- 19. P. saxatilis. Doubtless of Linnæus and subsequent authors in my list.
- 20. P. omphalodes. Doubtless of Linnæus, a variety of the foregoing in my list.
- 21. P. parietina. Doubtless of Linnæus, which, however, is not at all mentioned in Th. Fries' "Lich. Arctoi."
- P. fraxinea. Doubtless of Linnæus; a variety of Ramalina calicaris, L. Does not occur in Greenland, according to Th. Fries (L. Arct., p. 32).
- P. farinacea. Doubtless of Linnæus; also a variety of R. calicaris; but not occurring in Greenland, according to Th. Fries (L. Arct., p. 32).
- 24. P. jubata. No doubt of Linnæus; Alectoria jubata, L., of my list.
- 25. P. capillaris. No such lichen is mentioned in any lichenological work in my library. It cannot refer to Ephebe pubescens, Parmelia lanata, or Alectoria jubata, each of which is separately mentioned. I cannot even guess at its proper modern synonymy !
- P. nigrescens. Doubtless Collema nigrescens, L., which does not, however, occur in Greenland, according to Th. Fries (L. Arct., p. 281).
- 27. P. ciliaris. No doubt Physcia ciliaris, L., which, however, is not at all mentioned in Th. Fries' "Lich. Arctoi."
- 28. P. ochroleuca. No doubt Alectoria ochroleuca, Ehrh., of my catalogue.
- 29. Peltidea horizontalis.* No doubt Peltigera* horizontalis,*L.,

* There is great confusion created by the use of the generic terms *Peltidea* and *Peltigera*. Hitherto they have been used *synonymously*. But Nylander

which, however, does not occur in Greenland, according to Th. Fries (L. Arct., p. 47).

- 30. P. venosa.* No doubt of Linnæus and my list.
- 31. P. resupinata. May be Nephroma resupinatum of Hooker, Taylor, and Leighton, which = N. lævigatum, Ach., of Mudd's "Brit. Lich.," p. 81; or N. resupinatum, Ach., which = N. tomentosum, Hffm., of Nylander's "Synopsis," p. 319. There is great confusion in the synonymy of N. lævigatum, Ach., and N. tomentosum, Hffm., if they are really separate species. N. tomentosum does not occur in Greenland, according to Th. Fries (L. Arct., p. 41); while N. lævigatum appears = his N. papyraceum, Hffm., which occurs in my catalogue.
- 32. P. canina. Doubtless Peltigera canina, Hffm., of my list.
- 33. P. saccata. No doubt Solorina saccata, L., of my list.
- 34. P. crocea. No doubt Solorina crocea, L., of my list.
- 35. Cetraria Islandica. No doubt of Linnæus and my list.
- 36. C. Groenlandica (vars. nigra and viridis). May be Lichen Groenlandicus of the "Flora Danica," t. 466, which = Nephroma arcticum, L., of my list.
- 37. C. nivalis. No doubt of Linnæus and my list.
- C. pulmonaria.⁺ No doubt Sticta pulmonaria, L.,⁺ which does not occur in Greenland, according to Th. Fries (L. Arct., p. 49).
- 39. C. juniperina. No doubt of Linnæus and my list.
- 40. Cornicularia lanata. No doubt Parmelia lanata, L., of my list.
- C. tristis. No doubt Parmelia tristis, Web., which, however, does not occur in Greenland, according to Th. Fries (L. Arct., p. 30).
- 42. C. pubescens. No doubt Ephebe pubescens, L., of my list.
- 43. Stereocaulon paschale. No doubt of Linnæus and my list.
- 44. S. globulare. May be Lichen globularis, Retz., which = Calicium furfuraceum, L., of my list.

employs them to distinguish *separate* genera—the first established specially for *P. venosa* and *aphthosa*: the second including all the other British species. In a letter to me, of date February 1866, Nylander writes—"Si vous avez, dans le travail que vous vous proposez, à nommer le *Peltigera venosa*, il faudrait l'appeler *Peltidea venosa*, Ach., car je le rapporte maintenant ainsi que l'aphthosa au genre *Peltidea*, qui diffère par ses gonidies (qui rendent leur thalle à l'état humide d'un beau vert) des *Peltigera*, dont le thalle à l'état humide devient foncé." In his "Synopsis" and other works, moreover, he uses the term *Peltigerei* for the tribe, and *Peltidei* for the subtribe!

t Much confusion is created by the use of the specific names *pulmonaria* and *pulmonacea*, which are synonymous. One of them ought to be abolished. *Pulmonaria* has the claim of priority, having been used by Linnæus, Hoffmann, Schærer, and others; while Nylander, in his "Synopsis," adopts Acharius's name, *pulmonacea*.

- 45. Bæomices cocciferus. Doubtless Cladonia coccifera, L., which is = variety of C. cornucopioides, L., of my list.
- 46. B. pyxidatus. No doubt Cl. pyxidata, L., of my list.
- 47. B. cornucopioides. Doubtless Cl. cornucopioides of Linnæus and my list.
- 48. B. fimbriatus. Doubtless Cl. fimbriata of Hoffmann and my list.
- 49. B. gracilis. Doubtless Cl. gracilis of Linnæus and my list.
- 50. B. digitatus. Doubtless Cl. digitata, L., and my list.
- B. radiatus.* Probably Lichen radiatus, Schreb. (Engl. Bot. t. 2288), which = Cl. radiata, Ach., of the "Flora Hibernica," and = a variety of Cl. fimbriata, Hffm., of my list.
- 52. B. cristatus. Doubtless Cl. cristata, Hffm., which = Cl. degenerans, Flk., of my list.
- 53. B. foliaceus. Probably Lichen foliaceus, Huds., which = Cl. alcicornis, Flk., of my list. The latter is not mentioned at all in Th. Fries' "Lich. Arctoi."
- 54. B. rangiferinus. No doubt Cl. rangiferina, L., of my list.
- 55. B. uncialis. No doubt Cl. uncialis, L., of my list.
- 56. B. subulatus. No doubt Cl. subulata, L., which is = variety of Cl. furcata, Schreb., of my list.
- 57. B. fragilis (= coralloides fragile, Hffm.) No doubt Sphærophoron fragile, L., of my list.

I. In one case at least, *Parmelia capillaris*, the modern synonymy is indeterminable.[†]

II. In four cases this synonymy is doubtfully determinable, viz., in

Gyrophora hyperborea.	Cetraria Groenlandica.
Peltidea resupinata.	Stereocaulon globulare.

III. At least two species are *Algæ* or *Protophyta*, belonging to the genus *Protococcus*, or some of its allies or subdivisions,—viz., the two supposed species of the now obsolete genus *Lepraria*.

IV. One species is an obvious error, according to Th. Fries' "Lich. Arctoi," viz. :---

Lecidea pustulata.

* This lichen is enumerated *twice*, probably by an overlook either of printer or author.

⁺ A similar apparently indeterminable species is *Cladonia glacialis* of Brown's "Florula Discoana" (Trans. Botan. Soc. of Edin., vol. ix. p. 443). It is, however, I am informed by him, a misprint for *Cladonia gracilis*, L.

V. Four other species do not occur in the wide range of Th. Fries' "Lichenes Arctoi," which includes the whole of Northern Scandinavia and Russia (Nordland, Finmark, Lapland, and the Samoyede country), Iceland, Greenland, and the Spitzbergen group of islands, viz. :---

Parmelia candelaria.	Parmelia parietina.
ciliaris.	Bæomices foliaceus.

VI. Others, though met with in some parts of the region of Th. Fries' "Lich. Arctoi," do not, according to him, occur in Greenland, viz.:---

Lecidea sanguinaria. Endocarpon tephroides. Isidium defraudans. Parmelia fraxinea. farinacea.

Parmelia nigrescens. Peltidea horizontalis. Cetraria pulmonaria. Cornicularia tristis.

The last two classes may be regarded either as errors of Giesecké and Taylor, or as omissions of Th. Fries, who does not, like myself, appear to have been acquainted with Giesecké's list, seeing that the list in question is nowhere mentioned in his "Lichenes Arctoi." There are reasons both for and against adding the species in question to my catalogue. The arguments for such addition are that we are bound to believe-till the contrary can be proved-that they were collected by Giesecké, and properly determined by Taylor, while they have been inadvertently omitted both by Th. Fries and myself. The arguments, on the other hand, that lead to hesitancy in incorporating such lichens in the Greenland flora are, that they have been omitted by Th. Fries—an accurate and laborious lichenologist—experienced in the use of the microscope, and presumably well acquainted with all authentic collections or lists of Greenland Lichens up to the date of publication of his "Lich. Arctoi" (1860); and that all lists of lichens drawn up without microscopical examination are, as a rule, little trustworthy.* The latter objection, however, does not hold good as regards species that are easily determinable by the naked eye, such as Physcia ciliaris, P. parietina, Cladonia alcicornis, Ramalina calicaris, Peltigera horizontalis, Sticta

^{*} This proposition has already been sufficiently illustrated in my former paper by the analyses of the lists of James (p. 34), and of Hooker and Brown (pp. 47, 49, 51).

pulmonaria, or Parmelia tristis. Even if we add to my catalogue the omissions of Th. Fries and myself recorded by Giesecké and Taylor, the total number is increased only by thirteen species and varieties—the aggregate amounting to 281 species, including varieties.

VII. The remainder of Giesecké's lichens, consisting of thirty-six species and varieties, have already been recorded in my catalogue.

The total number of lichens collected and recorded by Giesecké is only fifty-seven, while the number enumerated in my catalogue was 268, or nearly five times as many. The difference between these figures may be held as representing the progress that has taken place in the collection and determination of the lichens of Greenland during the last forty years.

Referring to my comparison of the Lichen-Floras of Greenland and Iceland,* Mr Brown very naturally objects that the two countries or islands are not properly com-"The whole interior of Greenland," says he, parable. "so far as known, is overlaid with an immense glacial The east coast is almost entirely unexplored cap. and, on account of ice, unexplorable; and the interior a frozen icy waste.... You may almost take it for granted that all the lichen collections made in Greenland were made not far from the sea-level," and I may add on the west coast, and even within a limited area of *it*. Of all this I am fully aware, and I have not attempted to institute any rigid comparison either between the countries in question or their flora. But I believe the extent to which *Iceland* also is desert, and unexplored, or unexplorable, is not sufficiently borne in mind. An intelligent American traveller, who visited the greater part of Iceland in 1853, thus writes on this point :† "If you look on Gunnlaugsson's large map of Iceland-a map made from surveys, and extending over Iceland for twelve years-it will be seen that the green or agricultural portion is not more than one-third of it, and about one-half of the remainder is a pink colour, indicating the growth of heath; and the balance is snowy

* In my former paper, pp. 39 and 52.

† "Nordurfari; or, Rambles in Iceland," by Pliny Miles. London, 1854, p. 158.

mountains, sandy deserts, and black and barren lava." The glaciers of Greenland are in Iceland replaced, to a great extent at least, either by lava or volcanic sand, forming deserts which, if we may credit the testimony of travellers, are devoid even of cryptogamic vegetation.* This sand, which includes pumice and ash, is sometimes one or two feet thick on the plains, and even four to six feet in the "The melancholy appearance of these mountain valleys. districts has occasioned them to be called by the natives Hraun or Hröin,-a word meaning ruin or annihilation."† In 1861 the then vice-president of the Alpine Club (Wm. Longman) published "Suggestions for the Exploration of Iceland," accompanied with a tinted map, showing the districts yet unexplored, and the area occupied by jökuls‡ (glacier or ice-covered mountains). The combined area occupied by lava, volcanic sand, snow, and ice, is nearly onehalf of the whole island !§

Again, Mr Brown, in some degree, objects to the spelling of the names of localities in Greenland, given at page 32 of my catalogue. The truth is, however, that the utmost diversity prevails among travellers and writers regarding the spelling of Esquimo names, and even of the word Esquimo or Eskimo itself (= Esquimaux, &c.) The names in question were all cited from Th. Fries' "Lichenes Arctoi," and he doubtless copied the orthography of Danish I have therefore preferred to give his orthobotanists. Whether it is right or wrong, accordgraphy unchanged. ing to current opinion, is of no consequence to the subject or object I have presently in view,---the lichens of Green-land as a country. Neither are the precise latitude and

* Compare what I have said on this head at page 36 of my former paper.

† Edinburgh Cabinet Library volume on "Iceland, Greenland, and the Faroe Islands." Edin., 1840. P. 359.

⁺ The unexplored—and perhaps unexplorable—area of the Vatna or Klofa jökul alone amounts to about 400 square miles! (*Vide* Edin. Cab. Lib. vol., foot-note * p. 41). Of the whole area of 38,000 square miles, it has been calculated that not above one-eighth is occupied, the remainder (= 33,000 square miles) consisting of jökuls, or of plains and valleys desolated by lava or other volcanic *ejecta*. It is to be observed, however, that the estimates of the *barren* area given by different authors differ remarkably—depending, no doubt, mainly on their different ideas of *barrenness* !

¿ Vide a definition of the term in my paper on the Köllugja volcano, Iceland. "Edinburgh New Philosophical Journal," January 1861, p. 3. longitude material for present purposes. While, therefore, I am indebted to my friend Mr Brown for the trouble he has taken to set me right in various matters of detail, the matters in question do not appear—as not bearing directly on our present subject—to require further notice here.*

My catalogue contains a few trivial typographical errors, of which it may suffice to point out that an asterisk should have been prefixed to the following species, indicating that they occurred in Mr Brown's collection :---

> Lecidea Friesiana and contigua. Verrucaria tartaricola. Lecanora tartarea v. vermicularia.

Lecanora leucoræa is erroneously entered twice, the second time under Lecidea.

IV. Dr Gray's Arrangement of the Hepaticæ. By BENJ. CARRINGTON, M.D.

"Seemann's Journal of Botany" (1865) contained an article of great interest by Mr Carruthers, claiming priority for the classification of the Hepaticæ proposed in "Gray's Natural Arrangement of British Plants" (1821).

The fate of this work—the first attempt to apply the natural system to British plants—was most unfortunate. Few copies appear to have been sold, and virtually it fell still-born from the press, and has been overlooked alike by British and foreign botanists.

Yet it deserved a different fate. The introductory chapters are especially good—containing a lucid epitome of botanical history, a chronological list of authors and

^{*} Thus he points out that -(1.) There are several places of the same name in different parts of Greenland, e.g., Upernivik, Amitoarsuk, Isortok. (2.) There is a small patch of Cretaceous strata on the shores of the Waigat. (3.) Crantz's "History of Greenland" is a translation from the German of the original work published in 1769. (4.) Hölboll, as well as Rink and Wormskield, made lichen collections in Greenland. (5.) Several of the places mentioned by Th. Fries—such as Kukiarsuk—are unknown to, or are not mentioned by, Rink in his "Grönland Geographisk og Statistik." (6.) Other names are synonyms, e.g., Sydostbugten (= Anglicé "South-East Bay)," which is merely the southern portion of Disco Bay. (7.) Upernivik is the most northern Danish "Colonie"—in lat. 72° 48′. (8.) Sir James Clarke Ross did visit Spitzbergen when a lieutenant with Parry.