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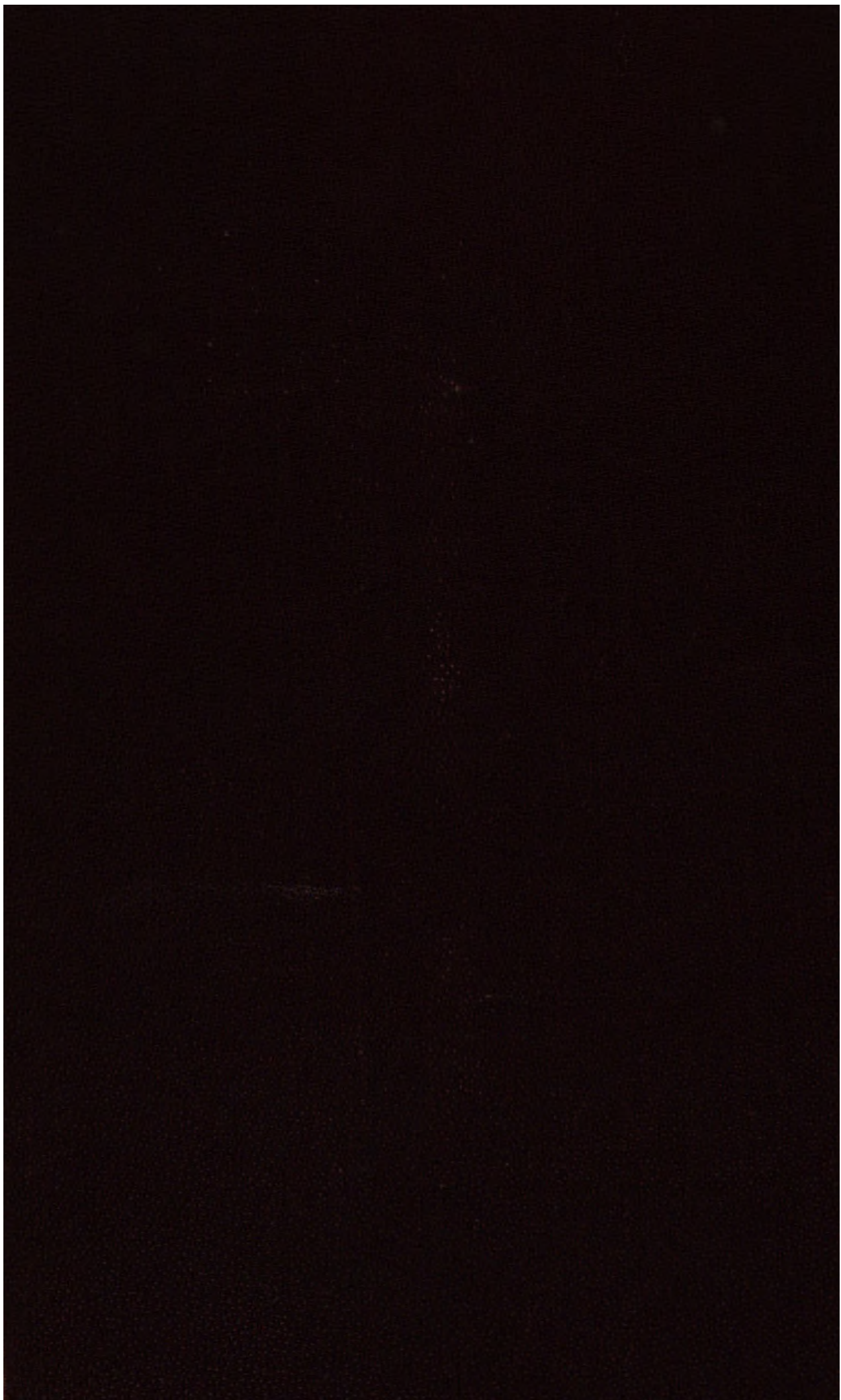
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ENGLISH BOTANY;

OR,

COLOURED FIGURES

OF

BRITISH PLANTS,

WITH THEIR

ESSENTIAL CHARACTERS, SYNONYMS, AND PLACES OF
GROWTH.

BY

SIR JAMES EDWARD SMITH, M.D. F.R.S.

PRESIDENT OF THE LINNÆAN SOCIETY, ETC. ETC.

THE FIGURES BY

JAMES SOWERBY, F.L.S. G.S. &c.

“..... quos ipsa volentia rura
Sponte tulere sua” VIRGIL.

THE SECOND EDITION,

ARRANGED ACCORDING TO THE LINNÆAN METHOD;
WITH THE DESCRIPTIONS SHORTENED, AND OCCASIONAL REMARKS.

By CHARLES JOHNSON,
LECTURER ON BOTANY, GUY'S HOSPITAL.

VOL. XI.

LONDON:

PRINTED BY RICHARD AND JOHN E. TAYLOR, RED LION COURT, FLEET STREET,

FOR THE PROPRIETOR, JUDITH SOWERBY,

3 MEAD PLACE, WESTMINSTER ROAD.

M.DCCC.XLIV.

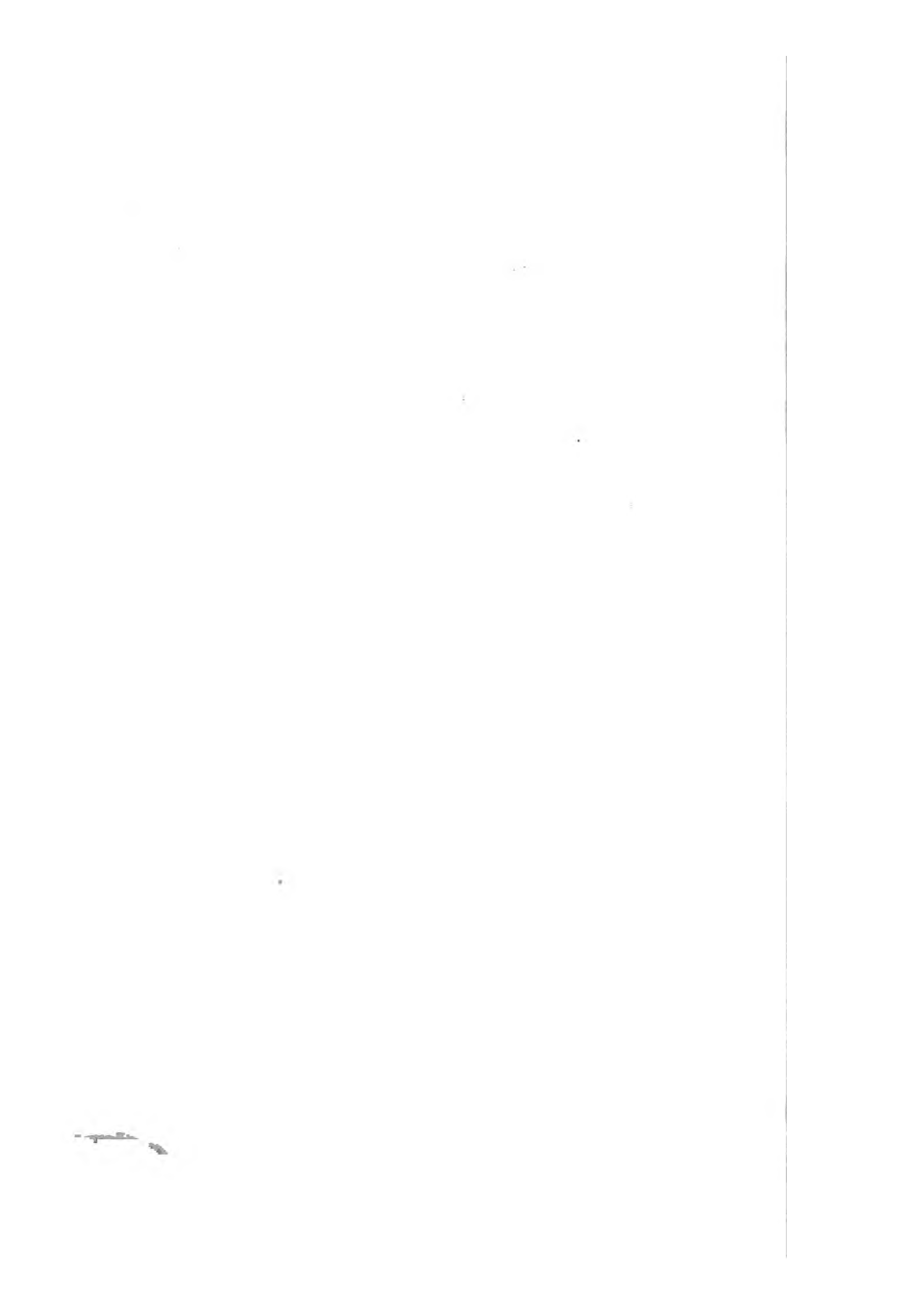


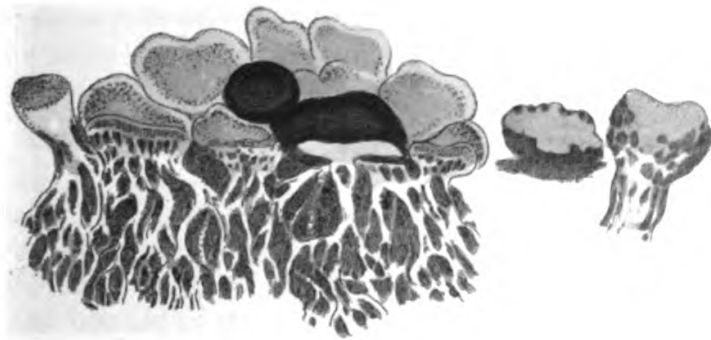
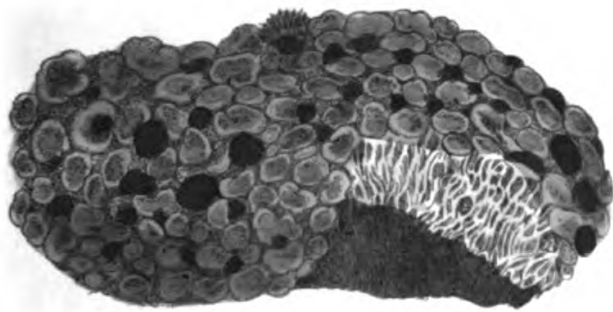
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e. 16





Psora caeruleo-nigricans.

Marsh 1.1803 in Hook. & Grev. Icones Londin.



ENGLISH BOTANY.

CLASS XXIV. CRYPTOGAMIA.

ORDER VIII. LICHENES. LICHENS (*continued*).

[In the following families the thallus is more or less foliaceous or membranous, or filiform and shrub-like, never truly crustaceous.]

FAMILY VIII. SQUAMARIEÆ.

THALLUS subfoliaceous, consisting of scales attached to the substance on which they grow, and more or less combined. Apothecia bordered, discoid, sessile (*patellulæ*).

The genera of this family consist of plants sometimes apparently crustaceous, but for the most part obviously composed of scales or tubercles ramifying from the bases of each other, the extreme margins of which, at least, are free; hence they may be regarded as forming a transitional group between the truly crustaceous and foliaceous families of the Lichens.

GENUS DLXXX. PSORA. *Psora*.

GEN. CHAR. *Thallus* defined, thick, formed of distinct, flattish or convex scales, lobes, or tubercles. *Apothecia* (*patellulæ*) bordered, plane, afterwards convex, growing between the scales; the border of the same colour and substance as the disc.

The apothecia are modifications of similar scales to those composing the thallus. The Greek name, *ψώρα*, signifies *scurf* or *leprosy*, and is given in allusion to the superficial aspect of some of the species.

PSORA CÆRULEO-NIGRICANS. *Black and blue Psora.* TAB. 2111.

Thallus of irregular, imbricated, tumid, powdery, greyish warts or scales. **Apothecia** coal-black, irregular, rather flat at first, eventually hemispherical; growing between the scales.

Lichen cæruleo-nigricans, *Lightfoot*. *E. B.* 1139. *Psora cæruleo-nigricans*, *Hooker Crypt. Part 1.* 192. *P. vesicularis* and *P. paradoxa*, *Hoffmann*. *Lecidea vesicularis*, *Acharius Syn.* 51.

Found growing on the ground and among rocks, chiefly in alpine districts. The plants consist of long, branched, tufted, spongy roots, bearing tumid, roundish, clustered scales, sometimes a little depressed in the centre and somewhat cyathiform, greenish when wet, bluish-grey or brown when dry, covered with a fine powder. The apothecia occasionally grow attached to the sides or margins of the scales, but they are more generally fixed like them to the soil beneath by similar spongy radicles; they are of a greyish hue when young, with a thick, paler border, which disappears as they advance in age, when they become more or less tumid and irregular, and of a deep coal-black.

PSORA ATRO-RUFA. *Red-brown Psora.* **TAB. 2112.**

Thallus subcontinuous, lobed; the lobes angular, smooth, imbricated, greyish-brown. Apothecia sessile among the lobes, dark reddish-brown, with a narrow, darker border, eventually confluent.

Lichen atro-rufus, *Dickson Crypt. fasc. 4.* 22. *tab. 12. fig. 4.* *E. B.* 1102. *Psora atro-rufa*, *Hooker Crypt. Part 1.* 192. *Lecidea atro-rufa*, *Acharius Syn.* 51.

A native of sandy ground, among mosses, in the north of England and elsewhere. Thallus whitish when young, eventually brown with a greyish or yellowish tint, smooth, composed of small, irregular and angular lobes, somewhat imbricated, but forming a more or less continuous surface. Apothecia numerous, conspicuous from their dark reddish-brown hue; flat at first, afterwards a little tumid, confluent and irregular, smooth, subpellucid when wet.

PSORA SCALARIS. *Olive and black imbricated Psora.* **TAB. 2113.**

Thallus imbricated; its lobes kidney-shaped, ascending, distinct, often scattered, pale olive, powdery at the edge and back. Apothecia flat, irregular, black, bordered.

Lichen scalaris, *Acharius Prod.* *E. B.* 1501. *Psora scalaris*, *Hooker Crypt. Part 1.* 192. *P. ostreata*, *Hoffmann*. *Lecidea scalaris*, *Acharius Syn.* 52. Lichen leucophæus, *Dickson Crypt. fasc. 2.* 20.

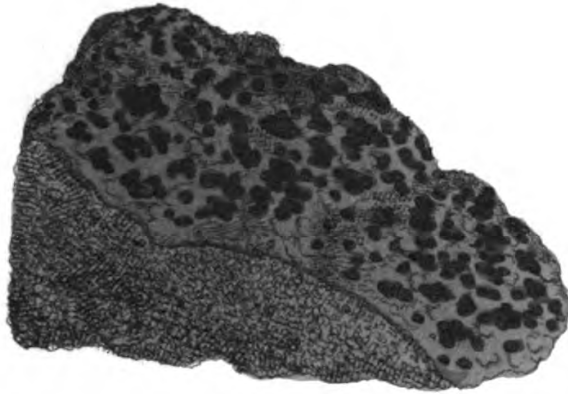
Found on the inside of old hollow trees, old park paling, &c., and sometimes on rocks. The thallus is composed of small, prominent, scaly lobes, often almost separate at their base, rounded or kidney-shaped, a little concave, pale olive-coloured and smooth above, the back and margin whitish and powdery; their inner substance milk-white. Apothecia sessile, scattered, of a roundish irregular form, with a flat, black, opaque disc, and when young a narrow border of the same hue.

PSORA DECIPIENS. *Deceitful Psora.* **TAB. 2114.**

Thallus subimbricated; the lobes or scales separate, roundish, or subovate, rather concave, flesh-coloured or red, white at the margin and beneath. Apothecia marginal, small, convex or subglobose, black; border obsolete.

1102

2112

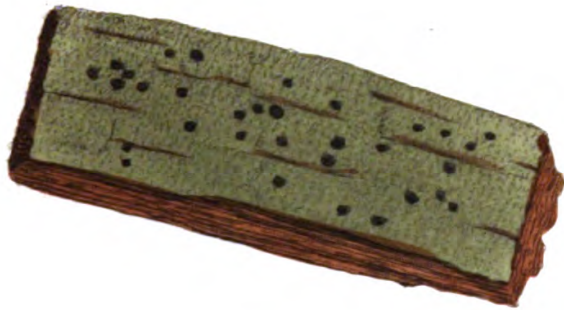


Psora atro-rufa?

Dec. 1 1862 Published by Ja. Sowerby London.

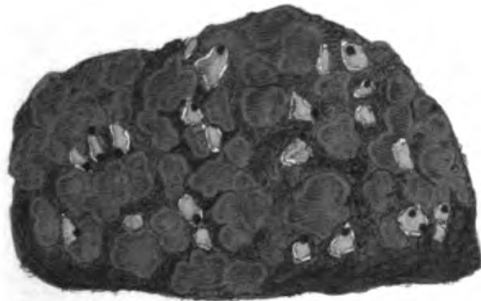
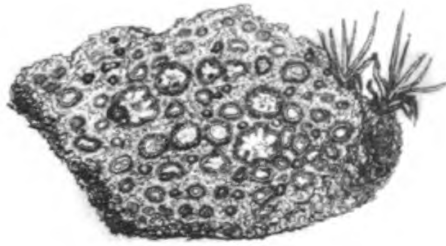
2501

2113.



Psora scalaris.

Sept. 1. 1805. Published by J. Sowerby, London.



Psora decipiens.

April 1, 1901. Published by Jas. Sowerby, London.

2112.

2115.

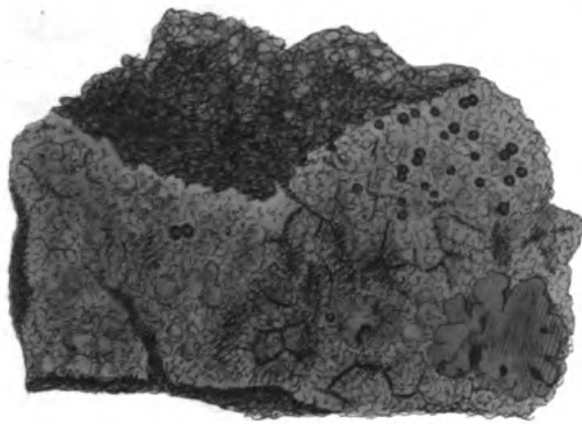


Psora rubiformis.

Fig. 1. 1810 published by J. J. Linn. in L. L.

1955

2116.



Psora glebulosa.?

Nov. 22. 1868. Published by J. & S. Lowry, London.

Lichen *decipiens*, *Hedwig*. *E. B.* 870. *Psora decipiens*, *Hoffmann*.
Hooker Crypt. Part 1. 193. *Lecidea decipiens*, *Acharius Syn.* 52.

First recognized as a British species growing on the Gogmagog hills, near Cambridge. On the highland mountains of Scotland it is far from unfrequent. Scales separate, or more or less crowded and subimbricated, concave, roundish or irregularly angular, of a bright reddish or tawny hue when young, with a white edge, so that they might be readily mistaken for apothecia, whence probably the specific name, *decipiens*, given to it by Ehrhart; in age they become of a dark, dirty brown. Apothecia marginal, very small, eventually convex and almost globular, black.

PSORA GLEBULOSA. *Broken-crusted brown-shielded Psora.* TAB. 2115.

Thallus dispersed, imbricated, with minutely lobed, glaucous-white, tumid, adherent scales. Apothecia convex, deep red-brown, with a thin, entire border of the same colour.

Lichen *glebulosus*, *E. B.* 1955. *Psora glebulosa*, *Hooker Crypt. Part 1.* 193. *Lecidea testacea*, *Winch Guide*, 2. 42. *L. pholidiota*, *Acharius Syn.* 53.

Found abundantly by Mr. Winch on quartzose rocks at Lanchester, and on walls at Knitsby, Durham. Thallus composed of minute portions, so that it cannot be separated entirely from the stone; each portion consists of little, imbricated, rounded, convex, often notched lobes, smooth, and of a pale glaucous-white on their upper side, closely adherent to the stone by the under. Apothecia scattered, sessile, small, but generally larger than the lobes of the thallus, dark reddish-brown, somewhat convex and thick, encompassed with a thin, even border, of their own substance and colour, or rather paler; almost black when dry.

PSORA ? RUBIFORMIS. *Raspberry-fruited Psora.* TAB. 2116.

Thallus depressed, of somewhat crustaceous, rounded, lobed, crenate, light-green lobes or scales, thickened and pale at their margins, white beneath. Apothecia on the disc, clustered, sessile, minute, globose, hollow, red.

Lichen *rubiformis*, *Wahlenberg*. *E. B.* 2112. *Psora ? rubiformis*, *Hooker Crypt. Part 1.* 193. *Bæomyces rubiformis*, *Acharius Meth.* 324. *tab. 7. fig. 5.* *Cenomyce rubif.*, *Lich. Univ.* *Lecidea rubiformis*, *Acharius Syn.* 52.

Sent to Sir J. E. Smith by Mr. W. Brunton, who found it on turf ground near Ripon, Yorkshire. The thallus forms rounded patches about an inch wide, is bluntly lobed, thick and crenated at the margin, of a pale, rather glaucous-green above, and white beneath. That which is considered to be the fructification consists of numerous little globose or ovate bodies of a red colour, generally clustered, sometimes dispersed, certainly originating from the disc of the thallus: they are hollow, spongy or powdery within, with an open, thick-edged mouth at the summit.

This curious production is doubtfully referred, in the 'English Flora,'

to the genus *Psora*. The thallus resembles very nearly that of *Scyphophorus*, or Cup-Lichen, and the very anomalous form of the fructification may possibly be traced hereafter, as being only one of the numerous variations to which the reproductive apparatus of that genus seems liable. The species appears to be very little known and of rare occurrence, another circumstance bearing upon the probability in question.

GENUS DLXXXI. SQUAMARIA. *Squamaria*.

GEN. CHAR. *Thallus* defined, scaly, spreading, orbicular and stellate; the scales distinct or adherent, often imbricated, diverging. *Apothecia* (*patellulæ*) bordered, sessile; the border of the same substance as the thallus.

“This may be considered an intermediate link between the *Lecanoræ* and *Parmeliæ*; most allied, however, to the latter, but having a much less distinctly leafy or membranaceous thallus.”—*Hooker*.

The name is from the Latin *squama*, a scale, indicative of the structure of the thallus, especially in those of the first section.

* *Thallus imbricated*.

SQUAMARIA CRASSA. *Thick Squamaria*. TAB. 2117.

Thallus imbricated, thick, cartilaginous, pale greyish-green; its lobes or scales horizontal, spreading, imbricated, rounded, divided, notched and waved, brownish beneath. *Apothecia* flattish, brownish-orange, with a paler, elevated border.

Lichen crassus, *Hudson*. *E. B.* 1893. *Squamaria crassa*, *DeCandolle*. *Hooker Crypt. Part 1.* 193. *Lecanora crassa*, *Acharius Syn.* 190. *Lichen cartilagineus*, *Lightfoot*, *Dickson*.

A native of limestone rocks, forming broad, cushion-like tufts or patches on the earth that covers them. *Thallus* somewhat leafy, imbricated, brittle; the upper surface smooth, of a light greyish- or yellowish-green, turning brown with age; the under surface brown, or black as if inky, rough. Lobes horizontally spreading, rather close and entangled, rounded, bluntly lobed and notched, pale at the edges. *Apothecia* sessile, nearly flat, of a dull rufous-orange colour, with a paler, obtuse border, becoming black with age.

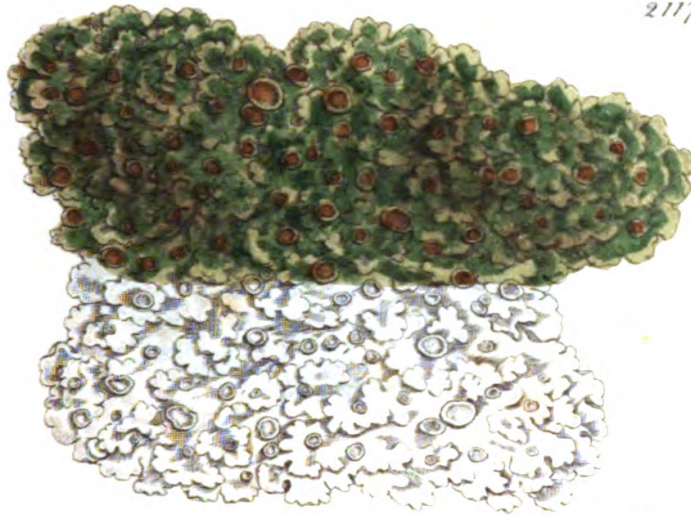
SQUAMARIA MUSCORUM. *Little fleshy-shielded Moss Squamaria*.
TAB. 2118.

Thallus imbricated, flat, pale-brown, smooth; its segments dilated, rounded, crenate, mealy and bluish at the margin. *Apothecia* prominent, thick, with a flat, orange-red disc, and a slightly raised pale border.

Lichen carnosus, *Dickson Crypt. fasc. 2.* 21. *tab. 6. fig. 7.* *E. B.*

1893

2117.

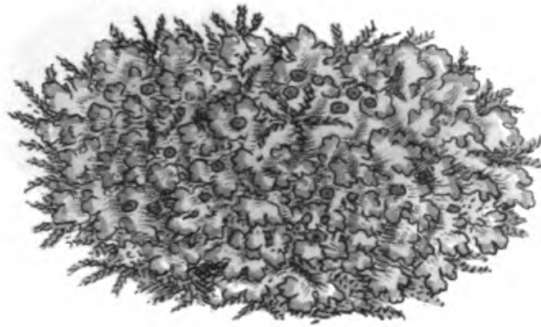


Squamaria crassa?

June 1, 1893. Published by J. S. Sowerby, London.

1684

2118.



Squamaria muscorum?

Dec. 1366. Published by J. S. Sewerby, London.

74
219.



Squamaria hypnorum?



Squamaria hypnorum

2283

2120.



Squamaria leucolepis.

Always published by J. P. Knapik & Co.

1684. *Squamaria muscorum*, *Hooker Crypt. Part 1.* 194. *Lecanora crassa*, *Acharius Syn.* 193. *L. hypnorum*, *Ach. Lich. Univ.*

Not unfrequent, spreading over mosses, on rocks and trees in mountainous districts. The thallus forms small, irregular patches, attached by minute radicles. Lobes flat, or ascending, oblong, wavy, smooth, somewhat imbricated, repeatedly subdivided, dilated, rounded and crenate towards the extremity. The colour is a light-brown, inclining to flesh-colour, very pale on the under side; the edges tinged with blue, and slightly powdery. Apothecia solitary or clustered, small, prominent, with a flat orange-red disc, and a smooth, slightly elevated border, of the colour and substance of the thallus.

SQUAMARIA HYPNORUM. *Spreading Ground Squamaria.* TAB. 2119.

Thallus spreading, of small greenish-brown scales, rounded, crenulated, and somewhat granulated at the margin. Apothecia eventually flat, red-brown, with a thin, inflexed, pale, lobed or crenated border.

Lichen hypnorum, *Fl. Dan.* *Dickson Crypt. fasc. 3.* 14. *E. B.* 740. *Squamaria hypnorum*, *Hooker Crypt. Part 1.* 194. *Lecanora hypnorum*, *Acharius Syn.* 193.

Found growing upon mosses, sometimes on the ground, in barren sandy places. Thallus composed of greyish-green globules or scales, spreading irregularly over mosses or dead grasses, and bearing small, straggling apothecia, whose disc is more or less flat or convex, of a pale chestnut-brown, surrounded by a lobed, incurved border, that when young is of the colour of the crust and somewhat granulated, but by age becomes of a pale brown, more cracked and less granulated.

“The small, almost granulated portions of the thallus of this plant render it doubtful whether it should not still rank with the true *Lecanora*.”—*Hooker.*

SQUAMARIA LEUCOLEPIS. *Greyish lobed Squamaria.* TAB. 2120.

Thallus imbricated; the segments bluntly lobed and notched, somewhat radiate and striated, silver-grey; black and somewhat fibrillose beneath. Apothecia black, with an elevated, thick, crenated border.

Lichen Hookeri, *E. B.* 2283. *Squamaria leucolepis*, *Hooker Crypt. Part 1.* 194. *Lichen leucolepis*, *Wahlenberg Lapp.* 781. *Lecanora leucolepis*, *Acharius Syn.* 194.

First noticed as a British species by Mr. W. Borrer, who found it growing on the micaceous schist rocks of the Breadalbane mountains. The thallus consists of small, silver-grey, imbricated, slightly elevated, oblong lobes, whose disc is obscurely striated; their margins tumid, crenate, paler; their extremities dilated and radiant, especially in such as form the circumference of the thallus. Apothecia abundant, a little elevated, of a moderate size, black, opaque, flattish, with a prominent, crenate, inflexed border, of the substance and pale whitish hue of the crenatures of the thallus.

SQUAMARIA CANDELARIA. *Yellow Candle Squamaria.* TAB. **2121.**

Segments of the thallus crowded, upright, entangled, yellow, minutely lobed, jagged, and divaricated. Apothecia minute, flat, deep-yellow, with a thick inflexed border.

Lichen candelarius, *Linn. E. B.* 1794. *Squamaria candelaria*, *Hooker Crypt. Part 1.* 194. *Lecanora candelaria*, *Acharius Syn.* 191. Lichen concolor, *Dickson Crypt. fasc. 3.* 18. *tab. 9. fig. 8.*

Frequent on old paling, posts, and on rocks in alpine districts. The thalli grow in dense patches, upright, a quarter of an inch or more in height, but when young are horizontal and somewhat imbricated. Segments much branched and divaricated, flattened, minutely and sharply cut and jagged, the ultimate ones obtuse, rather pulverulent. Apothecia small, scattered, lateral, nearly sessile, flattish, with a thick inflexed border externally warty. The colour varies from a pale greenish-lemon to a golden hue, but the bases of the thalli are pale or whitish, and the disc of the apothecia orange.

It contains much colouring matter, and has long been employed in Sweden for staining yellow the candles used at festivals; hence the specific name.

SQUAMARIA POLYCARPA. *Yellow many-fruited Squamaria.* TAB. **2122.**

Thallus spreading, crustaceous, wrinkled, greyish-yellow, lobed and toothed. Apothecia very numerous, crowded, flat, orange, with a thick, inflexed, greenish border.

Lichen polycarpus, *Ehrhart. E. B.* 1795. *Squamaria candelaria*, β . *Acharius Syn.* 192. *Hooker Crypt. Part 1.* 194.

Not unfrequent in similar situations to the last, which it often accompanies, and from which its specific distinction is doubtful. The thallus, when young, forms little circular patches, of a greenish-grey tinged with yellow, when growing on the branches of trees, or in the shade, but in exposed sunny places assuming more of a golden hue. The creeping habit, and less deeply lobed and jagged margins chiefly separate it from *S. candelaria*. The apothecia are generally numerous, elevated on thick, short stalks, and often overlay each other in maturity.

** *Thallus adnate, radiant, stellate and lobed in the circumference.*

SQUAMARIA MURORUM. *Yellow Wall Squamaria.* TAB. **2123.**

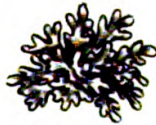
Thallus adnate, orbicular, cracked, plaited and lobed, bright yellow; segments linear. Apothecia central, crowded, sessile, flattish, orange-coloured, with a smooth, slightly waved border.

Lichen murorum, *Acharius Prod. E. B.* 2157. *Squamaria murorum*, *Hooker Crypt. Part 1.* 194. *Lecanora murorum*, *Ach. Syn.* 181. *L. flavicans*, *Withering.*

Common on walls, calcareous stones, and rocks. The thallus forms

1794

2121.



Squamaria candelaria?



Sept. 1867. Published by Jas. Sowerby, London.

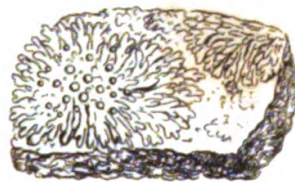


Squamaria polycarpa

Oct 1. 1807. Published by Jas. Sowerby London.

2157

2123.

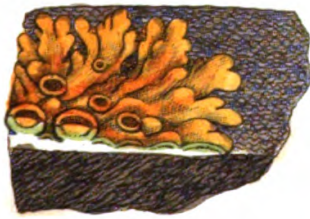
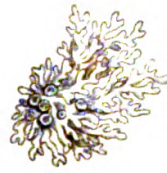


Squamaria mucronum?

For. unidentifiable by J. S. Lovell, London

2161

2124.

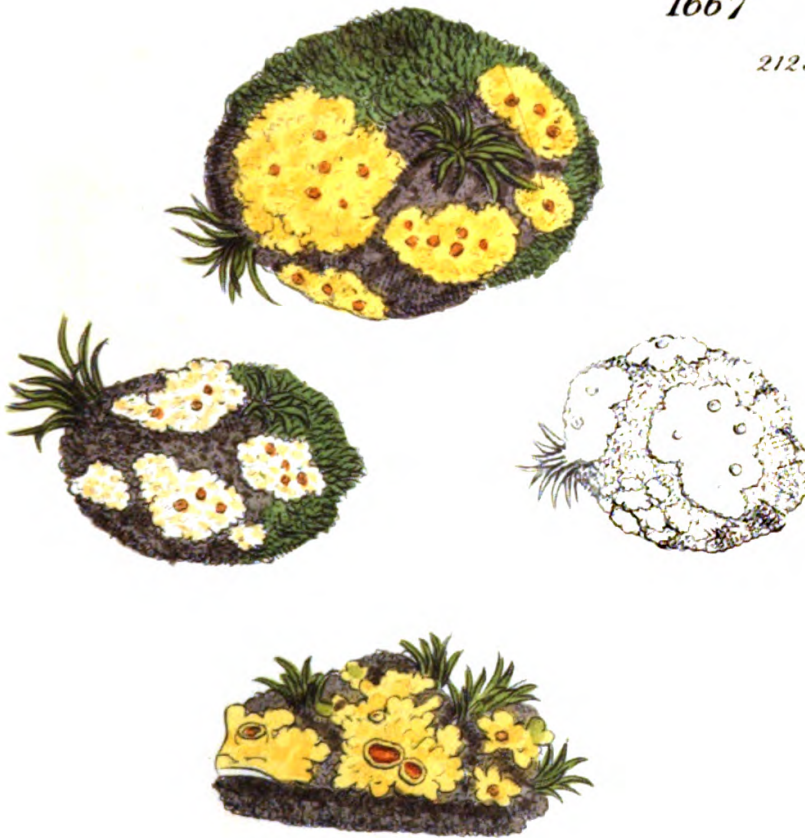


Squamaria elegans.

July 1830. published by J. P. Rowley-Light.

1667

2125.



Squamaria fulgens.

Nov. 1806. Published by J. & Sowerby London.



circular patches, closely attached to the stone or mortar ; it is furrowed, lobed, and crenate in the circumference, which is of a rich golden-yellow colour, passing into a paler, whitish, or greenish hue towards the centre. Apothecia numerous, crowded on the older part of the thallus, small, sessile, with a smooth, more or less waved border.

SQUAMARIA MINIATA. *Vermilion-coloured Squamaria.*

Thallus subgranulated, deep-red, smooth above, the circumference lobed and radiated ; segments convex, very short, inciso-crenate. Apothecia minute, turgid ; disc plane, eventually hemispherical ; border entire and of the same colour.

Squamaria miniata, *Hooker Crypt. Part 1.* 195. *Lecanora miniata*, *Acharius Syn.* 182. *Winch Fl. of North. and Durham*, 88. *Lobararia miniata*, *Hoffmann.*

Found by the Rev. J. Harriman on Gainsford Church, Durham.

SQUAMARIA ELEGANS. *Elegant Orange Squamaria.* TAB. 2124.

Thallus adnate, hard, smooth, orbicular, plaited or rugged, deep tawny-orange ; lobes linear, compound, convex, wavy. Apothecia concave, central, of the same colour as the thallus ; border somewhat inflexed, entire.

Lichen elegans, *Acharius Prod. E. B.* 2181. *Squamaria elegans*, *Hooker Crypt. Part 1.* 195. *Lecanora elegans*, *Ach. Syn.* 182.

A native of rocks and stones in the north of England and Scotland. Allied to *S. murorum*, but much smaller, of a deep orange or fulvous hue, and more deeply divided into linear, zigzag, convex segments.

SQUAMARIA FULGENS. *Yellow Ground Squamaria.* TAB. 2125.

Thallus adnate, orbicular, lobed and waved, somewhat imbricated, lemon-coloured ; whitish when dry. Apothecia deep-orange, eventually convex ; border at first elevated, obliterated by age.

Lichen fulgens, *Acharius Prod. E. B.* 1667. *Squamaria fulgens*, *Hooker Crypt. Part 1.* 195. *Lecanora fulgens*, *Ach. Syn.* 183. *Lichen citrinus*, *Hedwig.* *Psora citrina*, *Hoffmann.*

Apparently rare. First found in Britain by Mr. Adams, growing on rocks slightly covered with earth, near Stackpole Court, Pembrokeshire ; since by Messrs. Turner and Borrer, on cliffs by Freshwater Bay, Isle of Wight, and at New Haven, Sussex. Thallus closely attached to the soil by numerous radicles, friable in texture, spreading circularly, composed of partly imbricated, rounded lobes, and, when wet, of a beautiful, bright lemon-colour, which changes in drying to a dead whiteness : the original hue, however, is instantaneously restored by moistening, even after the lapse of several years. Apothecia mostly on the central or older parts of the thallus, or of its principal lobes, sessile, circular, deep orange-colour ; border of the colour of the thallus when young elevated, but becoming nearly obliterated as the disc approaches maturity and assumes a greater or less convexity.

SQUAMARIA LENTIGERA. *White Ground Squamaria.* TAB.
2126.

Thallus adnate, orbicular, lobed, subimbricated, greenish-white; lobes broad, slightly concave, waved and crenated. Apothecia nearly plane, reddish-buff-coloured; border elevated, tumid, inflexed, subcrenulate.

Lichen lentigerus, *Weber.* *E. B.* 871. *Relhan Fl. Cantab.* 430. *tab.* 7. *Squamaria lentigera, DeCandolle.* *Hooker Crypt. Part 1.* 195. *Lecanora lentigera, Acharius Syn.* 179.

Found on dry, chalky heaths in Cambridgeshire and Suffolk. It forms roundish patches an inch or two in diameter, of a thickish, chalk-like substance, closely attached to the ground, white, but generally tinged when moist with a greenish hue, particularly near the circumference, which is crenate, lobed and undulated, the extreme edge being of a pure white. Apothecia numerous; the disc plane, or slightly convex, of a waxy-brown colour, surrounded by a white border like the thallus.

The plant has a porcelain-like brilliancy, and is very conspicuous.

SQUAMARIA CANDICANS. *Whitish radiating Squamaria.* TAB.
2127.

Thallus adnate, tartareous, thin, orbicular, plaited, lobed and radiated at the margin, bright greyish-white. Apothecia clustered, greyish-black, slightly convex, with a plaited, elevated border.

Lichen candicans, *Dickson Crypt. fasc.* 3. 15. *tab.* 9. *fig.* 5. *E. B.* 1778. *Squamaria candicans, Hooker Crypt. Part 1.* 195. *Lecanora epigea, Acharius Syn.* 179.

A native of limestone and chalky rocks, in various parts of England. The thin, hard thallus adheres so firmly to the stone as to be inseparable from it entire; it forms roundish patches about an inch in diameter, of a bright bluish or greyish-white, variously plaited, lobed, and radiated toward the margin. Apothecia more or less crowded, sessile, round, flattish, greyish-black, with an elevated, eventually plaited or crisped border, of the colour and substance of the thallus.

SQUAMARIA GELIDA. *Flesh-coloured Alpine Squamaria.* TAB.
2128.

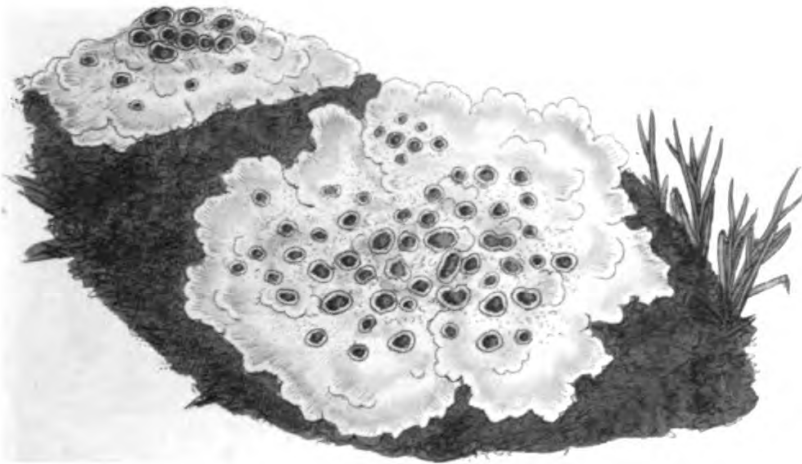
Thallus adnate, orbicular, radiated, lobed and lacinated, dirty-white, smooth, with large, brownish, radiated, central, fleshy warts. Apothecia concave, central, rose-coloured; with a thick, elevated, entire border.

Lichen gelidus, *Linn.* *Dickson Crypt. fasc.* 2. 19. *E. B.* 699. *Squamaria gelida, Delise.* *Hooker Crypt. Part 1.* 195. *Lecanora gelida, Acharius Syn.* 186.

Met with on rocks in the north of England, particularly in Teesdale, and in the Highlands of Scotland. Thallus closely adhering to the rock, smooth, white, forming small, roundish patches, lobed in the margin, and so plaited as to have the appearance at first sight of being imbricated. In the centre are a few elevated, brown or purplish, lobed warts, of a fleshy texture, around which are placed the apothecia, which are of a circular form, and of a delicate rose-colour when wet, with a very smooth, white, elevated border.

871

2126

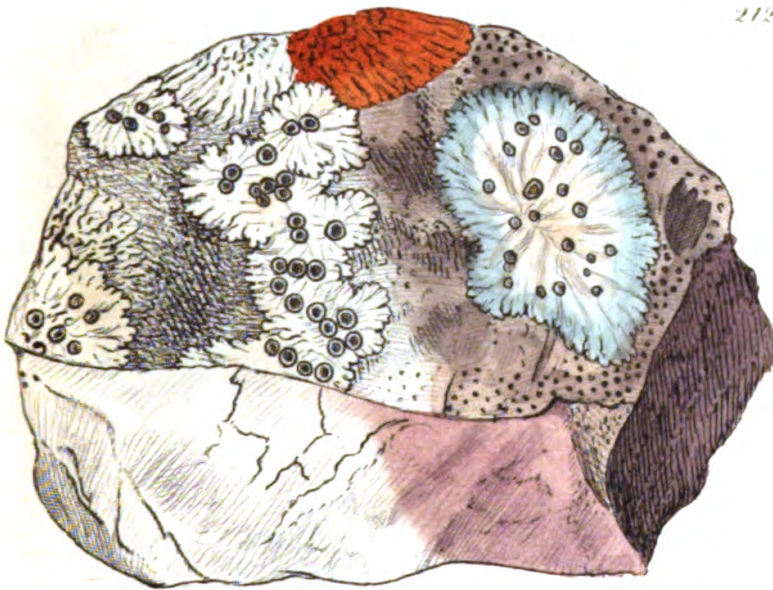


Squamaria lentigera?

May 1, 1801 Published by Jas. Sowerby, London.

1778

2127

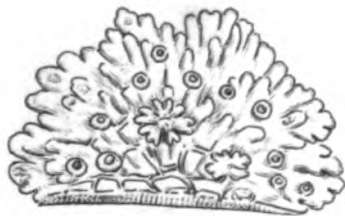
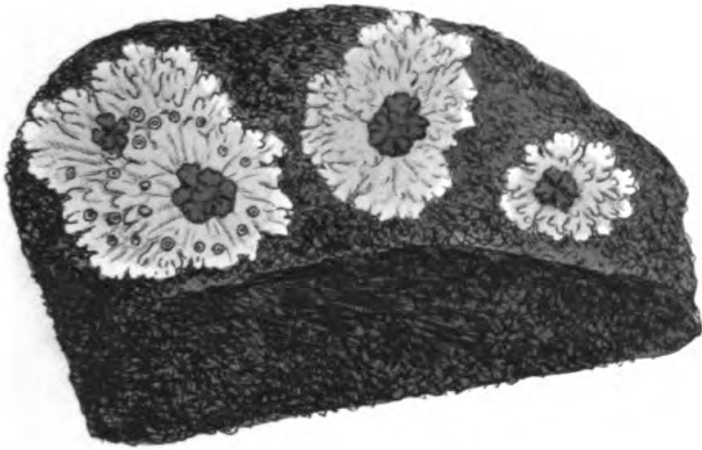


Squamaria candidans.

Ang. Library Published by J. & Sowerby London.

699

2128

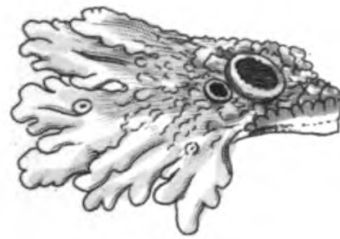
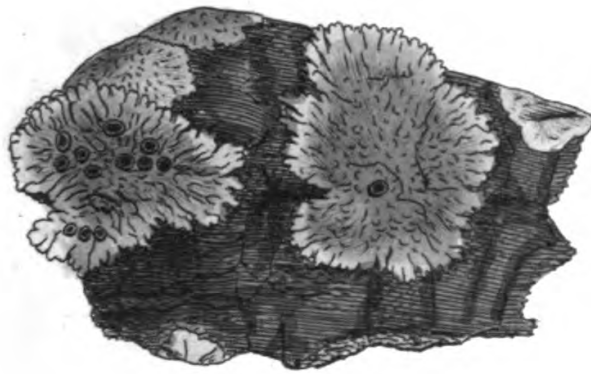


Squamaria gelida?

from 1200 fathoms by fish traps, etc.

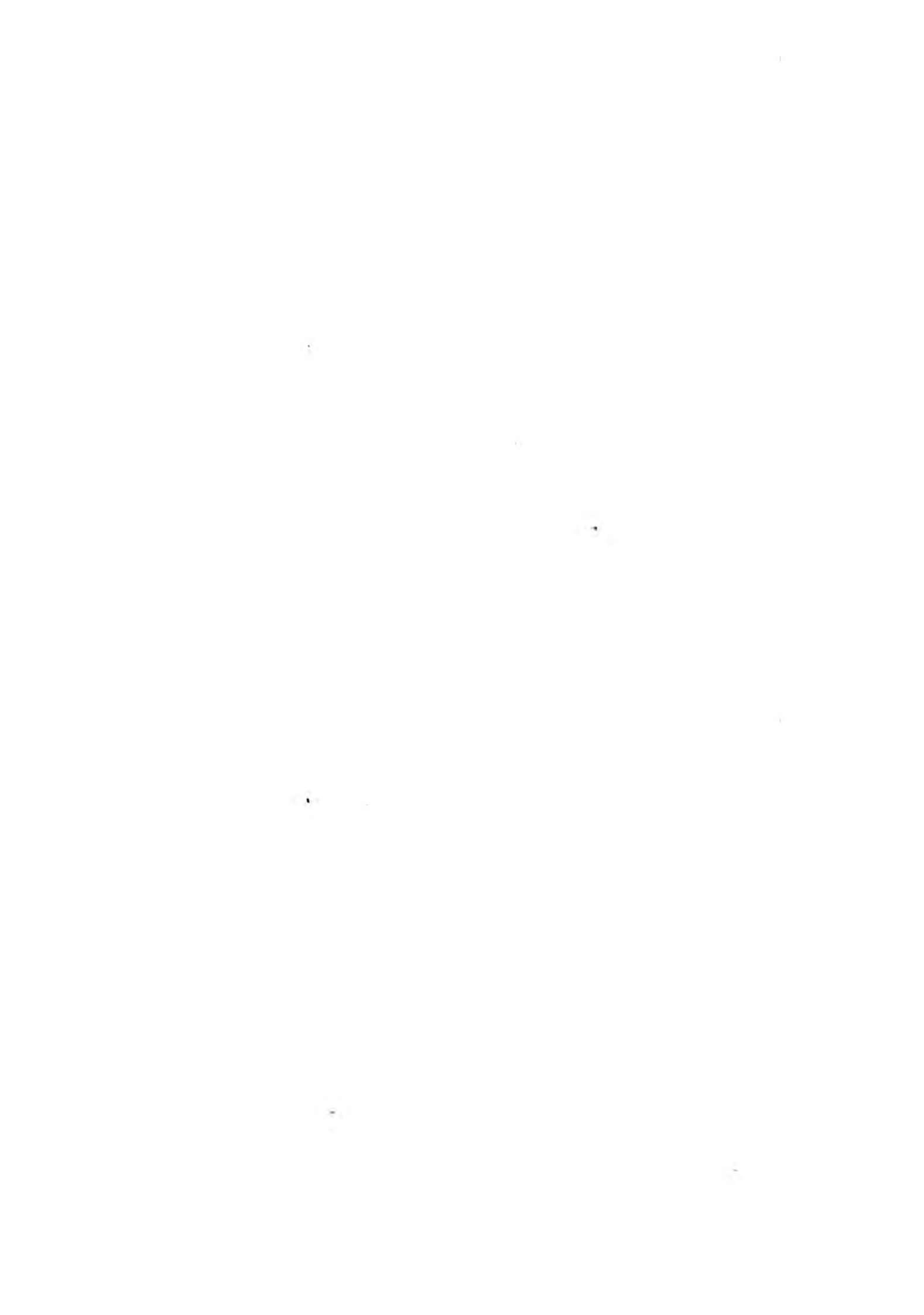
1779

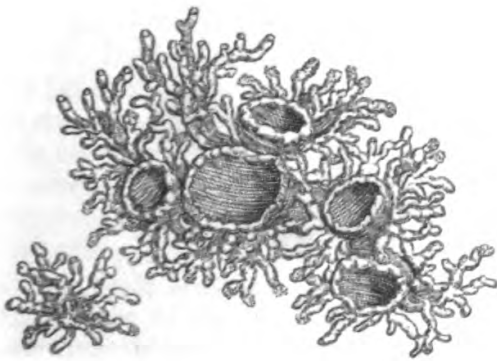
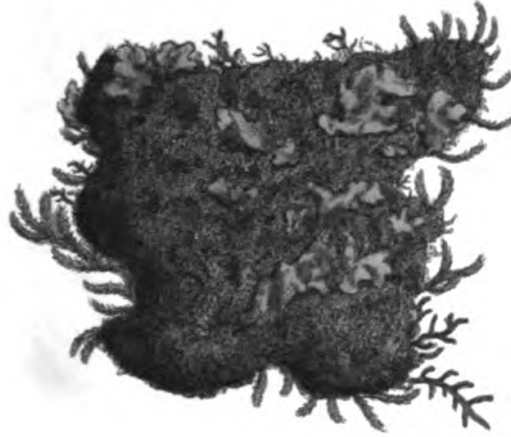
2129.



Squamaria Clementis

Fig. 1. 1843. Published by J. S. Edwards, London.





Squamaria isidioides

Dec. 1st 1837.

SQUAMARIA LANUGINOSA. *Powdery Squamaria.*

“Thallus orbicular, yellowish-white, pulverulent; greyish-black and downy beneath; lobes imbricated, plane, rounded, slightly crenated. Apothecia reddish; their border pulverulent.”

Squamaria lanuginosa, *Hooker Crypt. Part 1.* 196. *Parmelia lanuginosa*, *Acharius Syn.* 201. *Lichen membranaceus*, *Dickson Crypt. fasc. 2.* 21. *tab. 6. fig. 1.*

Not very unfrequent on rocks in the Highlands of Scotland. According to Mr. Dickson, the apothecia are of the same colour as the thallus.

SQUAMARIA CLEMENTI. *Clementine Squamaria.* **TAB. 2129.**

Thallus adnate, very mealy, with a membranous, radiating, lobed, and finely cut margin, of a whitish, unchangeable grey. Apothecia bluish-black, with an inflexed, crenate border.

Lichen Clementi, *E. B.* 1779. *Squamaria Clementi*, *Hooker Crypt. Part 1.* 196. *Parmelia Clementi*, *Turner in Linn. Trans.* 9. 146. *tab. 13. fig. 1.* *P. Clementiana*, *Acharius Syn.* 201.

Met with on trees and tiled roofs in Sussex, as well as about Tunbridge Wells, Southampton, and other places in the south of England. It forms roundish patches, often 2 inches or more in diameter, of a light bluish-grey, very powdery or mealy about the central part, and often to the very edges; margin membranous, finely lobed and cut, smooth, white beneath, closely attached to the bark or tile. Apothecia few and rare, central, at first concave, and almost covered with their inflexed, thin, crenate border, at length exposing a black disc, clothed, especially when wet, with a bluish hoariness.

SQUAMARIA ISIDIOIDES. *Isidium-like Squamaria.* **TAB. 2130.**

Thallus of minute greenish scales, white when dry, with branched cylindrical segments. Apothecia purplish-black, with a thick, rugged, more or less inflexed border.

Parmelia isidioides, *Borrer in E. B. Supp.* 2808.

Found by the Rev. T. Salwey “upon one tree in an open grove, in Cwm Bychan, about two miles above Llandbedr, near Barmouth.” Thallus scattered over mosses, and appearing to the naked eye a mere greyish-white mealiness, greenish when wet, among which the scutellæ are barely perceptible. A glass of considerable power shows it to consist of minute scales, branching out into, or formed by the confluence of, little cylindrical or slightly compressed segments, resembling the *podetia* of an *Isidium* or young *Sphaerophoron*, varying in position from decumbent to ascending and erect, some nearly simple, others more or less branched; the subdivisions irregular, parallel or spreading, marked with constrictions, and frequently tipped with a brownish speck. Apothecia not numerous, solitary or in little clusters, slightly elevated, with a contracted base; disc thick, flat, or somewhat concave, dull purplish or brownish black, minutely rugged; border tumid, more or less inflexed, sometimes crenulate, beaded, or, in age, beset with minute ramuli similar to those of the thallus.

The disc has occasionally, when dry, an appearance like a proper margin within the thalloidal one.

SQUAMARIA CÆSIA. *Grey-warted Squamaria.* TAB. 2131.

Thallus orbicular, convex, lobed and imbricated, greyish-white; segments unequally lobed and notched, bearing powdery, grey warts scattered about the centre. Apothecia glaucous-black, with an elevated, thickish, inflexed border.

Lichen cæsius, *Acharius Prod. E. B.* 1052. *Squamaria cæsia*, *Hooker Crypt. Part 1.* 196. *Parmelia cæsia*, *Ach. Syn.* 216. *Psora cæsia*, *Hoffmann. Lichen Psora, Dickson Crypt. fasc. 3.* 17.

A native of walls, stones, and roofs of houses, in several parts of England. The convex, imbricated and entangled thalli form a loose, uneven crust, soon losing its original orbicular figure, besprinkled with round, convex, powdery warts: the ultimate lobes are dilated, subdivided and notched, clothed with short brown fibres beneath. Apothecia small, sometimes numerous, but not of very frequent occurrence, flat, glaucous when dry, with an elevated crenate border.

SQUAMARIA EROSA. *Toothed-edged stellated Squamaria.* TAB. 2132.

Thallus leafy, imbricated, pale greenish-grey, greyish-white when dry; underside white, with pale fibres; segments much divided, rounded, with minutely jagged edges. Apothecia orbicular, flattish; disc black; border slightly elevated.

Parmelia erosa, *Borrer in E. B. Supp.* 2807. *Squamaria tribacia*, in part, *Hooker Crypt. Part 1.* 194. *Lecanora tribacia*, in part, *Acharius Syn.* 191. *Lich. Univ.* 415.

Not unfrequent in Sussex, on trunks of old trees, particularly elms, on tiled roofs, and on walls; probably elsewhere, having been found as far north as the Connel Ferry in Argyleshire. Thallus radiant, roundish in young distinct plants, but mostly found in large, irregular, crowded, imbricated patches, thin, greyish-green when wet, whitish when dry, attached by short pale fibres; segments much divided, imbricated and entangled. Apothecia rare, about the size of rape-seed, orbicular.

SQUAMARIA AFFINIS. *Spongy Squamaria.* TAB. 2133.

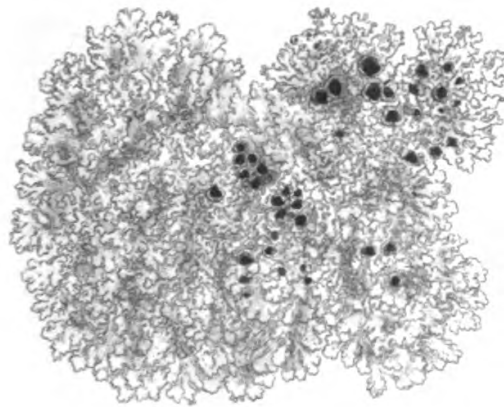
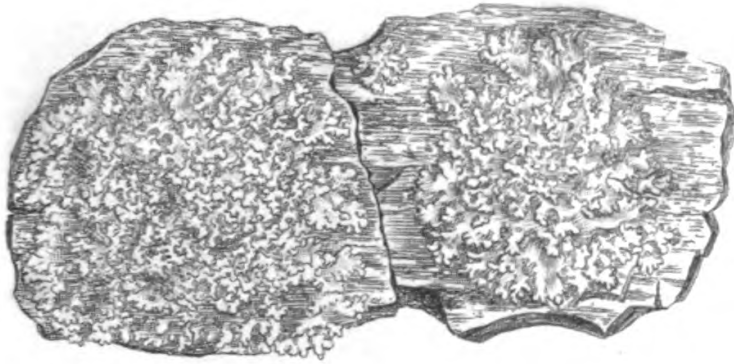
Thallus orbicular, livid lead-colour, with broad, notched and cut imbricated lobes; beneath somewhat spongy, with bluish-black, dense fibres. Apothecia rust-coloured, nearly flat, with a thick, elevated, inflexed, crenated border.

Lichen affinis, *Dickson Crypt. fasc. 4.* 24. tab. 12. fig. 6. *E. B.* 983. *Squamaria affinis*, *Hooker Crypt. Part 1.* 196. *Parmelia rubiginosa*, *Acharius Syn.* 201. Lichen rubiginosus, *Thunberg Fl. Cap.* 176?

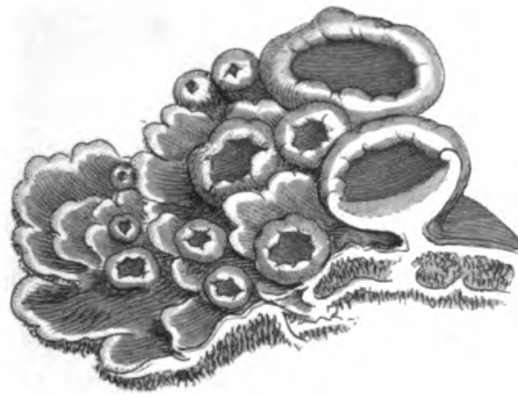
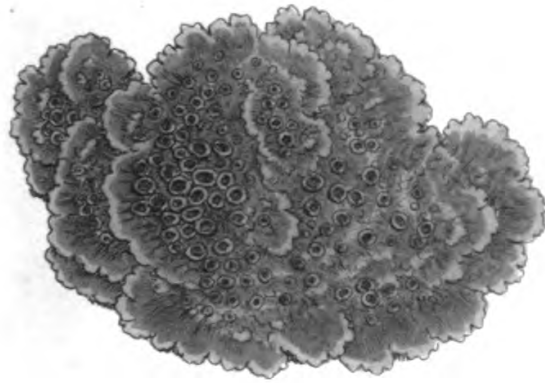
Frequent on the trunks of trees in subalpine districts. Thallus spreading circularly, with numerous imbricated segments, smooth, grey, concave, blunt, with silvery-white margins; clothed beneath with a uniform woolly coat of tangled, bluish-black fibres: the cen-



Squamaria casia?



Squamaria crosa?

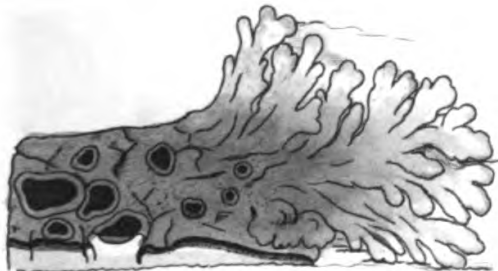
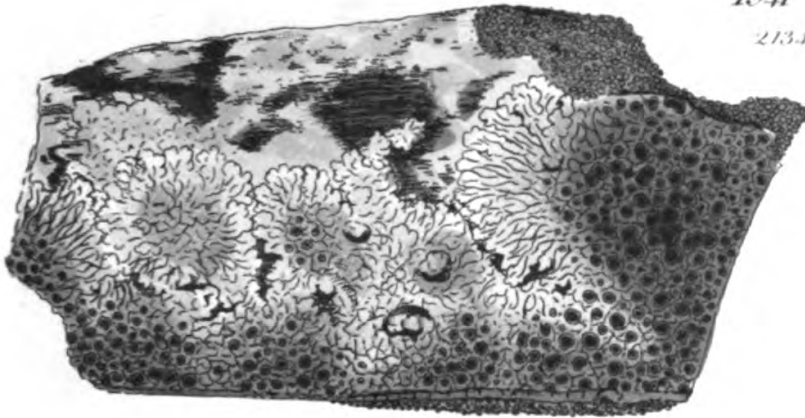


Squamaria affinis.

Feb. 1. 1802. Published by J. G. Smith, London.

1911

2134.



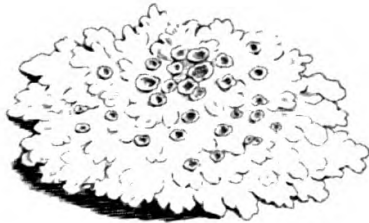
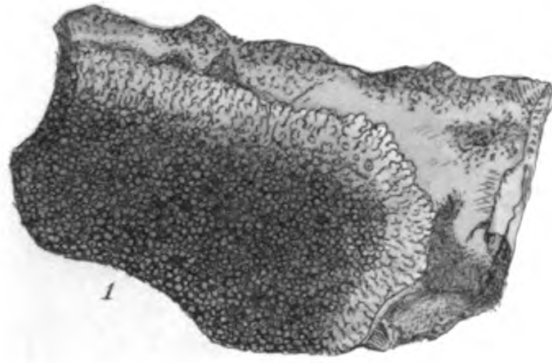
Squamaria circinata?

Oct. 1, 1868. Published by J. & S. Sowerby, London.

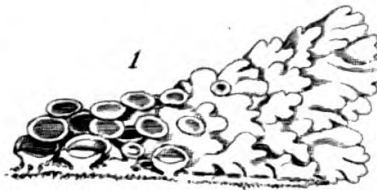


1695

2135.



Squamaria saxicola?





ENGLISH BOTANY:

PLANT KINGDOM

BRITISH PLANTS

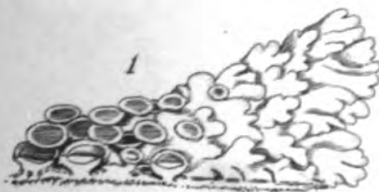
1695

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2

maria saxicola?



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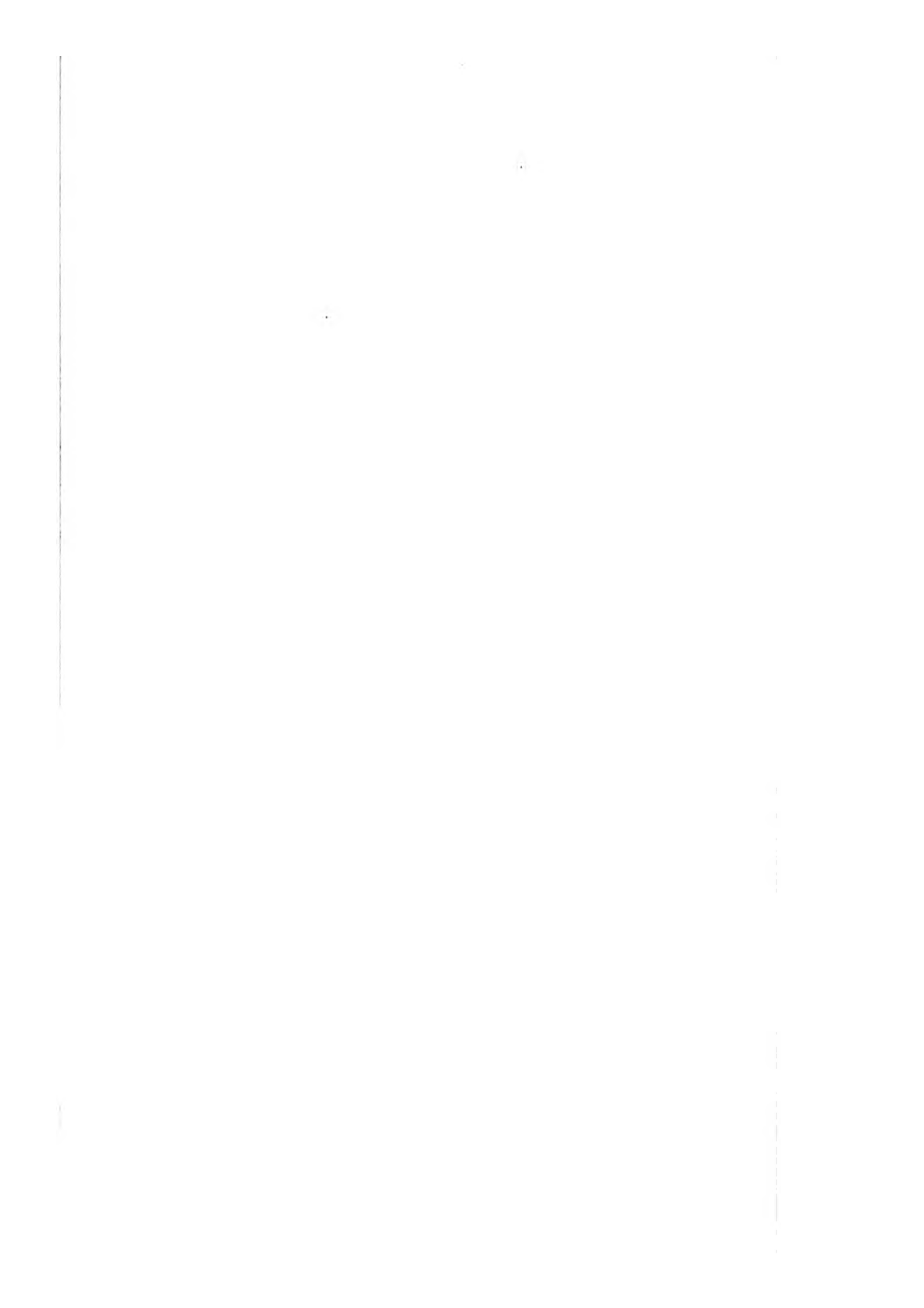


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Det. J. Sowerby, London.

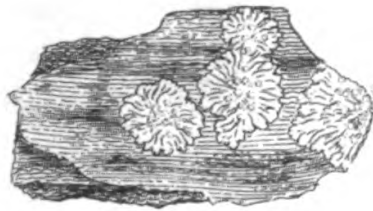
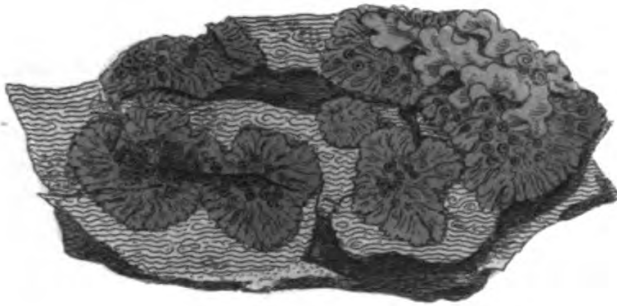


413



2158

2136.



Squamaria elæina?

June 1 1890 published by J. S. Cooper & Co. N. Y.



tral part often powdery. Apothecia numerous, reddish-chestnut or rust-colour, with a very elevated, crenate, inflexed border, of the same polished whiteness or silvery-grey as the edges of the thallus.

The specific name, *affinis*, was given by Mr. Dickson, in consequence of the near resemblance between it and *Lichen plumbeus*, with which previous botanists had confounded it: the apothecia, however, differ greatly, hence the latter plant is now placed in a separate genus, *Placodium*.

SQUAMARIA CIRCINATA. *Circinate Squamaria.* TAB. 2134.

Thallus adnate, subcrustaceous in the centre, orbicular, greyish, cracked, marked with radiant, marginal, lobe-like furrows. Apothecia central, crowded, depressed, blackish-brown, eventually angular, with a smooth border.

Lichen circinatus, *Acharius Prod. E. B.* 1941. *Squamaria circinata*, *Hooker Crypt. Part 1.* 196. *Lecanora circinata*, *Acharius Syn.* 184.

Found on flat calcareous stones in Suffolk, Cambridge and Westmoreland, likewise on encrinal limestone near the new bridge below Barnard Castle, Durham; hence probably not unfrequent in similar habitats in other parts of the kingdom. Thallus closely adnate, marked with radiating lines and furrows, so as to seem lobed, and almost imbricated at first sight. Apothecia very numerous, depressed, so much crowded as to become angular; disc dark brown or black, deciduous; border smooth, entire.

SQUAMARIA SAXICOLA. *Radiated Wall Squamaria.* TAB. 2135.

Thallus orbicular, finely lobed, somewhat imbricated, pale sulphureous-green; the lobes cut, crenate, zigzag, entangled. Apothecia central, crowded, flattish, tawny-brown, with a pale uneven border.

Lichen saxicola, *Acharius Prod. E. B.* 1695. *Squamaria saxicola*, *Hooker Crypt. Part 1.* 197. *Lecanora saxicola*, *Ach. Syn.* 180.

Lichen muralis, *Dickson Crypt. fasc. 1.* 11. *Psora muralis*, *Hoffmann.*

Not unfrequent in exposed situations, especially in subalpine districts, growing on rocks, walls, and loose flinty and other stones. On the broad, flat stones with which houses are tiled in Yorkshire, it grows peculiarly luxuriant, spreading into circular bands a foot or more in diameter, the centre being entirely obliterated by time. It generally occurs in round patches an inch or two broad, of a pale greenish-sulphur-colour, closely attached, more or less neatly lobed and imbricated, according to the hardness and smoothness of the medium on which it grows; segments narrow, entangled, dilated and crenate externally. Apothecia small, crowded, central, sessile, with a crenate, uneven border of the hue of the thallus.

SQUAMARIA ELÆINA. *Orbicular olive Squamaria.* TAB. 2136.

Thallus orbicular, imbricated, depressed, stellated, membranous, dark greenish-olive; smoothish and of the same colour beneath; segments close-pressed, pinnatifid, linear, obtuse. Apothecia central, brownish-black, with an elevated border.

- Lichen elæinus, *Wahlenberg Lapp.* 425. *tab.* 28. *fig.* 3. *E. B.* 2158.
Squamaria elæina, *Hooker Crypt. Part 1.* 197. *Parmelia elæina*,
Acharius Syn. 200. *Lecanora elæina*, *Ach. Lich. Univ.*

Found on the bark of elm and fruit trees, likewise on walls in the southern and eastern parts of England especially. Thallus of a blackish or olive-green hue, closely attached to the bark or wall; more or less speckled with pale, mealy warts. Apothecia central, small, flat; with a thick, inflexed, smooth border.

GENUS DLXXXII. PLACODIUM. *Placodium.*

GEN. CHAR. *Thallus* defined, orbicular and stellated; the scales adherent, indistinct, pulverulent, foliaceous in the circumference. *Apothecia* (*patellulæ*) usually in the centre of the thallus, bordered; the border of the same hue as the disc.

The adherence of the scales of the thallus will distinguish the species of this genus from *Psora*, and the different border of the apothecia from *Squamaria*. The name is from the Greek, *πλαξ*, *πλακός*, a crust or leaf.

“They have the fructification of *Lecidea* with the thallus of *Squamaria*, or in one species, *P. dædaleum*, almost that of *Parmelia*.”—*Hooker.*

PLACODIUM CANESCENS. *Grey Tree Placodium.* TAB. 2137.

Thallus adnate, orbicular, often confluent, plaited and lobed at the margin, with powdery spots of a glaucous-white in the centre. *Apothecia* central, depressed, black, with a narrow blackish border. *Lichen canescens*, *Dickson Crypt. fasc. 1.* 10. *tab.* 2. *fig.* 5. *E. B.* 582. *Placodium canescens*, *DeCandolle.* *Hooker Crypt. Part 1.* 197. *Lecidea canescens*, *Acharius Syn.* 54.

Very frequent on the bark of old trees, sometimes on rocks, walls and roofs, but rarely producing apothecia. It grows flat upon the bark, forming patches, which often become confluent. Thallus, when separated, pliable and somewhat leafy towards the margin, its inner substance very white; under surface pale flesh-colour, the upper light glaucous-grey, not shining, concentrically rugged, more or less sprinkled with white powdery spots. Apothecia very rare, clustered about the centre of old specimens, flat, blackish, with a narrow, rather paler border.

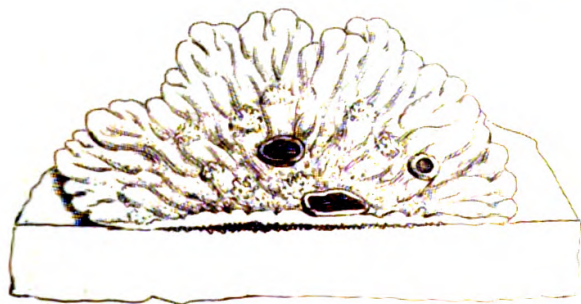
Mr. D. Turner observes, that when growing on walls or roofs, it often decays in the centre.

PLACODIUM PLUMBEUM. *Lead-coloured spongy Placodium.*

TAB. 2138.

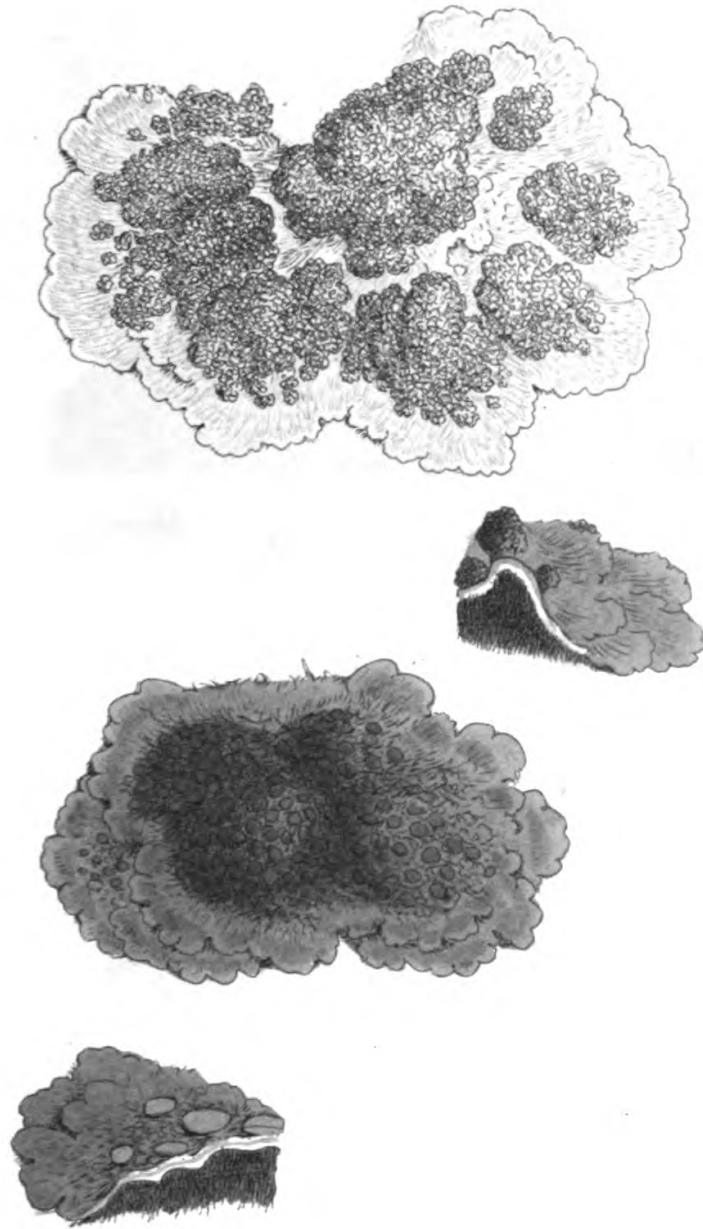
Thallus orbicular, livid lead-colour, broadly lobed and notched, some-

55
2137



Placodium canescens.

Spid. 1799. Tabularia. Pl. Præterea lenina.

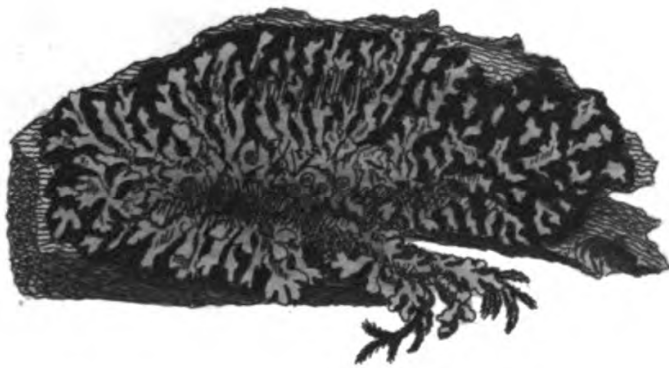


Placodium plumbeum



2128

2139

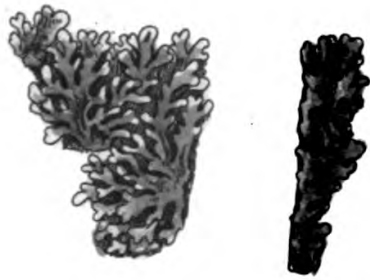


Placodium microphyllum?

Mar 1 1840 published by J. Sowerby del. sc.

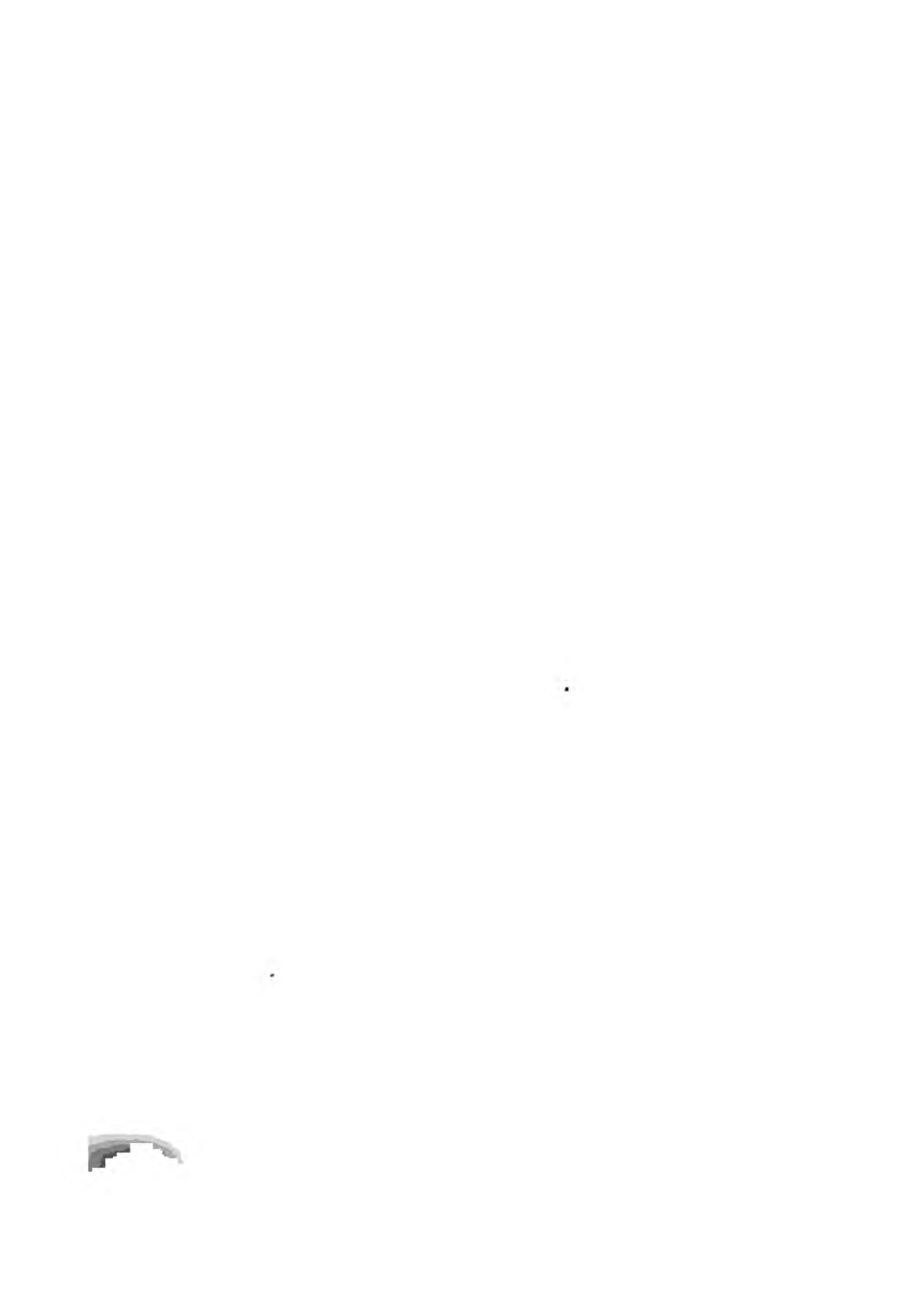
2129.

2140.



Placodium daedaleum?

Herb. 1810 published by J. Swartz, London.



what imbricated at the margin, thick, often covered in the centre with grey granulations; clothed beneath with bluish-black, spongy fibres. Apothecia small, central, flat, rust-coloured, with a very obscure border.

Lichen plumbeus, *Lightfoot Scot.* 826. *tab. 26. fig. 2.* *E. B.* 353.

Placodium plumbeum, *Hooker Crypt. Part 1.* 197. Lichen cærulescens, *Dickson.* *Parmelia plumbea, Acharius Syn.* 202.

Found on the trunks of trees in mountainous districts, and far from unfrequent, especially in the neighbourhood of the sea, or about lakes. Thallus remarkably thick and cork-like, elevated from the bark on which it grows by a dense, spongy coat of bluish or lead-coloured, downy fibres, that is often prominent and visible beyond the margin, which seems to be forced up by it. Upper surface smooth, not glossy, often longitudinally wrinkled. Apothecia mostly central, numerous, often clustered or confluent, small, reddish-brown or rust-coloured, with an obscure, entire border nearly of the same colour.

Specimens not bearing apothecia are frequently nearly covered with grey granulations or warts, which likewise occur occasionally more or less when the normal fructification is present.

PLACODIUM MICROPHYLLUM. *Small-leaved Cushion Placodium.*

TAB. 2139.

Thallus slightly imbricated, depressed, fragmentary, on a dense, black, fibrous cushion; its segments grey, lobed, crenated and granulated at the edge. Apothecia tawny, with a paler, smooth border.

Lichen microphyllus, *Schrader.* *E. B.* 2128. Placodium microphyllum, *Hooker Crypt. Part 1.* 198. Lecidea microphylla, var. triptophylla, *Acharius Syn.* 53.

Found on trees about Loch Katrine and other places in the Highlands of Scotland; likewise at Bodmin by Mr. D. Turner. The thallus, at first compact, depressed and uneven, separates eventually into scattered fragments, of a greyish hue, smooth above, lobed, rounded, granulated and powdery at the edges; the centre becoming almost shrubby, like some coralline. Apothecia neither frequent nor abundant, central, small, sessile, of a dull orange or tawny hue, with a paler, smooth border.

PLACODIUM DÆDALEUM. *Fine-lobed imbricated Placodium.*

TAB. 2140.

Thallus closely imbricated, radiated, membranous, very smooth, brownish-grey; pale with black fibres beneath: its segments linear, obtuse, undulated. Apothecia black, with a black border of their own substance.

Lichen dædaleus, *E. B.* 2129. Placodium dædaleum, *Hooker Crypt. Part 1.* 198.

Gathered by Mr. Menzies somewhere in Scotland, and apparently from rocks. Thallus closely imbricated, entangled, radiated, depressed, uneven; upper surface of a brownish, somewhat glaucous,

grey, smooth, but not shining, often blackish here and there, especially at the edges; pale brown or flesh-coloured, uneven beneath, and clothed with black radicles. Segments linear, curiously zigzag, undulated, or crenate; obtuse, lobed, and often dilated at the ends, closely folded or creeping over each other; bearing several grey, globular, powdery, marginal warts. Apothecia scattered, of the size of a common pin's head, sessile, very black, with an elevated, entire border of their own substance and colour.

Its claim to rank as a British species is very doubtful; as it does not appear to have been met with by any other botanist, there is probably some mistake in the communication between Mr. Menzies and Sir J. E. Smith, the latter of whom had never seen any other specimens of the plant, except those from which our figures were taken.

FAMILY IX. PARMELIACEÆ.

Thallus more or less foliaceous or membranaceous, loose, or only attached by fibres or radicles to the substance on which it grows. Apothecia scutelliform, discoid, bordered, attached by the centre.

GENUS DLXXXIII. PARMELIA. *Parmelia*.

GEN. CHAR. *Thallus* foliaceous, membranaceous or coriaceous, spreading, lobed, and stellated or laciniated, more or less fibrous beneath. *Apothecia* (*scutellæ*) orbicular, beneath formed of the thallus, free, fixed only by a central point; disc concave, coloured; border formed by the inflexed thallus.

One of the best-defined genera among the Lichens under its present limits. The name is expressive of the character of the apothecia, which resemble little bordered circular shields, being a compound of *πάρμη*, a small kind of shield, and *εἰλέω*, to inclose.

* *Segments of the thallus not inflated at the extremity.*

PARMELIA GLOMULIFERA. *Ball-bearing Parmelia*. TAB. 2141.

Thallus subcartilaginous, orbicular, glaucous-grey, broadly and irregularly lobed and sinuated; bearing large, tufted warts and excrescences of a dark greenish-brown colour; beneath tawny and downy. Apothecia red-brown, with an elevated border.

Lichen glomuliferus, *Lightfoot*. E. B. 293. *Parmelia glomulifera*, *Acharius Syn.* 195. *Hooker Crypt. Part 1.* 198.



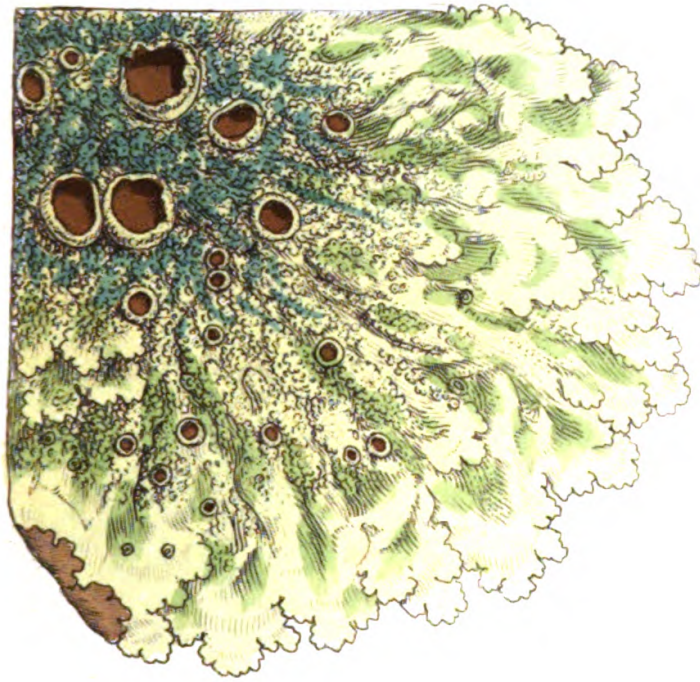
Parmelia glomulifera





654.

2142.



Parmelia caperata?

London Dec. 1796. *Philos. Bot. 1797. p. 119. pl. 1.*

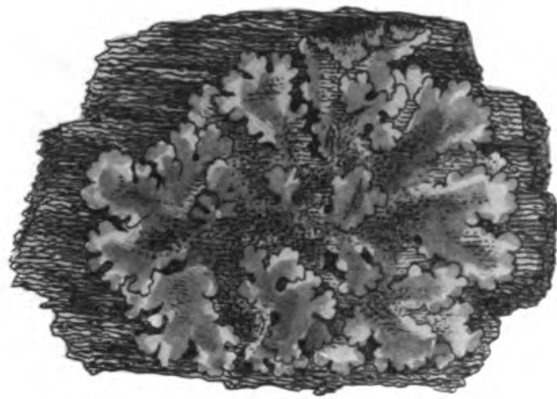


Parmelia conspersa L.

Dec 1809 published by J. Sowerby London

2005

2112.



Parmelia scortea

Specimen published by J. Sowerby London.



Frequent on the trunks of old trees in mountainous districts. Thallus spreading loosely over the bark, of a pale glaucous-green when moist, whitish-grey when dry, very smooth; beneath downy, light reddish-brown, with white edges: margin elegantly lobed and scalloped, the lobes round, and the little sinuses between them more or less circular. Apothecia numerous, slightly elevated, brownish orange-coloured.

The most conspicuous feature of the species consists in rounded tufts or balls, of a dark green, or blackish, soft, branched substance (pulvinuli), springing on solid, white, short stems from various parts of the thallus; they are more universally present than the apothecia, and grow on the same plants that produce the latter.

It is the largest and broadest of the British Lichens, the thalli often measuring 2 or 3 feet in diameter.

PARMELIA CAPERATA. *Wrinkled Sulphur Parmelia.* TAB. 2142.

Thallus submembranaceous, orbicular, pale sulphur-colour, lobed, more or less wrinkled, sinuated and crenate; granulose in the centre: black and hispid beneath. Apothecia bright chestnut, with an elevated, incurved, mealy border.

Lichen caperatus, *Linn. E. B.* 654. *Parmelia caperata*, *Acharius Syn.* 196. *Hooker Crypt. Part 1.* 198.

Frequent, especially in mountainous districts, on the trunks of trees, rocks, and old pales. Thallus often a foot in diameter, of a pale sulphur-colour above, and more or less powdered or granulated; black beneath. Apothecia a little elevated, bright reddish-chestnut, sparingly produced.

One of our largest and handsomest lichens.

PARMELIA CONSPERSA. *Greenish chestnut-shielded Parmelia.* TAB. 2143.

Thallus orbicular, membranous, lobed and sinuated, the segments rounded, pale glaucous-green, besprinkled with blackish points; granulated in the centre: beneath brown with black fibres. Apothecia mostly central, bright chestnut, with an inflexed, crenated border.

Lichen conspersus, *Acharius Prod. E. B.* 2097. *Parmelia conspersa*, *Ach. Syn.* 209. *Hooker Crypt. Part 1.* 199.

A native of rocks and stones in alpine and subalpine districts, especially in the North. Thallus pale glaucous-green, or yellowish, orbicular, radiated, sometimes 6 inches or more in diameter, generally smaller. Apothecia seldom abundant, bright reddish-chestnut, scattered about the centre of the thallus.

A very beautiful and conspicuous species.

PARMELIA SCORTEA. *Leathery granular Parmelia.* TAB. 2144.

Thallus orbicular, submembranaceous, lobed and sinuated, the segments rounded, greyish-white, with innumerable dark granulations; black and rough beneath. Apothecia bright chestnut, with an inflexed, crenated border.

Lichen scorteus, *Acharius Prod. E. B.* 2065. *Parmelia scortea*, *Ach. Syn.* 197. *Hooker Crypt. Part 1.* 199.

Found on trunks of trees and on pales, &c. in Sussex, Surrey, and elsewhere; but always barren in Britain. Thallus orbicular, a little imbricated, lobed; the lobes rather dilated, smooth, rounded, notched and wavy, light greyish-white; central part speckled with innumerable minute, dark, powdery granulations, each tipped with white. The under surface is clothed with very black fibres, almost to the extremities, which are rough and edged with shining brown. The apothecia are figured from foreign specimens.

PARMELIA BORRERI. *Borrerian Parmelia.* **TAB. 2145.**

Thallus orbicular, submembranaceous, broadly lobed and sinuated, the segments rounded, tawny-grey, sprinkled with white, powdery warts; brown and somewhat fibrous beneath. Apothecia bright chestnut, with an elevated, inflexed border.

Lichen Borreri, *E. B.* 1780. *Parmelia Borreri*, *Turner in Linn. Trans.* 9. 148. *tab. 13. fig. 2.* *Hooker Crypt. Part 1.* 199. *Acharius Syn.* 197.

Not uncommon on the trunks of trees, especially fruit-trees, in Sussex, Norfolk, and elsewhere; sometimes found on stones. The thallus is often intermixed with those of *P. saxatilis*, the next species, but differs in being less deeply divided, its segments more dilated and rounded, its underside paler and less densely hairy, and its upper more inclined, when moist, to a greenish-yellow hue. A more essential difference consists in its want of those elevated, reticulated, powdery veins, and consequent pits, always observable in *P. saxatilis*, while, on the contrary, it is sprinkled with innumerable round, white, powdery warts, not seen in that species.

Fructification very rarely produced.

PARMELIA SAXATILIS. *Grey Stone Parmelia.* **TAB. 2146.**

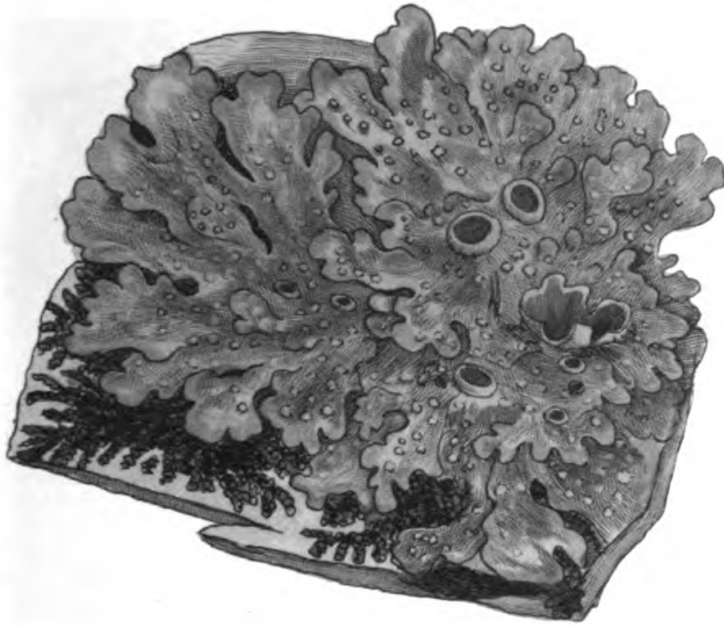
Thallus orbicular, grey, deeply lobed and sinuated, imbricated with retuse segments; the upper side rough with pits and raised, reticulated, powdery lines; beneath black and shaggy. Apothecia dark brown, with an inflexed, crenated border.

Lichen saxatilis, *Linn. E. B.* 603. *Parmelia saxatilis*, *Acharius Syn.* 203. *Hooker Crypt. Part 1.* 199.

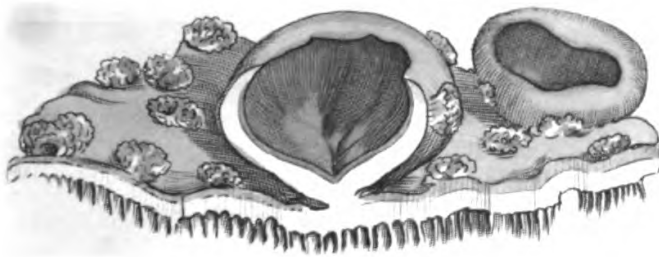
Though called *saxatilis*, this lichen is not less common on trunks of trees in every situation, than on rocks and stones in the more mountainous countries. It is not very generally to be met with in fructification; large, old, spreading, rock specimens are those in which the apothecia are chiefly to be found. The thallus spreads circularly in a rugged, imbricated manner, of a grey or ash-colour above, full of pits and warty, projecting lines; underneath quite black, and clothed with dense, branching, short black hairs, not reaching to the margin, which is brown and shining. Apothecia a little elevated, of a bright polished chestnut or bay-colour, with a broad, incurved, mealy border.

1780

2145.



Parmelia Borreri?

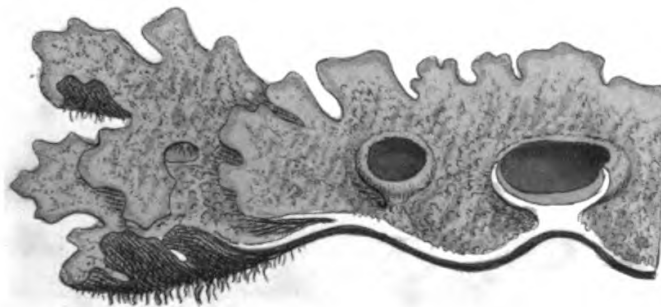
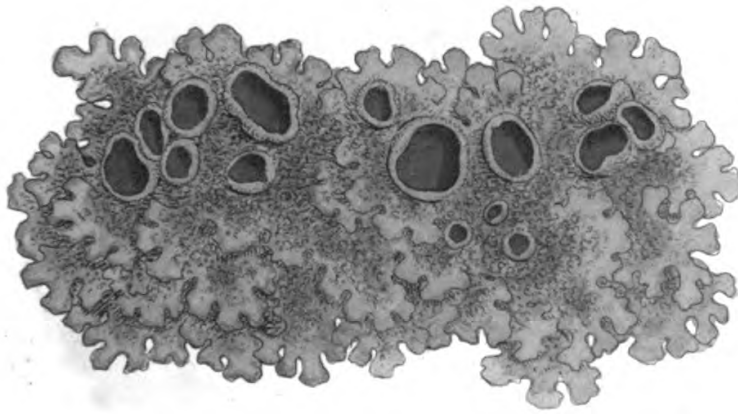


Aug. 1. 1807. Published by Jas. Sowerby London.



633

2140



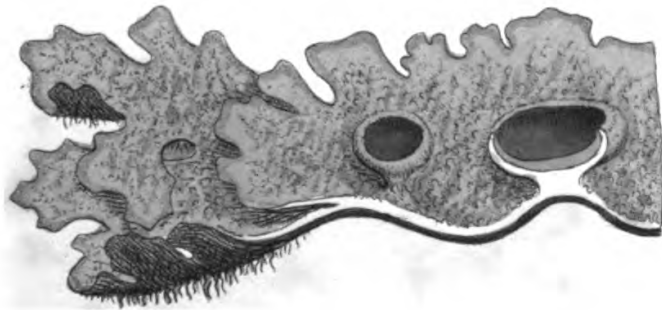
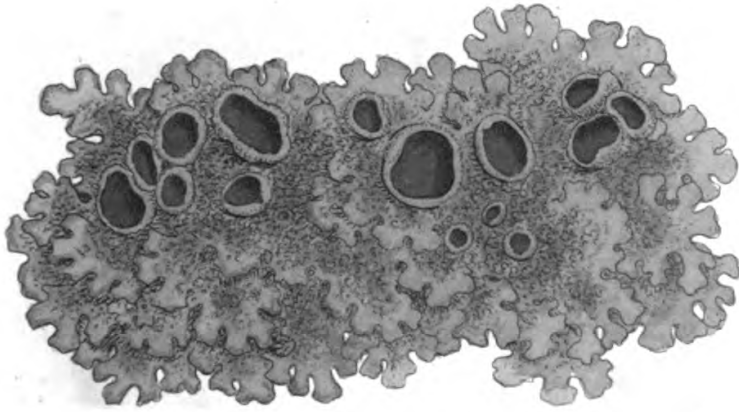
Parmelia saxatilis.

Parmelia saxatilis (L.) Ach. *l. saxatilis* (L.) Ach.



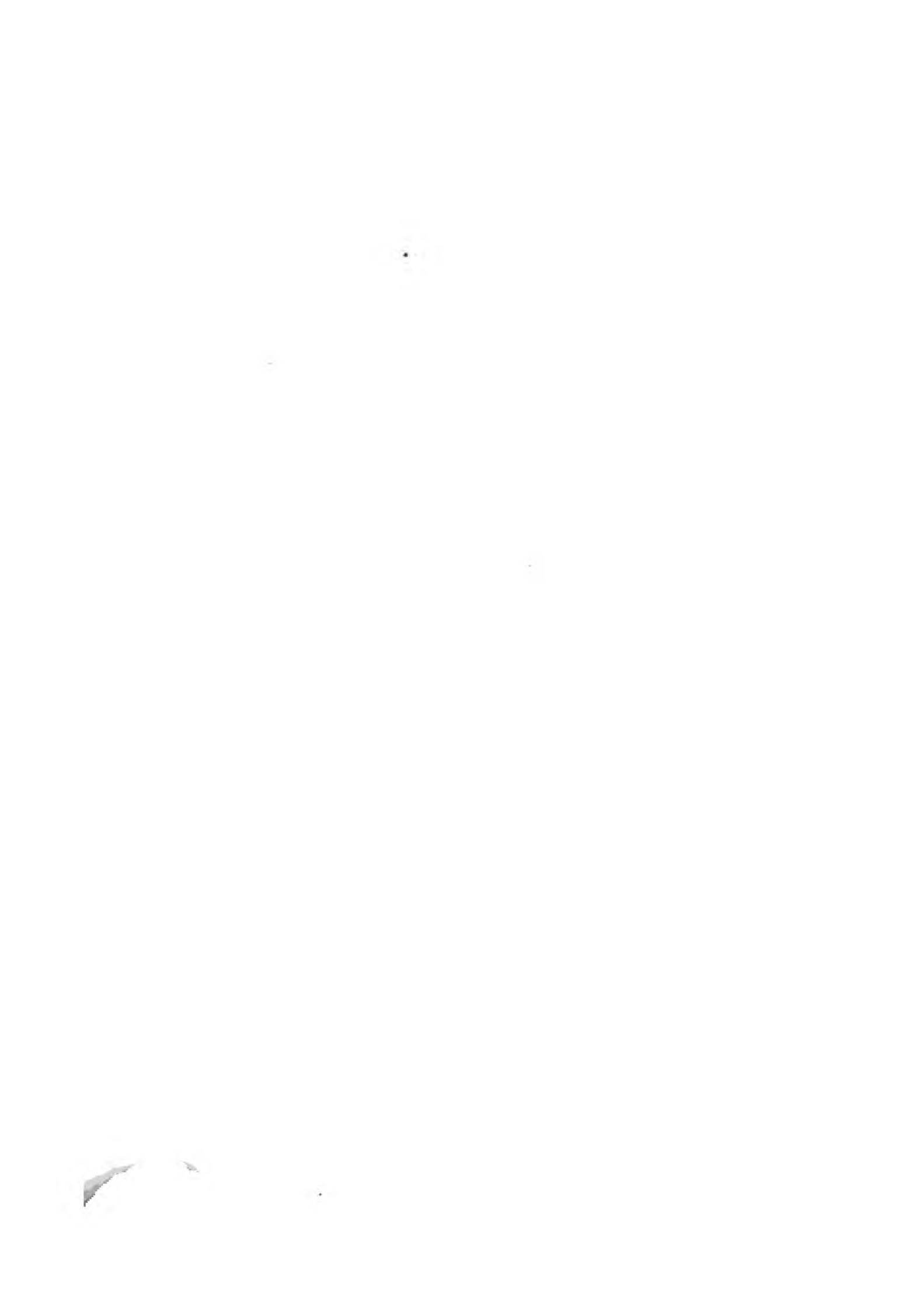
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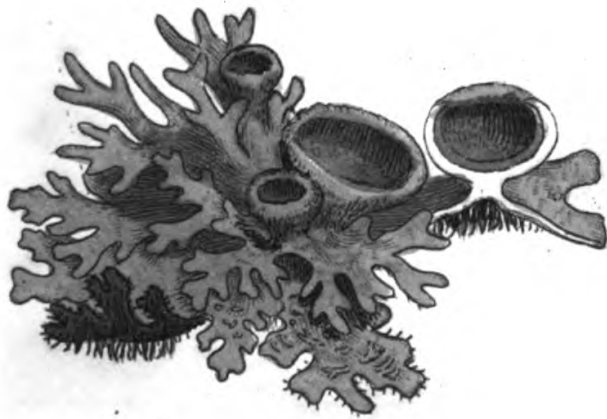


Parmelia saxatilis.

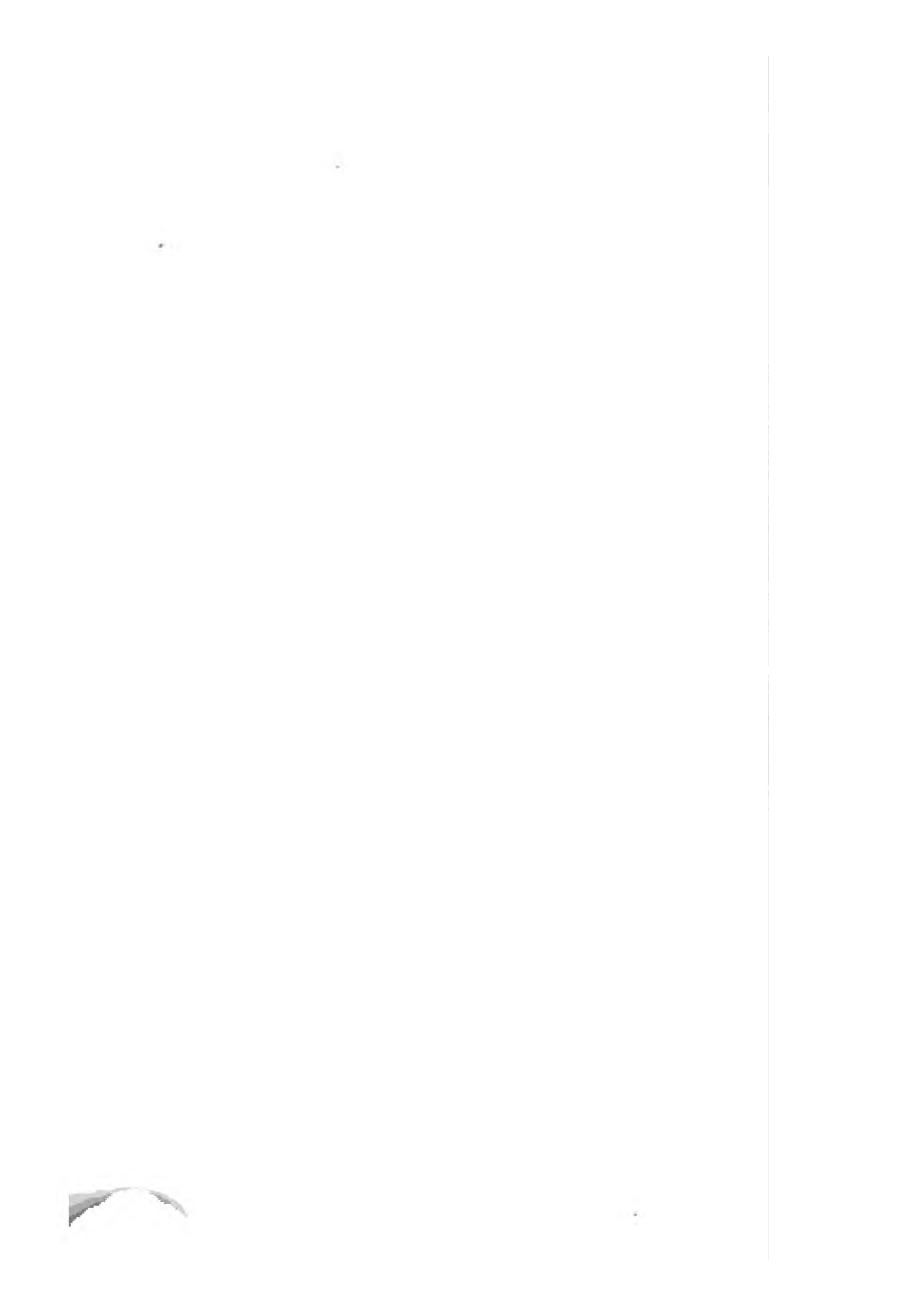
1847, published by ...



604
2147.

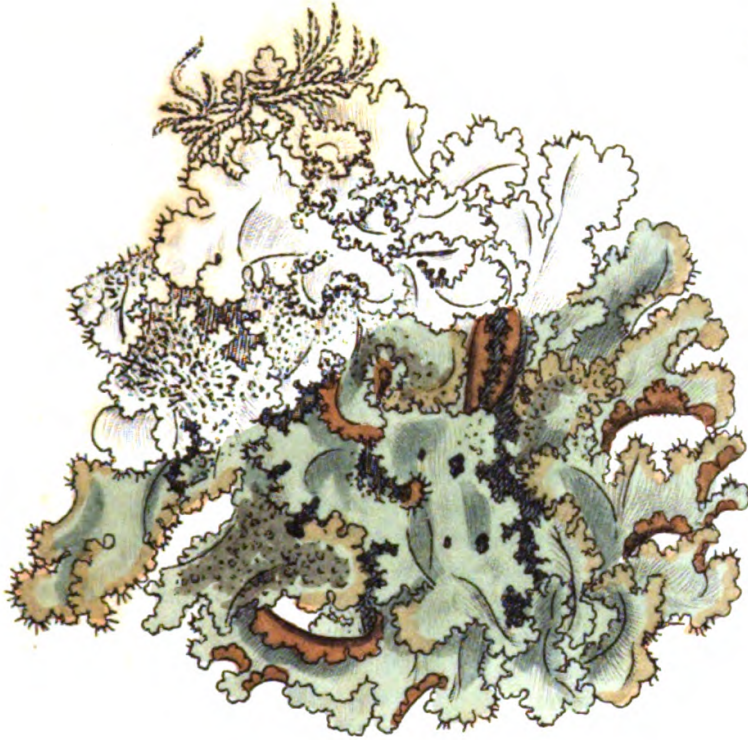


Parmelia omphalodes.

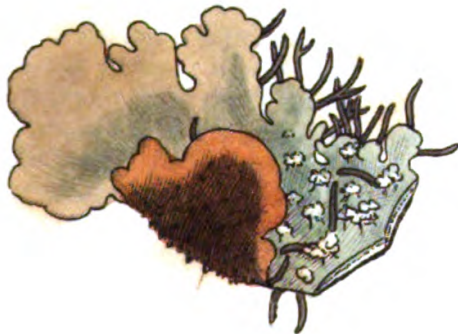


2423.

2148.



Parmelia perforata?



June 1882 published by J. S. Townsend, London

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“In Scotland it is collected abundantly by the peasantry and used, with the following species, *P. omphalodes*, to dye woollen stuffs of a dirty purple.”—*Hooker*.

PARMELIA OMPHALODES. *Purple Rock Parmelia.* TAB. 2147.

Thallus orbicular, dark purplish-brown, shining, with pale zigzag cracks, much lobed and multifid, imbricated, the segments truncated; black and shaggy beneath. Apothecia dark chestnut-brown, with an inflexed, crenated border.

Lichen omphalodes, *Linn.* *E. B.* 604. *Parmelia omphalodes*, *Acharius Syn.* 203. *Hooker Crypt. Part 1.* 199.

Met with on rocks and stones in alpine and subalpine districts; likewise abundantly on some exposed moors, especially the high stony ones of North Wales, Scotland, and Derbyshire. Some varieties of *L. saxatilis* approach this so nearly in everything but colour, that it is difficult to draw the line of distinction; but this may be generally known by its finer segments, dark purplish-brown hue, polished, not pitted surface, full of transverse, zigzag whitish cracks, and destitute of warty roughness. The under side is more thickly and universally shaggy with coal-black hairs that project beyond the lateral edges of the segments. The disc of the apothecia is dark brown, with a grey, inflexed, notched or crenated border.

The Highlanders and Welch use it to dye purplish colours; according to *Lightfoot*, it is prepared by soaking in urine, until it softens into a paste, and is then dried in the sun.

PARMELIA PERFORATA. *Perforate-shielded Parmelia.* TAB. 2148.

Thallus orbicular, somewhat membranous, glaucous-green, veinless, deeply lobed, crenate and sinuated, fringed with black hairs at the margin; black and rough beneath. Apothecia red-brown, at length perforated, deep and concave, with an entire, smooth, narrow border.

Lichen perforatus, *Acharius Prod.* *E. B.* 2423. *Parmelia perforata*, *Ach. Syn.* 198. *Hooker Crypt. Part 1.* 200.

Found on the trunks of old trees and on rocks, in Wales and in the South of England, especially in Sussex. It approaches the next, *P. perlata*, in general aspect, but the margins of the lobes of the thallus are much more finely crenated, and, though the surface is occasionally more or less granulated, the powdery marginal tubercles which characterize that species are not found in this. The apothecia have a very thin, smooth, entire border, not an inflexed, powdery, or crenate one, and they are very remarkable for acquiring a large irregular hole in the centre as they advance towards maturity.

The fructification has never been met with in this country, and the apothecia represented on our Plate are from an American specimen. In the western continent the plant is very abundant, grows to a large size, and seems to be universally distributed.

PARMELIA PERLATA. *Pearly Parmelia.* TAB. 2149.

Thallus orbicular, glaucous, with rounded, sinuated, crenated, flat-tish lobes; often bordered with powdery tubercles; black and hairy beneath. Apothecia elevated, olive-coloured, concave, with a crenate, thin, powdery, inflexed border.

Lichen perlatus, *Linn. E. B.* 341. *Parmelia perlata*, *Acharius Syn.* 197. *Hooker Crypt. Part 1.* 200.

Frequent on the trunks of trees and on old park-paling, but not often met with in fructification. The thallus forms patches as broad as the hand, not very firmly attached in any part, the margin quite loose and generally erect. Upper surface greyish-white, greenish when much moistened, smooth, or a little pitted or sprinkled with mealy cracks and tubercles intermingled with short black hairs. Under surface very black and shining, more or less clothed with short, black, rigid, branched or forked hairs, which sometimes project beyond the margin like a fringe. The more elevated parts of the thallus, especially about the centre, are often bordered with roundish, grey, mealy tubercles, compared by Dillenius to pearls. Apothecia a little elevated, cup-shaped; disc greenish-olive when wet, brownish when dry.

“Sir J. E. Smith has translated *perlata* by *pearly*, but the word was probably intended to imply its wide-spreading habit.”—*Hooker.*

PARMELIA LÆVIGATA. *Even grey Parmelia.* TAB. 2150.

Thallus spreading, greyish-white, smooth, deeply cut into many multifid lobes and segments, the ultimate ones broadly linear, acute, with terminal powdery warts; black and shaggy beneath. Apothecia very concave, deep chestnut, with an entire, inflexed border.

Lichen lævigatus, *E. B.* 1852. *Parmelia lævigata*, *Acharius Syn.* 212. *Hooker Crypt. Part 1.* 200.

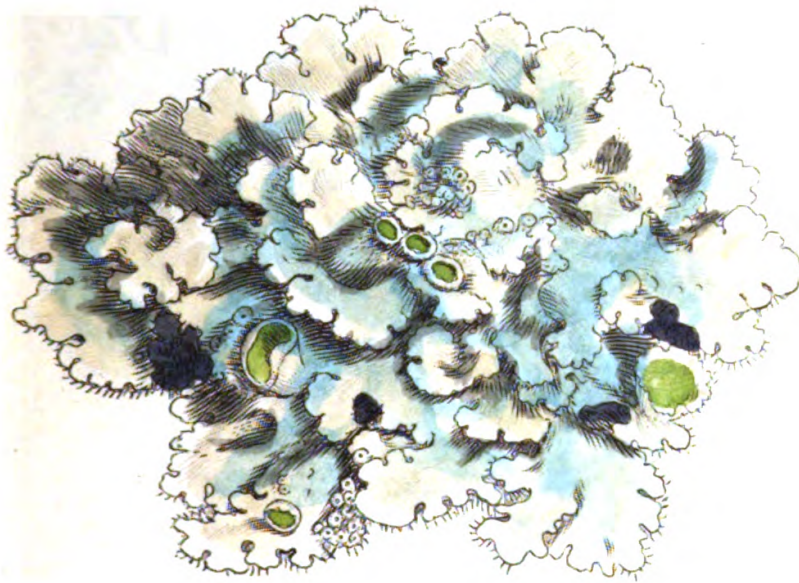
This elegant and remarkable lichen was discovered by the Rev. Hugh Davies, growing on rocks in Anglesea and Caernarvonshire. It forms flat, loose patches. Thallus loosely imbricated, with narrowish, more or less linear, or somewhat dilated and fan-shaped segments, whose terminal lobes are divaricated and acute. Upper surface pale greyish-white, peculiarly smooth and even, without veins, pits or warts, or the latter only occurring, of large size, at the ends of some of the lobes. Under surface black, shaggy with strong, branched, coal-black hairs. Apothecia scattered, concave, chestnut-coloured, with a smooth border, brittle.

PARMELIA HERBACEA. *Bright-green Parmelia.* TAB. 2151.

Thallus orbicular, membranaceous, naked above and bright green when moist, lobed and crenated at the margin; whitish, downy and fibrous beneath. Apothecia orange-brown, nearly flat, with an inflexed border.

Lichen læte-virens, *Lightfoot Fl. Scot.* 852. *Dickson. E. B.* 294. *Parmelia herbacea*, *Acharius Syn.* 198. *Hooker Crypt. Part 1.* 200. Lichen herbaceus, *Hudson.*

321
2119.



Parmelia perlata?

Opus 1903. Follies et Licheni. L. 100.

1852.

2150.



Parmelia lævigata?



Feb. 12 1858. Published by Jas. Sowerby, London.

1852.

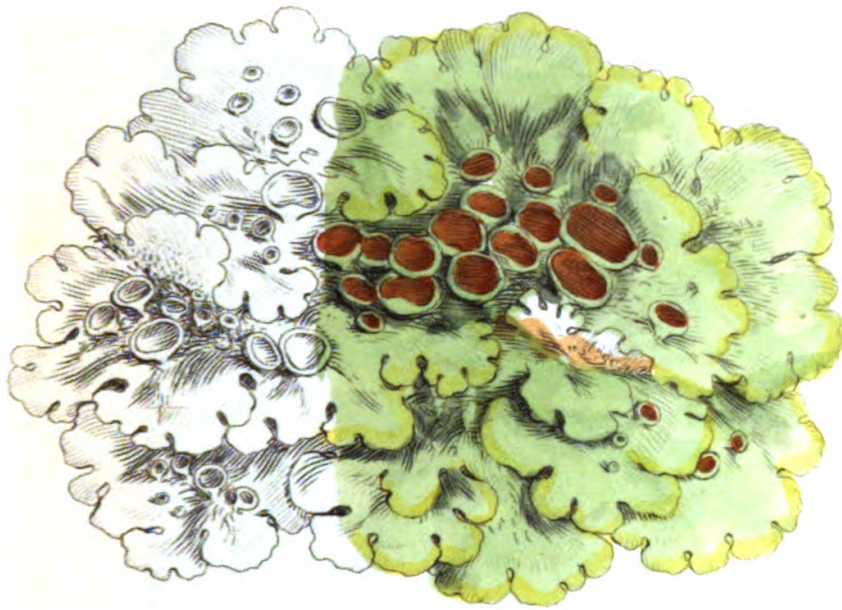
2150.



Parmelia laevigata?



Feb. 12 1852. Published by Jas. Sowerby, London.

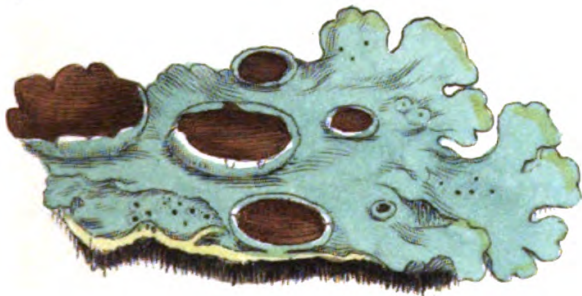
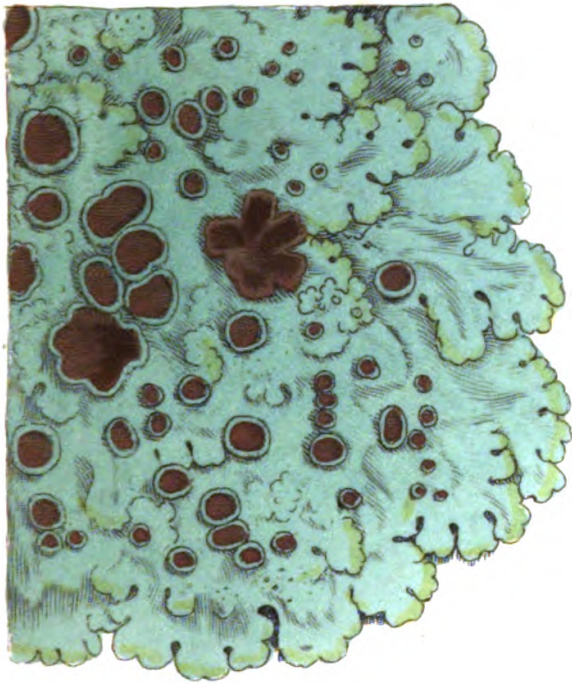


Parmelia herbacea

Fig. 2151. *Parmelia herbacea* V. J. Sowerby London

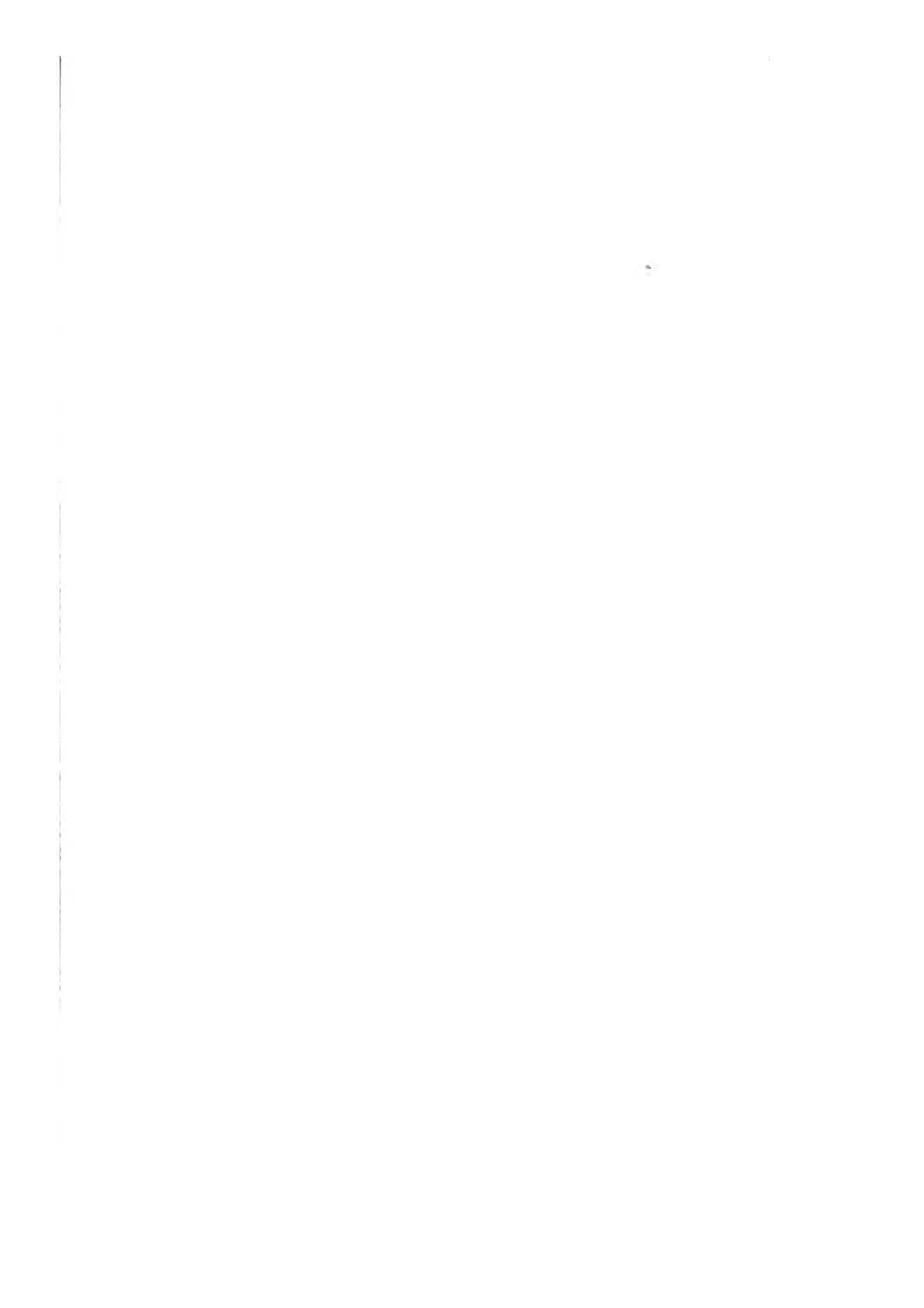
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2152



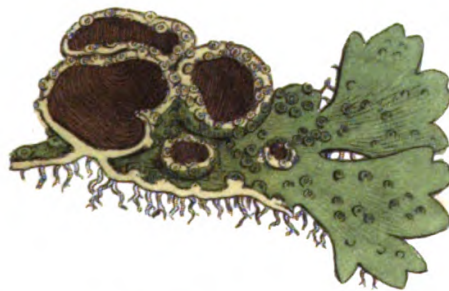
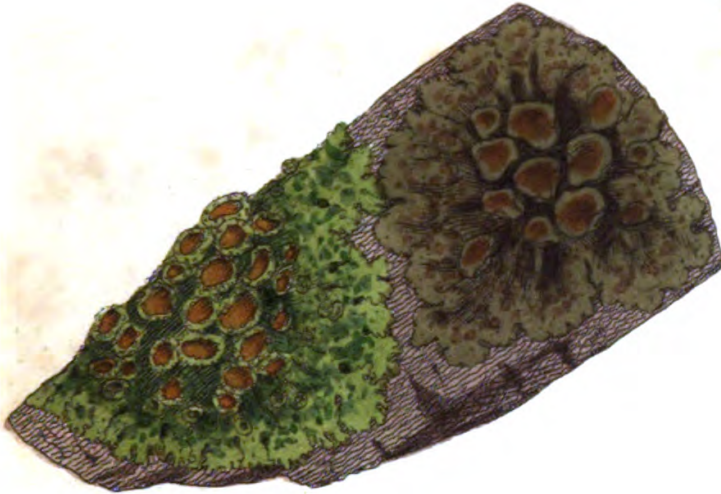
Parmelia titiacea?

collected by G. S. Gentry, N. M.



2180.

2153.

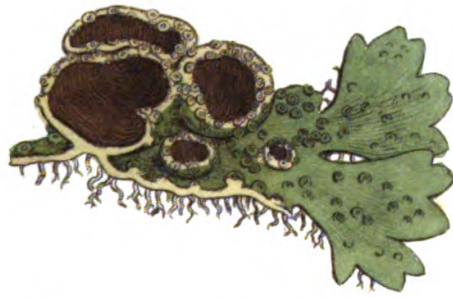
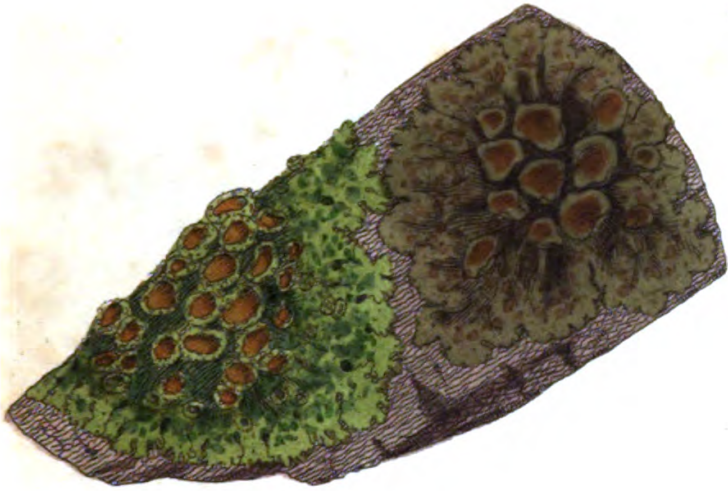


Parmelia olivacea?

Aug. 2. 1842. published by J. S. Kew & Co. London

2180.

2153.

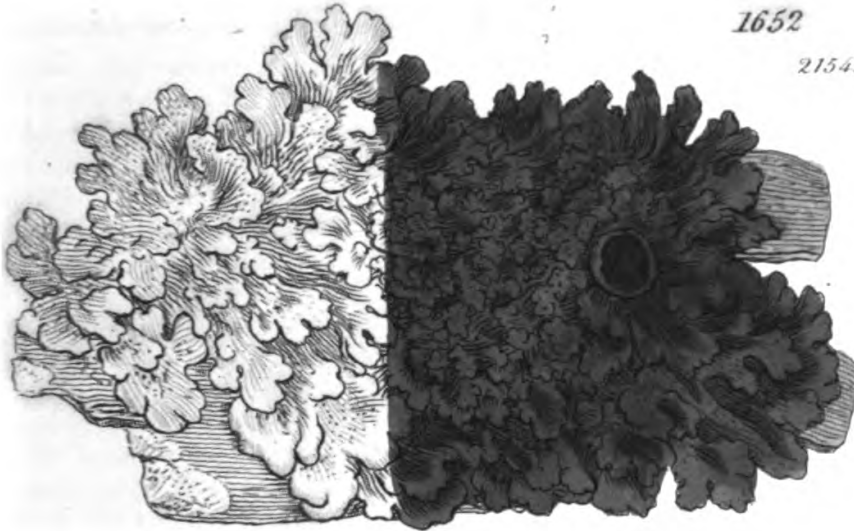


Parmelia olivacea?

Aspergillus puberulus by J. K. F. Kew, London

1652

2154.



Parmelia corrugata



Oct 23rd. Published by Jas. Sowerby, London.



A large and very conspicuous species, found on the trunks of trees, decayed wood, rocks, and overrunning mosses, in moist mountainous or subalpine districts. When dry the thallus becomes of a light brownish hue. Apothecia generally abundant, especially about the central part of the thallus, a little elevated; disc deep orange, brown when dry; border smooth, inflexed.

It approaches *P. glomulifera* in general appearance, but the thallus is thinner, of a different hue, and never furnished with the peculiar tufted warts found on that species.

PARMELIA TILIACEA. *Smooth grey Parmelia.* TAB. 2152.

Thallus orbicular, membranaceous, pale glaucous-grey, subpruinose, lobed and sinuated, crenate; shaggy and brownish-black beneath. Apothecia brown, with an incurved, entire or crenate border.

Lichen tiliaceus, *Hoffmann.* E. B. 700. *Parmelia tiliacea*, *Acharius Syn.* 299. *Hooker Crypt. Part 1.* 200.

Found occasionally on trees, especially oaks, in the South of England, likewise on rocks and old castles in Wales and Scotland. Allied to *P. saxatilis* and *P. omphalodes*, but distinguished by the smoothness of its upper surface, which is neither cracked nor pitted, as in those species. Apothecia flatter; their margin smooth and conspicuously white, never powdery nor warty; their disc bright bay-colour, greenish when wet. From *P. glomulifera* it is readily known by its coal-black, shaggy under-surface, and by the absence of the remarkable pulvinuli of that species.

Sir J. E. Smith describes it as being very common on the trunks of the olive-trees in the South of France, and bearing abundant fructification, which in Britain is but sparingly produced.

PARMELIA OLIVACEA. *Olive-coloured Parmelia.* TAB. 2153.

Thallus orbicular, olive-brown, shining, rugged in the centre, often granulated; the margin lobed and crenated, appressed; brownish and fibrous beneath. Apothecia dark chestnut-colour, concave, with an inflexed, irregularly crenated border.

Lichen olivaceus, *Linn.* E. B. 2180. *Parmelia olivacea*, *Acharius Syn.* 200. *Hooker Crypt. Part 1.* 200.

Frequent on the smooth bark of trees, on old park-paling, and other wood long exposed to the weather: on the white bark of the birch it is often peculiarly conspicuous, its shining olive-colour being little altered either by wet or drought. The thallus forms patches from 2 to 4 inches in diameter, sometimes much granulated and rugged in the central part, and usually besprinkled throughout, as well as on the borders of the apothecia, with papillary warts. Disc of the apothecia rather concave and uneven.

PARMELIA CORRUGATA. *Wrinkled-shielded Parmelia.* TAB. 2154.

Thallus orbicular, membranaceous, somewhat rugged and plaited, dark glaucous-green, lobed and cut; the lobes rounded and im-

bricated ; beneath blackish and fibrous. Apothecia large, concave, reddish-brown, externally wrinkled, with a crenated, inflexed border.

Lichen corrugatus, *Smith in Linn. Trans.* 1. 83. *E. B.* 1652. *Parmelia corrugata*, *Acharius Syn.* 199. *Hooker Crypt. Part 1.* 201.

Found on the trunks of trees in the eastern counties of England. Sir J. E. Smith first recognised it as a British species, growing on a tree, on the border of Saham Wood, Norfolk, and the Rev. G. R. Leathes found it on the trunks of old thorns in Ickworth Park, near Bury, Suffolk. It is one of the larger of our native lichens, forming broad patches of a dark green colour, more or less glaucous, especially when dry. Apothecia concave, rugged, red-brown, often half an inch broad, more or less wrinkled on the outside ; their margin inflexed, thin, notched, rugged, often mealy.

Common on the continent of Europe, where it was long confounded with *P. olivacea*.

PARMELIA PULVERULENTA. *Green powdery Parmelia.* **TAB. 2155.**

Thallus suborbicular, stellated, deep glaucous-green ; hoary ash-coloured when dry ; cut into numerous, oblong, multifid, flat, obtuse, wrinkled segments ; black and downy beneath. Apothecia glaucous-black, with a thick, inflexed, at length leafy border.

Lichen pulverulentus, *Schreber.* *E. B.* 2063. *Parmelia pulverulenta*, *Acharius Syn.* 214. *Hooker Crypt. Part 1.* 201.

Very common, growing upon the trunks of old trees. The thallus forms largish patches, of a deep glaucous-green colour when wet, but when dry becoming of a dull brownish-grey. Apothecia generally abundant ; their disc black in maturity, with a thick border, which eventually acquires a scaly, and often leafy edge.

PARMELIA PITYREA. *Scurfy imbricated Parmelia.* **TAB. 2156.**

Thallus orbicular, imbricated, glaucous-green ; hoary ash-coloured when dry ; its segments dilated, concave, rounded, crenate, very powdery at their lateral margins ; pale and fibrous beneath. Apothecia glaucous-black, with a broad, inflexed, very powdery border.

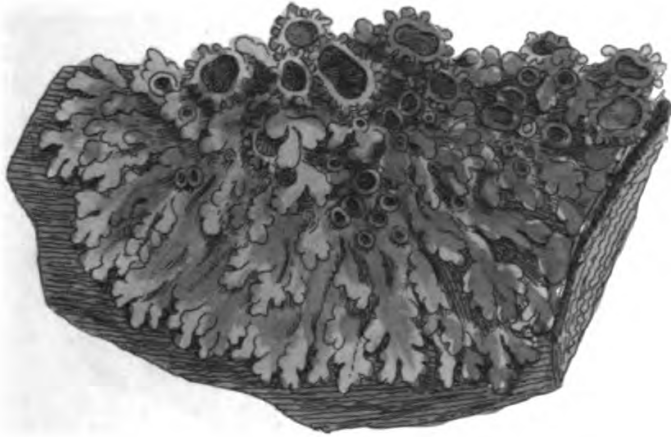
Lichen pityreus, *Acharius Prod.* *E. B.* 2064. *Parmelia pityrea*, *Ach. Syn.* 201. *Hooker Crypt. Part 1.* 201. *Lichen pulverulentus*, *Ehrhart.* *L. lanuginosus*, *Hoffmann.*

Common in the eastern counties of England, on old trees, and on brick walls, usually not very high above the ground, running closely over tufts of moss and accumulated earth. It always forms smaller patches than *P. pulverulenta* ; its lobes are more depressed and concave ; its colour a paler, more glaucous-green when wet ; and the lateral edges of its segments are distinguished by thick, whitish, powdery tufts or granulations, not found in the former ; neither are the fibres of its under-surface so dense or so black. The centre of the thallus, in age, becomes thickly covered with the powdery granulations, as likewise the thick, incurved borders of the apothecia, which are of rare occurrence, small and blackish.

It has been found in the neighbourhood of Glasgow.

2063

2155.



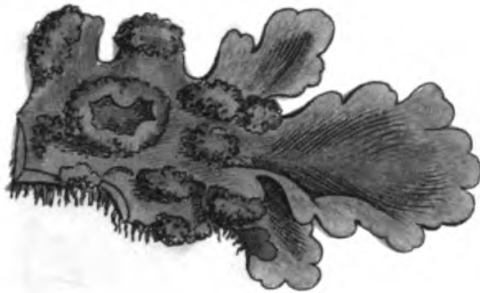
Parmelia pulverulenta?

Sept. 1869 published by J. Somerville. 17.



2064

2156.



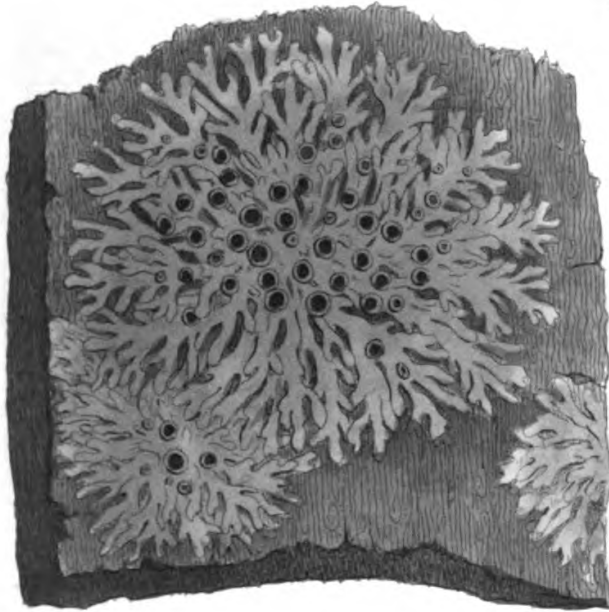
Parmelia pityrea?

Rep. 1869 published by J. Sowerby London.



1697

2157.



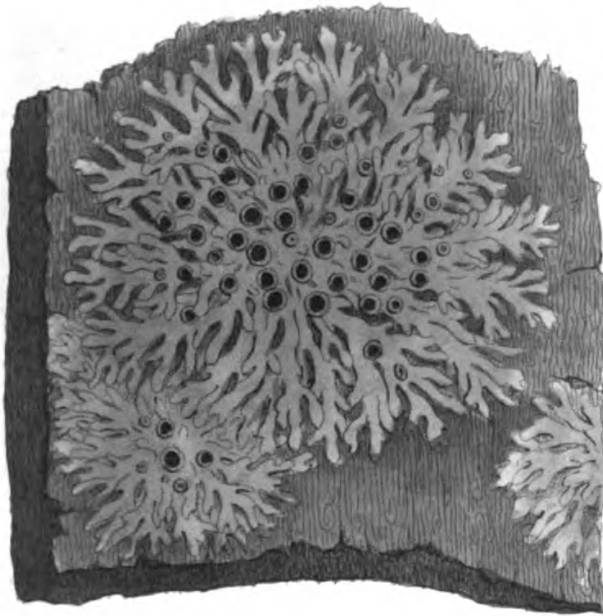
Parmelia stellaris



Jan 1867. Publish'd by J. Sowerby. London.

1697

2157.



Parmelia stellaris

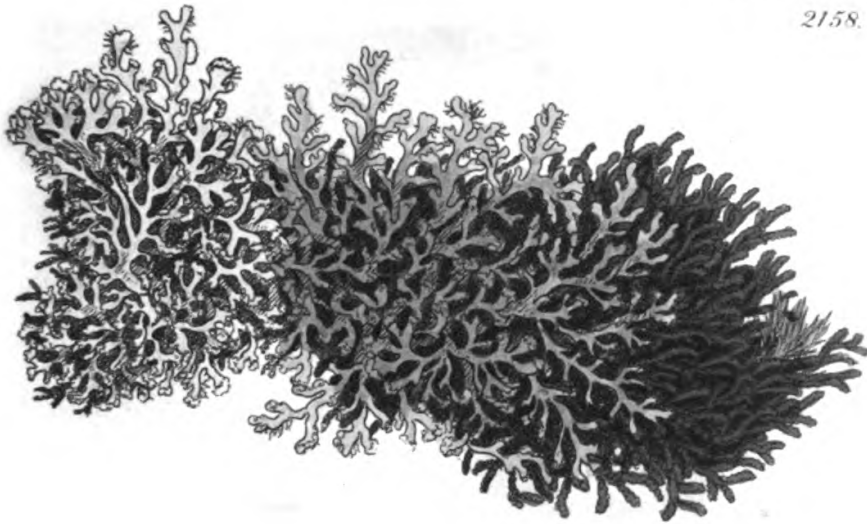


Jan 1867. Publish'd by Jas. Sowerby London.



1979

2158.



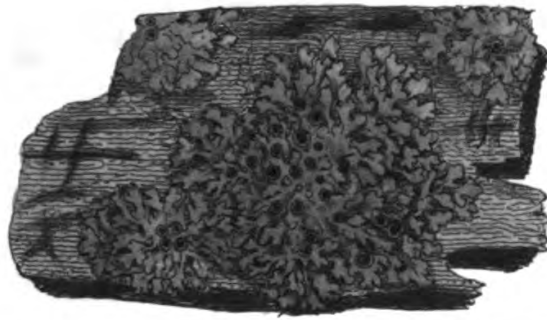
Parmelia speciosa?

Fig. 1. 1809. Published by J. Sowerby London



1942

2159.



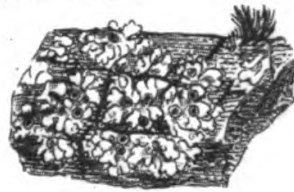
Parmelia cyclosetis.



Copyright Published by J. & S. Sewerby London.

1942

2159.



Parmelia cyclosetis.



Copyright Published by J. Sowerby London.

PARMELIA STELLARIS. *Black-shielded stellated Parmelia.* TAB. **2157.**

Thallus orbicular, stellated, pale unchangeable grey, at length rugged and granulated; its segments linear, rather convex, repeatedly subdivided; beneath whitish with black fibres. Apothecia greyish-black, with an entire, elevated, at length inflexed border.

Lichen stellaris, *Linn.* *E. B.* 1697. *Parmelia stellaris*, *Acharius Syn.* 216. *Hooker Crypt. Part 1.* 201.

A very common species on the bark of trees, where it forms roundish patches, conspicuous from their neat, radiated outline and their bright silver-grey hue, which is nearly the same whether wet or dry. Thallus easily separable from the bark, to which it adheres by numerous black or brown fibres springing from its whitish under-surface. Upper surface smooth when young, but eventually finely rugose, and sometimes granulated. Segments linear, convex, imbricated, multifid; their extremities obtuse. Apothecia numerous, small, round, black or greyish, with a grey, inflexed border, generally smooth and entire.

PARMELIA SPECIOSA. *Elegant Garland Parmelia.* TAB. **2158.**

Thallus stellated, imbricated, somewhat cartilaginous, greenish-white; snow-white with grey fibres beneath; its segments linear, slightly fringed, obtuse and powdery at the extremities. Apothecia brown, with an inflexed, notched or leafy border.

Lichen speciosus, *Wulfen.* *E. B.* 1979. *Parmelia speciosa*, *Acharius Syn.* 221. *Hooker Crypt. Part 1.* 201.

Discovered by Messrs. Turner and Hooker, growing upon rocks among mosses, at Ballacheulish, near Fort William, Scotland. The thallus, loosely imbricated, spreads among moss: it is deeply cut into linear, multifid, radiating segments, whose dilated, very obtuse extremities are powdery. Upper surface smooth, light greenish or glaucous; bluish-white when dry: under surface of the lobes pure white, with a few grey or black fibres; that of the central portion clothed with dense black radicles. Margins occasionally fringed. Apothecia sessile, rather convex, brown; the border inflexed, crenate, often encircled in maturity with an elegant leafy garland, whence the English name.

The fructification has never been met with on British plants but is described and figured from North American specimens.

“One specimen of *P. speciosa* has occurred, with scutellæ, in Saint Leonard's Forest, Sussex, where the plant grows sparingly on beech-trees.”—*Borrer in E. B. Supp.* 2796, *ad calc.*

PARMELIA CYCLOSELIS. *Orbicular dusky Parmelia.* TAB. **2159.**

Thallus orbicular, stellated, glaucous brownish-green; beneath black and fibrous; its segments linear, flattish, cut and lobed, bearing white, mealy warts. Apothecia brownish-black, with an inflexed, entire border.

Lichen cyclozelis, *Acharius Prod.* *E. B.* 1942. *Parmelia cyclozelis*, *Acharius Syn.* 216. *Hooker Crypt. Part 1.* 202.

Not very unfrequent, at least in the eastern and southern counties of England, growing on trees and old pales; found likewise at Appin, Argyleshire, by Captain Carmichael, as quoted in *Hooker Crypt.* The orbicular thallus is of a dusky grey, verging sometimes to a greenish-olive or olive-brown, an inch or more in diameter, flat; the segments closely imbricated and entangled, linear, narrow, cut and subdivided, sometimes a little convex, but mostly flat or concave. Under surface covered with dense black fibres projecting beyond the edges, which are likewise more or less beset with white or greenish-grey mealy warts. Apothecia small, blackish or dark brown, with a thick, inflexed border.

PARMELIA VIRELLA. *Little green imbricated Parmelia.* TAB. 2160.

Thallus membranaceous, stellated, greyish-green, laciniated; the segments flat, short, lobed, obtuse; black and spongy beneath; above sprinkled with powdery warts and reddish, lucid grains. Apothecia dark brown, with a smooth, inflexed border.

Lichen virellus, *Acharius Prod. E. B.* 1696. *Parmelia virella*, *Ach. Meth. Hooker Crypt. Part 1.* 202. *Lecanora virella*, *Ach. Syn.* 191.

Found by Mr. Borrer, on trees and pales in Sussex. The thalli form small, irregular patches, spreading in a radiant manner, but often running into each other, readily separable when moist. The segments are short, narrow, zigzag, obtusely lobed, somewhat imbricated, flat and smooth above, of a fine green when wet, changing to a pale, dull olive when dry. Pale powdery warts are scattered over the surface, and towards the younger extremities are often found small, smooth, prominent little points or grains, which when fresh and moist are clear and reddish, but soon become black. The under side is clothed with dense, black, spongy hairs, which project like a fringe beyond the edges. Apothecia scattered, nearly sessile, small, round, dark reddish-brown or black, rather concave, with a thick, smooth, elevated, entire border; sometimes invested beneath with a sort of fringe.

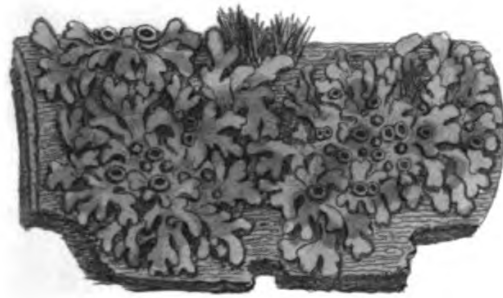
“How far *P. cyclosetis*, a very common species, is distinct from this, we are by no means satisfied.”—*Sir J. E. Smith.*

PARMELIA INCURVA. *Incurved yellowish-warted Parmelia.* TAB. 2161.

Thallus stellated, membranaceous, pale yellowish-green, bearing yellowish powdery warts; the segments much divided, narrow, radiating, convex, incurved; black and spongy beneath. Apothecia chestnut-brown, with an entire, incurved border.

Lichen incurvus, *Persoon. E. B.* 1375. *Parmelia incurva*, *Hooker Crypt. Part 1.* 202. Lichen multifidus, *Dickson Crypt. fasc. 3.* 16. *tab. 9. fig. 2.*

Met with on quartz and sandstone rocks in the mountainous districts of the North of England and Scotland, but far from frequent. When growing apart on an even surface, the thalli spread very regularly in a circular manner, but they are frequently interrupted in their



1696

2160.

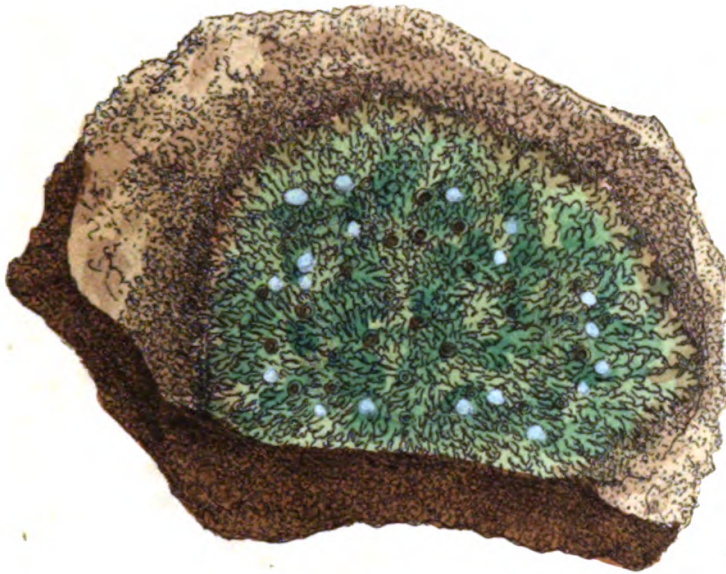


Parmelia virella?

Jan. 1807. Published by Jas. Sowerby London.

1375

2161.

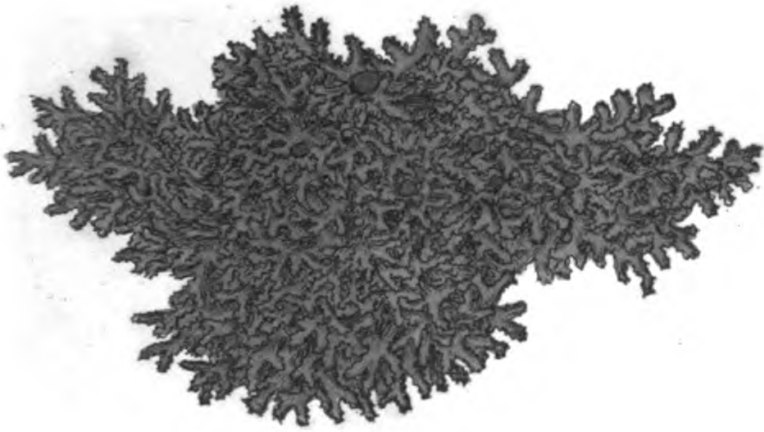


Parmelia incurva?

Nov. 1. 1804. Published by J. Sowerby, London.

653.

2162



Parmelia fahtunensis.

in the Alps, Russia.

2. 45

2163.



Parmelia stygia?

Very much published by S. F. Gray, London



growth by the ruggedness of the stones to which they are attached. The centre is almost crustaceous, the margins membranaceous, repeatedly cut into narrow, divaricated, convex, more or less imbricated segments, whose extremities are generally incurved. The edges are often black, but the general hue of the surface is a pale yellowish-green or sulphur-colour, sprinkled with yellowish powdery warts. Apothecia few, nearly sessile, small, flat, reddish-brown, with a thick, elevated, often powdery border.

PARMELIA FAHLUNENSIS. *Flat black Rock Parmelia.* TAB. 2162.

Thallus orbicular, pitchy-brown, smooth; the segments linear, sinuated, flat, or slightly grooved, lacerated; beneath coal-black, slightly fibrillose. Apothecia dark brown, with a crenated border. Lichen Fahlunensis, *Linn. E. B.* 653. *Parmelia Fahlunensis*, *Acharius Syn.* 204. *Hooker Crypt. Part 1.* 202.

A native of rocks on the more elevated mountains of the North of England, Wales, and Scotland. It forms flat, spreading patches, of a dark brown, somewhat olive hue when moist, smooth and shining, changing to black when dry. Segments numerous, multifid, linear, flat, or rather concave or grooved, the edges undulated, entire, or finely toothed and granulated. Apothecia numerous, deep chestnut-brown; when young, with an elevated, crenated border, which is obliterated by age.

Distinguished from *P. omphalodes* by the almost perfect smoothness of the under surface; and by its more or less grooved segments from *P. stygia*. The name, *Fahlunensis*, was bestowed by Linnæus, who found it growing plentifully on the dreary rocks about the copper mines of Fahlun in Sweden, a district in which, he observes, very few lichens are met with either on stones or trees.

PARMELIA STYGIA. *Stygian Parmelia.* TAB. 2163.

Thallus stellated, shining, pitchy-black, with a few scattered, white warts; the segments linear, multifid, somewhat palmate, convex; the margins and extremities decurved; beneath black with a few dark fibres. Apothecia of the same hue as the thallus, with a thin crenated border.

Lichen stygius, *Linn. E. B.* 2048. *Parmelia stygia*, *Acharius Syn.* 205. *Hooker Crypt. Part 1.* 202.

Found plentifully on elevated exposed rocks on Ben Nevis, and about the summits of other Highland mountains. It agrees with *P. Fahlunensis* in forming entangled tufts of a dark pitchy-brown or black, with sometimes a tinge of olive; but differs essentially in being convex on both sides, of a considerable thickness, white and solid internally, and smooth at the edges. The extremities are lobed or palmate, rather paler than the other part; the under surface very black, with a few scattered fibres or radicles. Apothecia few, of the same hue as the thallus, with a thin, crenated, often beaded border.

Many minute, white, mealy specks are usually seen on the upper surface, appearing like cracks in the epithallus.

PARMELIA ENCAUSTA. *Encaustic Parmelia.* TAB. 2164.

Thallus stellated, brownish-grey, dotted with black; the segments deeply and repeatedly forked, linear, wavy, tumid, here and there constricted, convex on both sides; black, opaque, wrinkled, and naked beneath. Apothecia reddish-brown; the border whitish, inflexed, more or less crenulated.

Lichen encaustus, *Smith in Linn. Trans.* 1. 83. tab. 4. fig. 6. *E. B.* 2049. *Parmelia encausta*, *Acharius Syn.* 206. *Hooker Crypt. Part 1.* 203.

Abundant on rocks at the summit of Ben Nevis, where it was first observed by the Rev. Dr. Stuart. Very variable in the breadth of its segments, as well as in the pallor or intensity of its hue.

From *P. stygia*, with which it was once confounded, it is distinguished by the numerous black dots on the upper surface, and the bluish-black wrinkled under-side, destitute of radicles.

PARMELIA AQUILA. *Sun-burnt Parmelia.* TAB. 2165.

Thallus orbicular, tawny-brown, very much divided into numerous imbricated, crowded, branched, narrow, linear segments, with their margins inflexed; black and shaggy beneath. Apothecia dark brown, with an incurved, crenated border.

Lichen aquilus, *Acharius Prod.* *E. B.* 982. *Parmelia aquila*, *Ach. Syn.* 205. *Hooker Crypt. Part 1.* 203. Lichen fuscus, *Hudson. Dickson.* *L. pullus*, *Lightfoot.* *L. obscurus*, *Withering.*

Occasionally met with on exposed rocks in various parts of Britain, especially about the borders of Devonshire and Cornwall. Thallus forming broad, orbicular patches, loosely attached to the rock by the brown fibrous radicles that clothe the under surface, and in dry weather curling up and becoming very brittle. Remarkable for its numerous segments, which are linear, narrow, repeatedly forked and lacinated, of a tawny-brown or sun-burnt hue, paler towards their extremities, smooth, and convex, in consequence of their edges being inflexed. Apothecia numerous, dark brown, with a thick, inflexed, rugged or crenated border.

PARMELIA ALEURITES. *Mealy spreading Parmelia.* TAB. 2166.

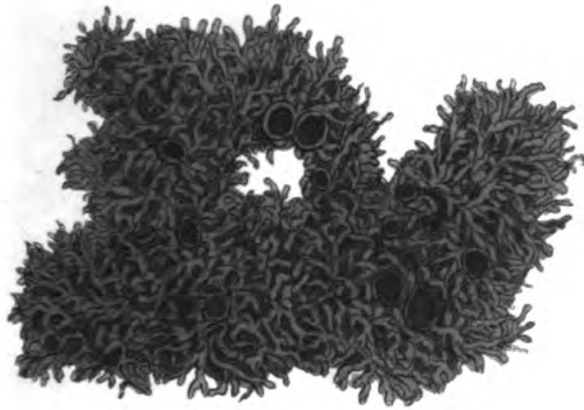
Thallus orbicular, continuous, rugged, greyish-white, mealy, lobed in the circumference, sinuated, crisped, and notched; beneath grey, with blackish fibres. Apothecia elevated, plane, reddish-brown; with an inflexed, crenulated, pulverulent border.

Lichen aleurites, *Acharius Prod.* *E. B.* 858. *Parmelia aleurites*, *Ach. Syn.* 208. *Hooker Crypt. Part 1.* 203. Lichen diffusus, *Dickson Crypt. fasc. 3^o.* 17. tab. 9. fig. 6. *Lobaria diffusa*, *Hoffmann.*

Not uncommon on the trunks of trees, park-paling, posts and rails; more frequent on the bark of firs in the North. The thallus spreads rather loosely, is of a thin substance, mealy, rugged, pale brownish- or yellowish-grey, or whitish, lobed, crenated, and smooth at the margins; the old or central parts becoming a congeries of powdery lumps

2049.

2164.



Parmelia encausta?

(1819) published by J. S. Pursh, London

982

2163.



Parmelia aquila?

Feb 1. 1802. Published by Jas. Gowerby London

853

2166

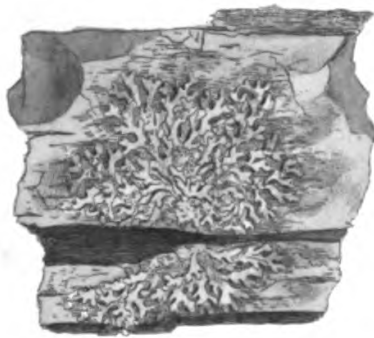
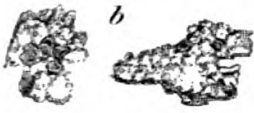
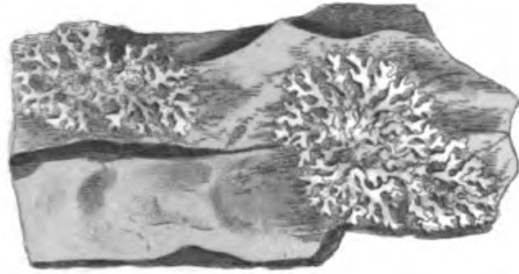


Parmelia aleurites.

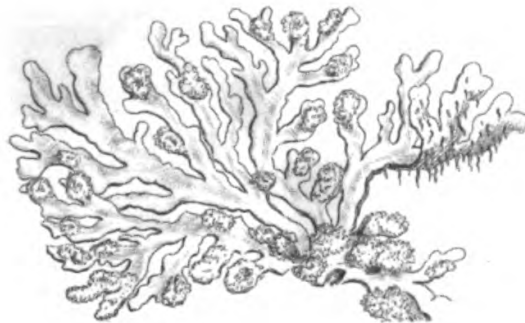
March 1. 1801. Published by J. G. Smith, London.

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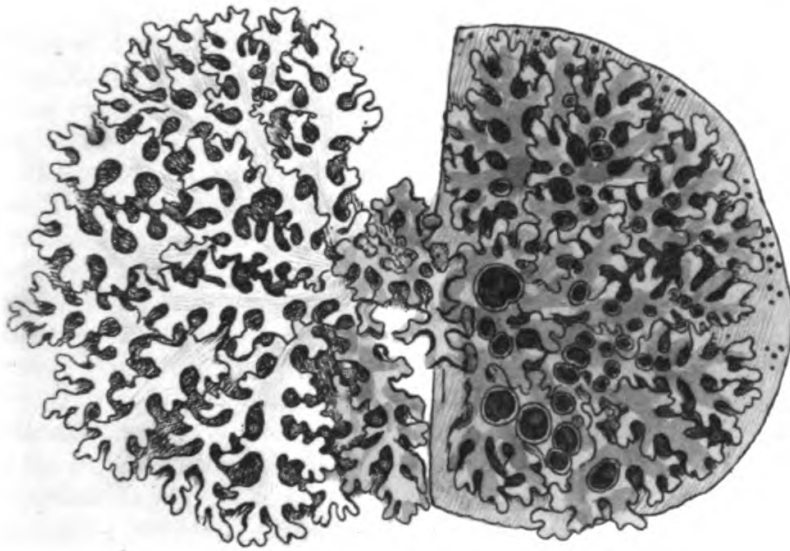


Parmelia ambigua?

Jan 2 1835.

2050

2108.



Parmelia sinuosa?



(No. 1171) published by J. S. Sowerby, London.



and swellings, without any leafy or membranous appearance. Apothecia orbicular when young, afterwards irregular, and frequently lobed, elevated on little stalks; the disc flat, smooth, of a rusty or chestnut-brown; the border elevated, irregularly notched, inflexed.

PARMELIA AMBIGUA. *Ambiguous Parmelia.* TAB. 2167.

Thallus very thin, appressed, stellated, pale yellowish green or white, bearing flattish powdery warts; the segments linear, plane, dichotomously many-cleft, subtruncated; beneath blackish-brown, fibrillose. Apothecia small, flattish; disc brown; border slightly elevated, powdery.

Parmelia ambigua, *Acharius Syn.* 208. *Borrer in E. B. Supp.* 2796. *Hooker Crypt. Part 1.* 203. *Squamaria ambigua*, *Hoffmann Pl. Lich.* 56. tab. 40. fig. 2-4, and tab. 42. fig. 2, 3.

A native of Scotland and Wales, chiefly on old fir-trees, very rarely producing its fructification. Our barren specimens were gathered, the yellow variety in the ascent of Larig Crue, the white in the neighbouring forest of Rothiemurchus: that with apothecia at *a*, was sent by Mr. G. Don, from Marr Forest in Aberdeenshire; that at *b*, by the Rev. T. Salwey, from old pales in Powis Park, Montgomeryshire. Thallus circular when young, with distinct, flat, closely appressed, thin and membranous, narrow, linear, repeatedly dichotomous segments, with slightly erose edges, and scarcely dilated, truncated extremities; the surface of a lemon-yellow, in general unpolished, even or minutely wrinkled, bursting forth here and there, chiefly in the central parts, into a few round, flattish, powdery warts. In an old state almost the whole plant becomes a glebulose powdery mass. Apothecia centrally affixed, but usually so immersed in the powder of the thallus as to appear sessile; disc reddish-brown, flat at first, soon becoming convex; border slightly elevated, thickish, powdery, entire, or lobed and crenate, eventually depressed and concealed by the swelling of the disc.

The whitish variety, figured on our Plate, has not been hitherto found in fructification in Britain; its under surface is of a paler brown, but Mr. Borrer regards the difference of hue to be the only distinction.

Narrow specimens of *P. sinuosa* are at once distinguishable from this by the polished surface and rounded sinuses.

PARMELIA SINUOSA. *Sinuous imbricated Parmelia.* TAB. 2168.

Thallus orbicular, radiated, imbricated, smooth, of a sulphureous-grey; its segments pinnatifid, with dilated cloven lobes and circular sinuses; beneath black with dense fibres. Apothecia brown, with a thin, smooth, entire border.

Lichen sinuosus, *E. B.* 2050. *Parmelia sinuosa*, *Acharius Syn.* 207. *Hooker Crypt. Part 1.* 203.

Found on stones and walls, in several places in Scotland, and very rarely on trees. The thallus spreads circularly, forming patches often several inches in diameter. It is thin, membranaceous, smooth, and of a very pale sulphureous-grey, inclining to a smoky hue; trans-

versely cracked when old ; the under surface is clothed with very black, dense, rigid, branching fibres, visible beyond the edges. The lobes are somewhat linear, pinnatifid, branched and dilated outwards, strikingly distinguished by the roundness of their sinuses ; their extremities abrupt and cloven. Apothecia very rare. Mr. Borrer mentions that a single specimen was found, bearing scutellæ, in Glen Nevis, in 1810 ; but our figure of the fructification was taken from one gathered by Mr. Menzies in Nova Scotia. When present, the shields are numerous, slightly elevated, about the size of a vetch-seed, with a flattish, dark brown disc, and a very thin, smooth, entire border.

PARMELIA PARIETINA. *Yellow wall Parmelia.* TAB. 2169.

Thallus orbicular, imbricated, bright yellow, lobed at the margin ; the lobes radiating, appressed, rounded, crenate and crisped ; granulated in the centre ; paler and fibrillose beneath. Apothecia deep orange, concave, with an entire border.

Lichen parietinus, Linn. E. B. 194. *Parmelia parietina*, Acharius Syn. 200. *Hooker Crypt. Part 1.* 204.

Common at all seasons, on walls, stones, posts, and the trunks of trees. The hue of the thallus varies according to situation, being of a deep orange colour where much exposed to the sun, while shade and moisture render it pale yellow, passing to greenish or pale olive ; the under-side is whitish, and fixed by white fibres. The segments are more or less imbricated, often wrinkled and sometimes powdery. Apothecia numerous, the disc deep orange or brownish.

According to Lightfoot, this species yields a yellow dye.

PARMELIA CARTILAGINEA. *Cartilaginous Parmelia.* TAB. 2170.

Thallus cartilaginous, imbricated, greenish grey ; the segments many-cleft, linear, flabelliform ; under-side pale and naked. Apothecia dilated, flattish, lobed ; disc buff-coloured ; border slightly elevated.

Parmelia cartilaginea, Acharius Meth. Borrer in E. B. Supp. 2802.

Lecanora cartilaginea, Ach. Syn. 191. *Squamaria cartilaginea*, DeCandolle. Not *Lichen cartilagineus*, Lightfoot.

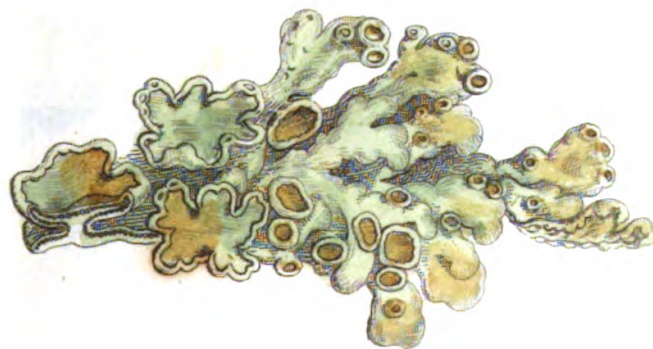
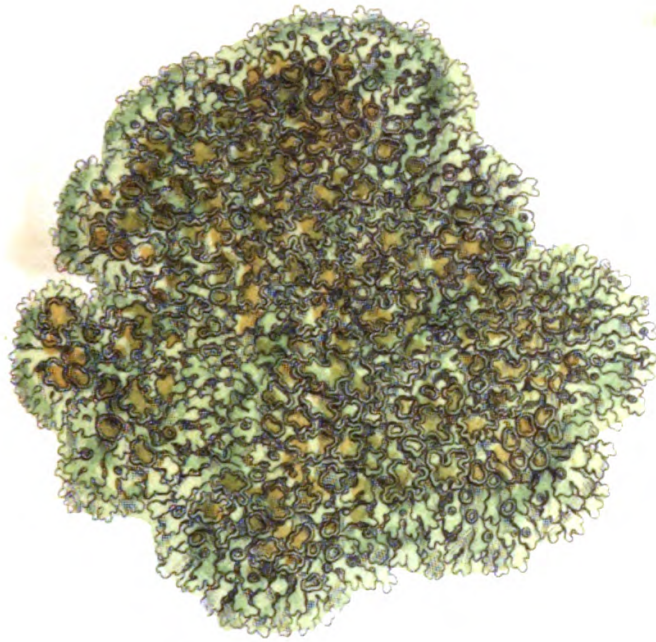
Found by the Rev. T. Salwey near the outlet of Llyn Bodlyn, among the mountains above Barmouth, on a large mass of rock upon the shore. Mr. Dickson had it from Yorkshire. Thallus spreading from a centre in round pulvinate patches to about 4 inches in diameter, and, in large specimens, 4 or 5 lines thick in the middle : segments crowded, imbricated, cartilaginous, rigid when dry, flexible when wet, irregularly linear, repeatedly and intricately, but somewhat dichotomously divided ; their edges variously sinuated ; their extremities slightly dilated and occasionally incrassated : upper surface smooth, dull, pale greenish-grey ; beneath naked, rugged, flesh-coloured, varying to dark brown, whitish toward the margins. Apothecia numerous, soon losing their circular figure, becoming irregularly and deeply lobed, and acquiring a diameter much exceeding that of the segment from which they spring, and which then rises into a sort of

194
2169.



Parmelia parietina?

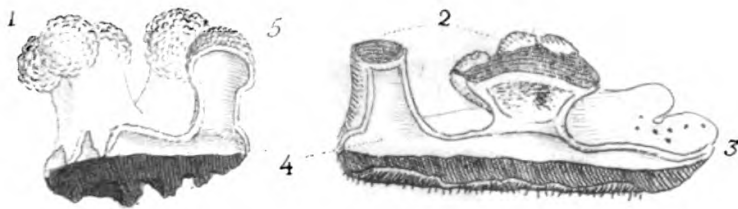
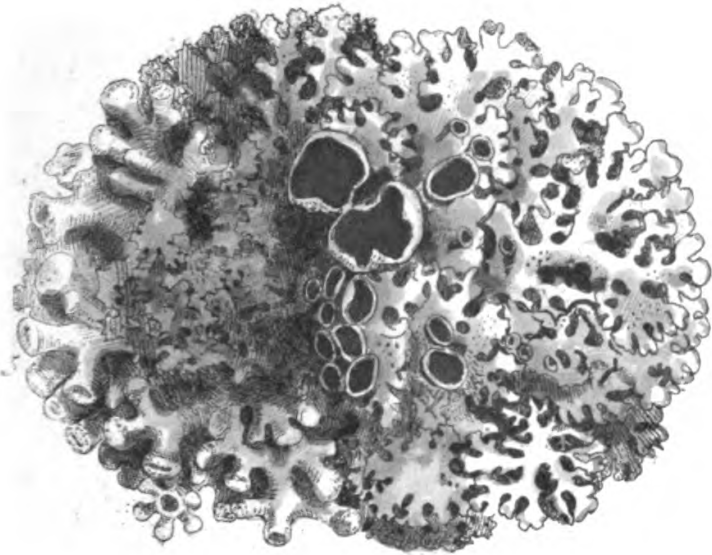
L. Guenay del. Aug. 1794.



Parmelia cartilaginea

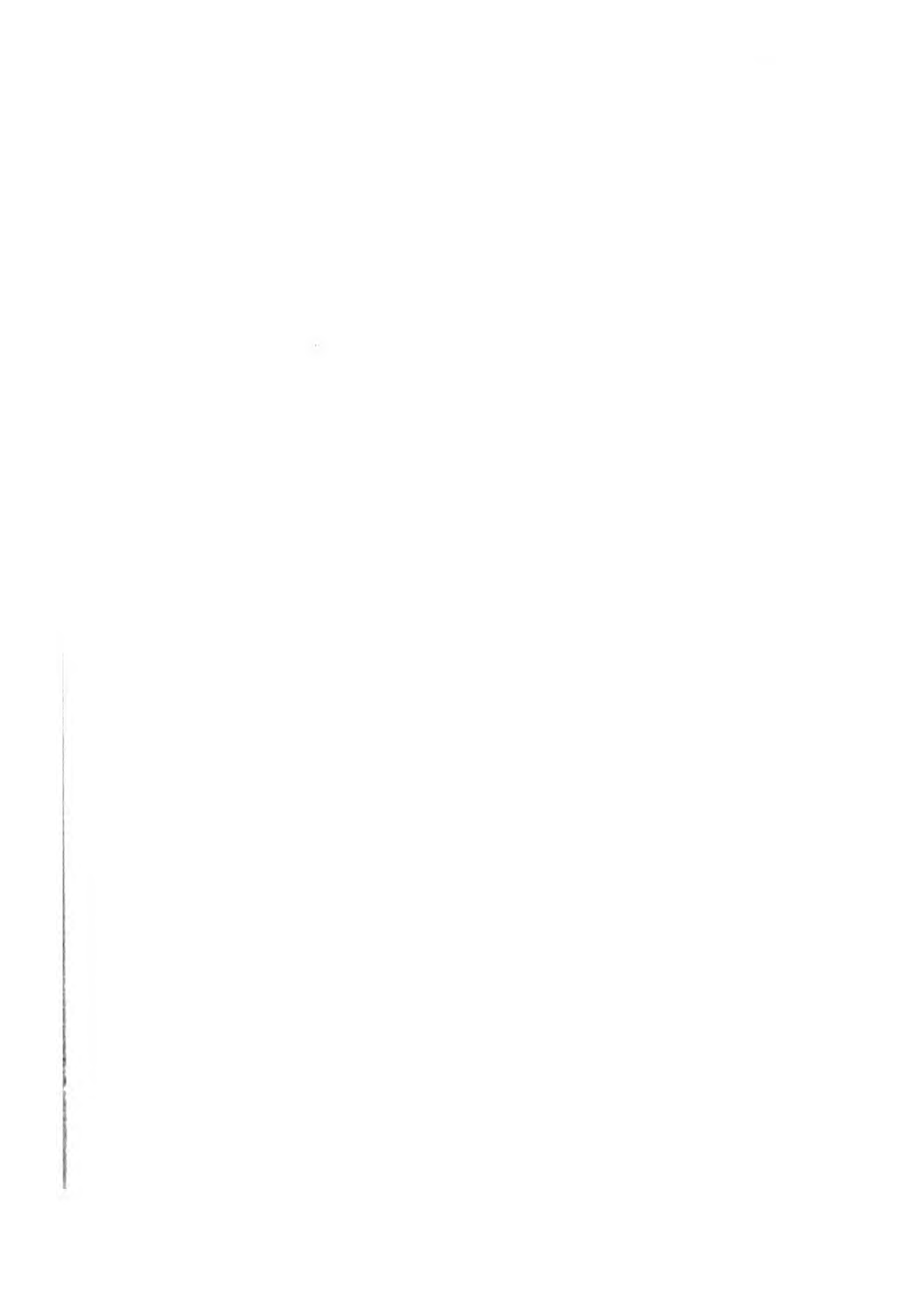
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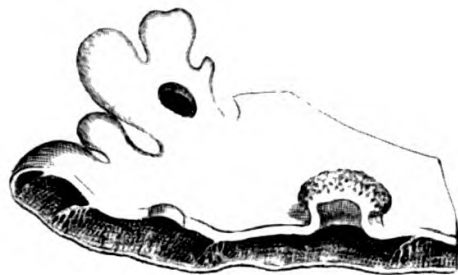
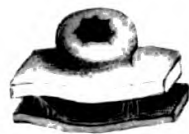
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Parmelia physodes.

P. physodes, *Vel. An. Fig. 93*





Parmelia diatrypa

Desf. in: "Pubblicat. by G. Sowerby London"



stalk beneath them : disc, when wet, nearly of the hue of the thallus ; when dry, straw-yellow, changing to brown : border persistent, slightly raised, narrow, inflexed.

** *Thallus with its segments inflated at the extremity.*

PARMELIA PHYSODES. *Inflated Parmelia.* TAB. 2171.

Thallus orbicular, stellated, glaucous-white; the segments sinuato-multifid, convex, glabrous, inflated; often bearing elevated powdery warts; beneath brownish-black. Apothecia red-brown, with a thin, elevated, wrinkled or crenated border.

Lichen physodes, Linn. E. B. 126. Parmelia physodes, Acharius Syn. 218. Hooker Crypt. Part 1. 204.

Not unfrequent on trunks of trees, old pales, large stones, and barren sandy moors, sometimes growing slightly attached to the stems of heath, and very conspicuous from its whitish hue, and its elegantly divided and curled form. Apothecia very rare. Sir J. E. Smith found it in fructification on Cromford Moor, near Matlock, and on the Malvern Hills, Worcestershire; it has been since met with in this state on an ash-tree near Dumfries, by Dr. Richardson.

This and the following are remarkable among our native species for being composed of two distinct membranes with a considerable cavity between them; in other words, for the separation of the epithallus and hypothallus, the former of which is white or greyish, the latter black. Sometimes the upper surface grows out into large, cylindrical, round-topped, powdery protuberances, which are likewise hollow, and these appear to be met with on fertile specimens among the apothecia, as well as in the ordinary or barren state of the plant.

PARMELIA DIATRYPA. *Perforated double-coated Parmelia.* TAB. 2172.

Thallus orbicular, substellated, greenish-grey; the segments sinuato-multifid, obtuse, convex, glabrous, inflated and perforated; bearing powdery warts; beneath brownish-black. Apothecia small, concave, brownish-red, with an entire, inflexed border.

Lichen diatrypus, Acharius Prod. E. B. 1248. Parmelia diatrypa, Ach. Syn. 219. Hooker Crypt. Part 1. 204. Lobaria terebrata, Hoffmann.

A native of mossy rocks and the trunks of trees in alpine districts, but rare: Mr. Turner first observed it near Beddgelert, at the foot of Snowdon. It is a smaller species than *P. physodes*, neater and more regular in its growth, and with narrower segments, which are remarkable for having generally a very distinct round perforation in the middle, opening into the vacuity between the two coats of the thallus. The apothecia are much smaller, nearly sessile, with a smooth, inflexed, entire border. Powdery warts, hollow, as in the preceding species, grow in abundance on the same plants that bear the apothecia.

The curiously hollow or inflated character of the thallus is not pe-

cular to these two species, being met with in several of exotic growth, chiefly North American : connected, as it doubtless is, with important physiological distinctions, it would, in a more natural arrangement than the present, warrant their separation from *Parmelia* as forming a different genus.

GENUS DLXXXIV. STICTA. *Sticta*.

GEN. CHAR. *Thallus* foliaceous, coriaceo-cartilaginous, spreading, lobed, free and downy beneath, with little cavities or hollow spots (*cyphellæ*), often containing a powdery substance. *Apothecia* (*scutellæ*) beneath formed of the thallus, to which they are appressed and fixed by a central point ; disc plane, coloured ; border elevated, formed of the thallus.

The general aspect of the plants of this genus is peculiar, and indicative of its being a truly natural one ; but the pitted or dotted surface of the thallus, expressed by its name, from the Greek *στικτός*, *dotted*, seems the only important character by which it is distinguishable from *Parmelia*.

The species inhabit rocks and the trunks of trees in mountainous countries. The thallus is broad, spreading, lobed at the margin, more or less leafy or coriaceous in texture, and generally with a blistered appearance on the upper surface, corresponding to depressions beneath. They have mostly a fetid odour.

The little pits or dots "vary much in their nature : in a few species they are merely irregular bald spots, apparently proceeding from abrasion of the surface ; in others they are powdery warts, *soredia*, without a margin ; and again, in others, as in *S. macrophylla*, little pits, *cyphellæ*, furnished with a margin from the superficial membrane of the thallus, within which they are originally formed ; these *cyphellæ* also vary, being in some instances filled with a powdery substance, in others empty or merely lined with powder."—*Borrer in E. B. Supp.* 2697, *ad calc.*

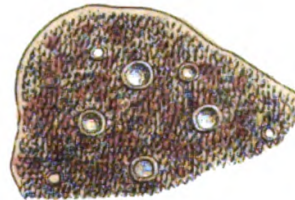
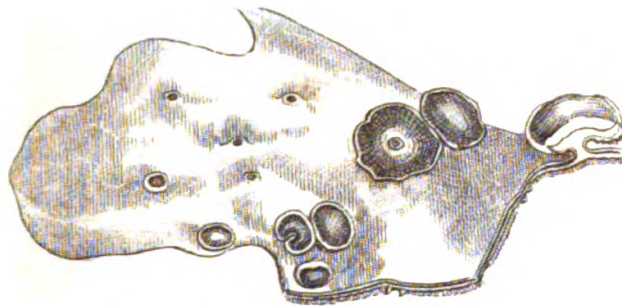
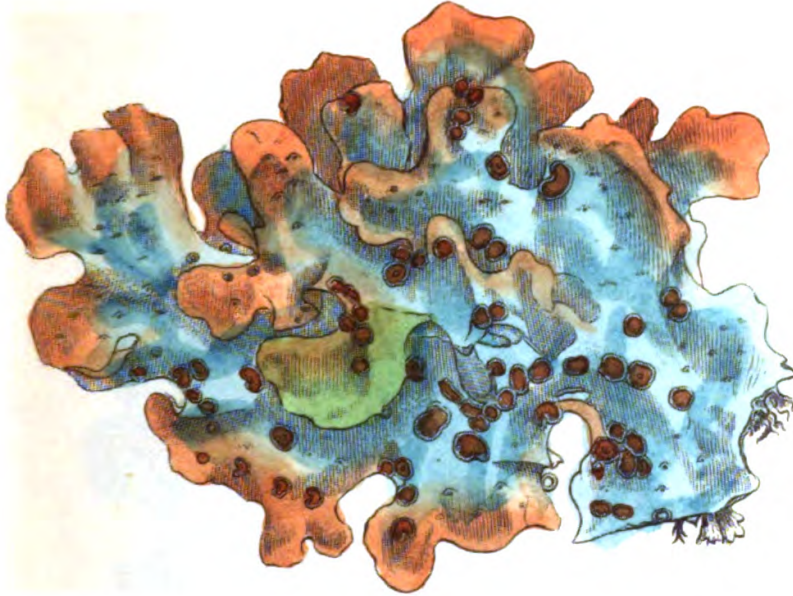
STICTA MACROPHYLLA. *Broad-leaved Sticta*. TAB. 2173.

Thallus coriaceous, imbricated ; naked, even, and green above ; clothed with brown fibres beneath ; its segments nearly flat, dilated, sinuated, obtuse, very entire. *Apothecia* reddish-brown ; their margin obtuse, flexuose, at length depressed. *Cyphellæ* urceolate, empty, whitish.

Sticta macrophylla, *Fée Crypt. des Ecorces Off.* tab. 33. fig. 1. *Borrer in E. B. Supp.* 2697. *Hooker Crypt. Part 1.* 205. *Bot. Misc.* 1. 17. tab. 13. *S. macrocarpa*, "*Delise Monograph, MS.*" *Fée, l. c.* 129 (text). *Sprengel Syst. Veg.*

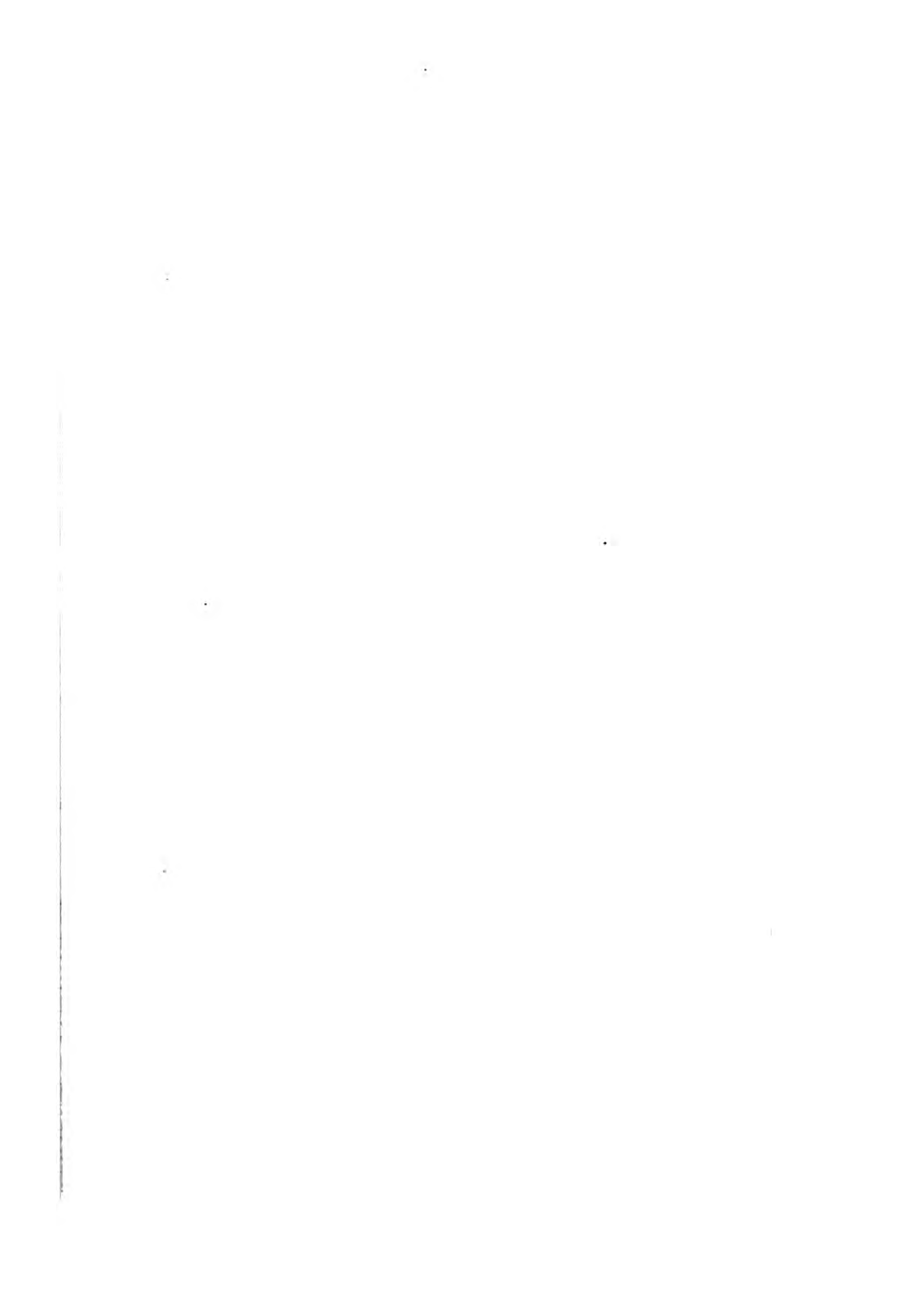
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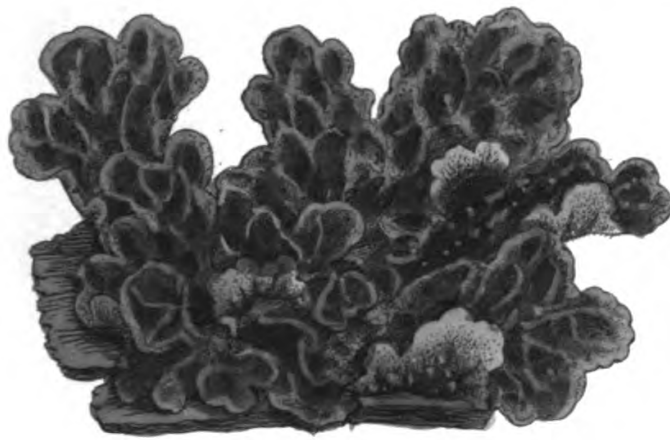
Sticta macrophylla?

July 1st 1891.



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Sticta crocata?

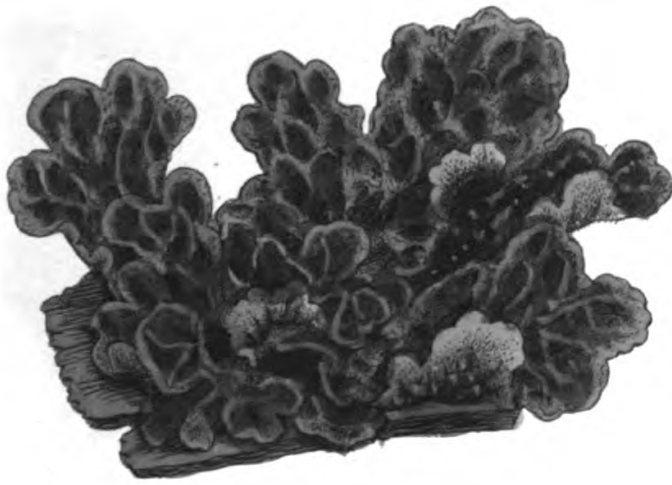


Fig. 1210 published by J. Sowerby London



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2174



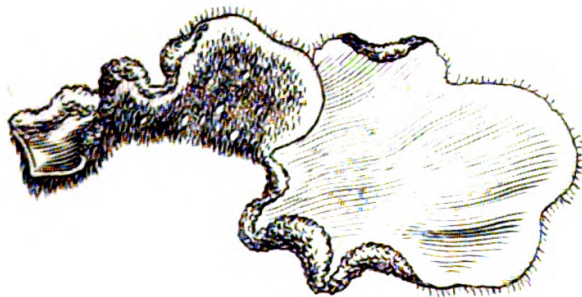
Sticta crocata?



184100 published by J. Sowerby London

2359

2175.



Sticta aurata?

See description by the name of Lichen



This fine lichen, previously only known as a native of the Mauritius, and, according to Fée, of South America, where it grows on the trunks of the Peruvian Bark tree, was discovered by Mr. W. Wilson in the summer of 1829, growing on shady rocks by the Turk Cascade, near Killarney, and likewise on Cromaglou Mountain, in the same vicinity. A specimen from the Mauritius, communicated by Sir W. J. Hooker, differs only in its somewhat broader and thicker thallus, and in the arrangement of all the scutellæ at the edges of the lobes, as represented in the 'Bot. Misc.,' where that form is regarded as a variety; the plant with scattered shields being mentioned as the typical form of the species. Thallus leathery; its segments loosely imbricated, and occasionally agglutinated, repeatedly divided into broad, slightly concave, wavy lobes with rounded sinuses; upper surface even, or slightly pitted, without elevated veins or powdery excrescences, green when wet, changing to ash-colour when dry; under-side densely clothed with short branched fibres, blackish toward the centre of the thallus. Cyphellæ numerous, small, roundish, white or pale brown, empty, but of a more or less powdery appearance within. Apothecia scattered or clustered about the sinuses of the margin; their disc eventually convex, reddish-brown; their border blunt, wavy, generally pale, but sometimes coloured like the disc. The mature scutellæ are about the diameter of hemp-seed, appressed to the thallus, but connected by their central part only.

STICTA CROCATA. *Yellow-veined Sticta.* TAB. 2174.

Thallus coriaceous, sinuated, broadly and roundly lobed, very dark olive-green, pitted and reticulated, the reticulations and margins bearing bright lemon-coloured powdery spots; the under-side clothed with pale brown fibres. Cyphellæ lemon-coloured, often wanting. Apothecia brownish-black, with an entire border.

Lichen crocatus, Linn. E. B. 2110. Sticta crocata, Acharius Syn. 231. Hooker Crypt. Part 1. 205.

A very beautiful species, first found by Mr. Dickson on rocks in the Highlands, since by several other botanists, growing on trees in the Duke of Argyle's grounds at Inverary, and in Glen Moriston, Inverness-shire. The thallus spreads in a loosely imbricated manner, forming roundish patches, and is of a coriaceous substance, sinuated, with roundish notched lobes: upper surface dull glaucous- or brownish-green, full of numerous, little, smooth depressions, separated from each other by a rude network of elevated veins, which are rough and scurfy, producing a fine lemon-coloured powder: under-side reddish-brown, downy, interspersed with little, smooth, lemon-coloured pits (cyphellæ). Apothecia have not been hitherto observed on British specimens.

It is here a rare species, being, like the preceding, one of tropical origin. It has been found in the West Indies, the island of Bourbon, South Africa, and Spain.

STICTA AURATA. *Golden-edged Sticta.* TAB. 2175.

Thallus coriaceous, broadly and deeply lobed and sinuated, wavy

and crisped, smooth, reddish-brown, the margins bearing a golden-yellow powder; beneath clothed with tawny, fibrous down. Cyphellæ golden-yellow, powdery. "Apothecia large, flat, deep brown; with a crenated border, bearing golden-yellow powder."—

Hooker.

Lichen auratus, *E. B.* 2359. *Sticta aurata*, *Acharius Syn.* 232. *Hooker Crypt. Part 1.* 205.

Our figure represents part of a specimen, communicated by Mr. Lambert, from the remains of Mr. Hudson's British herbarium; on which authority only it was admitted into the catalogue of our native lichens. Some pieces of *Neckera pumila*, attached to the specimen, indicate its growing on trees, but nothing further is known of its location in this part of the world, though Sir J. E. Smith suggests the probability of its being gathered in the woody part of Devonshire which its collector often visited. A larger species than *S. crocata*, less pitted, smooth, destitute of powdery veins, of a bright glaucous reddish-brown; under-side downy, blackish towards the middle, with small golden cyphellæ.

A well-known tropical lichen, found in South America, the West Indies, and St. Helena. Sir W. J. Hooker mentions his possession of specimens from the South of France; and the same indefatigable botanist is the first who described the fructification, "from a solitary individual in that state found in South America."

STICTA PULMONARIA. Lungwort *Sticta*. Hazel Rag. Oak Lungs. TAB. 2176.

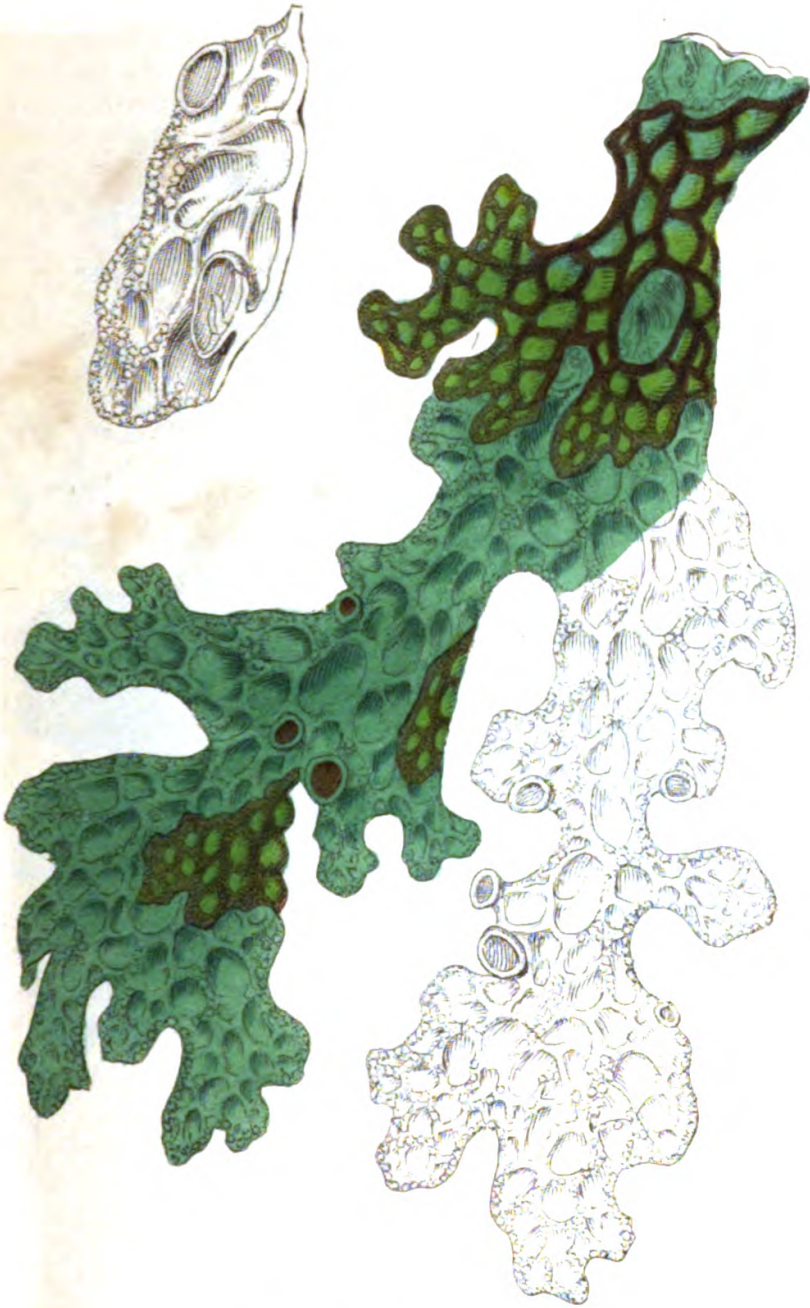
Thallus widely spreading, olive-green, pale brown when dry, pitted and reticulated, or bearing powdery, whitish warts on the reticulations, and frequently elongated, scattered or tufted granules, deeply lacinated, and broadly lobed and sinuated; beneath clothed with brownish, downy fibres, the swellings bare. Apothecia mostly marginal, red-brown, with a thick border.

Lichen pulmonarius, *Linn. E. B.* 572. *Sticta pulmonacea*, *Acharius Syn.* 233. *S. pulmonaria*, *Hooker Crypt. Part 1.* 206.

Plentiful in many woody districts, especially in the mountainous countries of the North, where it clothes the trunks of trees, frequently to a considerable extent, with its long, shaggy, leaf-like thalli, giving them a very remarkable appearance, especially in the winter season. Thallus rather dull green, changing to a yellowish-brown in drying, loosely attached to the bark on which it grows, deeply and somewhat dichotomously divided, irregularly and obtusely lobed, deeply pitted, the interstices forming a kind of network, which towards the margin is powdery or warty: under-side downy, blistered, pale, with a corresponding network of brown veins. Apothecia for the most part marginal, nearly sessile, flat, chestnut-coloured, with an elevated, smooth border.

This species is much used on the Continent, in the form of decoction with milk, to cure coughs, and in consumption and other pulmonary diseases; its remedial efficacy being greatly enhanced during the reign of signature medicine by the supposed resemblance which its lobed and pitted thalli bear to the lungs. It is bitter, astringent.

572
2176

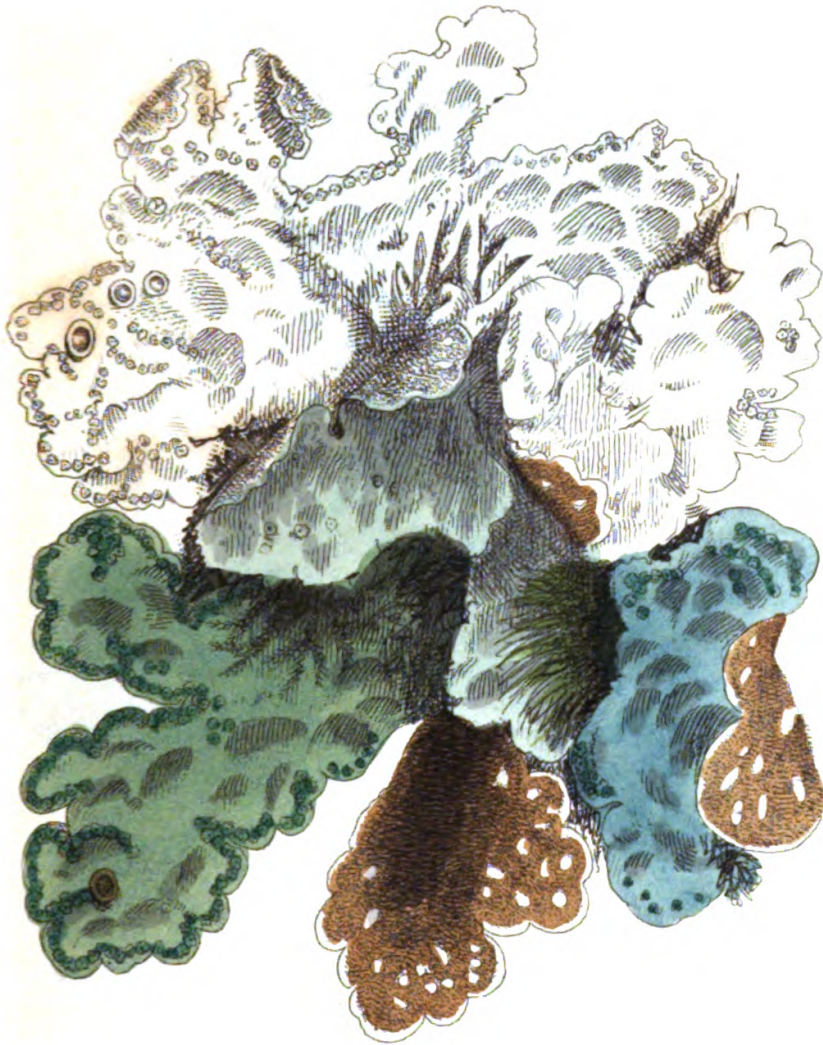


Sticta pulmonaria?

1819, *Sticta pulmonaria* (L.) Ach.

497.

2177.



Sticta scrobiculata?

Sticta scrobiculata, Lecanora



1104

2178.



Sticta limbata

Dec: 1 1802. Published by Ja. Sowerby London.

1104

2178.



Sticta limbata

Dec 1 1802. Published by J. Sowerby London.

gent, mucilaginous, and promotes expectoration, and, as observed by Sir J. E. Smith, seems to be an instance of a very foolish principle having accidentally led to truth in its application. Its medicinal properties, however, are, like those of the Iceland Moss, *Cetraria Islandica*, probably due to the presence of a slightly tonic principle in the abundant mucilage which these, and indeed most of the Licheneous plants contain, and which renders them more or less applicable as a light and wholesome diet.

It yields an orange-brown hue to woollen cloth, which is very durable.

STICTA SCROBICULATA. *Pitted Sticta.* TAB. 2177.

Thallus widely spreading, greyish-green and glaucous above, pitted, and bearing grey mealy warts, especially near the margin; the segments rounded and irregularly lobed; beneath downy, tawny, with bare, prominent, white spots. Apothecia scattered, small, reddish-brown, with a thick border.

Lichen scrobiculatus, *Scopoli. E. B.* 497. *Sticta scrobiculata, Acharius Syn.* 234. *Hooker Crypt. Part 1.* 206. Lichen verrucosus, *Hudson. Pulmonaria verrucosa, Hoffmann Pl. Lich. tab. 1. fig. 1.*

Found growing on the trunks of trees, and upon rocks among mosses, in exposed situations, in the mountainous parts of the North of England, Wales, and Scotland. The thallus spreads loosely, is rather leafy than coriaceous, deeply divided into rounded lobes, and obtusely notched, glaucous-green or greyish, full of irregular pits, smooth towards the centre, but sprinkled with grey mealy warts about the margin: under-side downy, brown, sprinkled all over with irregular, bare, prominent, white spots. Apothecia rare, about the size of mustard-seed, reddish-brown, flat; with an elevated, inflexed, downy margin.

STICTA LIMBATA. *Mealy-bordered Sticta.* TAB. 2178.

Thallus orbicular, glaucous-brown, with broad and rounded lobes, and grey powdery warts which are very copious about the margin; beneath nearly of the same hue, with downy fibres. Cyphellæ pale, naked. Apothecia brown, almost imbedded in the thallus, with a slightly elevated border.

Lichen limbatus, *E. B.* 1104. *Sticta limbata, Acharius Syn.* 236. *Hooker Crypt. Part 1.* 206.

Met with in several parts of the North of England, Wales, and Scotland, growing about the roots of trees, and on shady rocks among mosses: Dillenius gathered it in Bagley Wood, Oxfordshire. Except in the glaucous-brown hue of the thallus, there is considerable resemblance between this and the following species, *S. fuliginosa*; the surface, however, is smooth and almost polished, instead of being rough with granulated warts, except about the margin, which is profusely covered with a grey or pale lead-coloured mealiness, produced from cracks in the cuticle or epithallus. The apothecia differ from those

of *S. fuliginosa* in having a broad base, or rather being imbedded in the thallus, which, rising around them, forms a slightly elevated border that slopes off into the common level of the surface, and is not contracted into anything resembling a foot-stalk, as in that species: they are so rarely produced that but few botanists have met with them; our figures were drawn from specimens collected on Snowdon by Mr. Turner.

STICTA FULIGINOSA. *Sooty Sticta.* TAB. 2179.

Thallus orbicular, dark greenish-grey, rough with blackish granulations, broadly lobed at the margin: beneath pale brown, downy, fibrous, with bare, pale, sunken spots (cyphellæ). Apothecia scattered, red-brown, with a thick, fringed border; eventually convex, with the border obliterated.

Lichen fuliginosus, *Dickson Crypt. fasc. 1. 13.* E. B. 1103. *Sticta fuliginosa*, *Acharius Syn. 236.* *Hooker Crypt. Part 1. 206.*

Frequent on rocks and trees in alpine and subalpine districts, as well in the South of England as in the more mountainous parts of the North. The thallus spreads from a centre in a loosely imbricated manner, among moss, generally on the trunks of trees in old dark woods, especially hazels and thorns; it is membranous, with rounded lobes; the upper side rugose, of a greyish- or greenish-brown, sprinkled all over with rough, dark-coloured warts or granulations; under side pale reddish- or yellowish-brown, downy, dotted with small, white, smooth, scattered cyphellæ. Apothecia very rarely produced, mostly near the margin, small, slightly elevated; disc rusty-brown, convex in age; with a thickish, pale, crenated or fringed border, becoming eventually thin, and then obliterated.

The fetid odour of the lichens of this genus when moist is more remarkable in this and the following than in any other native species; it is compared to that of the urine of mice.

STICTA SYLVATICA. *Pitted wood Sticta.* TAB. 2180.

Thallus spreading or subsascending, of a greenish rusty hue, somewhat pitted above, often rough with grey, scattered granulations, deeply divided into lobed and sinuated segments; beneath tawny-brown, downy, fibrous; with pale, naked cyphellæ. Apothecia marginal, vertical, convex, dark brown.

Lichen sylvaticus, *Hudson. E. B. 2298.* *Sticta sylvatica*, *Acharius Syn. 236.* *Hooker Crypt. Part 1. 207.* *Peltigera sylvatica*, *Hoffmann Pl. Lich. 1. 21. tab. 4. fig. 2.*

Not uncommon in shady mountainous woods about the roots of trees, especially in the North. The thalli compose light, elastic tufts, spreading nearly horizontally, and slightly touching the ground or each other with their narrow, divaricated lobes; upper surface of a rich, often greenish-brown, full of little hollows, when dry glossy; under side besprinkled with whitish pits (cyphellæ), among short, soft down. The apothecia have never been met with in Britain, and are figured here from Hoffmann's work above quoted; they stand pressed vertically to peculiar marginal segments, and are small, convex, brown, and without a border.

1103

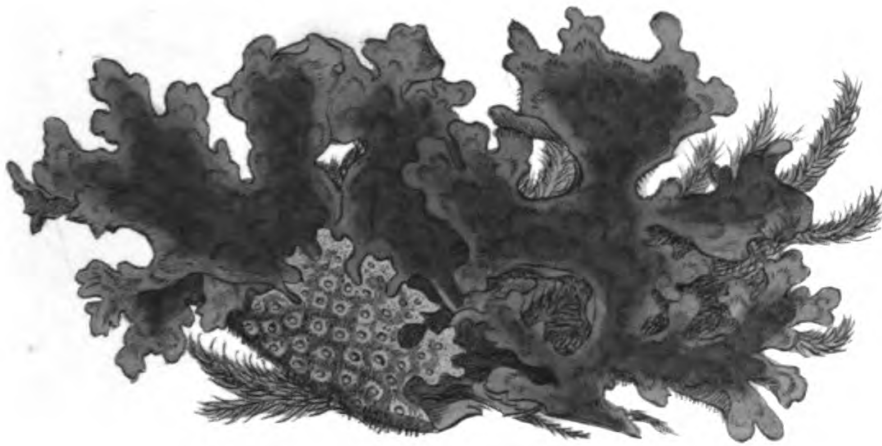
2179.



Sticta fuliginosa

Dec 1 1802 Published by J. Sowerby London





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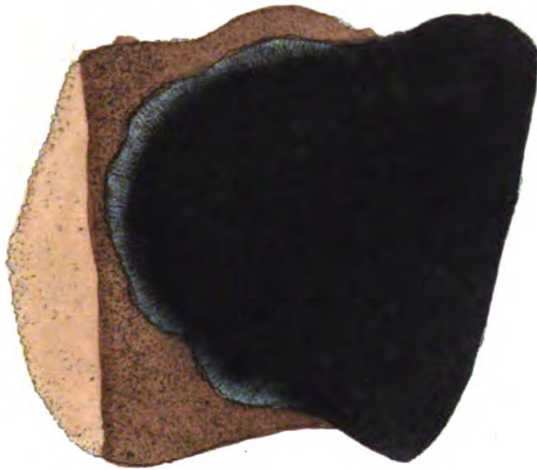


Sticta sylvatica?

Fig. 1000 published by J. S. Harknely

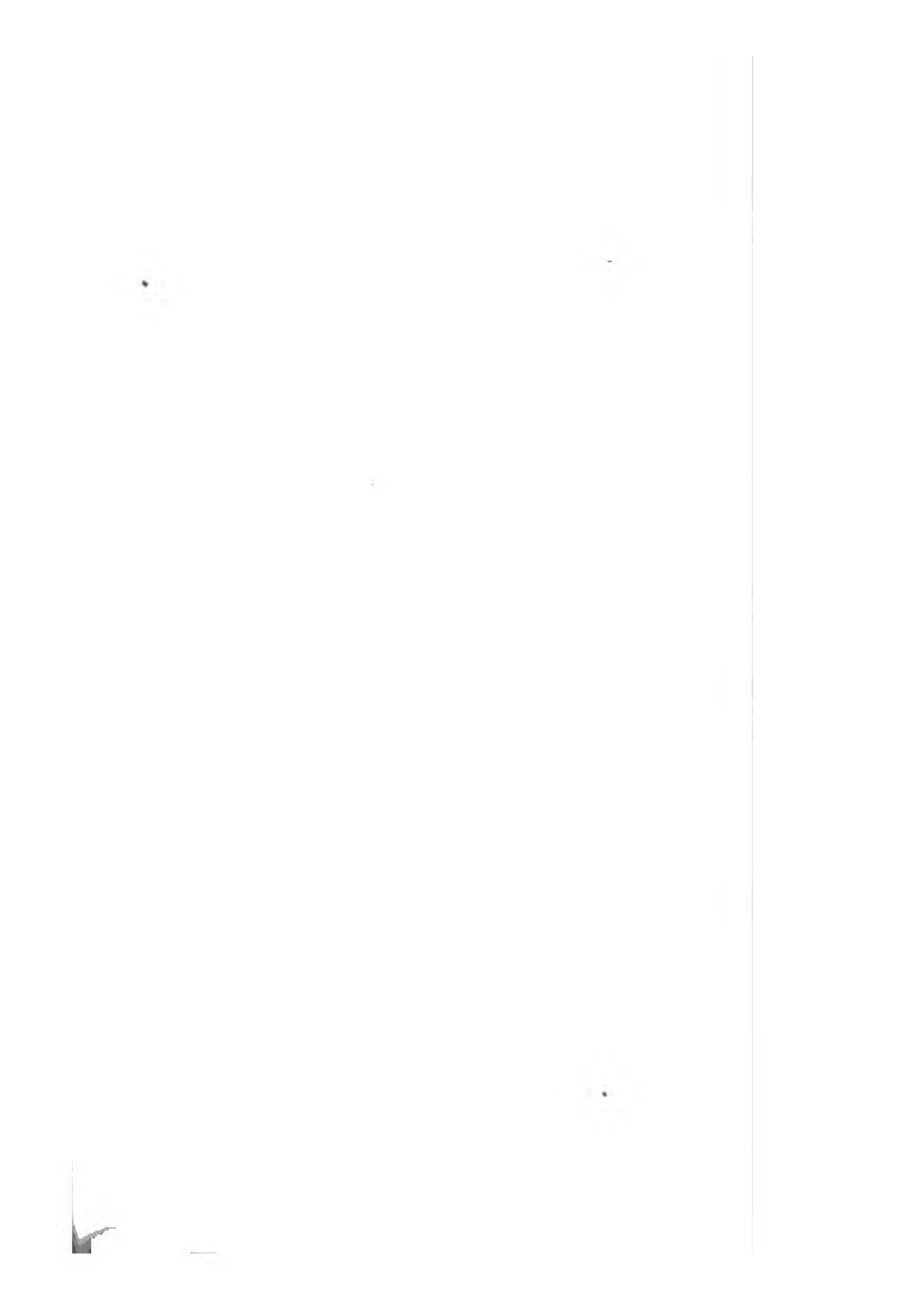
1161

2187.



Collema nigrum?

May 1 1803 Published by J. Sowerby, London.



When moist it has a fetid, alkaline scent, resembling that of *S. fuliginosa*, which in the absence of apothecia has often occasioned them to be confounded.

FAMILY X. COLLEMATEÆ.

Thallus, when moist, of a gelatinous substance.

GENUS DLXXXV. COLLEMA. *Collema*.

GEN. CHAR. *Thallus* entirely of one substance, gelatinous: when dry, generally becoming hard and cartilaginous, polymorphous, granulated, foliaceous, lobed, laciniated or branched. *Apothecia* (*scutellæ*) orbicular, sessile or, rarely, stipitate, bordered, entirely formed of the substance of the thallus; the disc sometimes coloured.

The gelatinous nature of the thallus distinguishes the plants of this genus, in a recent state, from all the other British lichens; but renders the study of them very difficult, in consequence of the contraction that necessarily takes place in drying. Many of the species are very obscure and uncertainly distinguished. The name is from the Greek κόλλα, *gluten*.

* *Thallus somewhat crustaceous, uniform.*

COLLEMA NIGRUM. *Inky Collema*. TAB. 2181.

Thallus sooty-black, composed of very minute, imbricated, lobed and cut segments; the margin bluish. Apothecia small, black, scattered; at first bordered and concave, at length convex.

Lichen niger, *Hudson*. E. B. 1161. *Collema nigrum*, *Acharius Syn.* 308. *Hooker Crypt. Part 1.* 207.

It forms a stain-like, inky crust upon shady rocks in alpine and sub-alpine countries. Mr. Hudson found it first in the neighbourhood of St. Ives, Cornwall: in the North it is not unfrequent. The thallus is very thin and with difficulty separable entire from the stone, being composed of innumerable minute lobes or segments, which are finely cut and palmate, of a black hue and gelatinous when wet, paler and greyish when dry. Apothecia black, when young slightly concave, with a smooth border, which becomes obliterated as the disc advances to convexity.

** *Thallus rather broadly lobed over the whole surface, imbricated, plaited, spreading, and becoming very turgid when wet.*

COLLEMA MICROPHYLLUM. *Small-lobed Collema.* **TAB. 2182.**

Lobes of the thallus crowded, imbricated, minute, pulpy, much divided; ultimate segments roundish, crenulate, somewhat convex.

Apothecia sessile, with a raised, entire border; eventually flat.

Collema microphyllum, *Acharius Lich. Univ.* 630. *Syn.* 310. *Borrer in E. B. Supp.* 2721. *Hooker Crypt. Part 1.* 207.

Discovered by the Rev. G. R. Leathes, growing on elm-bark, near Bury, Suffolk. *Acharius* mentions its occurrence in Sweden, France, and Switzerland. Thallus spreading irregularly, appearing, to the naked eye, a rugged, dark greyish-brown crust, blacker, with a tinge of green when wet: when magnified it is found to be composed of closely imbricated lobes, variously divided, with an uneven surface, as if powdered or minutely granulated, and cut at the edges into small, rounded, crenulate, flattish or convex segments: gelatinous and pulpy, but not very thick when wet, hard and opaque when dry. Apothecia small, sessile, or little raised above the level of the thallus; with an incurved, entire border coloured like the thallus, and a concave, orange-red disc; eventually flat, the margin still entire, but less elevated, and tinged with red.

"The crust of this *Collema* is considerably like the supposed thallus of the very anomalous *C. spongiosum*, tab. 2207. It has not the black, fibrous substratum of *Placodium microphyllum*, tab. 2139, to which *Acharius* compares it, and to some states of which it has, in other respects, much resemblance. The species is more likely to be confounded with *C. fragrans*, tab. 2183; but the thallus of that lichen is less imbricated, with larger, less divided lobes, the edges of which are less notched or crenate and somewhat raised, and the surface has not the powdered or granulated appearance when dry."—*Borrer*.

COLLEMA CHEILEUM. *Lipped Collema.*

"Thallus suborbicular, imbricated; lobes thick, all minute, rounded, crenulated, ascending. Apothecia nearly plane, aggregated, of the same colour as the thallus; the border crenulated, subevanescent."

Collema cheileum, *Acharius Syn.* 310. *Hooker Fl. Scot.* 2. tab. 71.

Crypt. Part 1. 208. *Lichen marginatus*, *Dickson Crypt. fasc.* 4. 25.

Found by Mr. Dickson in Scotland, growing about the roots of trees, in shady subalpine woods.

COLLEMA FRAGRANS. *Fragrant Collema.* **TAB. 2183.**

Thallus suborbicular, olive-black; its lobes ascending, crowded, rounded, thick-edged, crenate, smooth. Apothecia scattered, tawny, with a thick olive border.

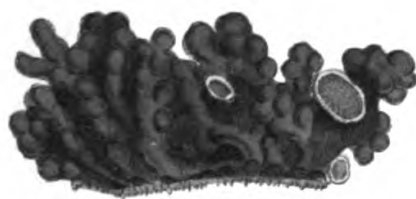
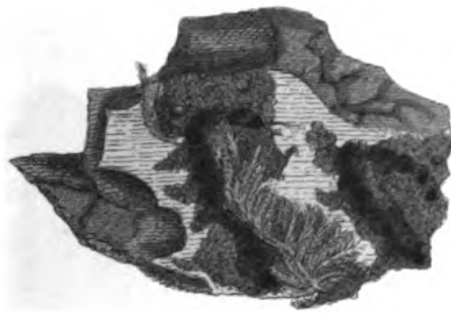
Lichen fragrans, *E. B.* 1912. *Collema fragrans*, *Acharius Syn.* 311.

Hooker Crypt. Part 1. 208.

Found on the trunks of elm- and ash-trees in Kent, Surrey and Sussex. It forms small tufts, spreading horizontally, but the small,

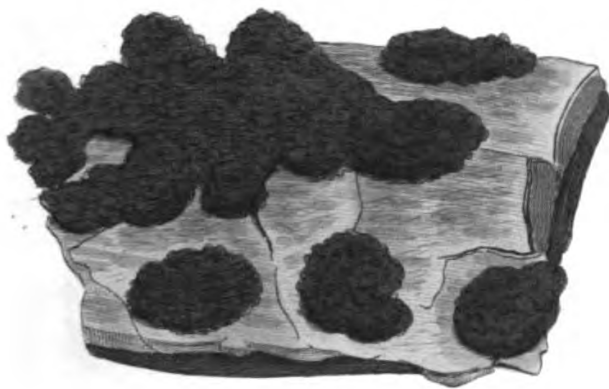
2721.

2182.

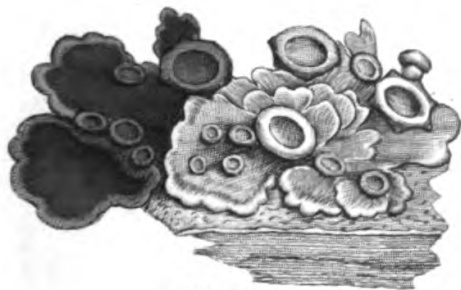


Collema microphyllum?

November 7th 1831.



1912
2183.



Collema fragrans.
July 1. 868. Published by J. Sowerby London.

834

2184



Collema cristatum

Collema cristatum (L.) Ach.



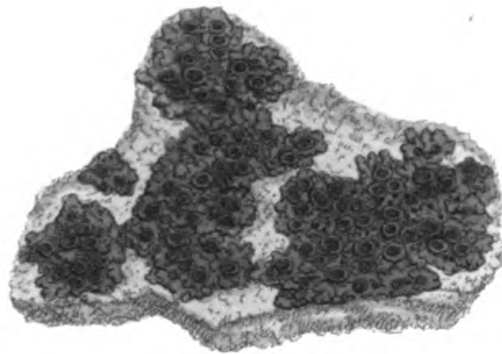
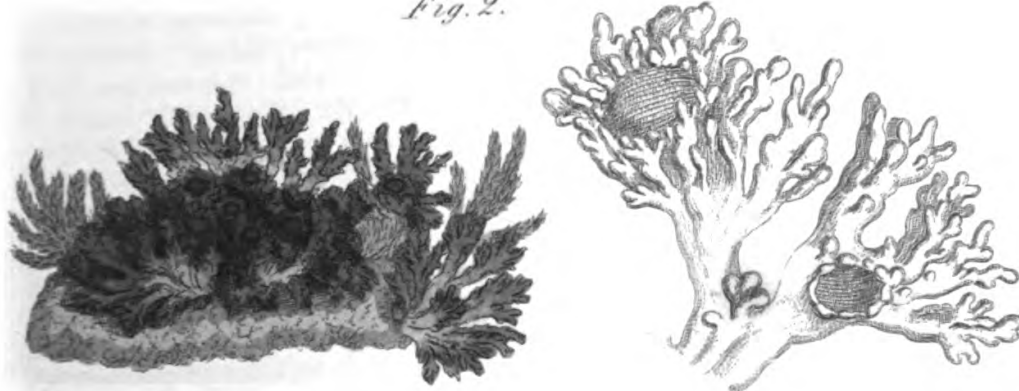


Fig. 1.

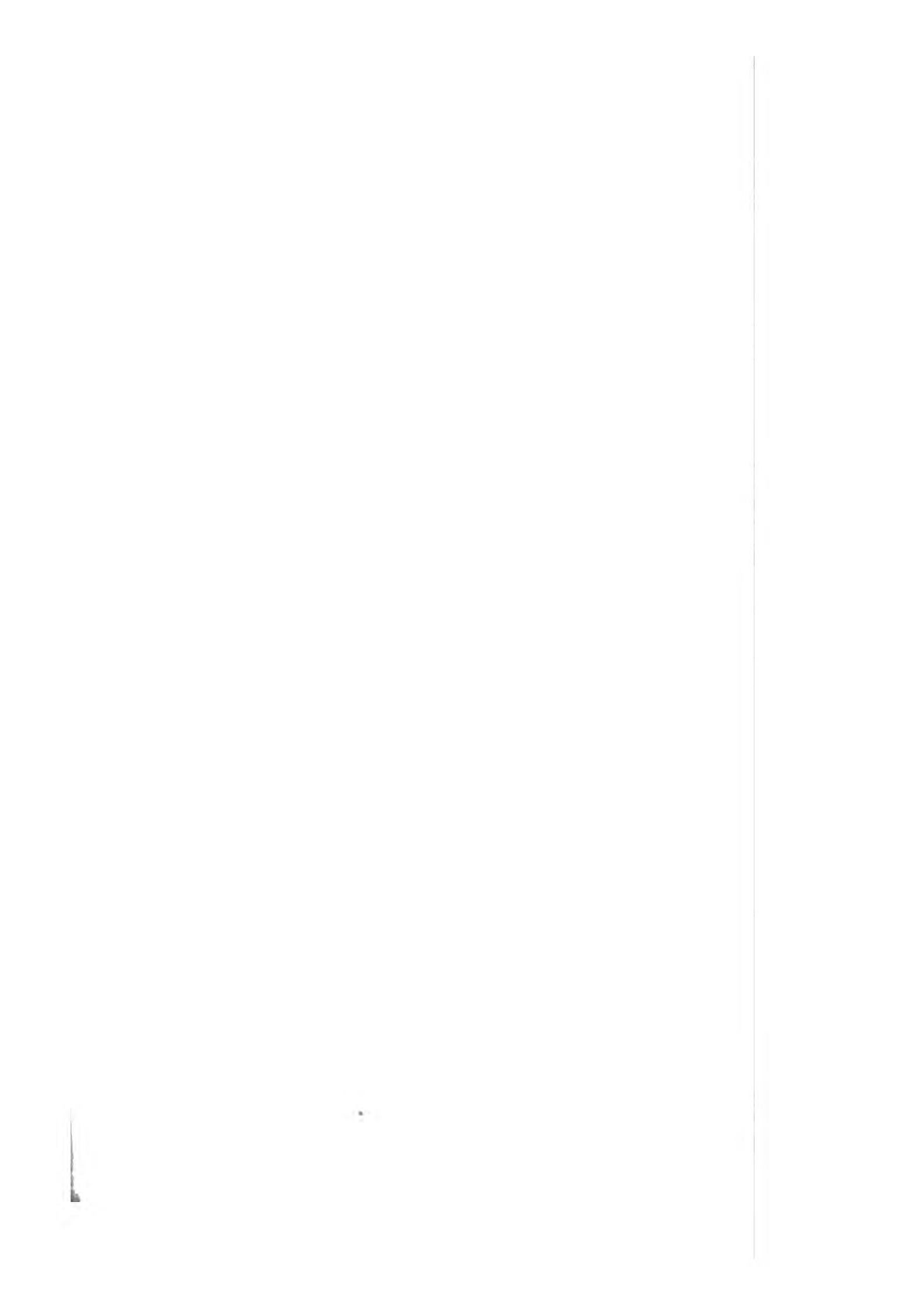


Fig. 2.



Collema limosum Fig. 1.

ceranoides Fig. 2.



rounded, crenated and thick-edged lobes curve upwards. Apothecia irregularly scattered, minute, sessile; the disc of a dull tawny hue, concave; the border thick, somewhat lighter than the thallus, externally rather tumid and uneven.

The name, *fragrans*, was bestowed upon it by Sir J. E. Smith, in consequence of a "sweet aromatic odour, not unlike that of the *spiritus volatilis aromaticus* of the apothecaries," given out by his specimens when moistened: but Mr. Borrer, the original discoverer of the species, observes, that this was probably accidental, as he finds in it no odour but that often perceptible in other pulpy *Collemeta*, especially in specimens that have been dried and subsequently moistened.

COLLEMA CRISTATUM. *Crested Collema*. TAB. 2184.

Thallus suborbicular, compact, thick, olive-green or blackish; cut into numerous plaited, notched, nearly erect lobes, of which those of the circumference are larger, crenulated and obtuse. Apothecia scattered, flat or slightly concave, red-brown, with an elevated, irregular border.

Lichen crispus, E. B. 834. *Collema cristatum*, *Hooker Crypt. Part 1*. 208. *C. pulposum*, *Acharius Syn.* 311. *Lichen cristatus*, *Linn. Hudson*.

Occasionally found in wet shady places under rocks, stones and walls, and among mosses. The thallus is more or less orbicular, of a thick substance, variously lobed and wrinkled. Apothecia numerous, scattered, with a reddish, very slightly concave disc, and a blunt, irregular, elevated border.

The plant, like many others of its genus, is scarcely to be detected unless in moist weather.

There seems to have been much confusion between the synonyms of this and another species: see the observations of Mr. Borrer under *C. crispum*.

COLLEMA LIMOSUM. *Mud Collema*. TAB. 2185. fig. 1.

Lobes of the thallus scattered, appressed, thick and pulpy, flattish, slightly crenulate; almost evanescent in drying. Apothecia immersed; border eventually somewhat prominent, nearly entire.

Collema limosum, *Acharius Lich. Univ.* 629. *Syn.* 309. *Borrer in E. B. Supp.* 2704. fig. 1. *Hooker Crypt. Part 1*. 208.

Perhaps common on wet, clayey soil, although hitherto little noticed: the specimen figured was gathered at Hurst-pierpoint, Sussex. Thallus of a dark green or blackish hue, composed of small gelatinous, pulpy lobes, appressed to the soil, at length irregularly roundish, separate or confluent, flattish at the edges, which are irregularly sinuated or crenate, but with turgid granulations on the surface. Apothecia formed within the substance of the lobes, mostly solitary; gradually expanding into a disc of the same hue as the thallus, or more or less tawny, and eventually occupying nearly the whole width of the lobe, which forms about it a thick, obtuse, orbicular, entire, or slightly crenulate border. In drying the thallus changes to a thin black or bluish crust, scarcely rising above the level of the soil, and in which the

discs of the scutellæ form slightly concave, red, orbicular depressions. Moisture, however, as usual in this family, restores the original appearance, even after the specimens have been kept dry for many years.

The near affinity of this little lichen to *Collema cristatum* is obvious, and it may possibly be but a variety; yet the scattered mode of growth, and the less tenacious substance of the thallus, which almost disappears in drying, seem to indicate a specific difference.

COLLEMA CERANOIDES. *Horned Collema.* TAB. 2185. fig. 2.

Lobes of the thallus imbricated, ascending, dilated upwards, proliferous, terminated with crowded, erect, elongated granules, overtopping the flattish apothecia.

Collema ceranoides, *Borrer in E. B. Supp. tab. 2704. fig. 2.* *Hooker Crypt. Part 1. 209.* *C. palmata*, *a, Acharius Lich. Univ. 643? Syn. 319?*

Not uncommon on the chalky soil of the Sussex Downs, but does not generally produce its fructification: Mr. R. J. F. Thomas found the specimens figured at Boxgrove, near Chichester, and Mr. Forster gathered it at Hexham, Essex: the editor has it from the neighbourhood of Reigate, Surrey, and Meopham, Kent; hence it is probably far from being a local species, at least in the south-eastern counties of England. Thallus gelatinous, olive-brown, tinged slightly with green, in young plants often blackish, growing in roundish pulvinate patches, sometimes half an inch thick; lobes proliferously branched, flabelliform, or dilated upwards from a narrow and occasionally almost cylindrical base, terminated by numerous turgid, graniform, or elongated and subcylindrical, erect, fastigate, crowded laciniae, proceeding chiefly from the edges, but some of them from the disc of the lobes, which in most instances they entirely conceal, and forming the surface of the patch. Apothecia sessile on the lobes, seldom numerous, at first somewhat convex, with a scarcely perceptible border, which eventually rises above the brown disc, becomes crenulate, and shoots out into granules like those of the thallus, among which the disc is often partially concealed.

In a dry state the lobes of the thallus are brown, the apothecia tawny, and the terminal granules black.

Nearly allied to *C. cristatum*, with the larger varieties of which it is, in all probability, often confounded; but it is distinguishable by the clustered, fastigate granules, or ramuli, which compose its surface.

There can be little doubt that the following, *Lichen tenax* of the previous edition, is nearly allied to this, if indeed it does not represent the same species.

COLLEMA TENAX. *Tenacious Collema.* TAB. 2186.

Thallus rather glaucous, fleshy, imbricated; its lobes obtuse, somewhat palmate. Apothecia depressed, dilated, reddish.

Collema tenax, *E. B. 2349.* *Acharius Syn. 314.* *Hooker Crypt. Part 1. 209.*

Found by the Rev. Hugh Davies in moist alpine situations in

2349.

2186.



Collema tenax.

Nov. 1. 1850. published by J. A. Murray, London.

2348

2187.



Collema plicatilis.

Museo Picturati by J. Th. Kuhn, by L. C. G.

2039.

2188.



Collema fluviatili.

July 1854, published by J. A. Ravenel, London.

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2582

2180



Collema multipartitum?

January, published by J. Sowerby, London



North Wales, growing among mosses, to which its tenacious, fleshy and juicy thallus adheres closely. More or less orbicular; the segments somewhat radiating, flattish, subdivided in a dichotomous or palmate manner, their ultimate lobes obtuse. The greenish glaucous hue changes to lead-colour in drying. Apothecia numerous, scattered, depressed, light red-brown, concave and sunk at first, afterwards rather convex and uneven, dilated; with a narrow, or sometimes tumid and notched border.

The original specimen of this is wanting, and the references to *Lichen tenax* of Swartz and Bernhardi, in *E. B.* 2349, are considered by Mr. Borrer to be erroneous.

COLLEMA PLICATILE. *Plaited Collema.* TAB. 2187.

Thallus orbicular, imbricated; its lobes thick, rounded, plaited, ascending, entire. Apothecia reddish-brown, concave, crowded.

Collema plicatile, *Acharius Syn.* 314. *E. B.* 2348. *Hooker Crypt. Part 1.* 209. *Lichen plicatilis*, *Ach. Prod.* *Parmelia plicatilis*, *Ach. Meth.*

A native of wet or inundated rocks in alpine situations. Thallus orbicular, dark-green, imbricated, clustered, plaited, with numerous small lobes, more or less fleshy, smooth. Apothecia abundant, crowded or clustered, sessile or a little elevated, the size of a common pin's-head; disc concave, reddish-brown; the border thick, smooth, inflexed, persistent.

COLLEMA FLUVIATILE. *River Collema.* TAB. 2188.

Thallus thick, imbricated, greenish-black; its segments obovate or linear, convex, proliferous, channeled beneath. Apothecia globose, concave, brown.

Lichen fluviatilis, *Hudson.* *E. B.* 2039. *Collema fluviatile*, *Acharius Syn.* 314. *Hooker Crypt. Part 1.* 209.

Found by Dr. Richardson, on calcareous stones in the rivulet which issues from the base of the surrounding rocks, at Malham Cove, Yorkshire; and by Dillenius in the alpine torrents of Snowdon, North Wales. Thallus of a dull, dark olive, almost black, tufted, thick, and gelatinous; its segments more or less imbricated, oblong, or more frequently obovate, occasionally notched, convex above, channeled underneath; they grow in a proliferous manner, and are sometimes granulated. Apothecia lateral, small, globular; the disc concave, reddish-brown; the border pale, and smooth.

COLLEMA MULTIPARTITUM. *Many-branched Collema.* TAB. 2189.

Thallus radiating, fleshy; segments repeatedly forked, fan-shaped, crenate, convex above, concave beneath. Apothecia prominent, eventually blackish and flat.

Collema multipartitum, *E. B.* 2582. *Hooker Crypt. Part 1.* 210.

Found abundantly on walls and rocks in the neighbourhood of Killarney, Ireland, whence it was first communicated by Sir Thomas

Gage : Sir J. E. Smith found it in Westmoreland, but without fructification. Thallus fleshy, of a dull blackish-olive, radiating from a centre, which it eventually leaves bare, sometimes becoming dispersed in small fragments, which lose their concentric disposition. The whole plant is deeply and repeatedly divided into wavy or twisted segments, sometimes rather linear, but dilated, forked and subdivided towards the extremity, and bluntly crenate at the broad tips. Upper side always convex ; under channeled or concave. Apothecia copious, at first sessile, but soon becoming elevated ; reddish-brown and slightly concave, with a thick, even border when young ; subsequently flattened, blackish, and with the border nearly obsolete.

COLLEMA MARGINALE. *Margined Collema.* TAB. 2190.

Thallus imbricated, olive-black ; its lobes linear, parallel, zigzag, channeled, crisped, crenate, branched, smooth. Apothecia marginal, dark reddish-brown, with an entire border.

Lichen marginalis, *Hudson.* *E. B.* 1924. *Collema marginale*, *Hooker Crypt. Part 1.* 210. *C. melænum*, β , *Acharius Syn.* 316.

Found on rocks and walls in mountainous and subalpine districts in the North of England and Scotland, more generally forming broad patches on calcareous stones, in rather moist places, and often accompanied by mosses. The thallus spreads in a circular, somewhat radiating manner, and is of a dull blackish-olive, darker when dry ; the under and lower parts much paler than such as are more prominent. Lobes very much crowded and branched, smooth, not granulated. Apothecia mostly about the margins, slightly elevated, horizontal, flat, dark reddish-brown, with a prominent, entire, by age somewhat jagged border.

COLLEMA FASCICULARE. *Clustered Collema.* TAB. 2191.

Thallus suborbicular ; the lobes clustered, dilated upwards, plaited, waved, inciso-crenate. Apothecia marginal, shortly stalked, clustered, turbinate, reddish.

Lichen fascicularis, *Linn.* *E. B.* 1162. *Collema fasciculare*, *Acharius Syn.* 317. *Hooker Crypt. Part 1.* 210.

Not unfrequent on the mossy trunks of trees in the North of England and Scotland. The lobed thalli grow in roundish clusters, from a quarter of an inch to an inch or more in height, and are of a dull greenish-black, paler at the lower part, where they are narrow and compressed ; they are much dilated upwards, longitudinally plaited, and terminated by great numbers of upright, marginal, turbinate apothecia, each standing on a short stalk of the substance of the thallus, which forms the thick, wavy border.

The apothecia are so numerous that the lobes of the thallus are often obliterated by them.

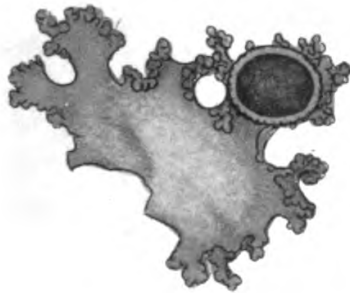
Probably more common than supposed, as is the case with many other species of the genus, contracting in dry weather so as to bear scarcely any resemblance to a vegetating substance, but during rain becoming plump and conspicuous.

1924

2190.



Collema marginale?



Sept. 1, 1908. Published by J. S. Sowerby, London.

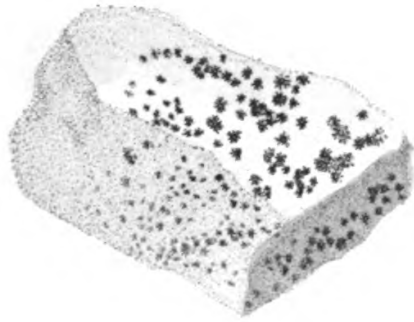
1162

2191.



Collema fasciculare?

May 1. 1803 Published by J. J. Sowerby, London



Collema cretaceum?



1635

2193.



Collema palmatum?

Aug 1866. Published by J. & Sowerby, London.

1980

2194.



Collema saturninum

Feb 1899 Published by J. Sowerby London



COLLEMA CORRUGATUM. *Corrugated Collema.*

“Gelatinous, thick, black-green ; with elevated intestiniform convolutions.”

Lichen corrugatus, *Dickson Crypt. fasc. 4. 26.* *Collema corrugatum*, *Acharius Syn. 318.* *Hooker Crypt. Part 1. 210.* *Dillenius Musc. tab. 19. fig. 19.*

This does not appear to be known as a lichen at present, nor indeed has it been identified by any recent botanist. The only original figure seems to be that of Dillenius above quoted, who mentions its being gathered in Sussex, on rocks near the sea-shore ; hence it is probably some algaecious plant.

COLLEMA CRETACEUM. *Chalk Collema.* **TAB. 2192.**

Thallus minute, simple, lobed, stellated, dark-olive ; bearing a central, solitary, elevated, brownish flesh-coloured apothecium, with a paler, elevated, entire border.

Lichen cretaceus, *E. B. 738.* *Collema cretaceum*, *Acharius Syn. 328.* *Hooker Crypt. Part 1. 210.*

Very common on chalk, as well as on the white coating of flint-stones, over which it is scattered in the form of minute, olive-coloured or blackish stars. Few of the plants exceed the diameter of a large pin's-head ; they are composed of a spreading, lobed, prominent thallus, in whose centre stands a very conspicuous elevated apothecium, of a reddish-brown or brownish flesh-colour, smooth, concave, and somewhat turbinate ; surrounded with a paler, entire border.

The fructification is of rare occurrence, and many consider it merely a young state of some other species ; Sir W. J. Hooker notes its affinity to *C. tenuissimum*.

*** *Thallus somewhat foliaceous, thin, lobed chiefly in the circumference.*

COLLEMA PALMATUM. *Palmated Collema.* **TAB. 2193.**

Thallus tufted, nearly erect, greenish-brown ; its segments linear, somewhat palmate, many-lobed, thin, revolute. Apothecia scattered, reddish.

Lichen palmatus, *Hudson. E. B. 1635.* *Collema palmatum*, *Hooker Crypt. Part 1. 210.* *C. palmatum, β , Acharius Syn. 319.* *C. corniculatum, Hoffmann.*

Found on sandy ground among mosses, especially in the vicinity of the sea. Thallus forming erect tufts, nearly an inch high, among mosses and other lichens ; its segments crowded, very much divided, forked and toothed, the edges all revolute. Apothecia small, sessile, globose, scattered about the disc of the lobes on the fore side ; disc brownish-red, with a reddish, entire border.

COLLEMA SATURNINUM. *Saturnine Collema.* **TAB. 2194.**

Thallus foliaceous, submembranaceous, dark greenish-lead-coloured ;

glaucous and downy beneath; its lobes subascending, rounded, wavy. Apothecia scattered, reddish-brown, with an entire, thin border.

Lichen saturninus, *Smith in Linn. Trans.* 1. 84. *E. B.* 1980. *Dickson Crypt. fasc.* 2. 21. *tab.* 6. *fig.* 8. *Collema saturninum*, *Acharius Syn.* 320. *Hooker Crypt. Part* 1. 211. Lichen myochrous, *Ehrhart*.

Not unfrequent on trunks of trees in mountainous districts, especially in Scotland, but seldom to be found in fructification. Thallus more or less gelatinous when wet, blackish, or greenish lead-colour, whitish and downy on the under side, whence the specific name of *Ehrhart*, literally mouse-skin lichen. The apothecia, when present, are scattered over the thallus, a little elevated, with a reddish-brown disc and a thin, entire border; specimens from Switzerland and the Pyrenees present them in abundance, although they are so rare in this country as to have been found by few botanists.

COLLEMA BURGESSII. *Crown-fruited Collema.* **TAB. 2195.**

Thallus subfoliaceous, somewhat imbricated, glaucous greenish-brown, much lobed and sinuated, curled all over; downy and somewhat spongy beneath. Apothecia slightly elevated, brown, flattish; with a greenish, foliaceous, crisped and sinuated border.

Lichen Burgessii, *Lightfoot Fl. Scot.* 827. *tab.* 26. *E. B.* 300. *Collema Burgessii*, *Acharius Syn.* 320. *Hooker Crypt. Part* 1. 211.

Found on trunks of trees in subalpine districts, especially near water, as in the vicinity of the Devil's-bridge, Cardiganshire, and several other parts of Wales; likewise in Scotland, where it is not unfrequent. It grows in patches, often as broad as the hand; the thallus being variously lobed, sinuated, curled and clustered, so as to form a thick cushion-like tuft. Its substance is rather thin and pellucid, of a dull green colour when wet, smooth above, finely downy beneath; becoming when dry of a purplish-brown on the upper side, and whitish or hoary beneath. Apothecia slightly elevated; the disc a little concave, smooth, red-brown; the border very conspicuous, leafy, variously lobed, sinuated and crisped.

COLLEMA TUNÆFORME. *Sooty Collema.*

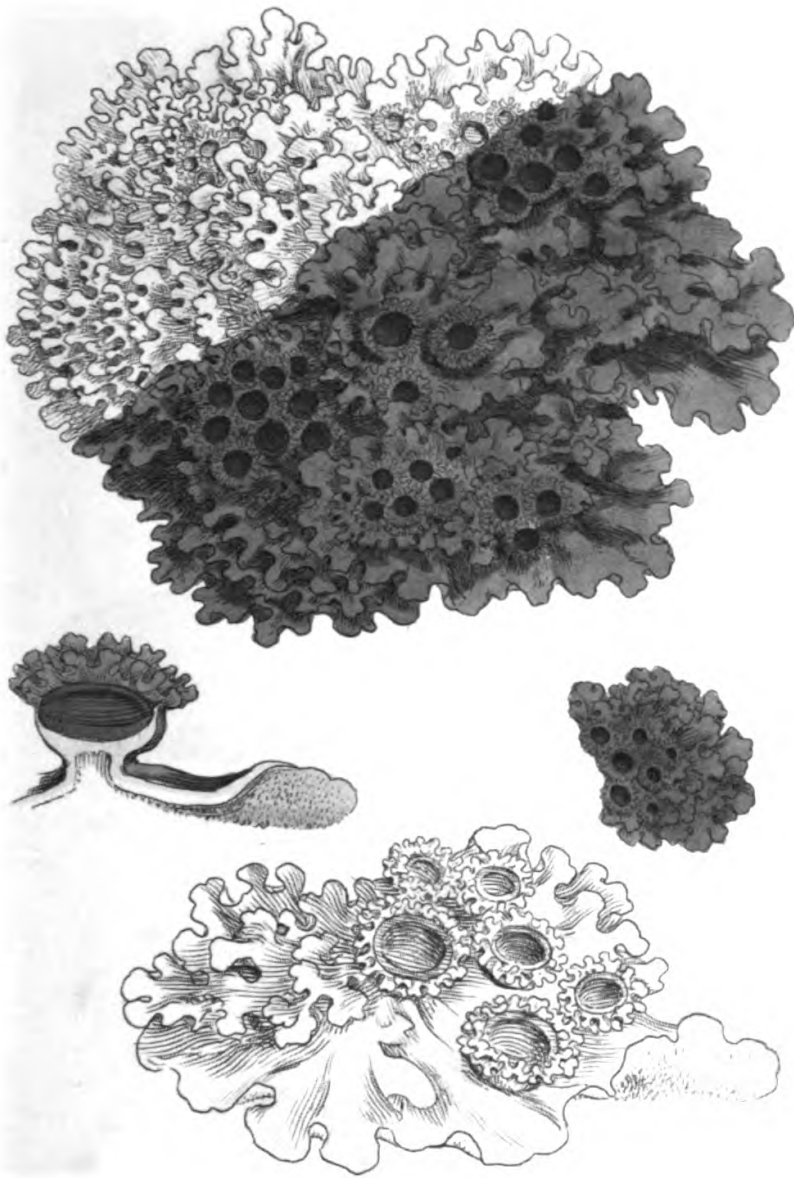
"Thallus foliaceous, submembranaceous, somewhat wrinkled, black-green, with scattered fuliginous powder; the lobes oblong, deeply cut, sinuato-laciniated, obtuse, flexuose and crisped, subcrenate. Apothecia few, scattered, flattish, brown, with an entire border."

Lichen tunæformis, *Acharius in Nov. Act. Holm.* 16, 17. *tab.* 1. *fig.* 6. *Dickson Crypt. fasc.* 4. 25. *Collema tunæforme*, *Ach. Syn.* 322. *Winch Fl. North. and Durham*, 93. *Hooker Crypt. Part.* 1. 211.

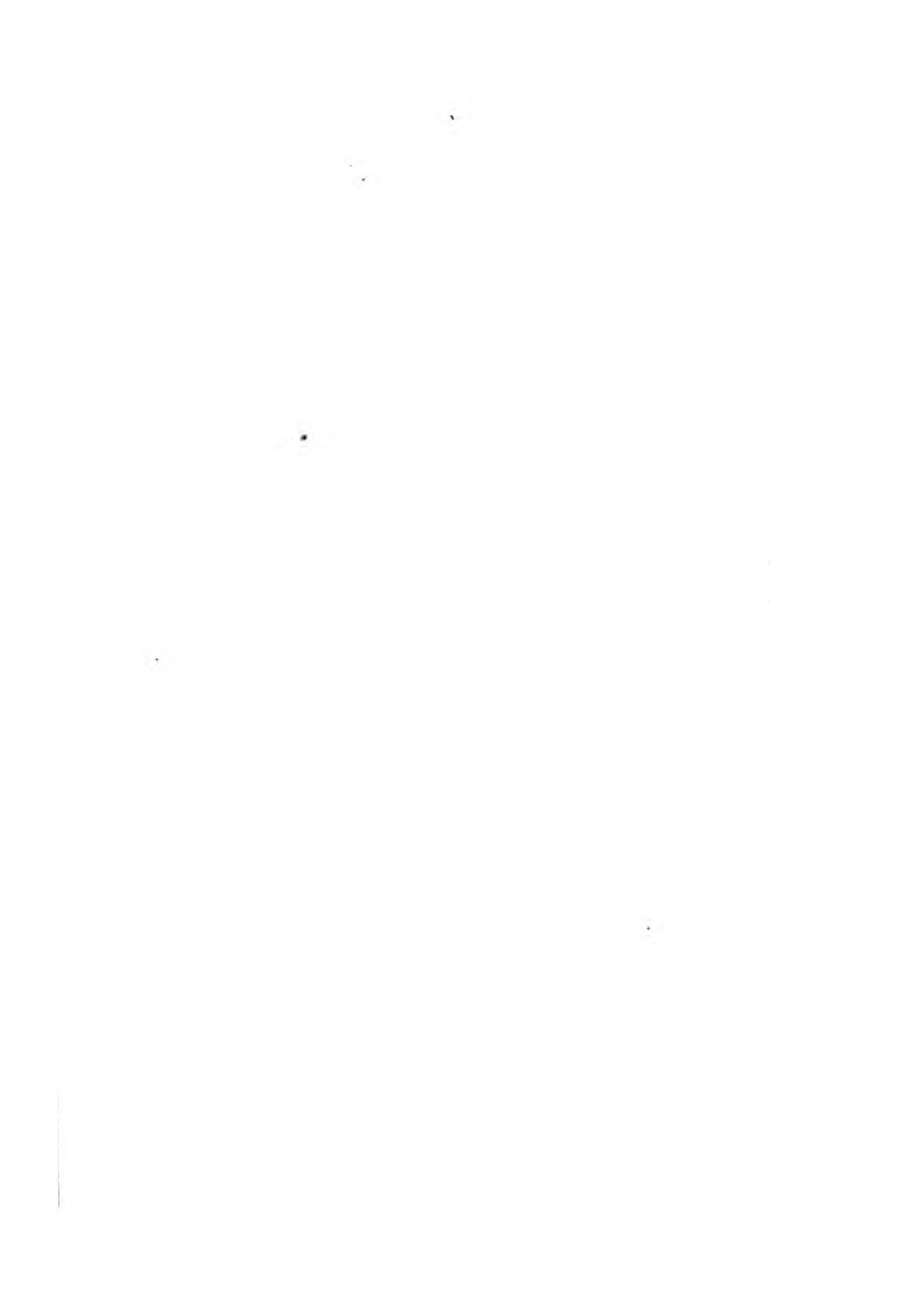
Found on rocks near Wigmore, Herefordshire, on limestone about Egleston and Middleton in Teesdale, Durham, and about Wycliff in the same county.

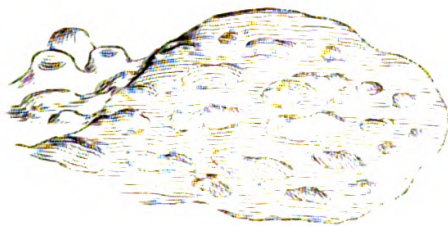
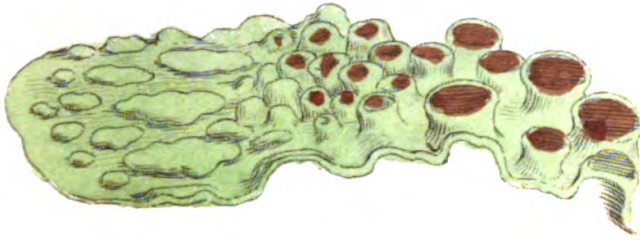
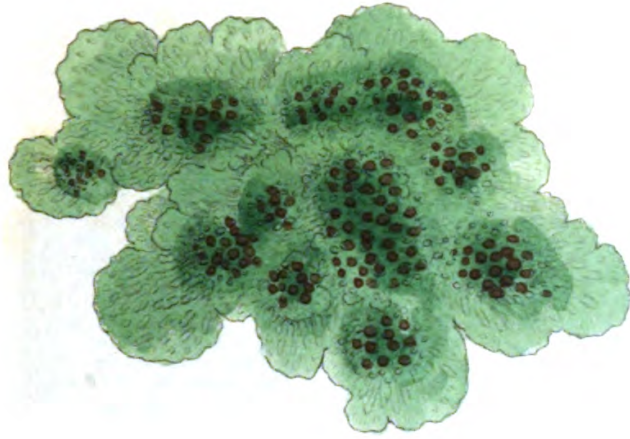
COLLEMA NIGRESCENS. *Bat's-wing Collema.* **TAB. 2196.**

Thallus foliaceous-membranaceous, suborbicular, rugged and blistered, broadly and roundly lobed, dark olive-green. Apothecia



Collema Burgesii.





Collema nigrescens

Collema nigrescens





1653

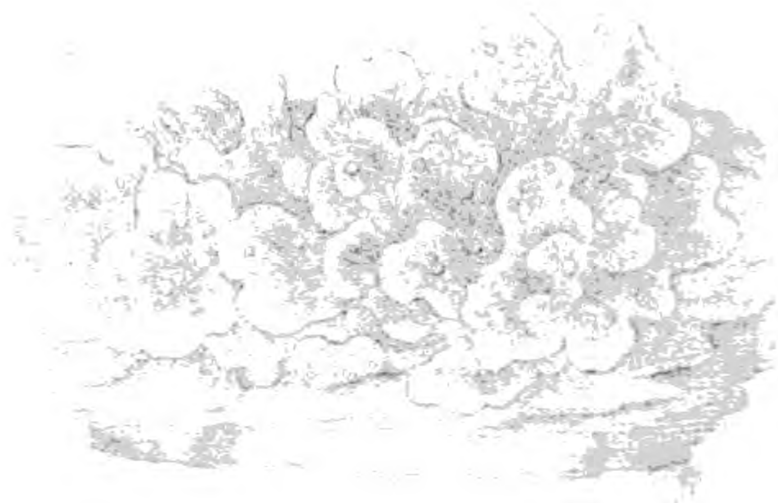
2197.

Collema



flaccidum?

Oct. 1. 1866. Published by Jas. Sowerby, London.



1871



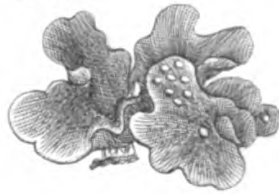
1872



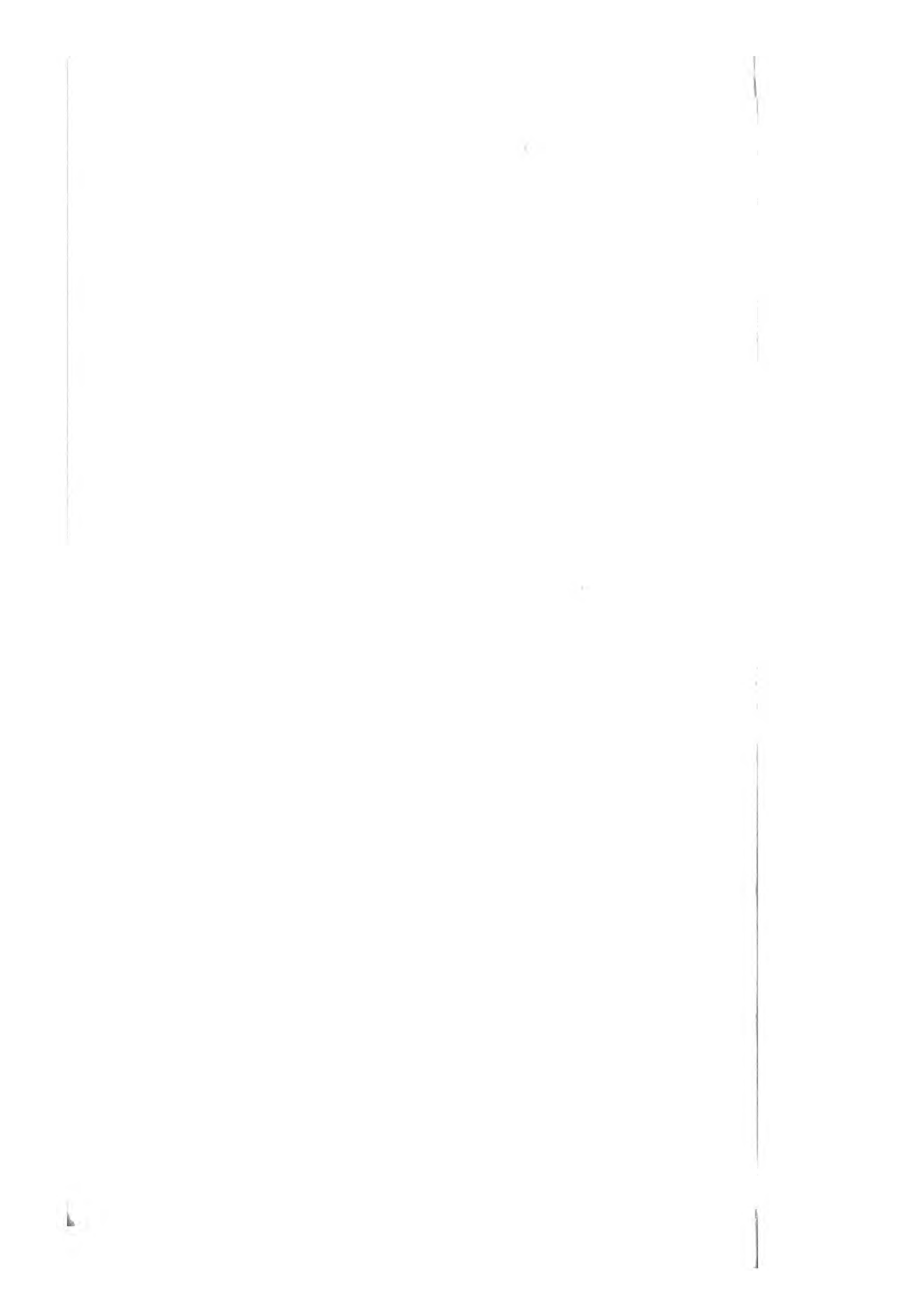
1757

2198.

Collema granulatum?



June 2. 1867. Published by J. Sowerby, London.



clustered, elevated, reddish-brown, with an entire border; eventually convex.

Lichen nigrescens, Hudson. *E. B.* 345. *Collema nigrescens*, Acharius *Syn.* 321. *Hooker Crypt. Part 1.* 211. *Lichen vespertilio*, Lightfoot.

Not unfrequent on the trunks of trees in damp woods, or on moist shaded rocks. It grows in patches lying close to the bark, especially the outer lobes of the thallus, which are rounded and entire, appearing very much wrinkled or blistered, in consequence of numerous oblong, parallel, pustule-like elevations, each of which is hollowed out on the under-side. The whole plant is smooth, membranaceous or leaf-like, but tender and gelatinous, of a dull deep green when wet, blackish when dry, and not unaptly compared by Dillenius to a bat's wing in texture. Clusters of little granules, *pulvinuli*, arise about the centre, and sometimes all over the surface of the thallus, and are probably the most frequent source of its propagation, the apothecia being seldom found: when present, they are crowded about the centre of the lobes in oblong or orbicular clusters, small, reddish-brown, a little elevated, with a thin entire border; the disc by age becomes convex.

COLLEMA FLACCIDUM. *Flaccid Collema.* **TAB. 2197.**

Thallus foliaceous-membranaceous, somewhat granulated, or smooth, dark blackish-green; its lobes ascending, rounded, plaited, entire. Apothecia scattered, reddish, very slightly convex, with an entire border.

Lichen flaccidus, Acharius *Prod.* *E. B.* 1653. *Collema flaccidum*, Ach. *Syn.* 322. *Hooker Crypt. Part 1.* 211. *Lichen rupestris*, Linn. *fil.* Swartz. *L. nigrescens*, Ehrhart *Crypt.*

Found on the trunks and about the roots of trees in damp woods, likewise on moist rocks, especially in subalpine and mountainous districts. The thallus forms loose flaccid tufts, the lobes of which are ascending, rounded, and entire; the upper surface is generally more or less granulated, of a dark blackish olive-green colour. Apothecia scattered, a little elevated, light reddish-brown. In age the disc often falls out in fragments, leaving a very white receptacle.

COLLEMA GRANULATUM. *Granulated Collema.* **TAB. 2198.**

Thallus foliaceous-membranaceous, granulated on both sides, of a blackish olive-colour; its lobes crowded, rounded, plaited, crisped, and cut: beneath with tufted, cottony radicles. Apothecia scattered, dark brown, with an entire margin.

Lichen granulatus, Hudson. *E. B.* 1757. *Collema granulatum*, *Hooker Crypt. Part 1.* 211. *C. furvum*, Acharius *Syn.* 323.

Nearly allied to the foregoing and following species, from which it is not very easy to distinguish it in description. From *C. flaccidum* it is charactered by its creeping habit, by being generally much smaller, and of a more olive or yellowish hue when wet, though almost black when dry. In substance it is thicker, comparatively fleshy and rigid: the lobes crowded, cut, plaited, and clothed with

globular, pellucid grains on both sides. Apothecia scattered, sessile, flat, or slightly concave, dark brown, at length black, with an entire border.

Found on the ground in several parts of the kingdom, as in Sussex, Westmoreland, &c. ; but, like many others of the genus, scarcely observable unless in moist weather.

COLLEMA CRISPUM. *Curled Collema.* TAB. 2199. fig. 1.

Lobes of the thallus thinnish, much divided ; their segments imbricated, crowded, rounded, concave, with entire or denticulate, raised edges. Apothecia sessile ; their margin crenulate, eventually leafy.

Collema crispum, *Borrer in E. B. Supp.* 2716. fig. 1. *Hooker Crypt. Part 1.* 212. *Lichen crispus*, *Linn.*, *Hudson*, &c.

Of no unfrequent occurrence upon stones and the lower part of walls, chiefly in shady places, and found sometimes on the ground, both on chalky and on gravelly soil. Thallus in rather thin patches of a roundish outline when separate, but often confluent to a considerable extent. Lobes crowded and somewhat imbricate, small, variously sinuated, fixed beneath by small tufts of white, cotton-like fibres ; the segments entire, minutely crenulate, or fringed with granule-like teeth, their edges raised, their surface naked, or sprinkled with minute granules, which probably grow out into the small round processes that are usually crowded proliferously over all the central parts of the thallus, so as to give it an uneven, curled and leafy appearance. Substance gelatinous and pellucid, but tenacious, when wet ; rigid when dry ; thin, yet not membranous like that of *C. nigrescens*, *C. sinuatum*, &c. : the hue a dark bottle-green, drying greyish-black, with a tinge of green or blue in specimens that have grown in very damp situations. Apothecia sessile on the disc of the lobes, concave, with a thickish border when young, soon flat, or even convex, the border becoming narrow, crenulate or granulate, and at length fringed with small leafy processes like those upon the thallus : disc tawny, or brick-red, sometimes of the hue of the thallus.

C. granulatum is distinguished from this by its larger lobes, more pulpy when wet, and sprinkled on both surfaces with granules which do not become leafy, and by the smaller, almost stalked scutellæ, with an entire, elevated border.

COLLEMA DERMATINUM. *Skinny Collema.* TAB. 2199. fig. 2.

Lobes of the thallus between gelatinous and coriaceous, rounded, with ascending, sinuated edges ; upper surface sprinkled with granules. Apothecia somewhat stalked ; border narrow, entire, slightly raised.

Collema dermatinum, *Acharius Syn.* 322. *Borrer in E. B. Supp.* 2716. fig. 2. *Hooker Crypt. Part 1.* 212.

Found on calcareous rocks : with scutellæ, in North Wales, by Mr. Griffith ; without them, in Leigh Wood, near Bristol, by Mr. Forster. Thallus roundish, adhering without radicles, composed of rounded, irregularly sinuated lobes, of a tenacious gelatinous sub-

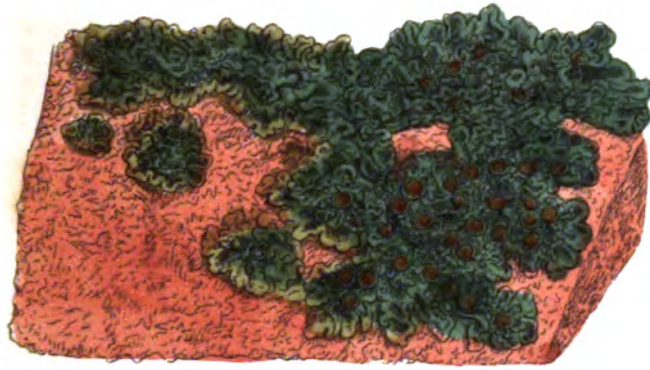


Fig. 1.



Fig. 2.



Collema crispum . . . *Fig. 1.*
——— *dermatinum* *Fig. 2.*

100

100

772.

2200



Collema sinuatum

Vertical line on the left side of the page.

772.

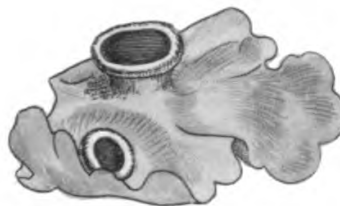
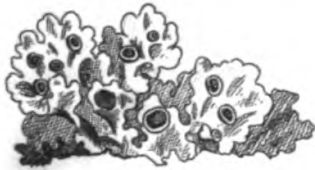
2200



Collema sinuatum

1981

2201.



Collema tremelloides.

Ed. 1809 Published by J. Sowerby London

stance between membranous and coriaceous, and of a dark olive or bronze-green on both sides: when dry very rigid, browner above, and on the under-side of a bluer or more bronzed hue, and marked with long narrow wrinkles, like shrivelled skin. Outer segments flattish, raised at the edges, producing in a proliferous manner from their disc those that form the central part of the patch, which are nearly erect, concave, and clustered. Surface more or less sprinkled with small globular granules. Apothecia numerous, about the size of cabbage-seed, red, at least when dry.

The substance of the thallus is about as thick as that of *C. crispum*, but its lobes are larger and less divided, and its apothecia resemble those of *C. granulatum* and *C. flaccidum*: but the thallus is much less thin and membranous than in the latter, the lobes less entire, and the granules not so numerous nor so minute: the lobes are less concave than in *C. granulatum*, the granules confined to the upper surface, and the tufted cottony radicles are wanting.

COLLEMA SINUATUM. *Sinuated Collema.* TAB. 2200.

Thallus foliaceous-membranaceous, imbricated, dark glaucous-green; the lobes crowded, small, rounded, incised, nearly entire, suberect, plaited. Apothecia scattered, sessile, brownish, with a smooth, entire border.

Lichen sinuatus, *Hudson. E. B.* 772. *Collema sinuatum*, *Hooker Crypt. Part 1.* 213. *C. scotinum*, β . *Acharius Syn.* 374.

Met with growing in the interstices of rocks, on old walls in shady places, and occasionally among mosses, in various parts of the kingdom, but more especially in the vicinity of the sea. It forms little dense tufts, composed of numerous spreading, imbricated lobes, which are rounded, lobed and crenated, of a glaucous-green when wet, but dull brown, verging towards a lead-colour, when dry. Apothecia scattered, small, concave, brownish, especially when dry; the border smooth, entire, elevated.

Not very conspicuous, unless in moist weather, when it assumes a bright sea-green tinge.

COLLEMA TREMELLOIDES. *Nostoc-like Collema.* TAB. 2201.

Thallus foliaceous-membranaceous, thin, subdiaphanous, smooth on both sides, dull green; light lead-coloured and opaque when dry; the lobes ascending, rounded, folded, somewhat notched. Apothecia scattered, rather elevated, flat, reddish, with a pale smooth border.

Lichen tremelloides, *Linn. E. B.* 1981. *Collema tremelloides*, *Acharius Syn.* 325. *Hooker Crypt. Part 1.* 213. Lichen cochleatus, *Dickson Crypt. fasc. 1.* 13. tab. 2. fig. 9.

A native of rocks, among mosses in alpine and subalpine districts, and especially near the sea. Thallus very thin and tender, of a dull dark green and pellucid when wet, but becoming quite opaque and pale lead-coloured in drying; smooth, and of the same hue both above and below. Apothecia scattered, somewhat elevated, with a flat,

reddish chestnut disc, and a very smooth, thick border, which is externally like the thallus, but with its inner edge pale buff-coloured.

COLLEMA LACERUM. *Jagged Collema.* TAB. 2202.

Thallus foliaceous-membranaceous, extremely thin, subdiaphanous, nearly upright, bluish-brown; the lobes dilated, finely jagged and fringed. Apothecia scattered, minute, concave, red, with a thick border.

Lichen lacer, *E. B.* 1982. *Collema lacerum*, *Acharius Syn.* 327. *Hooker Crypt. Part 1.* 213. *Lichen lacerus*, *Ach. Prod.* *L. tremelloides*, *Hudson.* *L. tremella*, *Withering.* *Tremella lichenoides*, *Linn.*

Not very unfrequent on rocks and old shady walls, among mosses, especially in the mountainous parts of the kingdom. The thallus grows nearly erect among the moss, to which it adheres: it is extremely thin and delicate, almost pellucid, of a light brown hue with a tinge of blue, which is sometimes very vivid. The lobes, dilating upwards, are variously jagged and divaricated, and finely toothed or fringed at the margins. Apothecia, when present, abundant, minute, prominent, with a red, concave disc, and thick, smooth border.

One of the most elegant and delicate of the *Collemas*, little altered in appearance or texture by drying. The fructification is chiefly met with in northern and alpine districts.

**** *Thallus variously cut into numerous, slender branches.*

COLLEMA SUBTILE. *Fine-spun Collema.* TAB. 2203.

Thallus dull blackish-green, very minute, substellated, cut into numerous, very narrow, linear, imbricated and appressed bluntish segments. Apothecia central, clustered, nearly plane, brownish, with a narrow, entire border.

Lichen subtilis, *Schrader.* *Bernhardi in Schrad. Journ.* 1. 5. tab. 2. fig. 6. *E. B.* 1008. *Dickson Crypt. fasc.* 4. 25. *Collema subtile*, *Acharius Syn.* 328. *Hooker Crypt. Part 1.* 213.

Far from uncommon on moist ground, though chiefly in a clayey soil. The individual plants are very minute, indeed so much so that they would be scarcely detected by the naked eye, did they not form little patches, from half an inch to one or two inches in diameter, conspicuous on the bare ground by their dull, darkish green hue. Thallus spreading from a centre, variously and repeatedly branched into narrow, waving, bluntish, somewhat fleshy segments, which are more or less imbricated and entangled. Apothecia central, clustered, solitary in very small plants only, sessile, with a nearly flat, brownish, granulated disc, and a narrow, entire border.

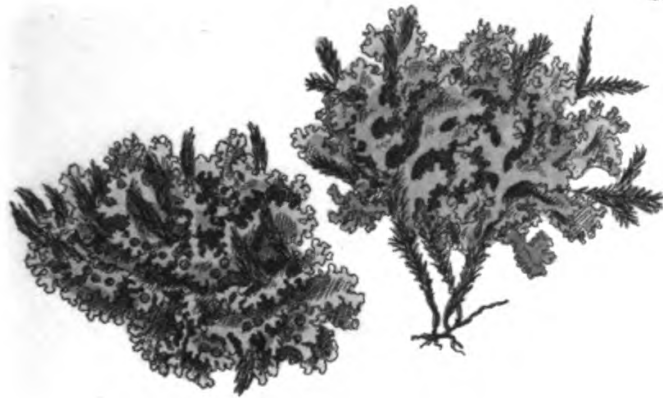
Under a high magnifier the thallus appears granulated, as in the bottom figure on our plate.

COLLEMA TENUISSIMUM. *Fine-cut Collema.* TAB. 2204.

Thallus imbricated, greenish-black, cut into numerous, minute, linear,

1982

2202.



Collema lacerum

Feb 1 1869 Published by Jas Sowerby London



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2003



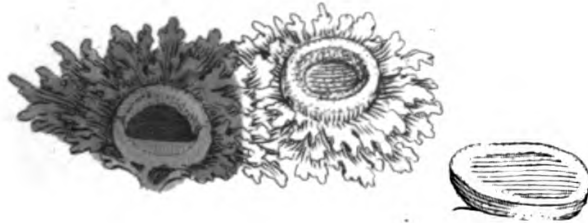
Collema subtile?

April 1, 1802 Published by J. J. Sowerby, London.



1427

2204.



Collema tenuissimum?
Horn & Sons, Published by J. & S. Swanby, London.



2264
2205.



1.



2.



2.

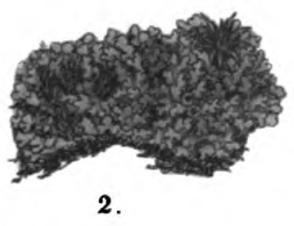
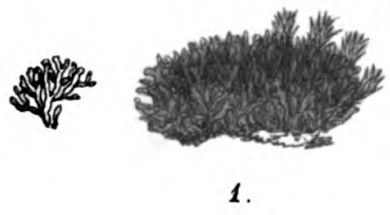


1.

Collema Schraderi?

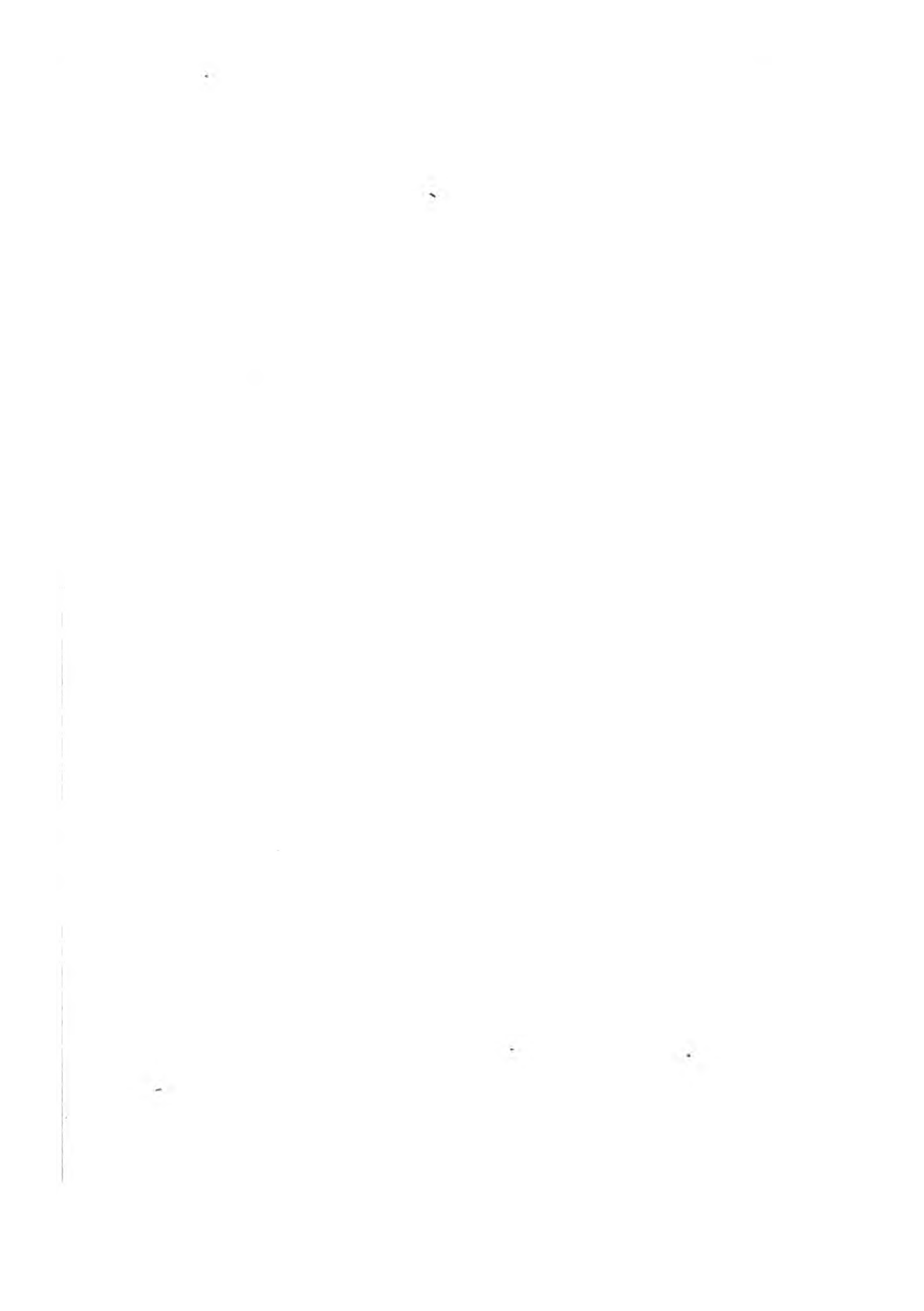
May 1811 published by J. S. Scherzer & Co.

2284
2205.



Collema Schraderi?

May 1881, published by J. S. Sarsby, London.



2204

2206



Collema muscicola



Moss 1. 12. 1841. No. 10. 1841. No. 10. 1841.



multifid, unequal, granulated, rather acute, very crowded segments. Apothecia scattered, nearly plane, reddish-brown, with a thick, entire border.

Lichen tenuissimus, *Dickson Crypt. fasc. 1. 12. tab. 2. fig. 8. E. B. 1427.* *Collema tenuissimum, Acharius Syn. 328. Hooker Crypt. Part 1. 213.*

Found on dry, sandy banks, among mosses or short grass. Plants very minute, aggregated in patches, as in the preceding species, of an exceedingly deep olive or brownish-green, or almost black. Thallus more or less stellate, or palmate, of a thin substance; the lobes linear, unequal, jagged, or fringed. Apothecia large by comparison, sessile, flat, dark brown, becoming paler and more red in drying, with a thick, elevated, entire border.

COLLEMA SCHRADERI. *Schraderian Collema.* **TAB. 2205.**

Thallus cæspitose, erect, dull olive-green, somewhat fleshy, branched; the branches linear, dichotomous, compressed, rugose, constricted in places, obtuse. Apothecia lateral, reddish, with a pale border.

Collema Schraderi, Acharius Syn. 328. E. B. 2284. Hooker Crypt. Part 1. 213. *Lichen Schraderi, Bernhardt in Schrad. Journ. for 1799. 1. 22. tab. 2. fig. 5.*

Grows on the ground among mosses, especially in a clayey soil, and on rocks and walls. The thallus, repeatedly branched in a dichotomous manner, forms little erect, level-topped tufts, usually of a dull, darkish olive-green colour, paler and whitish below, sometimes of a dirty white or pale brownish hue altogether: the branches are somewhat fleshy, and constricted here and there, but become shrivelled and compressed by drying. Apothecia not very often present, lateral, reddish, with a thick pale border.

The right-hand figures, marked 1 on our plate, represent the plant in a barren state, as gathered by Sir J. E. Smith, from a low stone wall, at Matlock Bath, Derbyshire. The left-hand, fig. 2, represent one with fructification, found by Mr. Turner, on Caistor church, Norfolk, and which was first supposed to be a different species.

COLLEMA MUSCICOLA. *Moss Collema.* **TAB. 2206.**

Thallus cæspitose, suffruticulose, very minute, olive-black, pulvinate: branches cylindrical, divided, subfastigate, rather obtuse, wavy and uneven. Apothecia nearly terminal, horizontal, flattish, brown, with an entire border.

Lichen muscicola, Acharius Prod. E. B. 2264. Dickson Crypt. fasc. 2. 23. tab. 6. fig. 9. Bernhardt in Schrader's Journ. 1799. 22. tab. 2. fig. 8. Collema muscicola, Acharius Syn. 328. Hooker Crypt. Part 1. 214.

Found on rocks, among mosses, in the mountainous districts of the North of England, Wales, and Scotland. The plant consists of innumerable minute, tufted, entangled and interbranching, upright, compound fibres, all cylindrical, but rugged, bent, wavy, irregular, their ends bluntish, entire or notched; their substance rigid when

dry, soft and gelatinous when wet; their colour olive-black. Apothecia often abundant, small, horizontal, when dry of the colour of the branches, when wet lighter and browner, a little concave when young, with a thin, smooth, entire border.

The apothecia, as remarked by Bernhardi, are often common to two or three of the branches, a circumstance only to be explained, by the tendency of the plants of this family to unite, like the *Fungi*, their growing parts wherever they come in contact. The habit of this species is very like that of a small *Cornicularia*.

COLLEMA SPONGIOSUM. *Spongy Collema*. TAB. 2207.

Thallus dull green; the segments clustered, much branched, granulated, cylindrical, obtuse. Apothecia scattered, concave, brown; externally spongy and pale, with a thin, upright border.

Lichen spongiosus, *Smith E. B.* 1374. *Collema spongiosum*, *Acharius Syn.* 329. *Hooker Crypt. Part 1.* 214.

Far from unfrequent in subalpine districts, growing upon the ground, among mosses. Thallus of a dull olive-green hue, consisting of a very gelatinous, spongy mass of thick, branched segments, whose lobes are cylindrical, obtuse and granulated: in drying it becomes paler and greyish. Apothecia very large, sessile, scattered, with a smooth, dark chestnut disc, surrounded by a peculiarly erect, thin, greenish border; invested on the outside with a convex, thick, spongy coat, of a light brown or buff-colour, which, with their large size, renders them very conspicuous.

The thallus of this curious lichen is very obscure, and its large and conspicuous apothecia are very likely to be mistaken at first sight for a species of the Fungus genus *Peziza*, as they were for a long time by the Rev. Mr. Harriman, the discoverer, who transmitted it to Sir J. E. Smith, from the county of Durham, in 1802.

FAMILY XI. PELTIGEREÆ.

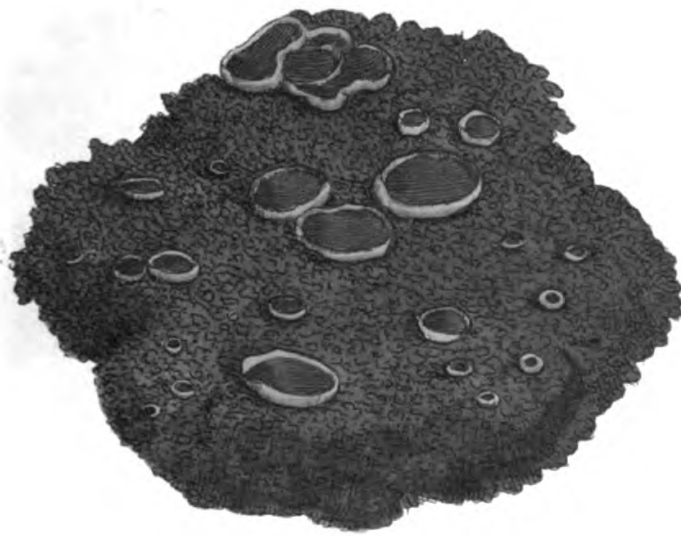
Thallus more or less foliaceous, never gelatinous, spreading.

Apothecia not bordered, or very slightly so, suborbicular, often resembling, in form and mode of attachment, the nail of the human hand (*peltæ*).

GENUS DLXXXVI. SOLORINA. *Solorina*.

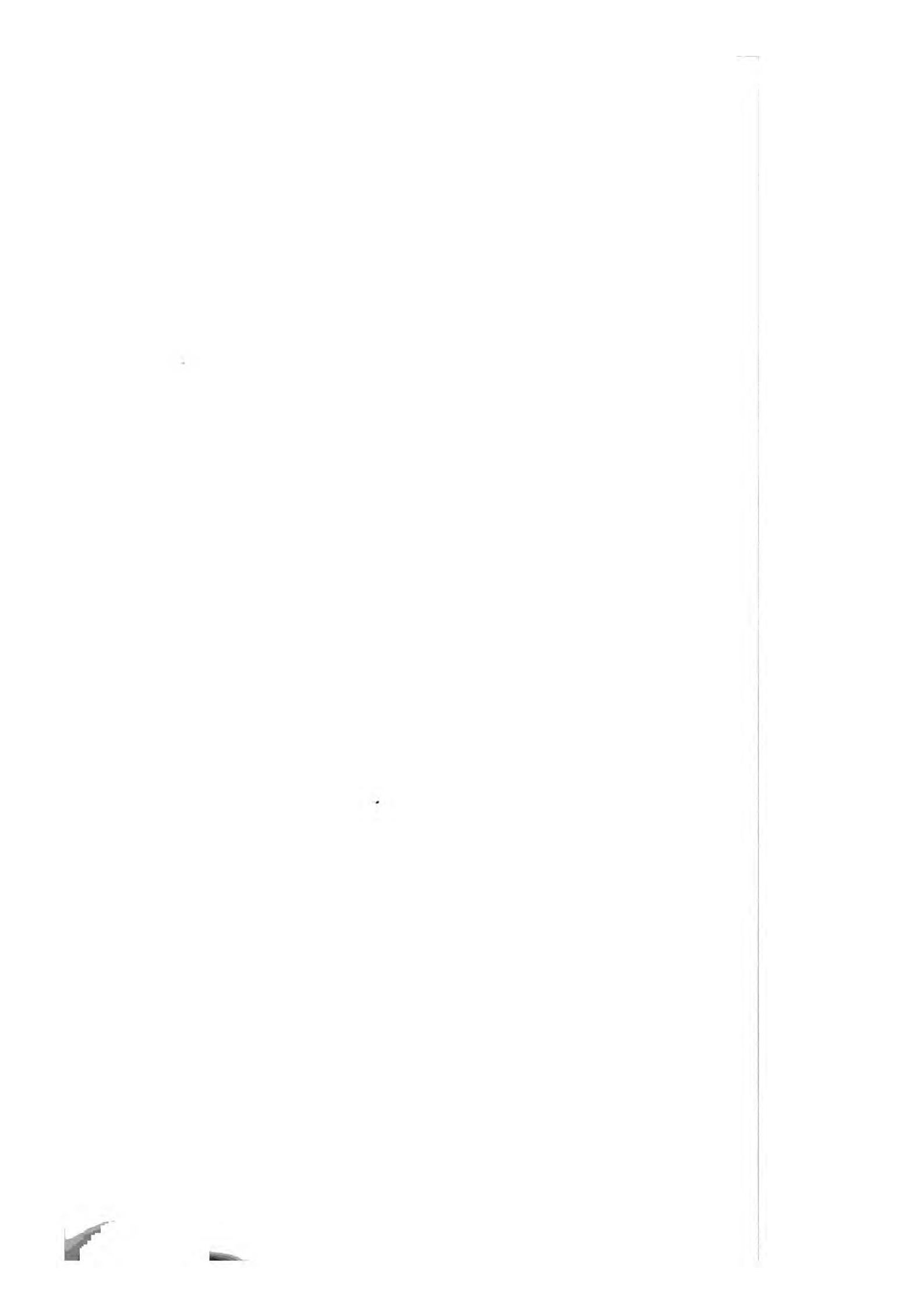
GEN. CHAR. *Thallus* foliaceous, coriaceous, lobed, free beneath, having fibrous or woolly veins. *Apothecia* (*peltæ*) adnate, sometimes immersed, orbicular, never marginal, without border.

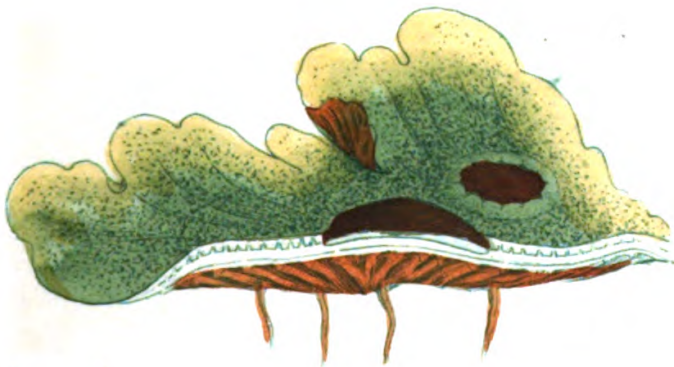
1374
2207.



Collema spongiosum?

Oct. 1 1804. Published by Jaf. Sowerby, London.

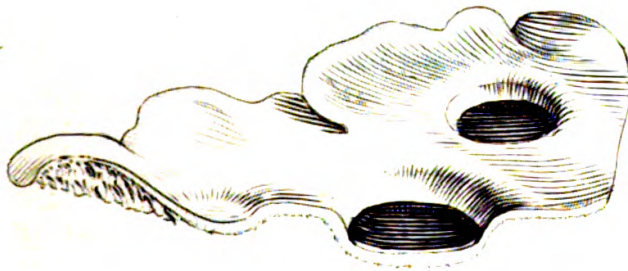




Solorina crocea ?



288;
2209.



Solorina saccata?

M. 11793. Bull. Acad. Sci. Paris, 1845.



The form and situation of the apothecia, more especially the latter, distinguish this genus from *Peltidea*: the orbicular outline is expressed in the name, from *σόλος*, *an orb*, and *ῥινός*, *a kind of shield*.

SOLORINA CROCEA. *Saffron-coloured Solorina.* TAB. 2208.

Thallus green above, coriaceous, roundish, lobed, flat; beneath veiny and of a fine orange or saffron-colour. Apothecia scattered, slightly tumid, closely attached and nearly even with the thallus, red-brown.

Lichen croceus, *Linn.* E. B. 498. *Solorina crocea*, *Acharius Syn.* 8. *Hooker Crypt. Part 1.* 214. *Peltigerea crocea*, *Hoffmann.*

It grows flatly upon the ground, in barren sandy spots, about the summits of the Highland mountains, forming circular patches, more or less imbricated and obtusely lobed. The upper surface is granulated and of a fine green colour, changing to brown in drying; the under, of a vivid saffron or orange colour, which is permanent, is marked with numerous prominent veins, throwing out radicles here and there. Apothecia scattered, mostly abundant, flat, or but slightly tumid, chestnut-coloured, roundish, smooth, and closely attached to the surface of the thallus, by the external or upper cuticle of which they are at first covered.

SOLORINA SACCATA. *Socket Solorina.* TAB. 2209.

Thallus green above, coriaceous, roundish, lobed; beneath whitish and fibrous. Apothecia dark brown, nearly plane, deeply sunk in the thallus.

Lichen saccatus, *Linn.* E. B. 288. *Solorina saccata*, *Acharius Syn.* 8. *Hooker Crypt. Part 1.* 214.

Found upon the ground, in moist, shady clefts of rocks, in mountainous and subalpine districts. The thallus spreads circularly, and is of a leathery texture, but tender when wet; its upper surface smooth, of a fine grass-green, turning to greyish-brown in drying; its under white and downy. Apothecia very deeply immersed in pits or sockets of the thallus, blackish-brown, nearly flat, without border, but covered at first with a thin skin, that cracks in the centre and is gradually obliterated.

GENUS DLXXXVII. PELTIDEA. *Peltidea.*

GEN. CHAR. *Thallus* foliaceous, coriaceous, or membranaceous, spreading, lobed; the lobules fertile: beneath with woolly veins. *Apothecia* (*peltæ*) suborbicular, adnate on the upper side of the lobules or proper portions of the thallus, and having a border formed of the thallus.

The marginal position of the apothecia, which are adnate

to the upper face of the lobules of the thallus, characterizes this genus; they are not orbicular, but more or less oval and flattened or abbreviated at the lower extremity, somewhat resembling the figure of the finger-nail: hence indeed the name, from *pelta*, a kind of buckler or target in the shape of a half-moon, said to have been used by the Amazons.

PELTIDEA VENOSA. *Black-veined Peltidea.* TAB. 2210.

Thallus ascending, small, green and smooth above, irregularly lobed; beneath white, downy, with dark, prominent, reticulated veins. Apothecia marginal, suborbicular, plane, dark red-brown.

Lichen venosus, *Linn. E. B.* 887. *Peltidea venosa*, *Acharius Syn.* 237. *Hooker Crypt. Part 1.* 215.

A native of moist, shady spots, in alpine districts in the North of England and Scotland, growing upon the ground. Thallus coriaceous, ascending, rooted at the base only, dilated upwards into a roundish wedge-like form, half an inch to an inch in length, slightly waved and lobed: upper surface perfectly smooth, of a fine green when fresh, brown or greyish when dry; under-side downy, white, with numerous longitudinal, prominent, branching and reticulated, dark-coloured veins. Apothecia marginal, but more connected with the upper surface than the lower, sessile, dark reddish-brown, flat, surrounded by an even margin, which disappears as it grows old.

PELTIDEA SCUTATA. *Target-fruited Peltidea.* TAB. 2211.

Thallus coriaceous, spreading, lobed, ash-coloured; reddish-white and veiny beneath: lobes subascending, oblong, rounded, sinuated and cut, powdery; fertile ones short. Apothecia ascending, suborbicular, dark brown; the border inflexed, nearly entire.

Lichen scutatus, *Dickson Crypt. fasc.* 3. 18. (without the synonyms.)

Peltidea scutata, *Acharius Syn.* 237. *Hooker Crypt. Part 1.* 215.

Grows upon old trees, among mosses, in the North of England and in Scotland, but not common. The thallus spreads in broad, loose patches over the bark, and is of a leathery consistence, smooth, and of a brownish or greenish-grey hue above; pale and with a pink tinge beneath, with dark veins and thinly scattered radical fibres. Lobes crisped and powdery at the margins; the fertile ones short, ascending, contracted beneath the flat, dark brown apothecia, so as to give them the appearance of being stalked.

PELTIDEA HORIZONTALIS. *Brown horizontal Peltidea.* TAB. 2212.

Thallus coriaceous, spreading, glaucous greenish-brown, lobed, crenate, glossy; beneath pale, with numerous brown, branching and reticulated veins: fertile lobes short. Apothecia plane, horizontal, transversely oblong, red-brown, with a pale, nearly entire border.

Lichen horizontalis, *Linn. E. B.* 888. *Peltidea horizontalis*, *Acharius Syn.* 238. *Hooker Crypt. Part 1.* 215.

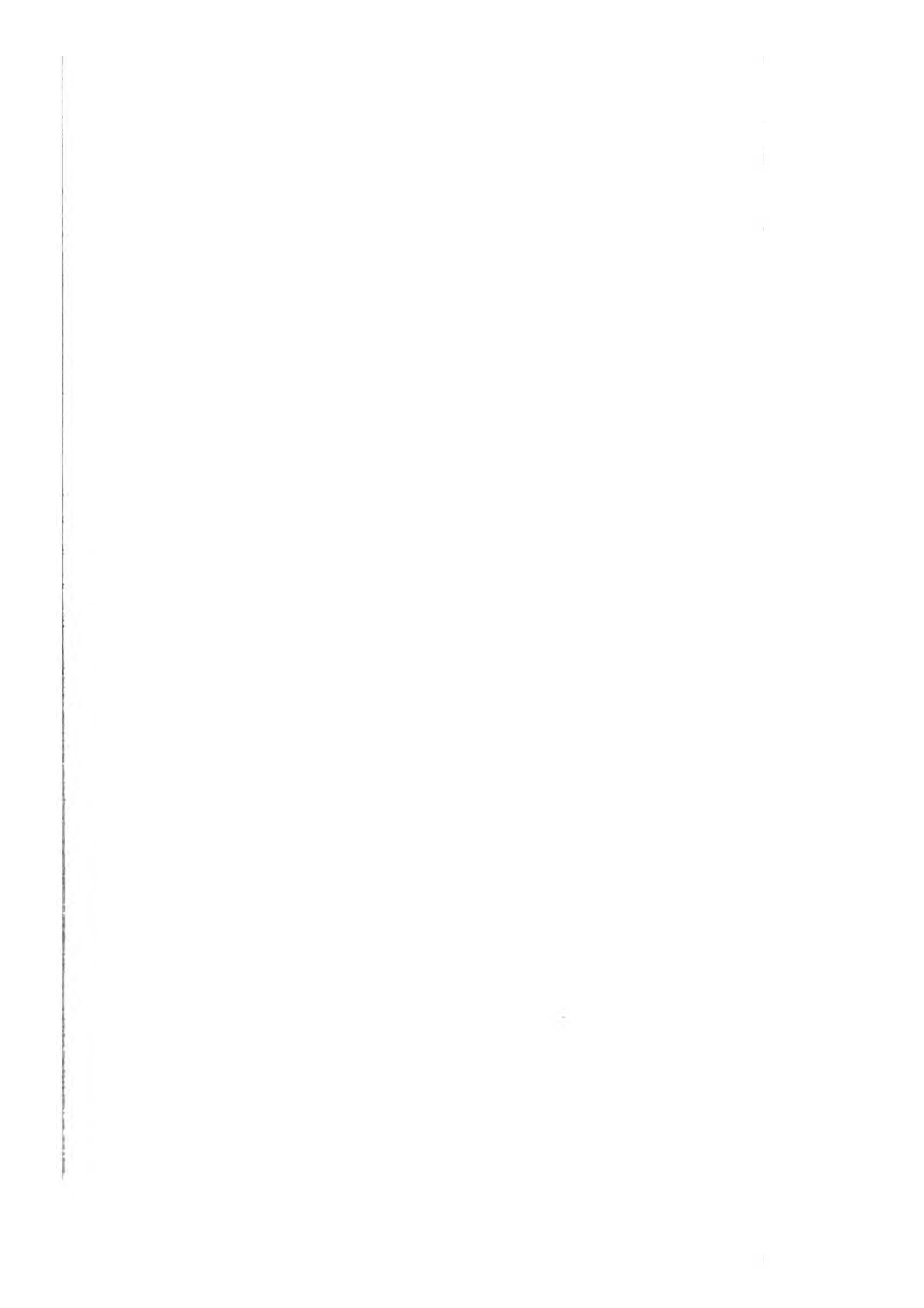
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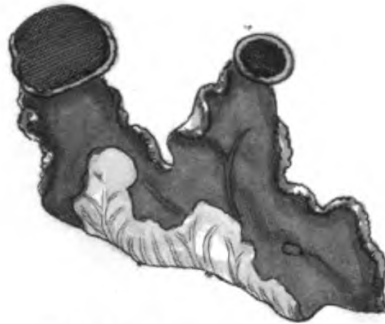
Peltidea venosa

June 1 1891 Published by J. Sowerby London.



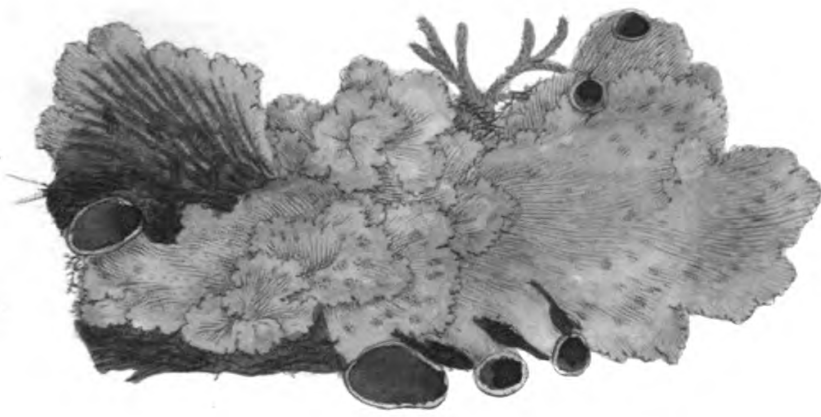
1834

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Peltidea sculata?

Jan. 1838. Published by J. Sowerby London.

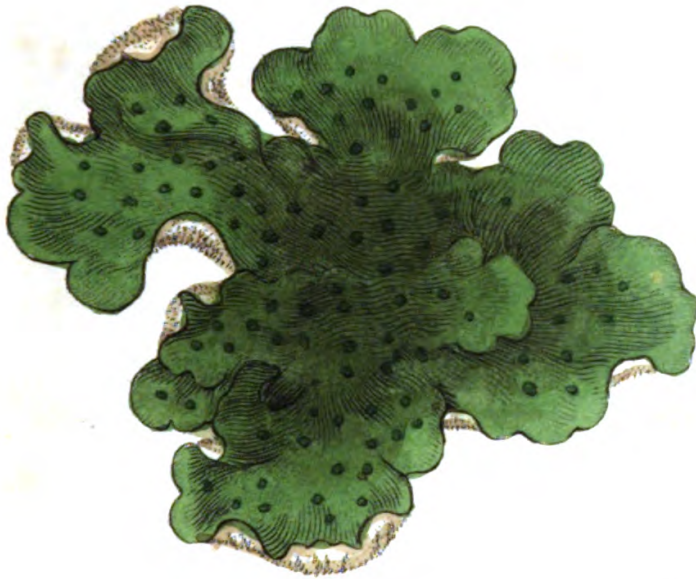


Peltidea horizontalis.

June 1. 1801 Published by Jas^s. Sworley, London

1119

2213.



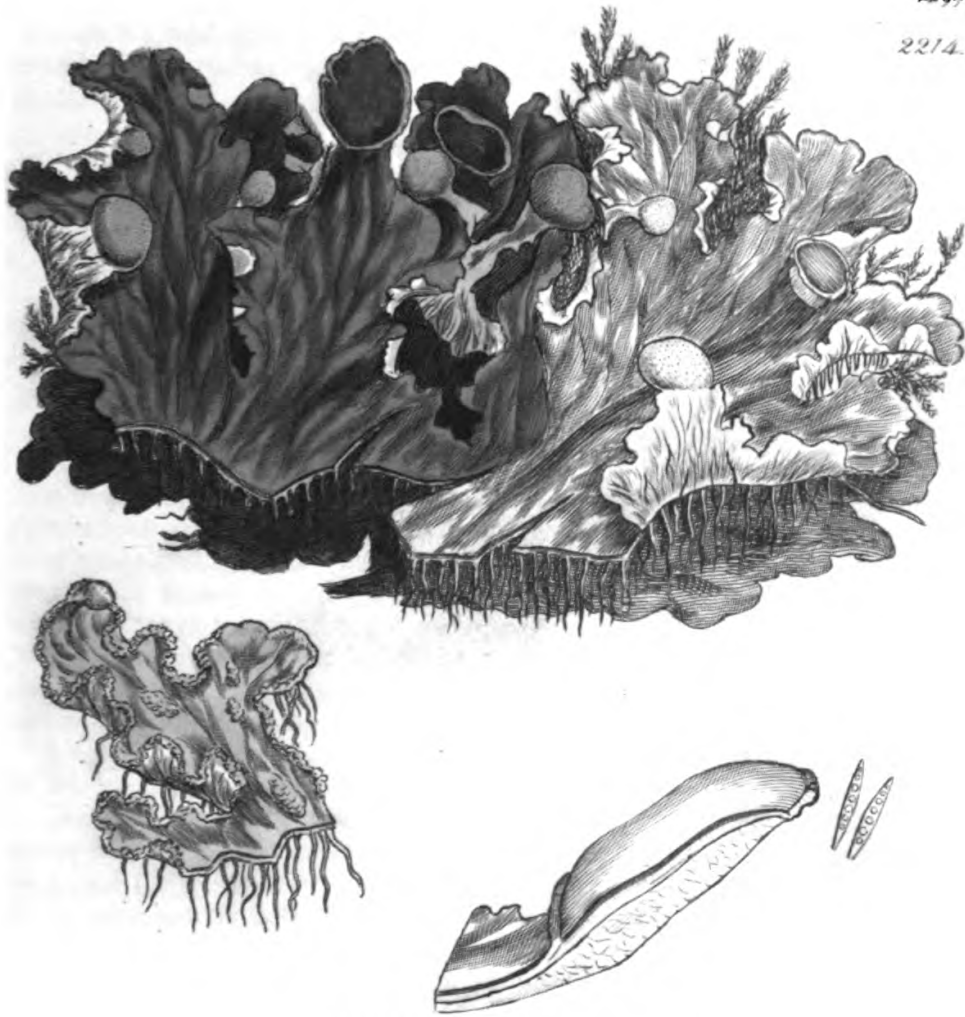
Peltidea apthosa?

Jan^y 1 1802 Published by J^s Sowerby, London



2200

2214



Peltilidea canina?

Fig. 1000 published by Dr. L. S. Lewis



Not infrequent in woods in the mountainous parts of Great Britain, growing on moist mossy rocks, and about the roots of trees. The thallus has no determinate outline, but is variously lobed, the upper surface a little pitted, glossy, and of a glaucous or greenish-brown, sometimes sprinkled with a few mealy warts (pulvinuli); the under side downy, covered almost to the margin with a tolerably regular network of broad brown veins, with white oblong spaces in the interstices, and with a few tufted black radicles. Apothecia horizontal, flat, red-brown, surrounded by a narrow, entire, or slightly crenate border.

PELTIDEA APHTHOSA. *Thrush Peltidea.* TAB. 2213.

Thallus spreading, roundly lobed, smooth, light-green, sprinkled with brown warts; beneath fibrous, slightly veined: lobes broad, rounded, the fertile ones contracted, with reflexed sides. Apothecia large, ascending, red-brown, with a jagged border.

Lichen aphthosus, *Linn. E. B.* 1119. *Peltidea aphthosa*, *Acharius Syn.* 238. *Hooker Crypt. Part 1.* 215. *Peltigera aphthosa*, *Hoffmann.*

Found on moist, shady, alpine rocks, among moss, or growing under the shelter of firs and juniper bushes, generally near water. The thallus spreads circularly from 3 to 6 inches in diameter, divided deeply into several rounded lobes: upper surface of a beautiful shining grass-green, which changes to brown in drying, sprinkled with small dark brown warts, that have at first sight the appearance of small shields or tubercles: the under side is clothed with dense black woolly radicles. Apothecia on oblong, upright, narrow lobes, springing from the margin of the thallus, large, concave, of a bright chestnut-colour, encircled by a downy, inflexed, jagged border.

A very handsome species, but rarely seen in fructification, at least in this country.

Linnæus bestowed upon it the specific name of "*aphthosus*," on account of its decoction in milk being used by the Swedish peasantry as a cure for the *aphthæ*, or thrush, in children; an application probably occasioned by its remarkably speckled appearance, which would scarcely fail to attract the notice of the advocates for signature medicine, as well in that country as it has done elsewhere.

PELTIDEA CANINA. *Ash-coloured Ground Peltidea.* *Canine Peltidea.* TAB. 2214.

Thallus coriaceous, glaucous or greenish-grey, somewhat furrowed, with rounded, ascending lobes; beneath white, with brownish branching veins and fibres: fertile lobes with the sides reflexed. Apothecia marginal, vertical, revolute, roundish, reddish-brown, with a pale subcrenulated border.

Lichen caninus, *Linn. E. B.* 2299. *Woodville Med. Bot. Supp.* 273.

Peltidea canina, *Acharius Syn.* 239. *Hooker Crypt. Part 1.* 215.

The most common species of its genus, growing on the ground, on heaths, hedge-banks, and about the roots of trees in woods, generally among moss, sometimes on thatched roofs. The leathery thallus

expands in broad patches, of a light grey or greenish hue, which becomes darker by age. Under side white, with numerous, brown, branching veins, and dark or blackish radicles. The apothecia are produced on broadish, convex, marginal lobes; they are solitary, perpendicular, roundish, eventually recurved, of a bright chestnut or reddish-brown colour, large and very conspicuous; but the plant is, in many parts of the country, more frequently met with in a barren state, apparently being propagated by pulvinuli in the form of little, mealy, marginal warts.

The specific name of this lichen was bestowed upon it in consequence of its repute as a remedy for the bite of a mad dog, an application suggested by the celebrated Dr. Mead, but long disused, its efficacy being at the best problematical. Its slightly bitter and demulcent properties render it available medicinally, on the same principle with those of *Sticta pulmonaria* and *Cetraria Islandica*.

PELTIDEA SPURIA. *Imperfectly-veined Peltidea.* TAB. 2215.

Thallus coriaceous, ash-coloured and even above; whitish, smooth, with indistinct pale veins beneath: fertile lobes ascending. Apothecia anterior, roundish, dark reddish-brown.

Lichen spurius, *Acharius Prod. E. B.* 1542. *Peltidea spuria*, *Ach. Meth.* 283. tab. 2. fig. 2. *Hooker Crypt. Part 1.* 215.

Found on hedge-banks, and on thatched roofs, in Sussex and Suffolk. Very nearly allied to *P. canina*, if not indeed one of the variations to which that species is liable. The upper surface of the thallus is of a similar glaucous ash colour or greenish-grey hue, and the under side white, but destitute of fibres, and very indistinctly veined. The apothecia, occupying marginal lobes, as in the last species, are roundish, elliptical or reniform, and of a dark reddish-brown.

PELTIDEA RUFESCENS. *Dark-coloured Ground Peltidea.* TAB. 2216.

Thallus rigid, concave, even, dark reddish-brown; pale, downy, with obsolete veins beneath: lobes rounded, with numerous fruit-bearing processes. Apothecia vertical, roundish, dark-brown, with a pale border.

Lichen rufescens, *Necker Musc. E. B.* 2300. *Peltidea rufescens*, *Acharius Meth. Hooker Crypt. Part 1.* 216. *P. canina*, β *crispa*, *Ach. Syn.* 239. Lichen caninus, β *rufescens*, *Hudson. Lightfoot.*

Frequent in woods, and on banks, among grass and mosses, and quite as common as *P. canina*, from which it chiefly differs in being of a smaller size and darker hue. The thallus too is thicker and more rigid; the upper side concave in consequence of the inflexed margins, very smooth and even, unless when cracked, which gives it the appearance of being veined; in drying it mostly becomes dark chestnut-coloured or reddish: under side more downy than that of *P. canina*, with broader, more obsolete or superficial veins. Apothecia numerous, smaller, and of a much darker brown.

This may be a mere variety, but it is a very marked one, and its differential characters and habit are well expressed in our figure.

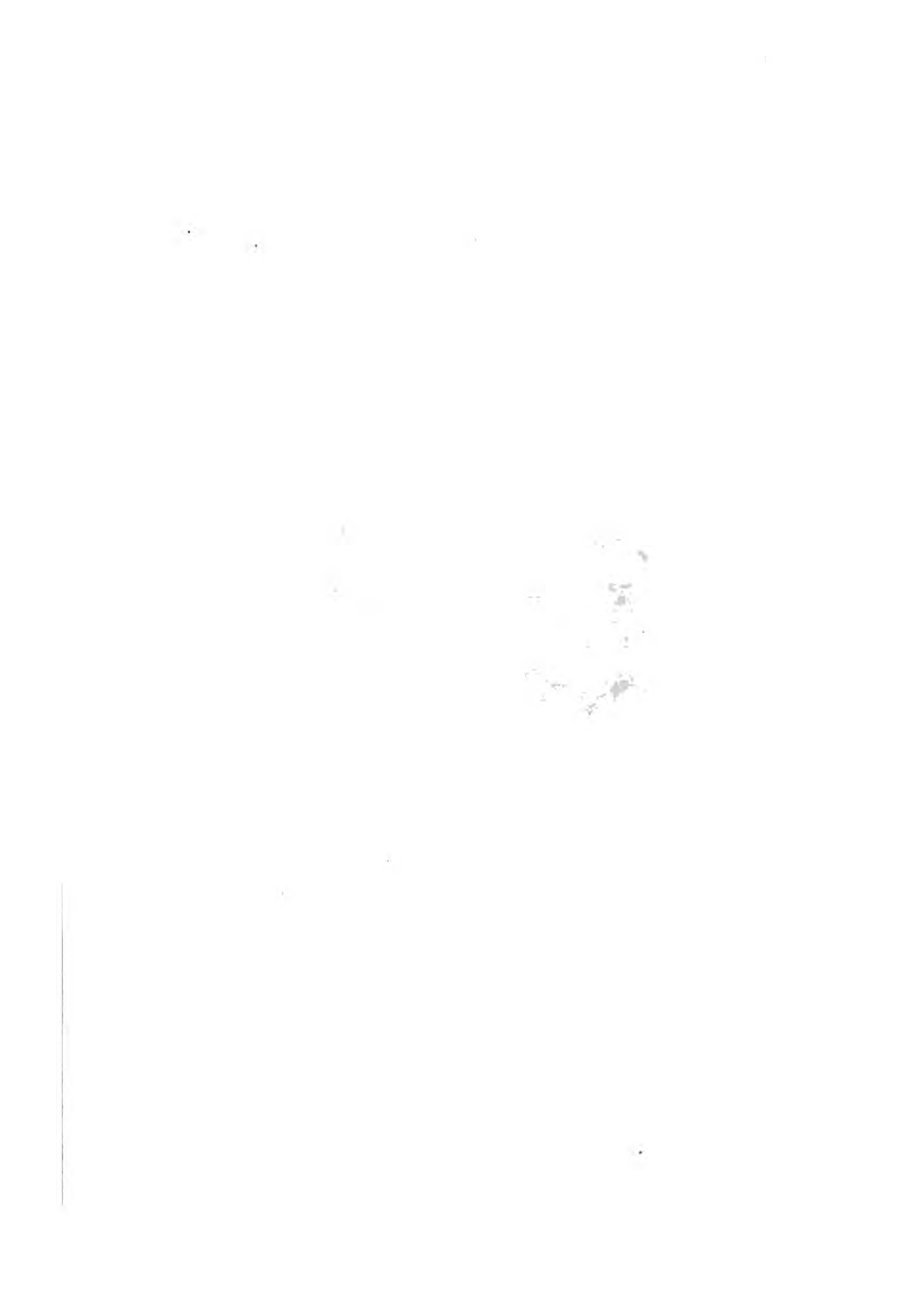
1642

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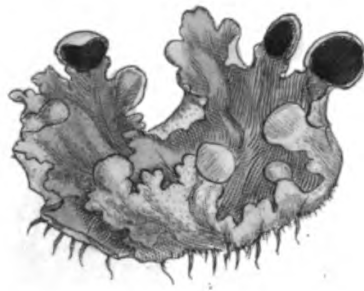
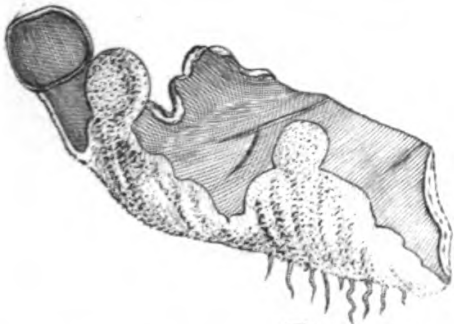
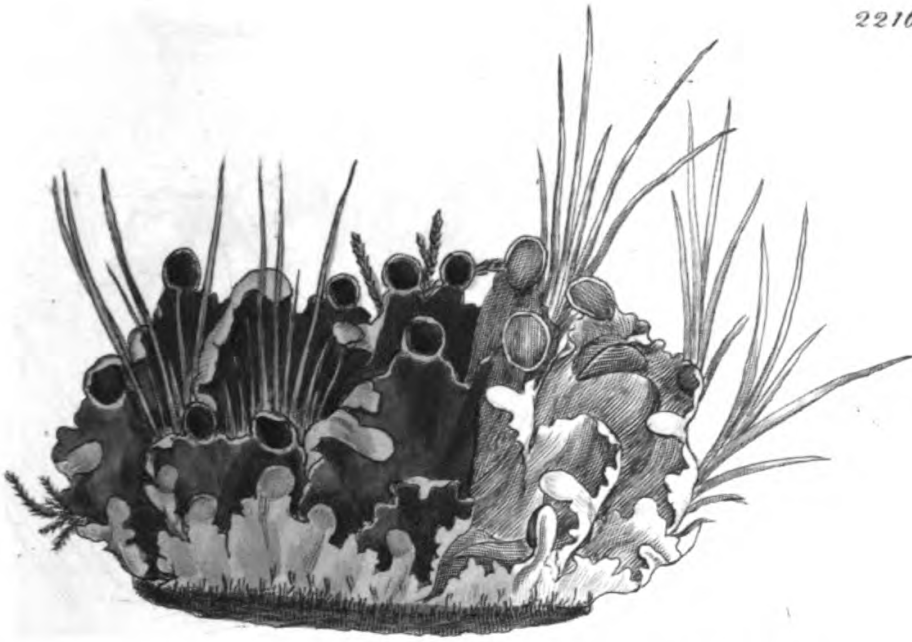
Peltidea spuria

Dec. 1865. Published by Jas. Sowerby, London.



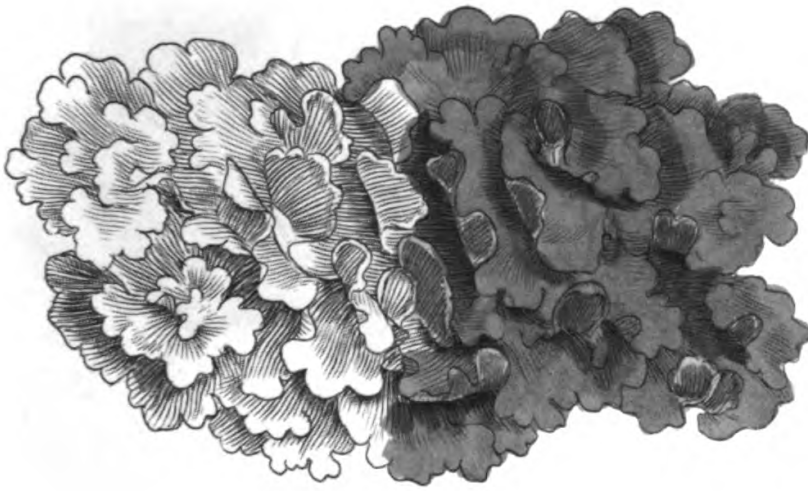
2300.

2216.



July 1, 1887, published by J. S. Flowering Station

Peltidea rufescens.

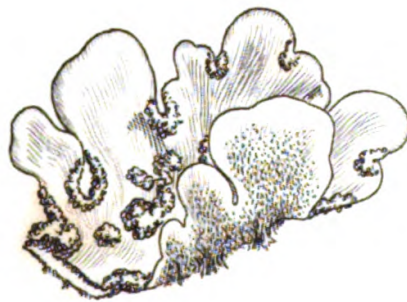


Nephroma resupinata?

Det. 1796. Publiz. by J. Sowerby Lond. 11

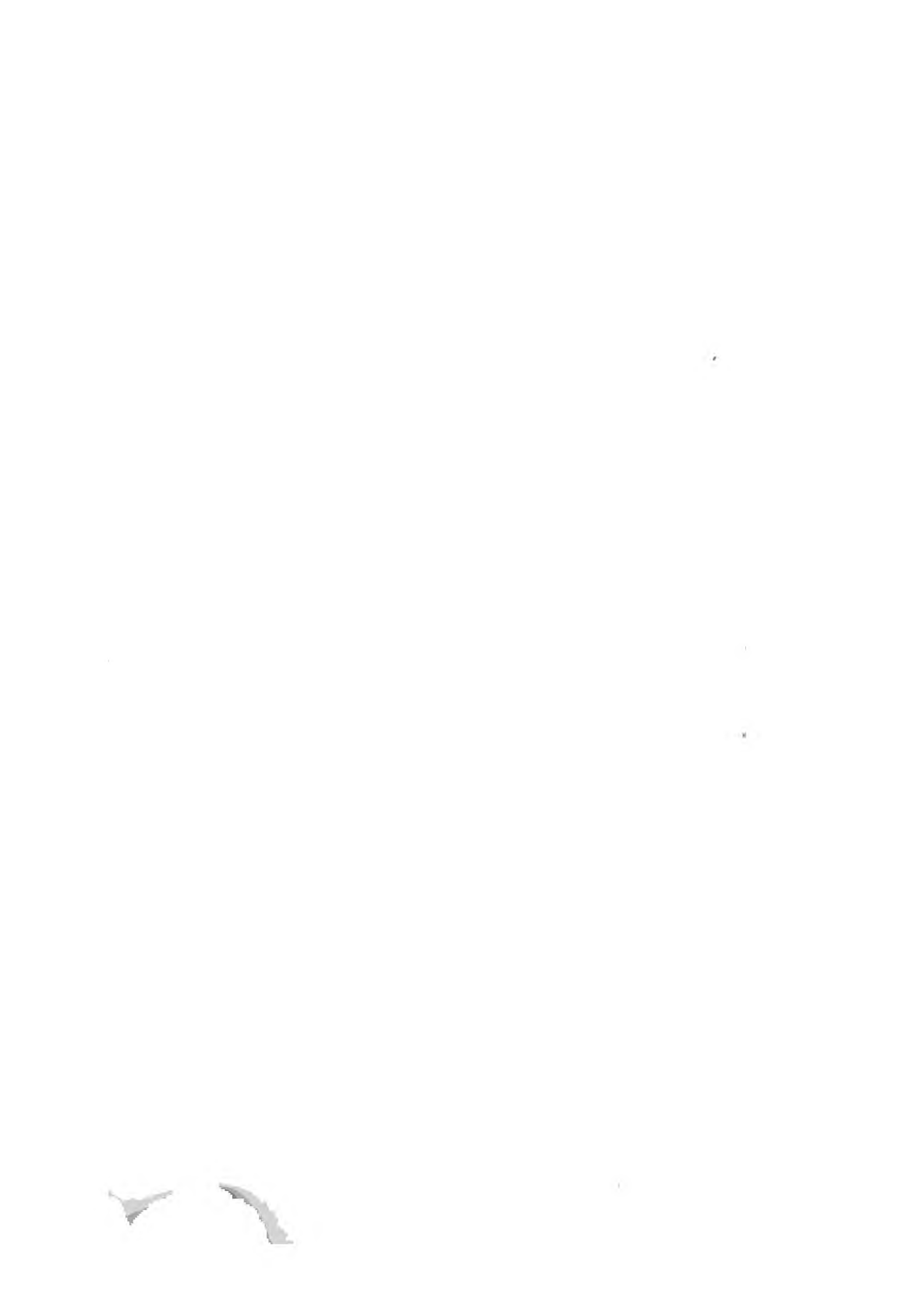
2360

2218



Nephroma parilis.

Des. 1841 published by J. S. Sowerby London.



PELTIDEA POLYDACTYLA. *Many-fingered Peltidea.*

"Thallus glaucous-green, naked, glabrous, with brown reticulated veins beneath; fertile lobules very numerous and crowded, and, as well as the brown terminal apothecia, cucullato-revolute."

Peltidea polydactyla, *Acharius Syn.* 248. *Hooker Crypt. Part 1.* 216. *Fl. Scot.* 2. 61. *Lichen caninus*, γ . *Lightfoot.*

"On the ground, on grassy and mossy banks, and on low walls, frequent."—*Hooker.*

I am unacquainted with this lichen, unless it be as one of those occasional states of *P. rufescens* which connect it with *P. canina*, in regard to hue and texture, and differ chiefly in the comparative size and abundance of the apothecia.

GENUS DLXXXVIII. NEPHROMA. *Nephroma.*

GEN. CHAR. *Thallus* foliaceous, coriaceous or membranaceous, spreading, lobed, naked or hairy beneath, the lobules fertile. *Apothecia*, (*peltæ*) orbicular, reniform, adnate on the under side of the lobules or proper portions of the thallus, and having a border formed of the thallus.

The situation of the apothecia is remarkable in the plants of this genus, they being on the under surface of the lobules of the thallus instead of the upper, the only character of distinction between it and *Peltidea*.

The name is from the Greek νεφρός, *a kidney*, and ὅμοιός, *like*, alluding to the reniform figure of the peltæ.

NEPHROMA RESUPINATA. *Resupinate Nephroma.* TAB. 2217.

Thallus spreading, greyish, or greenish-brown, smooth, lobed and imbricated; fertile lobules very short, erect, pale; pubescent and granulated beneath. *Apothecia* large, numerous, red-brown, with an uneven border.

Lichen resupinatus, *Linn. E. B.* 305. *Nephroma resupinata*, *Acharius Syn.* 241. *Hooker Crypt. Part 1.* 216.

A native of the trunks of trees, and shady, mossy rocks, especially in mountainous districts. Thallus creeping, greyish-brown, smooth, imbricated more or less, bluntly lobed; the fertile lobes suberect, dilated at the extremity, which bears the apothecia on its under side. Disc roundish, or reniform, or irregular, concave, tawny or brick-coloured, becoming darker in drying.

NEPHROMA PARILIS. *Chocolate Nephroma.* TAB. 2218.

Thallus somewhat coriaceous, creeping, lobed, jagged, crenate and wavy, greenish or purplish-brown, besprinkled with superficial or marginal, dark, powdery warts. *Apothecia* red-brown, broader than long, on the under side of short, proper lobules.

Lecan parilis, *Acharius* *Prod.* E. R. 2360. *Nephroma* parilis, *Ach.*
Syn. Bot. Europ. Crypt. Part 1. 316.

Found by the Rev. E. Williams, in an old stone-quarry in Shropshire in 1800, but not in fructification. The thallus spreads on the ground, or over stones, in shady places, among moss, in a somewhat reticulate form, and is of a dull brown, inclining to chocolate-colour when best, rather membranous than coriaceous, variously lobed, wavy and sinuated. The upper side is smooth, except where the surface, and the curled edges especially, are rough with abundant small granulations: the under side is often wrinkled and very slightly downy. The apothecia seem only to have been noticed by Acharius on Swedish specimens, who describes them as being of a "red-brown, seated at the back of very short lobes, and transversely oblong," not rounded as in *N. vesiginatum*.

Some of the specimens sent by Mr. Williams to Sir J. E. Smith were overgrown with *Lecidea coronata*, see tab. 2057, which looked, the latter observes, as if it were their proper fructification, so well did its granulated thallus assimilate with the warts on the *Nephroma*.

FAMILY XII. UMBILICARIÆ.

Thallus more or less orbicular, attached by the centre.

A very natural family, and strikingly distinguished from the rest of the foliaceous Lichens by their peculiar habit, and central, not superficial attachment.

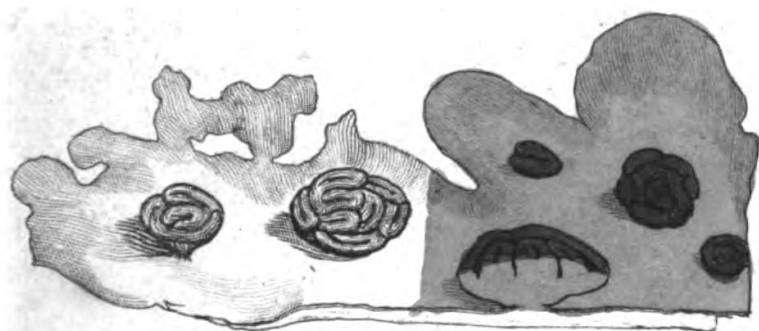
GENUS DLXXXIX. GYROPHORA. *Gyrophora*.

GEN. CHAR. *Thallus* foliaceous, coriaceous or membranaceous, fixed by the centre, or peltate. *Apothecia* orbicular, subscutelliform, sessile and adnate, covered with a black membrane; the disc marked with concentric circles or plicæ, with a border of its own substance.

The species of this genus are attached chiefly to high latitudes and cold alpine districts, vegetating on the bleakest and barest rocks, especially on those of the granitic series. They are very bitter to the taste but highly nutritive, and used as food in various parts of the world, where the rigour of the climate and barrenness of the soil render the supply of more grateful aliment precarious if not impossible. Several species are eaten by the Canadian hunters under the common name of Rock-tripe, *Tripe de Roche*, and the same afforded a valuable and opportune relief to the distress of our adventurous

1282

2219



Gyrophora polyphylla?

March 1 1804. Published by J. Sowerby, London.

Lichen parilis, *Acharius Prod.* E. B. 2360. *Nephroma parilis*, *Ach. Syn.* 242. *Hooker Crypt. Part 1.* 216.

Found by the Rev. E. Williams, in an old stone-quarry in Shropshire in 1800, but not in fructification. The thallus spreads on the ground, or over stones, in shady places, among moss, in a somewhat stellate form, and is of a dull brown, inclining to chocolate-colour when fresh, rather membranous than coriaceous, variously lobed, waved and sinuated. The upper side is smooth, except where the surface, and the curled edges especially, are rough with abundant dark granulations; the under side is often wrinkled and very slightly downy. The apothecia seem only to have been noticed by Acharius on Swedish specimens, who describes them as being of a "red-brown, placed at the back of very short lobes, and transversely oblong," not rounded as in *N. resupinatus*.

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A very natural family, and strikingly distinguished from the rest of the foliaceous Lichens by their peculiar habit, and central, not superficial attachment.

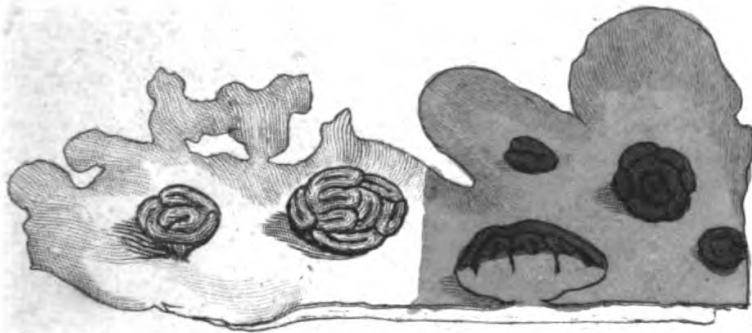
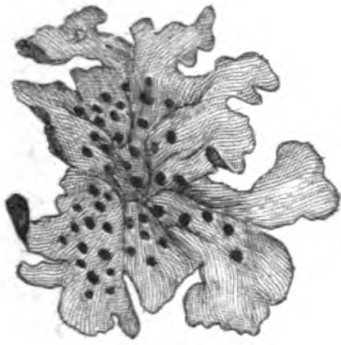
GENUS DLXXXIX. GYROPHORA. *Gyrophora*.

GEN. CHAR. *Thallus* foliaceous, coriaceous or membranaceous, fixed by the centre, or peltate. *Apothecia* orbicular, subscutelliform, sessile and adnate, covered with a black membrane; the disc marked with concentric circles or plicæ, with a border of its own substance.

The species of this genus are attached chiefly to high latitudes and cold alpine districts, vegetating on the bleakest and barest rocks, especially on those of the granitic series. They are very bitter to the taste but highly nutritive, and used as food in various parts of the world, where the rigour of the climate and barrenness of the soil render the supply of more grateful aliment precarious if not impossible. Several species are eaten by the Canadian hunters under the common name of Rock-tripe, *Tripe de Roche*, and the same afforded a valuable and opportune relief to the distress of our adventurous

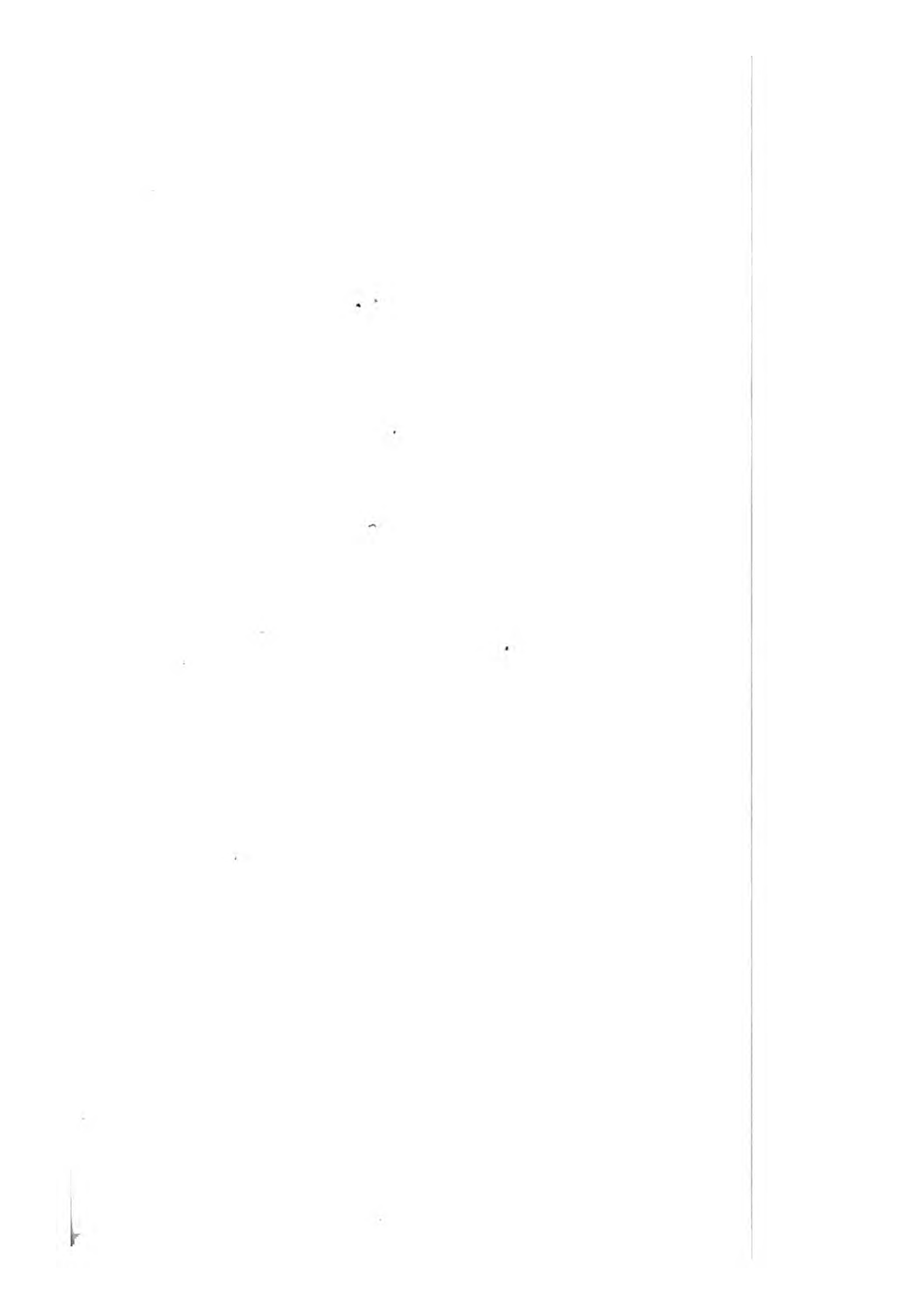
1282

2219



Gyrophora polyphylla?

March 1. 1864. Published by J. Sowerby, London



2484

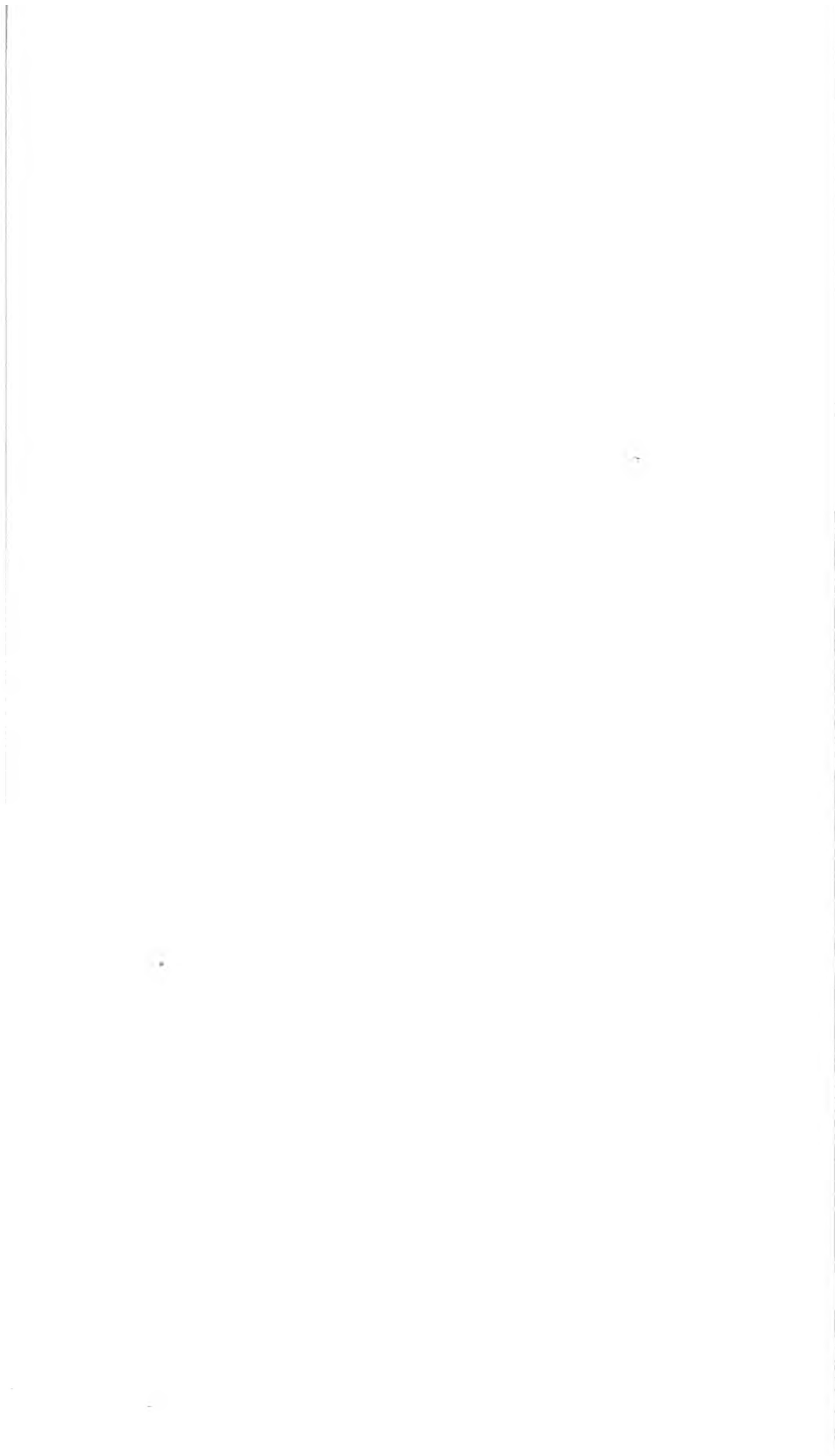
2220.



Gyrophora proboscidea?



No. 1, 1872, published by J. S. Severly, London.



countrymen under Capt. Franklin, during their memorable expedition to the arctic regions.

The character of the apothecia, which are always black, is very peculiar, and differing from that of all other Lichens: they are called *tricæ* or *gyromata*, from their more or less concentrically plaited disc: hence too the generic name *Gyrophora*, from *γῦρὸς*, a circle, and *φορὸς*, bearing or bringing forth.

GYROPHORA POLYPHYLLA. *Many-leaved Gyrophora.* TAB. 2219.

Thallus umbilicated, membranaceous, variously lobed, naked and smooth on both sides; dark olive-brown and shining above, dull-black beneath. Apothecia convex, rough, irregularly plaited.

Lichen polyphyllus, Linn. *E. B.* 1282. *Gyrophora polyphylla*, *Hooker Crypt. Part 1.* 217. *G. glabra*, *Acharius Syn.* 63. *Umbilicaria polyphylla*, *Schrader. Hoffmann Pl. Lich. tab.* 59. *fig.* 2.

Frequent on rocks in high mountainous districts, especially on the granite mountains of the north of England and Scotland. Thallus strongly fixed by the centre, many-lobed, often so deeply as to seem formed of several leaves, membranous, rigid, quite smooth all over, black beneath, somewhat lighter, with an olive hue above. Apothecia nearly sessile, convex, black, their surface formed of angular plaits, or of several separate rolls or folds, which are irregular and never truly concentric.

The fructification is far from common in Britain.

GYROPHORA PROBOSCIDEA. *Proboscis Gyrophora.* TAB. 2220.

Thallus membranaceous, rugose, with elevated reticulations, of a smoky-brown colour, lobed and erose at the margin; beneath paler and subfibrillose. Apothecia rather convex, variously plaited.

Gyrophora proboscidea, *Acharius Meth. E. B.* 2484. *Hooker Crypt. Part 1.* 217. *Ach. Syn.* 64. *Umbilicaria corrugata*, *Hoffmann Pl. Lich. tab.* 43. *fig.* 4-7. Lichen deustus, *Lightfoot.*

Frequent on the granite rocks of the highlands of Scotland, likewise in the north of England and Wales, often accompanying *G. cylindrica*, tab. 2224; a very distinct species, though unfortunately confounded by name in the first edition of this work. Indeed the names of both have been, as observed by Sir W. J. Hooker, unhappily chosen, appearing to bear reference only to the fringe-like divisions of the margin, as viewed under a magnifier, which, in *G. cylindrica* especially, somewhat resemble the proboscis of the Elephant or Hercules Beetles, *Scarabæus Elephas* or *S. Hercules*: in the present species, however, the rugose surface of the thallus, when magnified, certainly reminds us of the wrinkled trunk of the elephant, as do the remarkable folds of the apothecia of its extremity (see our lower figure). Thallus fixed by the centre, more or less irregularly lobed and divided, sometimes a little fimbriated at the margin. Apothecia turbinate, prominent.

GYROPHORA ARCTICA. *Arctic Gyrophora.* TAB. 2221.

Thallus coriaceous, rigid, thick, wavy and folded, ash-coloured, with tortuous plaits, and sprinkled with elevated warts above; beneath smooth, paler. Apothecia eventually subglobose, with a plaited disc.

Gyrophora arctica, *Acharius Meth.* 106. *tab. 2. fig. 6.* E. B. 2485.

G. proboscidea, β *arctica*, *Ach. Syn. Hooker Crypt. Part 1.* 217.

This, although considered a variety of the preceding by many botanists, is very different in its general appearance. The substance of the thallus is thicker, more rigid, and tenacious; the upper surface more obtusely corrugated, and besprinkled with warts. By age it becomes entirely black above, and still more unequally rugged, with reflexed edges. Apothecia abundant, elevated when old, the disc with numerous contorted plaits.

GYROPHORA DEUSTA. *Burnt Gyrophora.* TAB. 2222.

Thallus membranaceous, roundly lobed, brown; upper side more or less granulated; under side reticulated and cellular, smooth, naked. Apothecia with circular plaits, eventually convex.

Gyrophora deusta, *Acharius Meth. Syn.* 66. E. B. 2483. *Hooker Crypt. Part 1.* 218. *Umbilicaria flocculosa*, *Hoffmann Pl. Lich. tab. 68. fig. 1-4.* *Lichen flocculosus*, *Wulfen in Jacq. Coll. 3.* 98. *tab. 1. fig. 3.* *Lichen deustus*, *Linn.*

A native of mountain rocks in the Highlands of Scotland. Thallus roundly lobed, the margins somewhat crenated, lurid blackish-brown, inclining to rust-colour: the under surface naked, smooth, but not even, being more or less distinctly marked with vein-like reticulations, with pits between. Apothecia quite sessile, a little convex; the disc with several convolutions, partly concentric, partly folded, but usually with a regular circular outline or border.

Very nearly allied to *G. arctica*, if not indeed the same species.

GYROPHORA EROSA. *Corroded Gyrophora.* TAB. 2223.

Thallus simple, membranaceous, rugged, bluish-black; the circumference irregularly lobed, erose, and perforated; the segments convex: beneath brownish-grey, somewhat granulated and fibrous. Apothecia convex, variously plaited.

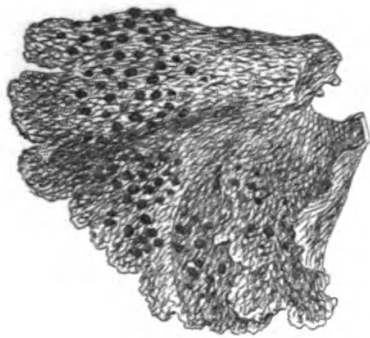
Gyrophora erosa, *Acharius Meth. Syn.* 65. E. B. 2066. *Hooker Crypt. Part 1.* 218. *Umbilicaria erosa*, *Hoffmann Pl. Lich. 3. tab. 70.* *Lichen torrefactus*, *Lightfoot.* *L. polyrhizos*, *Hudson.*

Frequent on the high alpine rocks of the north of England, Wales, and Scotland, especially on granite. It differs very much from all of our native species, in the curious lace-work of its circumference, and in the peculiar compressed fibres, like shavings, of the under side. Thallus inky-black above, lobed, jagged and curled, bearing convex, coal-black apothecia, with variously plaited discs.

It abounds on the vitrified forts of the Highlands of Scotland, looking as if it had, like them, undergone the action of fire; hence the specific name of *Lightfoot*, referred to above.

2485.

2227.



Gyrophora arctica?



Described by J. S. Hensley by J. S. Hensley

2483

2222.

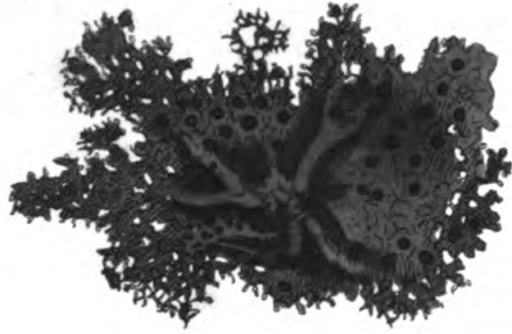


Gyrophora deusta?
Now republished by J. S. Swartz & Co.



2068

2223



Gyrophora erosa?

Det. 1869 published by J. S. Sowerby London.

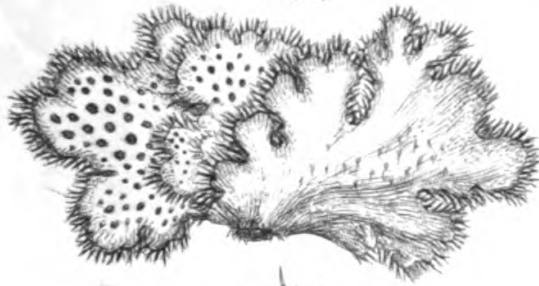
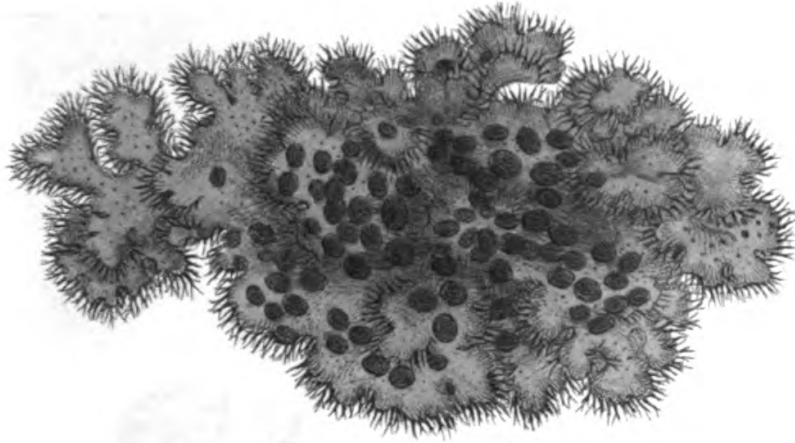
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522.

2224.



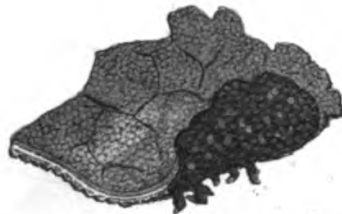
Gyrophora cylindrica?



2480.

2225.

Gyrophora murina?



Gyrophora murina?

discs of the scutellæ form slight Moisture, however, as usual in penance, even after the speci years.

The near affinity of this little and it may possibly be but a growth, and the less tenacious s disappears in drying, seem to in

COLLEMA CERANOIDES. *H.*

Lobes of the thallus imbricated, rous, terminated with crowde topping the flattish apothecia.

Collema ceranoides, *Borrer in E Crypt. Part 1. 209.* *C. pal Syn. 319?*

Not uncommon on the chalky not generally produce its fructific the specimens figured at Boxgrove gathered it at Hexham, Essex: hood of Reigate, Surrey, and Me far from being a local species, at of England. Thallus gelatinous, green, in young plants often black patches, sometimes half an inch th subelliform, or dilated upwards fro cylindrical base, terminated by nu gated and subcylindrical, erect, fa ing chiefly from the edges, but s lobes, which in most instances the surface of the patch. Apothecia rous, at first somewhat convex, w which eventually rises above the b shoots out into granules like thos disc is often partially concealed.

In a dry state the lobes of the tawny, and the terminal granules

Nearly allied to *C. cristatum*, w is, in all probability, often confound clustered, fastigate granules, or ra

There can be little doubt that t previous edition, is nearly allied to sent the same species.

COLLEMA TENAX. *Tenacious*

Thallus rather glaucous, fleshy, im what palmate. Apothecia depre *Collema tenax*, *E. B. 2349.* *Ach Part 1. 209.*

Found by the Rev. Hugh Davi



Coloniae



2480.
2225.

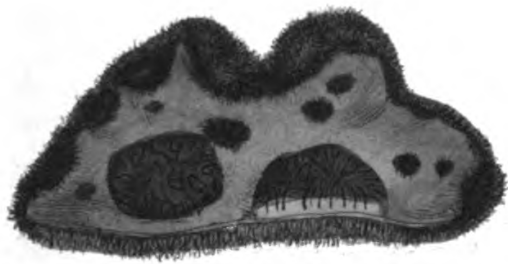
phora murina?



Descriptio published by J. K. L. L.

931

2226



Gyrophora pellita?

Oct 1, 1911. Culture 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000



GYROPHORA CYLINDRICA. *Fringed Gyrophora.* TAB. 2224.

Thallus coriaceous, slightly wrinkled, dark bluish or greenish-grey, variously lobed and plaited, coarsely ciliated at the margin with black, wiry bristles; beneath smooth, pale, with scattered branching fibres. Apothecia elevated, nearly plane, variously plaited.

Lichen proboscideus, *Linn. E. B.* 522. *Gyrophora cylindrica*, *Acharius Syn.* 65. *Hooker Crypt. Part 1.* 218. *Umbilicaria crinita*, *Hoffmann Pl. Lich. tab.* 44. *Lichen cylindricus*, *Linn. Amæn. Acad.* *L. crinitus*, *Lightfoot.*

Frequent on mountain rocks, especially granite or quartz, in Scotland, Wales, and the north of England. Thallus coriaceous, or leathery in texture, dark bluish-grey, or with a slight tinge of green, variously lobed, simple, or many-leaved; the margin more or less regularly fringed with coarse, black, or black and white bristles. Apothecia mostly abundant, contracted at the base into a foot-stalk; the disc with irregular but concentric plaits, resembling a piece of coarse black riband rolled loosely together, so as to leave a cavity or perforation in the centre of the folds.

The Icelanders use this species to communicate a brownish-green colour to woollen cloth. It furnishes likewise, as well as *G. proboscidea*, an occasional article of food.

GYROPHORA MURINA. *Mouse-skin Gyrophora.* TAB. 2225.

Thallus membranaceous, plaited, and somewhat lobed at the margin; minutely granulated on both sides; glaucous-grey above, blackish-brown beneath. Apothecia scattered, somewhat bordered, much convoluted.

Gyrophora murina, *Acharius Meth. E. B.* 2486. *Hooker Crypt. Part 1.* 218. *Lichen griseus*, *Ach. in Act. Holm.*

Communicated to Sir J. E. Smith by Mr. D. Turner as a British species, but the specimens were exotic, and the precise place of growth in this country not known; hence there is probably some mistake respecting its right to a place in the 'English Botany,' which the remarks in the previous edition are not calculated to elucidate. It is a common species in Sweden, France and Switzerland, and very distinct from the rest which are here figured. Thallus 1 to 2 inches across; black, without fibres beneath, finely granulated with pale cartilaginous warts, like shagreen. Upper side grey, very minutely cracked, without veins or plaits; white and mealy in the middle. Apothecia rare, minute, seldom perfectly plaited.

GYROPHORA PELLITA. *Fleecy Gyrophora.* TAB. 2226.

Thallus coriaceous, sinuato-lobate, dark greyish-coppery-green, brown when dry, very smooth; beneath and at the margin coal-black, with dense pulvinate fibres. Apothecia sessile, eventually subglobose, copiously and intricately plaited.

Lichen pellitus, *Acharius Prod. E. B.* 931. *Gyrophora pellita*, *Ach. Syn.* 67. *Hooker Crypt. Part 1.* 219. *Lichen velleus*, *Hudson.* *L. polyrhizus*, *Lightfoot.*

Found on alpine rocks in the North of England and Scotland, chiefly on granite and other micaceous mountains. Thallus simple or many-leaved, lobed, notched, and sinuated, smooth, veinless, of a greyish or greenish-brown, varying to copper-colour, brown when dry; often sprinkled with branching, black warts: beneath black, uniformly covered with dense, branched, coal-black hairs, by which the margin is likewise fringed. Apothecia not frequent, sessile, convex, eventually subglobose; the disc formed of a multitude of plaited, hair-like lines, more complicated and intricate than in any other native species, and resembling the most beautiful filigree-work.

GENUS DXC. UMBILICARIA. *Umbilicaria*.

GEN. CHAR. *Thallus* foliaceous, coriaceous-membranaceous, pustuled, fixed by the centre, peltate. *Apothecia* orbicular, somewhat concave, adnate, covered by a black membrane; the disc eventually tubercled, with a border of its own substance.

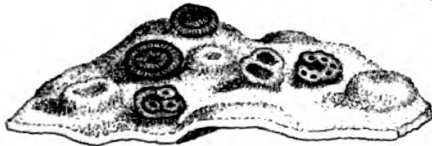
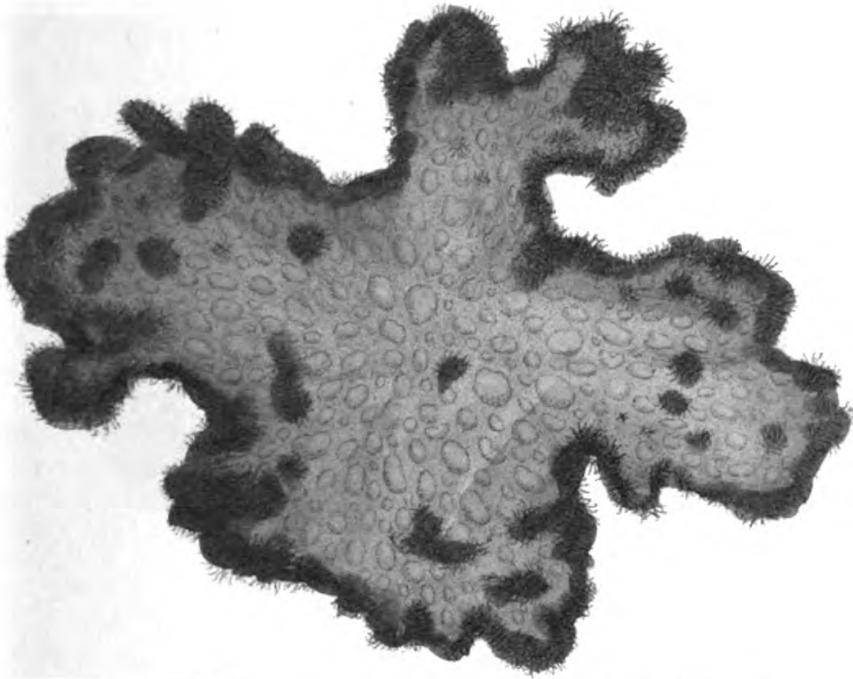
This, which by many writers is connected with *Gyrophora*, only differs essentially from the last genus in the structure of the apothecia. The original name, applied to both by Hoffmann, from the Latin *umbilicus*, in allusion to the umbilicated or centrally fixed thallus, is restricted to the present, in which the apothecia are not *gyromata*.

UMBILICARIA PUSTULATA. *Blistered Umbilicaria*. TAB. 2227.

Thallus spreading, covered with wart-like blisters, greenish-grey; blacker at the margin, which is variously lobed, and bears copious tufts of black hairs that sometimes extend to the disc: beneath grey-brown, naked, deeply pitted. Apothecia few, plane, bordered, eventually often tubercled.

Lichen pustulatus, Linn. E. B. 1283. *Umbilicaria pustulata*, Schrader. *Hooker Crypt. Part 1*. 219. *Hoffmann Pl. Lich. tab. 28. fig. 1, 2. tab. 29. fig. 4.* *Gyrophora pustulata*, Acharius *Syn.* 66. *Hooker Fl. Scot. 2. tab. 42.* *Lecidea pustulata*, Ach. *Meth.*

A native of granite rocks in various parts of Great Britain and the south of Ireland, often growing to several inches in diameter, but rarely producing its fructification. Thallus spreading, simple, remarkable for its curiously blistered appearance, becoming pale grey and pruinose in drying. Apothecia bordered, at first flat, afterwards either marked with an inner circle and a central perforation, or more or less tubercled, never plaited. Our bottom figure represents the fructification from a specimen found by Mr. Menzies in Scotland, but it is so rare in that state as to have been found by few other botanists; Messrs. Borrer and Hooker met with it in the Isle of Skye.



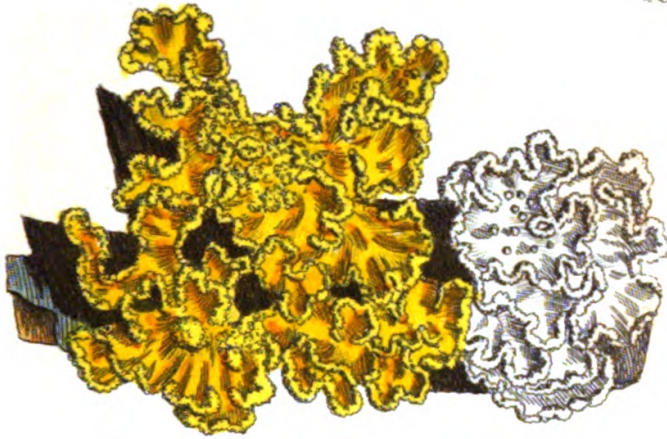
Umbilicaria pustulata?

March 1. 1804. Published by J. Sowerby, London.



2111

2228.



Cetraria pinastri?

Feb. 1810 published by J. Sowerby London.

FAMILY XIII. RAMALINEÆ.

Thallus usually compressed and laciniated, nearly uniform on both surfaces. Apothecia (*scutellæ*) scutelliform.

This, like the last, is a truly natural family; the thallus, whether spreading or ascending, never being attached by the surface, but by a central point, or by the lower extremity. The branched, almost suffruticose habit of the species, and the uniform aspect of the two sides of their almost universally compressed thallus, prevent them from being referred to, or confounded with, any of the preceding families.

GENUS DXCI. CETRARIA. *Cetraria*.

GEN. CHAR. *Thallus* foliaceous, cartilagineo-membranaceous, ascending or spreading, lobed and laciniated, smooth and naked on each side. *Apothecia* orbicular, obliquely adnate with the margin of the thallus, the lower portion being free; the disc coloured, plano-convex, with an inflexed border formed of the thallus.

This genus has its name from the fanciful resemblance between the form of its apothecia and that of the *cetra*, or square shield made of bullock's hide, in use among the ancient Moors and Spaniards. The species are almost exclusively high alpine or arctic plants, and those met with in Britain are generally barren, or the fructification very rare, and only found about the summits of the loftier mountains of Scotland.

CETRARIA PINASTRI. *Golden Cetraria*. TAB. 2228.

Thallus depressed, smooth, and of a pale yellow or brownish hue on both sides; the margin roundly lobed, elevated, crisped, bearing copious yellow powder; lobes ascending. Apothecia elevated, bright bay-coloured, with a yellow crenated border.

Lichen pinastri, *Scopoli*. *E. B.* 2111. *Dickson Crypt. fasc.* 3. 18.

Cetraria juniperina, β . *Acharius Meth. Syn.* 226. *l. c.* *Hooker Crypt.*

Part 1. 220. *Squamaria pinastri*, *Hoffmann Pl. Lich. tab.* 7. *fig.* 1.

Lichen juniperinus, *Lightfoot*. *L. juniperinus*, β . *pinastri*, *Linn.*

Found in the North of Scotland, chiefly on the trunks of the Scotch fir, *Pinus sylvestris*: Mr. Turner, one of whose specimens is figured at 1, met with it on park-pales at Framingham, near Norwich. The thalli of this beautiful lichen spread loosely, forming irregular tufts: they are of a soft, membranaceous texture when moist, smooth on both sides, and of a pale glaucous-brown, with a tinge of yellow; the latter hue, however, is overpowered by the bright lemon-colour of the

copious powder, borne by the numerous rounded and curled marginal lobes, which grow upright, though the thallus itself is depressed. The apothecia have never been found in Britain, though the species is not unfrequent in some parts of Scotland; they are figured at 2, from a specimen in the Linnæan herbarium: the disc is bright bay or chestnut-colour, the border thin and more or less crenated. In Sweden, and on the Alps of Switzerland and Savoy, they are not unfrequent.

CETRARIA SEPINCOLA. *Fence Cetraria.* TAB. 2229.

Thallus smooth, glaucous-brown; paler and somewhat pitted beneath; segments flattish, ascending, lobed, waved, subcrenate, powdery at the edge. Apothecia nearly marginal, elevated; the disc flattish, chestnut-coloured, with a thin, crenate, and wrinkled border.

Lichen sepincola, Ehrhart. E. B. 2386. *Hedwig Crypt.* 2. 8. tab. 2.

Cetraria sepincola, Acharius Syn. 227. *Hooker Crypt. Part 1.* 220.

Platisma sepincola, Hoffmann *Pl. Lich.* 1. 71. tab. 14. fig. 1.

Mr. Dickson mentions this as growing on stones upon the mountains of Scotland, but no other British botanist seems to be acquainted with it except as growing on wood. It is chiefly met with in Scotland, especially in the North Highlands, growing upon firs and birches. Mr. Turner found it on old posts and rails, by the sea, near Yarmouth. Thallus pale brown, verging towards lead-colour, more glaucous in the English specimens; much paler and even whitish on the under side; the edges jagged, crenated, and pulverulent. Apothecia very rare in Britain, chiefly about the margin; at first sessile and concave, soon elevated and flattish, of a glossy chestnut-brown, with a thin, uneven border.

Figure 1. represents one of Mr. Turner's Yarmouth specimens; fig. 2, on a branch of birch, one from Germany, bearing fructification; fig. 3. was gathered in Scotland by Mr. Borrer.

CETRARIA GLAUCA. *Glaucous Cetraria.* TAB. 2230.

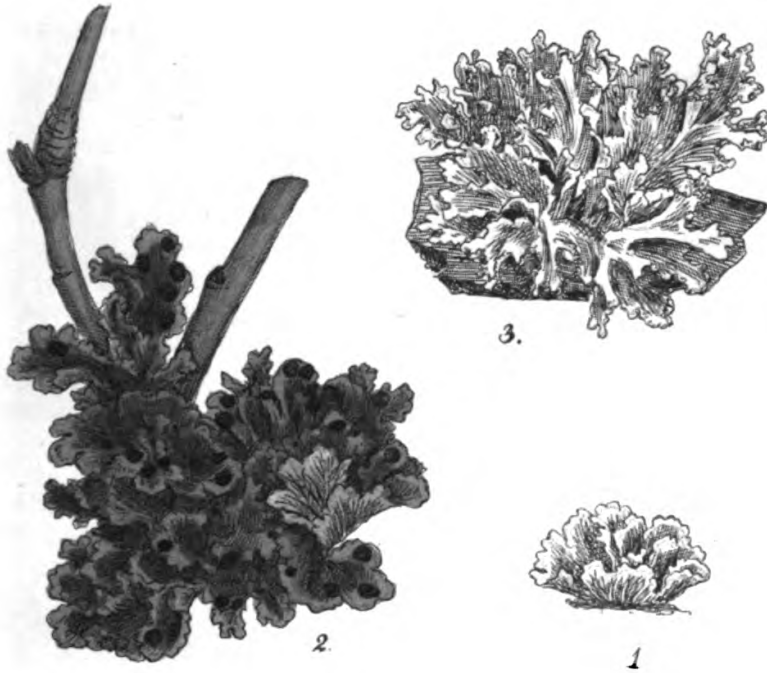
Thallus membranaceous, smooth, glossy on both sides, sinuated and lobed, glaucous-grey above, brown beneath; the segments ascending, jagged and cut, curled. Apothecia marginal, reddish-brown or bay, with a wrinkled border.

Lichen glaucus, Linn. E. B. 1606. *Cetraria glauca*, Acharius Syn. 227. *Hooker Crypt. Part 1.* 220.

Not unfrequent in subalpine districts, growing on the ground on rocky moors and heaths, as well as on the trunks of old trees. The thalli form loose, straggling tufts; they are thin, very pliable when wet, smooth, and shining on both sides, variously lobed, sinuated and curled, glaucous-grey or brown above, blackish beneath, but paler towards the edges. The apothecia grow on or near the margin, and are almost sessile; when young, they are convex, with a jagged, inflexed, more or less wrinkled border, when old nearly flat: disc smooth, red-brown or bay.

2386.

2220.



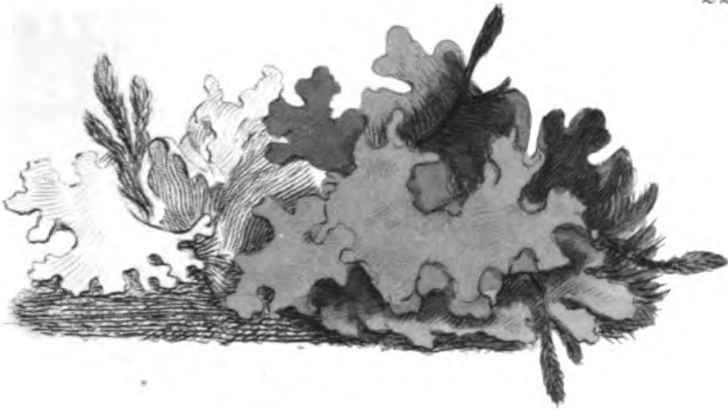
Cetraria sepincola?



Nov. 1872. published by J. A. Kirby, London.

1606

2230.



Cetraria glauca?

Jan. 1 1806. Published by J. Sowerby, London

2373.

2237.



Cetraria fallax?

Jan. 1. 1812. published by J. G. Sowerby, London.

1994

2232.



Cetraria nivalis.

Macr. & G. Publ. by Jas. Sowerby London

1994

2232.



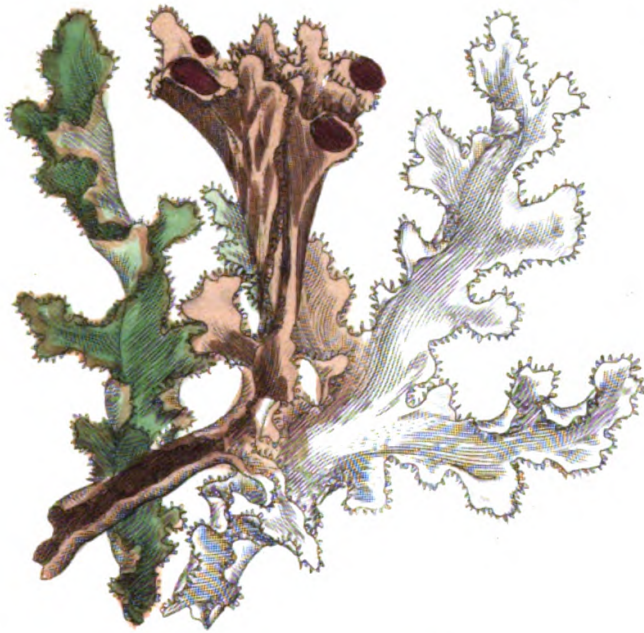
Cetraria nivalis.

Mar. 1. 1849. Published by Jas. Sowerby London.

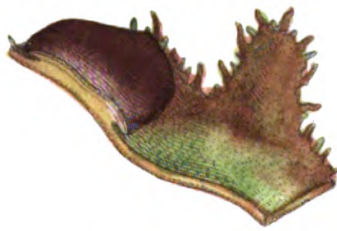


1330

2233.



Cetraria Islandica?



July 2. 1804. Published by J. Sowerby, London.



CETRARIA FALLAX. *Fallacious Cetraria.* **TAB. 2231.**

Thallus membranaceous, smooth, glaucous or whitish on both sides, glossy, lobed, and finely laciniated on the margins. Apothecia terminal, slightly bordered, brown; eventually dilated and convex. Lichen fallax, *Weber. E. B.* 2373. *Dickson Crypt. fusc.* 1. 13. *Cetraria fallax*, *Acharius Meth.* *C. glauca*, β . fallax, *Ach. Syn.* 227. *l.c.* *Hooker Crypt. Part 1.* 220. *Platisma fallax*, *Hoffmann Pl. Lich.* 2. 71. *tab.* 46.

Found on rocks in Devonshire, and growing? "on the ground and on trees at Inverary," Scotland. Nearly allied to the last species, *C. glauca*, but differing in its ample and diffuse habit, the more elegantly fringed divisions of the margin, and large, terminal, dark brown apothecia, growing on elongated, dilated segments of the thallus: in colour likewise the present is much paler, especially on the under side.

Sir J. E. Smith, "not having been able to procure, or even to see any of British growth," states, that the figure of this species was taken from a specimen sent him by Professor Gouan of Montpellier.

It seems very doubtful whether the plant found at Inverary is the same species as that figured on our plate; my own specimens, from trees in that locality, are totally different, being very evident states of *C. glauca*, "from which the dark epidermis beneath has fallen away."

CETRARIA NIVALIS. *Snow Cetraria.* **TAB. 2232.**

Thallus erect, tufted, very pale sulphur-colour, orange at the base, nearly plane, pitted and reticulated, laciniated; segments multifid, crisped, crenato-dentate, divaricated, often warted at the points. Apothecia near the margin, pale flesh-colour, with a crenulated border.

Lichen nivalis, *Linn. E. B.* 1994. *Fl. Lapp, ed. 2.* 355. *tab.* 11. *fig. 1.* *Cetraria nivalis*, *Acharius Syn.* 229. *Hooker Crypt. Part 1.* 221.

Frequent about the summits of the most elevated mountains of Scotland, especially on the Cairngorm range; affecting, indeed, higher habitats than most of its family. Thallus of various shades of yellow or sulphur-colour, frequently almost white, tufted, and often entangled among other lichens and mosses, between membranaceous and cartilaginous, brittle when dry, repeatedly cut into narrow, divaricated, notched segments, pitted and reticulated all over, not aptly resembling in form and colour, small leaves of curled Endive. Little black warts occur here and there at the extremities of the segments, and are probably concerned in its multiplication, the pale flesh-coloured apothecia never having been found in this country: indeed, though the plant is abundant in Sweden and in the alpine districts of central Europe, the fructification is rarely met with.

One of the most elegant and beautiful of its natural order.

CETRARIA ISLANDICA. *Iceland Cetraria.* *Iceland Moss.* **TAB. 2233.**

Thallus erect or ascending, tufted, olive-brown, paler on one side,

lacinated, channeled, dentato-ciliate ; the fertile segments very broad. Apothecia brown, appressed, flat, with an elevated border. Lichen Islandicus, *Linn. E. B.* 1330. *Woodville Med. Bot. tab.* 265.

Cetraria Islandica, Acharius Syn. 229. *Hooker Crypt. Part 1.* 221.

Far from unfrequent, growing on the ground, on mountainous heaths and in woods, in the alpine districts of the North, but not very common in fructification. The thalli form loose, elastic tufts, often intermixed with moss and other plants : they are channeled in the lower part, dilated and lobed above, the margins more or less regularly fringed ; the colour varies from greenish to a light chestnut, generally much paler on the under side. Apothecia dark chestnut, glossy, flat, at first with an elevated border ; growing closely to the upper surface, near the margin, and at the extremity of the segments.

Few species of lichen are so variable in size and ramification as this. It is the Iceland-moss of the druggists, which has long been a popular remedy for coughs and consumption. Though abundant in some parts of Scotland, all that is used here is imported, chiefly from Iceland and Norway, where the plant grows much more luxuriantly than in Britain, and is valued as an important article of food. For this latter purpose it is steeped in cold water, to get rid of a bitter and purgative principle, belonging to many of the lichens in a recent state, dried and powdered. The flour is eaten, either kneaded into cakes, or boiled with milk, in the form of a porridge, and eaten with gratitude too, the Icelanders especially having a current expression that "the bounty of the Almighty sends them bread out of the very stones ;" the lava on the western coast of their island being covered with it. Henderson observes, that the porridge prepared of this lichen is to a foreigner not only the most wholesome, but also the most palatable of all the articles of Icelandic diet.

Independent of the use of the Iceland-moss medicinally in this country, its nutritive property has of late years been made available to a considerable extent, both in brewing, and in the composition of biscuit for the use of our seamen ; in which latter a certain proportion of lichen-flour not only increases the proportionate bulk of the material, but renders the biscuit less liable to be attacked by worms and insects.

The economical value of lichen-meal may be partly estimated by the increased quantity of bread which it produces, when mingled with flour in certain proportion, as appears by a published report of the Saxon government ; in which it is stated that 6 lbs. 11 oz. of lichen-meal, boiled with 14 times its weight of water, and thus added to 59½ lbs. of flour, produced 111½ lbs. of good bread ; the same weight of flour, without the lichen, only producing 78¾ lbs. of bread : consequently the 6 lbs. 11 oz. of lichen-meal gave an increase of 32¾ lbs. of bread. Of the nutritive character of bread thus prepared there can be no question, this lichen, when the bitter and colouring principles are removed by washing, consisting almost entirely of a substance analogous to gluten ; a nutritive medium, of which the very best wheaten flour does not contain more than 24 per cent.

211
2234



Roccella tinctoria



GENUS DXCII. ROCCELLA. *Roccella*. *Archill*. *Orchell*.

GEN. CHAR. *Thallus* coriaceo-cartilaginous, rounded or plane, branched or laciniated. *Apothecia* orbicular, adnate with the thallus: the disc coloured, plano-convex, with a border eventually thickened and elevated, formed of the thallus, and covering a sublentiform, black, compact, pulverulent powder, concealed within the substance of the thallus.

The plants of this genus grow exclusively on maritime rocks in situations more or less exposed to the spray of the sea, and the name *Roccella* is supposed by some to be derived from the Portuguese *roccha*, a rock, in allusion to this habitat; other authors, however, trace it, as well as its commercial appellation, to the family name of the Florentine who first discovered, or rediscovered, the method of preparing the valuable dye yielded by at least one of the species, a name variously written, as *Oricellarii*, *Rucellarii*, &c.; the former surmise is the more probable.

ROCCELLA TINCTORIA. *Dyer's Roccella*. *Rock-Moss*. *Archill*. *Orchell*. TAB. 2234.

Thallus suffruticose, rounded, branched, somewhat erect, greyish-brown, bearing powdery warts. *Apothecia* flat, almost black, pruinose, with a scarcely prominent border.

Lichen *Roccella*, Linn. *E. B.* 211. *Roccella tinctoria*, *DeCandolle*. *Acharius Syn* 243. *Hooker Crypt. Part 1.* 221.

Found only on maritime rocks on the extreme southern coast of England, and the islands of Scilly, Portland, Guernsey, &c. It seems to be chiefly distributed in warm climates, being very common on the southern and eastern shores of the Mediterranean, in the Atlantic islands, and the Indian Archipelago, in all of which habitats it grows much larger and stronger than with us; Linnæus had it from China. Its solid base is firmly fixed to the rocks, and produces a thick tuft of worm-like stems, which are rounded, acutely pointed, often curved, more or less branched, smooth, of a white, grey, or brownish hue, and studded about the upper part with scattered tubercles, full of a white powder.

This species, known commonly by the name of *Archill* or *Orchell*, a corruption of the "Orcella" of the Italians, or the French "Orseille," is the most important and valuable of all the lichens in a commercial point of view, on account of the colouring matter which it yields, and which is especially prized by the dyers of wool and silk. The English blue broad-cloths owe their peculiar lustre and purple tint to being first dyed with *Orchell*, and various shades of purple and crimson are obtained from it under different processes. The art of preparing it for this purpose is supposed to have been known to the ancients, and some have regarded it as the true $\lambda\epsilon\iota\chi\gamma\eta$ of Dioscorides,

called, from being collected on one of the rocky islands of the Archipelago, the "Purple of Amorgos"; which, if indeed the produce of the present plant, was, however, lost to the modern Europeans until the year 1300, when a merchant of Florence discovered a process for obtaining it, nearly similar to that now in use. It consists in mixing the powdered plant with half its weight of pearlash, moistening the mixture with human urine, and allowing it to ferment, until the colour changes, first to a purplish-red, and subsequently to a violet, evidently by the action of the ammonia evolved during the fermentation. The colour is very fugitive itself, but highly valuable, on account of the brilliancy of hue which it communicates, in combination, to dyes of more permanent character. Orchell therefore is far from being an inconsiderable item in our annual imports, in some years amounting to 90 or 100 tons: the price varying according to the quantity and quality of the material brought to market, the best having, in time of great scarcity, been known to realize as much as £1000 per ton. The best is imported from the Canary and Cape de Verd Islands, and its average price is about £300 per ton; that from the Azores realizes about £230; that from Madeira £150; the worst is from the Cape of Good Hope, which sells at the low price of £20 only. These differences in quality are considered to arise from the more or less indiscriminate mixture of the present with the following species in the different habitats.

Orchell is, perhaps, more generally known by the names of Litmus or Turnsol, under which terms it was originally brought to market by the Florentines, and afterwards by the Dutch, while its preparation was yet a secret from the rest of the European nations. Litmus is one of the most delicate tests employed by chemists for detecting the presence of a free acid; the action of which is explained, by assuming the blue colour of the litmus to be a compound of a red proximate principle belonging to the plant and an alkali, the addition of an acid neutralizing the latter, and leaving the red colouring matter free. The colour in question does not, however, exist in this lichen in its natural state: M. Robiquet obtained what he considered to be its basis, in the form of flat, colourless, quadrangular crystals, of a sweet flavour, soluble in water, and capable of being volatilized at a moderate heat without decomposition, the colour being only elicited by the successive action of ammonia and atmospheric air.

ROCCELLA FUCIFORMIS. *Flat-leaved Archill or Orchell.* TAB. 2235.

Thallus flat, branched, nearly erect, greyish-white, bearing white, mealy warts. Apothecia blackish, pruinose, bordered.

Lichen fuciformis, Linn. *E. B.* 728. *Roccella fuciformis*, DeCandolle. *Acharius Syn.* 244. *Hooker Crypt. Part 1.* 222.

Found, growing with the last species, on maritime rocks on the coast of Cornwall and Devonshire, and the Channel Islands. Distinguished from *R. tinctoria* by the broader, flat, or compressed segments of its thallus, paler hue, and, generally, much larger size; but still having characters in common with that species, which have led

728

2235



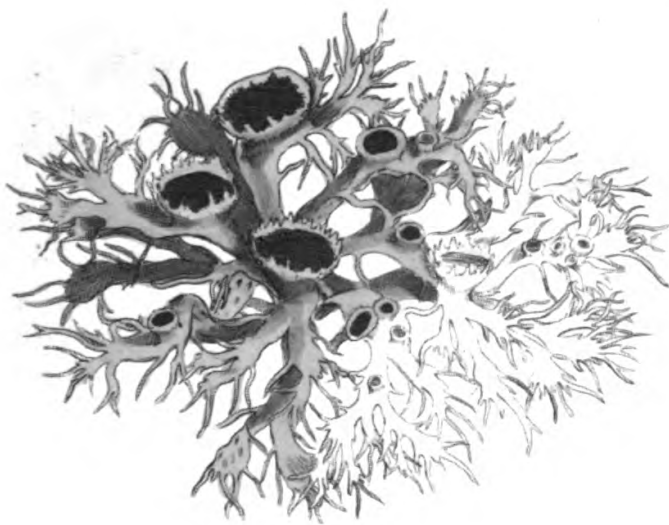
Roccella fuciformis

Agardh, Fauna Fucorum, p. 10, t. 1, f. 10.



1362

2236



Borrera ciliaris

Sept. 1864 Published by J. Sowerby, London



to the suspicion of its being merely a variety, more especially as small cylindrical branches now and then occur on the present plant.

It is said to be very abundant in the Indian Archipelago, especially on the shores of Sumatra, and is collected both there and elsewhere, indiscriminately with *R. tinctoria*, for the use of the dyers. Those, however, who are conversant with the manufacture of the dye consider it to be very far inferior to the latter species, for their purpose.

GENUS DXCIII. BORRERA. *Borrera*.

GEN. CHAR. *Thallus* cartilaginous, branched and lacinated, the segments free, generally grooved beneath, the margins frequently ciliated. *Apothecia* orbicular, peltate, formed beneath of the thallus; the disc coloured, surrounded by an elevated, inflexed, thalloidal border.

There is too much difference in the habit of the plants of this genus, to admit of its being classed among those of its order which claim the consideration of strictly natural groups; but it is still tolerably well defined by the foregoing character, and, however objectionable in some points of view, as at present constituted, its dedication by Acharius to one of the best lichenologists of the age, W. Borrer, Esq., renders the very beautiful series of lichens comprised under it doubly interesting to the British botanist.

By far the larger proportion of the species belongs to southern latitudes; the few which are indigenous are almost entirely confined to the southern maritime counties of England.

BORRERA CILIARIS. *Larger ciliated Borrera*. TAB. 2236.

Thallus spreading, glaucous greenish-grey, minutely downy; the segments linear, branched, ciliated; white and grooved beneath. *Apothecia* elevated, brownish-black, pruinose, concave, eventually plane, with a jagged border.

Lichen ciliaris, Linn. E. B. 1352. *Borrera ciliaris*, Acharius Syn. 220. *Hooker Crypt. Part 1*. 222.

Common on the trunks and branches of trees, less frequently on dead wood. *Thallus* dull greenish-grey, spreading, very much divided, the segments linear, dilated upwards, convex; white beneath and grooved; margins more or less copiously fringed with branching or simple, bristle-like processes. *Apothecia* on short stalks, flattish, brownish-black, with an inflexed, crenated border; when young, glaucous and rather concave. Sometimes the border is greatly dilated, variously lacinated, and erect.

This and the following are very liable to be confounded.

BORRERA TENELLA. *Lesser ciliated Borrera.* TAB. 2237.

Thallus spreading, whitish-grey, smooth; the segments linear, sub-pinnatifid, their extremities ascending, dilated, obtuse, vaulted, ciliated. Apothecia sessile, bluish-black, pruinose, with an elevated, entire border.

Lichen tenellus, *Weber. E. B.* 1351. *Borrera tenella, Acharius Syn.* 221. *Hooker Crypt. Part 1.* 222. Lichen hispidum, *Hoffmann Pl. Lich. tab. 3. fig. 2, 3.* *L. ciliaris, β. Hudson.*

Common on the trunks and branches of trees and shrubs; the sloe and other bushes in our hedges generally abound with it. Thallus spreading, forming more or less orbicular patches, seldom more than an inch in diameter, of a brilliant whitish-grey; segments linear, zig-zag, rather convex, dilated, obtuse, and vaulted, or somewhat inflated at their extremities, and fringed with irregular, blackish or white, undulating bristles, often powdery. Apothecia sessile, bluish or greyish-black, flat; their border inflexed, sometimes uneven, but never crenate or jagged.

BORRERA LEUCOMELA. *Black-haired Borrera.* TAB. 2238.

Thallus spreading, smooth, white on both sides, channeled and powdery beneath; segments linear, fringed with long, black, very slender hairs. Apothecia stalked, bluish-black, with a white radiating border.

Lichen leucomelos, *Linn. E. B.* 2548. *Borrera leucomela, Acharius Syn.* 222. *Hooker Crypt. Part 1.* 223.

Discovered by Sir W. J. Hooker, growing upon the ground, among thyme, &c., in heathy places near the sea, at Babbicombe in Devonshire, and about Torbay. Thallus forming lax tufts, generally conspicuous from their white or greyish-white hue, very smooth above; the segments linear, more or less fringed with long, very slender, coal-black, simple or branched hairs; channeled and mealy, and always snow-white beneath. The fructification has not been found in England, and is figured from specimens gathered by Mr. Menzies in St. Helena. The apothecia are lateral, on short stalks; the disc flat, greyish, surrounded by a white, leafy, radiating border, sometimes bearing hairs like those fringing the segments of the thallus.

This is a tropical species, a native of the West Indies and South America, as well as some of the islands of the Atlantic.

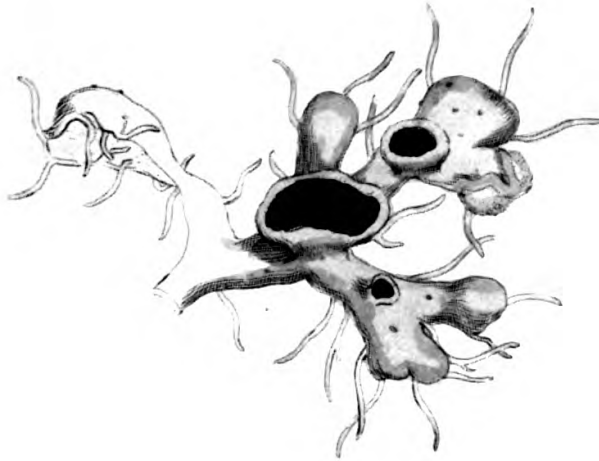
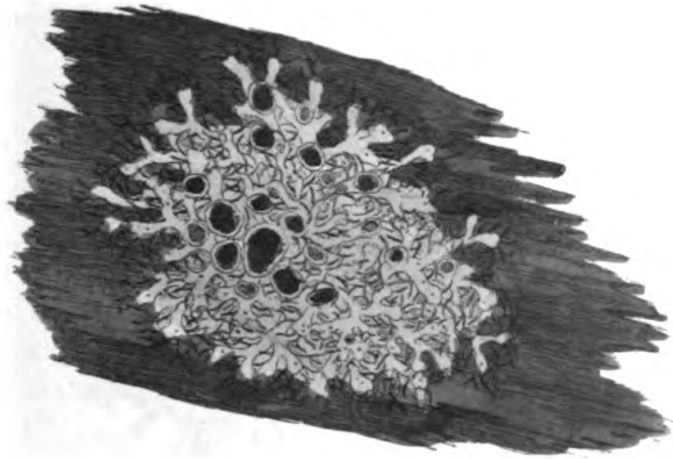
The British plant "varies somewhat from the exotic state of *B. leucomela*, in having broader segments to the thallus, of a less pure white, and with more branching cilia; yet, both in its appearance and place of growth, it is very different from *B. ciliaris*, to which, if I mistake not, Mr. Borrer is disposed, and, perhaps, correctly, to refer it."—*Hooker.*

BORRERA FURFURACEA. *Branny Borrera.* TAB. 2239.

Thallus spreading, subascending, greyish-green, farinaceous; the segments linear, attenuated, much divided and forked; the margins recurved; deeply grooved, rugged, and black beneath. Apothecia scattered, very concave, inflated, reddish-brown, with a thin, inflexed border.

1351

2237



Borrera tenella?

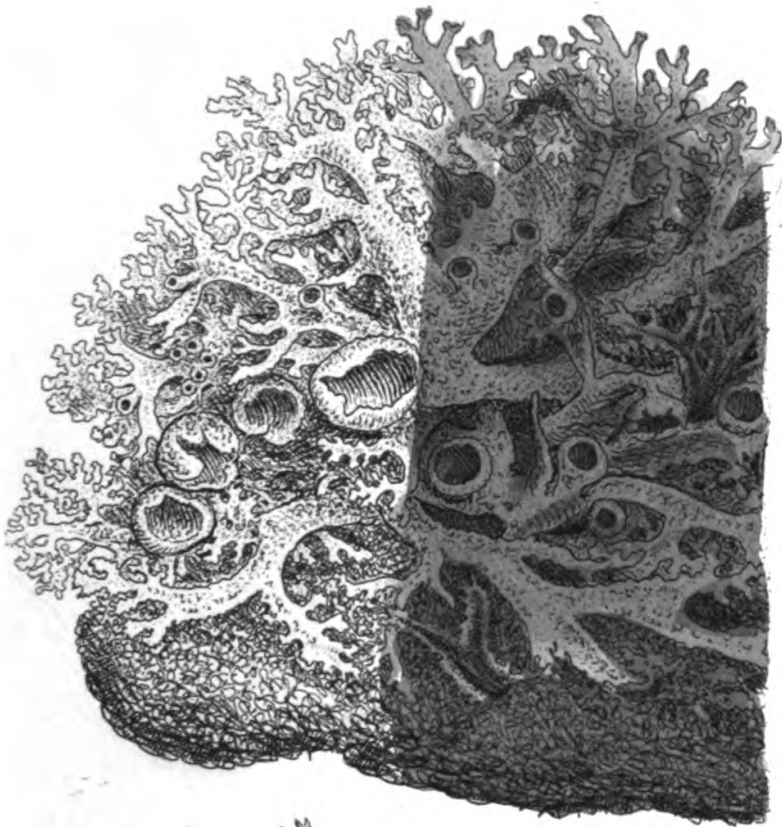
2548

2235.



Borreria leucomela

May 1812, published by J. L. L. L. L.



Borrera furfuracea?

Fig. 1. 1852. Published by J. G. Sowerby, London.

1715

2240.

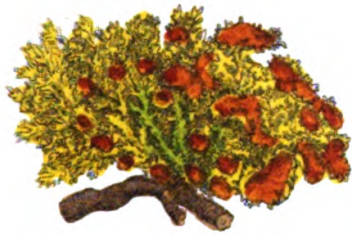


Borreria Atlantica?

Mar. 2. 1867. Published by J. & S. Sowerby London.

1088

2241.



Borrera chrysophalma



Lichen furfuraceus, Linn. E. B. 984. *Borrera furfuracea*, *Acharius Syn.* 222. *Hooker Crypt. Part 1.* 223.

Found on the trunks and branches of old trees, chiefly about the decaying parts, on old pales and other dead wood: the specimens sent to Sir J. E. Smith by the Rev. Mr. Harriman, whence it is not mentioned, were on "granite and sandy grit," and from one of these our figure was drawn. The thallus forms large, loosely spreading patches, and consists of numerous branched and repeatedly dichotomous segments, various in breadth, and terminating in sharp, reddish points. Upper surface convex, greenish-grey, covered with a meal-like powder; the under concave, rugged or plaited, black, having here and there a blue or purplish tinge. Apothecia scattered, elevated, reddish-brown, concave or inflated, with a thin inflexed border.

A very handsome and conspicuous lichen, but not very productive of apothecia, unless in particular localities. It is the largest native species of its genus, and the repeated and rather complicated divisions of the thallus render it one of the most elegant.

BORRERA ATLANTICA. *Atlantic Borrera. Downy Shrubby Borrera.* TAB. 2240.

Thallus erect, tufted, grey, downy, much and intricately branched; the segments linear, deeply channeled, their margins revolute. Apothecia scattered, lateral, the disc nearly flat, black, with a thick, entire border.

Lichen Atlanticus, E. B. 1715. *Borrera Atlantica*, *Acharius Syn.* 223. *Hooker Crypt. Part 1.* 223. *Lichen intricatus*, *Desfontaines Fl. Atlant.* 420. tab. 258. fig. 3.

First noticed as a native species by Mr. Borrer, who collected it from elm-trees, at Bracklesham in Selsey Island, and afterwards found it growing abundantly on the cliffs near Hastings, bearing fructification. It forms dense, entangled tufts of a grey or brownish-white hue, and clothed with a fine short down. Segments numerous, divaricated, linear, channeled. Apothecia sessile, small, round, with a black or brownish-black, flat disc, eventually becoming rather convex, and an entire, thick, downy border.

This, like *B. leucomela* and the two following species, attains its utmost northern limits in the south of England, belonging rather to the vegetation of warmer latitudes. The specific name refers to its growing on Mount Atlas.

BORRERA CHRYSOPHTHALMA. *Golden-eyed Borrera.* TAB. 2241.

Thallus erect, tufted, branched, bright greenish-yellow; the segments linear, multifid and fringed, especially towards the extremity. Apothecia abundant, terminal, deep orange-colour, with a fringed, radiating border.

Lichen chrysophthalmus, Linn. E. B. 1088. *Borrera chrysophthalma*, *Acharius Syn.* 224. *Hooker Crypt. Part 1.* 223. *Platism armatum*, *Hoffmann Pl. Lich.* tab. 36. fig. 1.

Specimens of this rare and beautiful lichen were first brought to the late Mr. Sowerby, from branches of apple-trees in Devonshire,

by a poor fisherman, from whom he occasionally received shells and other natural productions from the west of England. Sir W. J. Hooker mentions it as growing on thorns near Torquay, and Mr. Borrer finds it in Sussex, "generally, if not always, growing on the natural family of *Rosaceæ*." Tufts seldom an inch high, the segments linear, lacinated and elegantly fringed, pale greenish-grey, more or less tinted with yellow. Apothecia numerous, terminal, slightly concave, of a rich orange-colour, with a fringed, radiant border of the same hue as the thallus.

Its preference of trees of the Rosaceous orders is remarkable. Its discoverer, Micheli, found it on pear-trees near Florence, and Sir W. J. Hooker "gathered it abundantly on white-thorns, by the roadside in La Vendée in France, but near the sea, where also it appears always to grow with us." It is found at the Cape of Good Hope.

BORRERA FLAVICANS. *Brass-wire Borrera.* TAB. 2242.

Thallus erect, tufted, branched, entangled, tawny; the branches divaricated, linear, taper-pointed, compressed, angular, wavy, beset with warts. Apothecia lateral, nearly sessile, flat, orange-colour, with a narrow, entire, pale border.

Lichen flavicans, Swartz. E. B. 2113. Borrera flavicans, Acharius Syn. 224. Hooker Crypt. Part 1. 224. Lichen vulpinus, Hudson.

Found on trees and shrubs, especially, if not universally, on fruit-trees and others of the Rosaceous orders, in Devonshire, Sussex, and elsewhere in the south of England. The thalli form dense entangled tufts, an inch or two in height, of a rich tawny or orange hue, paler, and even grey, where less exposed to light. Branches slender, linear, compressed, angular, smooth, except where numerous powdery warts break out; the ultimate ramifications are very complicated, fine and acute. The apothecia, figured here from exotic specimens, have never been found in Britain; they are small, nearly, if not quite sessile, with a flat, orange-coloured disc, and a pale, entire, inflexed border.

It is a native of the warmer parts of both the northern and southern hemisphere. Sir J. E. Smith had it from South America and the West Indies.

GENUS DXCIV. EVERNIA. *Evernia.*

GEN. CHAR. *Thallus* subcoriaceous, branched and lacinated, angled or compressed, cottony within. *Apothecia* orbicular, scutelliform, sessile; the disc concave, coloured, with an inflexed border formed of the thallus.

Only differing from the following genus, *Ramalina*, in the apothecia being coloured and sessile. The name is one of very arbitrary selection, the Greek $\epsilon\upsilon$ being by a forced interpretation rendered *much*, and $\epsilon\pi\rho\varsigma$, a *branch*, accords with

213

2242

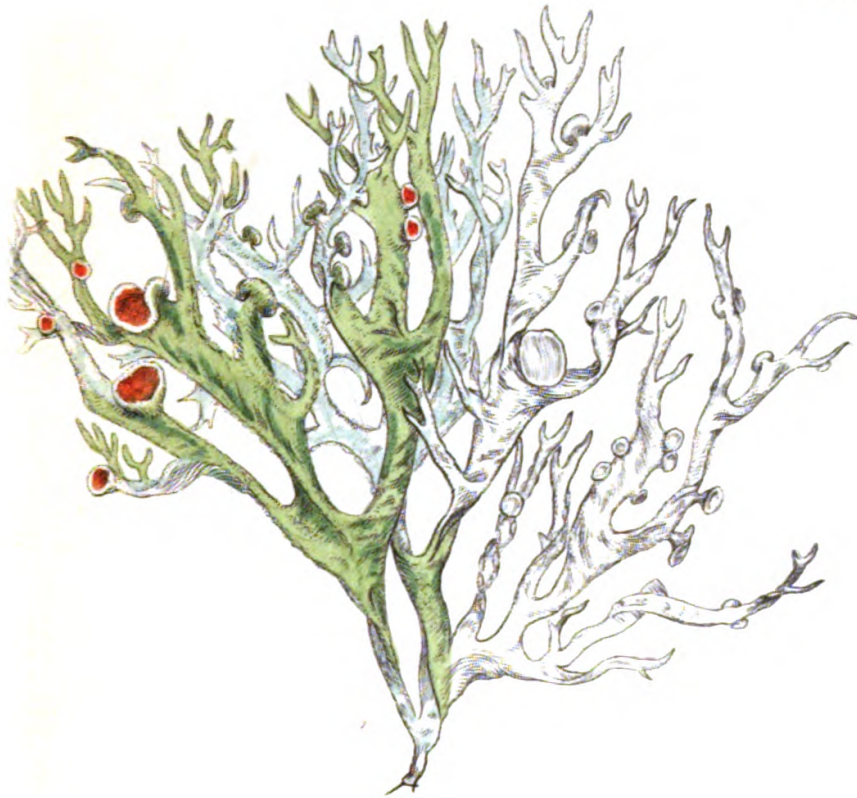


Borrera flavicans.

Illustration of Borrera flavicans

859

2243.



Evernia prunastri

April 1, 1891. Col. J. D. G. by J. S. G. London.

1358

2244.



Evernia stictoceros.

Sept. 1. 1844. Published by J. G. Sowerby, London.



the habit of the plants as it might with that of many other erect or suffruticose lichens.

EVERNIA PRUNASTRI. *Ragged hoary Evernia.* TAB. 2243.

Thallus erect, much branched, greenish-white, pitted and rugged, flat; the branches linear, attenuate, somewhat grooved and paler on the nether surface. Apothecia lateral, bright brown, concave, elevated, with an inflexed border.

Lichen prunastri, Linn. E. B. 859. Evernia prunastri, Acharius Syn. 225. Hooker Crypt. Part 1. 224. Lichen corniculatus, Reichenhan.

Very common on the trunks and branches of old trees. Thallus pliable, between membranaceous and coriaceous, very much branched in a forked manner, the branches divaricated, greenish on one side, white on the other and slightly grooved or concave. Apothecia reddish-brown or chestnut-coloured, with an entire, white, inflexed border, generally sessile or nearly so; not very frequent.

The dried plant imbibes odours very readily, and is used as a stuffing for perfumed cushions and an ingredient in scent-pots. During the war it was, at the instigation of the late Lord Dundonald, employed as a substitute for gum by the calico-printers.

EVERNIA STICTOCEROS. *Dotted-horned Evernia.* TAB. 2244.

Thallus tufted, spreading, much branched, compressed, wrinkled, pale sulphur-coloured, alike on both sides, bearing minute black terminal tubercles. Apothecia — ?

Lichen stictoceros, E. B. 1353. Evernia prunastri, β . stictoceros, Hooker Crypt. Part 1. 224.

Found by J. Brodie, Esq. growing on the ground upon broken sand-banks, in the warren opposite Exmouth, Devonshire. The thallus forms spreading tufts, of a pale greenish sulphur-colour, and is repeatedly branched, divaricated, compressed, wrinkled and pitted, beset here and there with white powdery warts: terminal branches attenuated, more cylindrical, often dotted with little dark specks, and each tipped with a minute, black, convex, smooth tubercle.

In the absence of apothecia, there seems little doubt of this being a variety of the preceding.

GENUS DXCV. RAMALINA. *Ramalina.*

GEN. CHAR. *Thallus* cartilaginous, branched and laciniated, somewhat suffruticose, generally having powdery warts (*soredia*), compactly cottony within. *Apothecia* orbicular, scutelliform, stipitate and peltate, plane, bordered, entirely formed of the substance of the thallus and nearly of the same colour.

Nearly approaching *Evernia* in the general aspect of the species, but sufficiently distinguished from it by the character of the apothecia: the thallus too is generally more rigid, and the white cottony or spongy mass of the interior more dense. The apothecia are sometimes coloured. Named from the Latin *ramale*, a dead branch.

RAMALINA POLYMORPHA. *Variable Ramalina.*

"Thallus plane-compressed or roundish, laciniato-ramose, pale, longitudinally lacunose. Soredia scattered, subelliptical, terminal, capituliform. Apothecia submarginal, rather concave, the disc flesh-coloured, subpruinose."

Ramalina polymorpha, *Acharius Syn.* 295. *Hooker Crypt. Part 1.* 224. *Winch Fl. of North.* 92. *Lichen polymorphus*, *Ach. in Act. Holm.* 18. 270. *tab. 11. fig. 3.*

Found by the Rev. J. Harriman on rocks and stones in the neighbourhood of Eglestone, Durham.

RAMALINA FRAXINEA. *Ash Ramalina.* TAB. 2245.

Thallus pendent, tufted, flat, pitted and reticulated, light greenish-grey, glabrous, much branched; the segments linear-lanceolate, attenuated, often jagged. Apothecia large, scattered, elevated.

Lichen fraxineus, *Linn. E. B.* 1781. *Ramalina fraxinea*, *Acharius Syn.* 296. *Hooker Crypt. Part 1.* 225.

Very common on the trunks and large branches of old trees, especially the ash and oak. It grows pendent in large tufts of a pale greenish-grey, white when dry, from two to six inches in length. Thallus divided from the base into numerous, flattish, pliable, linear-lanceolate, acute, jagged or compound segments; even when young, but soon becoming pitted and wrinkled; destitute at all times of every kind of pubescence or roughness. Apothecia numerous, on short stalks, from both sides as well as the edges of the segments, various in size, plane or concave, pale buff, sometimes flesh-coloured, eventually rugged and blackish; the border small and thin.

Collected during the war indiscriminately with *Evernia prunastri*, for the use of the Glasgow manufacturers.

RAMALINA FASTIGIATA. *Fastigate Ramalina.* TAB. 2246.

Thallus erect, tufted, pale glaucous-green or grey, rigid, compressed, lacunose, smooth, naked, much branched; the segments dilated upwards, and bearing short, spur-like branches. Apothecia subterminal, nearly sessile, pale, flat.

Lichen fastigiatus, *Acharius Prod. E. B.* 890. *Ramalina fastigiata*, *Ach. Syn.* 296. *Hooker Crypt. Part 1.* 225. *Lichen calicaris*, *Hudson.*

Frequent on the trunks of trees in woody subalpine districts, forming short branched tufts, very variable in their ramification, greenish-grey, ash-coloured or inclining to buff; the branches more or less pitted, but smooth, never with soredia, powdery warts or cracks, by

1781

2245.



Ramalina fraxinea

Aug. 1817 published by J. K. Schreb.

Nearly approaching *Evernia* in the general aspect of the species, but sufficiently distinguished from it by the character of the apothecia: the thallus too is generally more rigid, and the white cottony or spongy mass of the interior more dense. The apothecia are sometimes coloured. Named from the Latin *ramale*, a dead branch.

RAMALINA PICTORUM Variable *Ramalina*.

"Thallus plane-compressed or roundish, laciniato-ramose, pale, longitudinally lacunose. Soredia scattered, subelliptical, terminal, equilateral. Apothecia submarginal, rather concave, the disc flesh-coloured, subpruinose."

Ramalina polymorpha, Acharius Sp. 295. *Hooker Crypt. Part 1. 29. Wain R. of North. 92. Lichen polymorphus, Ach. in Act. Hiss. 18. 271. tab. 11. fig. 3.*

Found by the Rev. J. Hirstman on rocks and stones in the neighbourhood of Eglesme, Durham.

RAMALINA FRAXINEA. *Ad Ramalina*. TAB. 2245.

Thallus sessile, tufted, fat, pitted and reticulated, light greenish-grey, glabrous, much branched; the segments linear-lanceolate, attenuated, often jagged. Apothecia large, scattered, elevated.

Lichen fraxinus, Lam. E. B. 1781. *Ramalina fraxinea*, Acharius Sp. 26. *Hooker Crypt. Part 1. 225.*

Very common on the trunks and large branches of old trees, especially the oak and ash. It grows pendulous in large tufts of a pale greenish-grey, white when dry, from two to six inches in length. Thallus divides from the base into numerous, flatish, pliable, linear-lanceolate, more jagged or compound segments; even when young, but soon becoming pitted and wrinkled; destitute at all times of crests and induscia or rugines. Apothecia numerous, on short stalks, from both sides as well as the edges of the segments, variously jagged and lacinated. The border small and thin.

Collected among the oak indiscriminately with *Evernia prunastri*, in the oak of the *Crusgw* manufactory.

RAMALINA FASTIGIATA. *Fastigiata Ramalina*. TAB. 2246.

Thallus erect, tufted, pale glaucous-green or grey, rigid, compressed, lacunose, much tufted, much branched; the segments dilated, rounded and having short, squam-like branches. Apothecia submarginal, many-sided, pale, fat.

Lichen fastigiatus, Acharius Prod. E. B. 390. *Ramalina fastigiata*, Ach. Sp. 26. *Hooker Crypt. Part 1. 225. Lichen calicaris*, Ach.

Propagated on the trunks of trees in woody subalpine districts, forming white branched tufts, very variable in their ramification, greenish-grey, reticulated or inflexed in leaf; the branches more or less subreticulate, never with soredia, powdery warts or cracks, by

1721

2245.



Ramalina fraxinea

Aug. 1827 published by J. K. Schreb.



Ramalina fastigiata?

June 1, 1891. Published by J. Sowerby, London.

634
2247.

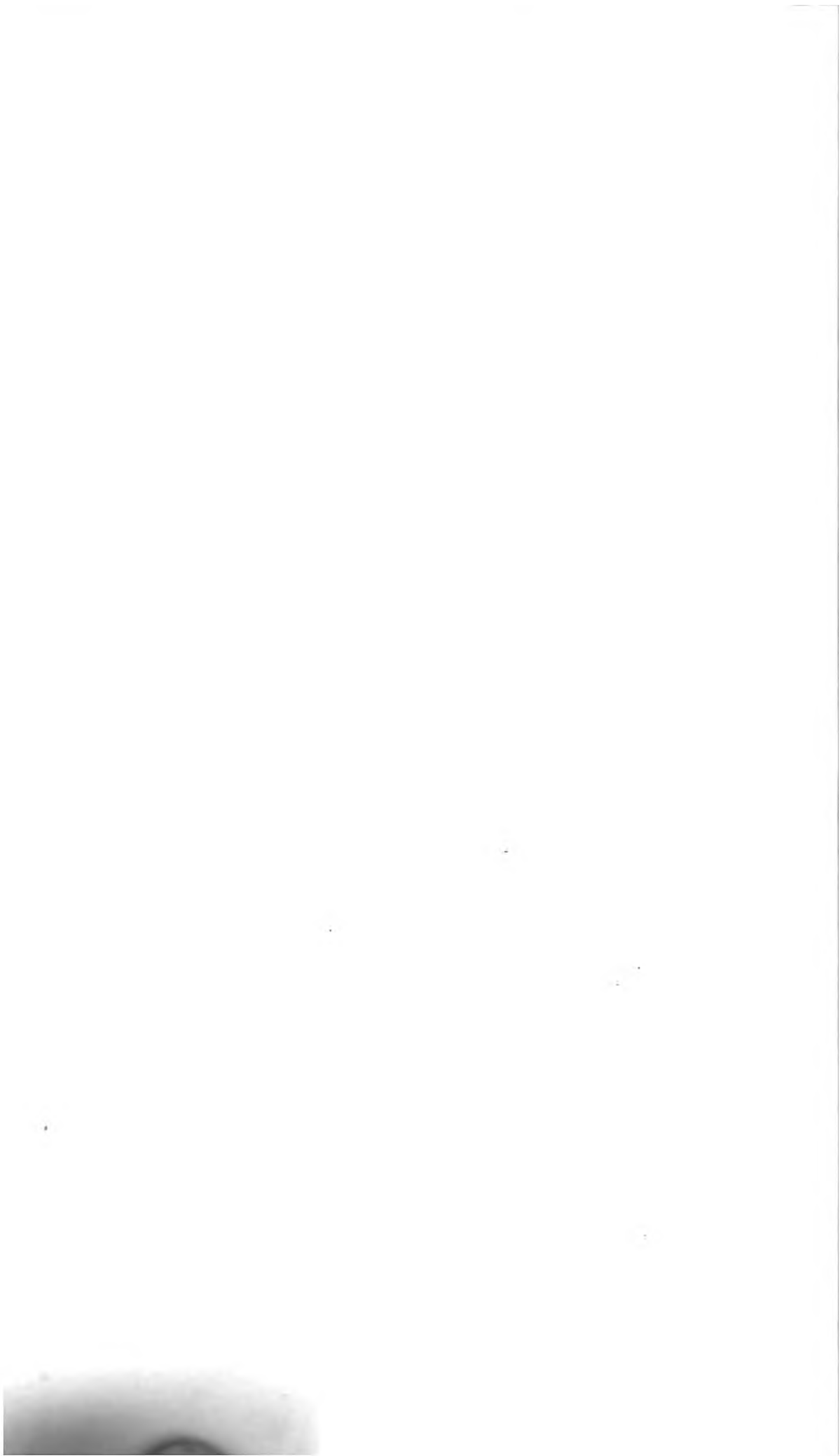


Ramalina scopulorum!



Ramalina farinacea?

Illustration by J. E. Smith, London.



the absence of which it is at once distinguished, under all circumstances, from *R. farinacea*, which in habit it sometimes resembles. Apothecia generally abundant, lateral, or, for the most part, nearly terminal, the pointed summit of the branch beyond them being more or less reflexed in the form of a spur; when young they are concave, of the hue of the thallus, or paler; by age they become plane or convex, and of a pale buff-colour.

RAMALINA SCOPULORUM. *Ivory Rock Ramalina.* TAB. 2247.

Thallus pendent, pale greenish-white, compressed, sublacunose, rather glossy, branched; the segments divaricated, linear, attenuated. Apothecia scattered, on short stalks.

Lichen scopulorum, Retz. E. B. 688. Ramalina scopulorum, Acharius Syn. 297. Hooker Crypt. Part 1. 225. Lichen calicaris, Linn. L. siliquosus, Hudson.

Often abundant on rocks near the sea, from which the thalli grow pendent, from two to eight inches in length, much branched and divaricated; the segments linear, narrow, pointed, compressed and somewhat pitted; their colour a greenish or yellowish-white, and the surface generally so smooth and glossy as to resemble ivory. Apothecia submarginal, scattered, on short compressed stalks, nearly flat, very pale brown at first, black in decay, their edges turning backwards.

Though so different in its ordinary appearance, Sir W. J. Hooker remarks, that it is sometimes difficult to distinguish small specimens of this from the last species, *R. fastigiata*.

Inhabiting maritime rocks only, *R. scopulorum* may be regarded as supplying in northern countries the place that *Rocella tinctoria* occupies in southern, and, according to Lightfoot, it yields a red dye; the same author states that it was formerly used, instead of starch, in the manufacture of hair-powder.

RAMALINA FARINACEA. *Narrow Mealy Ramalina.* TAB. 2248.

Thallus erect, pale glaucous greenish-grey, pitted, much branched, bearing copious soredia; the segments linear, attenuated, wavy. Apothecia on short stalks, scattered, flat, bordered, pale buff-coloured.

Lichen farinaceus, Linn. E. B. 889. Ramalina farinacea, Acharius Syn. 297. Hooker Crypt. Part 1. 225.

Frequent on the trunks and branches of trees, where it forms spreading, much branched tufts of a pale glaucous hue; the segments, varying much in breadth, are generally very narrow, attenuated, flat-tish, pitted and smooth, except for the numerous irregular powdery warts or cracks on their sides, which constitute the most remarkable feature of distinction in this species, and which in drying become almost white. Apothecia flat, of a very pale buff-colour when young, surrounded by an entire border of the colour of the thallus, which often bears powdery warts or soredia similar to those of the thallus. The fructification is not often to be met with.

This species is said to yield a mucilage equal to that obtained from the *Cetraria Islandica*.

RAMALINA POLLINARIA. *Broad-leaved mealy Ramalina.* **TAB. 2249.**

Thallus somewhat leafy, spreading, smooth, pitted, greenish-grey, sprinkled with powdery cracks (soredia); the lobes jagged in linear segments. Apothecia nearly terminal, slightly elevated, buff-coloured, with a greenish, inflexed; smooth border.

Lichen pollinarius, *Acharius Prod. E. B.* 1607. *Ramalina pollinaria*, *Ach. Syn.* 298. *Hooker Crypt. Part 1.* 225.

Found on the trunks of old trees, posts, rails, &c., rarely on rocks, in several parts of England. The thalli form spreading tufts very variable in size and breadth, deeply and irregularly lobed, and with the lobes cleft on the margin into linear, fringe-like segments. Apothecia very near, or upon the margin, slightly elevated on a thick wrinkled stalk, which runs into a broad, inflexed, smooth border; disc flattish, pale buff, generally cracked by age. The greenish-grey hue of the thallus often changes to a yellowish-buff.

“Particularly abundant in Norfolk and Suffolk on old barn-doors, which are sometimes covered with the plant.”—*Hooker.*

It is said to yield a good pale red or brown to wool or silk.

FAMILY XIV. USNEÆ.

Thallus subcylindrical, filamentous, with a central thread, mostly pendent. Apothecia (*orbillæ*) scutelliform, without ciliated.

GENUS DXCVI. USNEA. *Usnea.*

GEN. CHAR. *Thallus* subcrustaceous, rounded, branched, with a central thread, generally pendulous. *Apothecia* (*orbillæ*) orbicular, terminal, peltate, entirely formed of the substance of the thallus and nearly of the same colour; the circumference mostly without a border, generally ciliated.

The plants of this genus are met with clothing the trunks of old trees in subalpine and mountainous districts in almost all parts of the world. They approach so nearly in structure and even in general aspect, that it is difficult to define the limits of the species; indeed a comparison of their various intermediate forms renders it not improbable, that those which have been hitherto described as distinct may be only different states of the same plant.

The presence of a central axis or thread, formed of elastic fibres, a structure without parallel in this order, would, in a

1607

2240



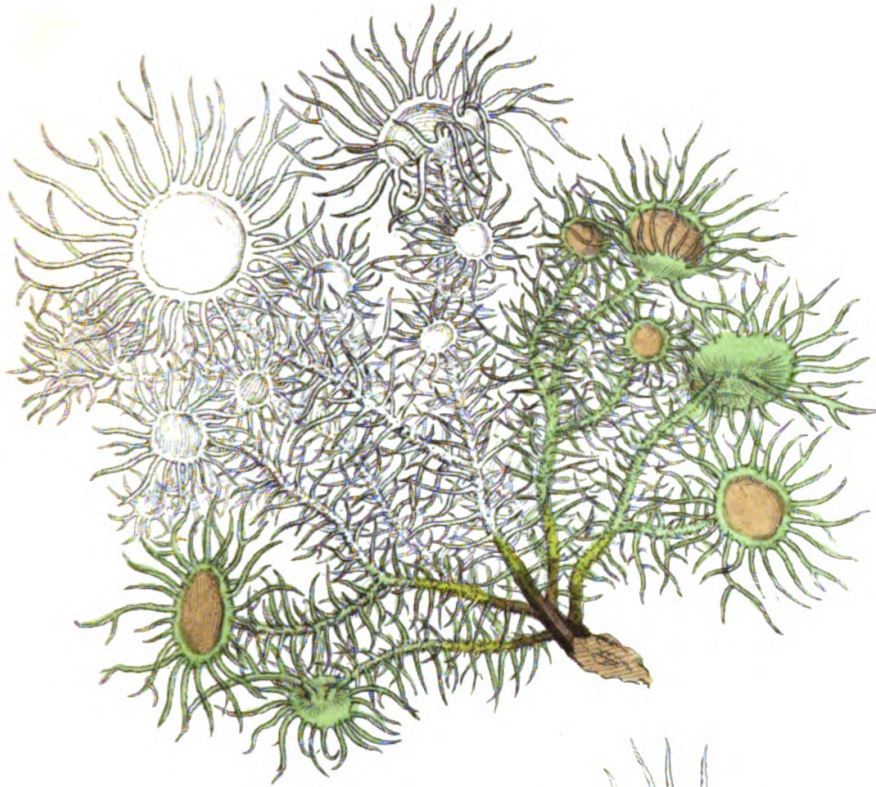
Ramalina pollinaria?

Jan. 1. 1806. Published by Jas. Sowerby, London.



872

2250



Usnea florida?

Usnea florida (L.) Ach.



287

2251



Usnea plicata

Usnea 1798. Described by J. F. Kuntze, L. Zentgraf.



truly natural arrangement, perhaps, assign the *Usneæ* the first place among the Lichens, but it is only a modification of the cellular fibrous tissue of the mesothallus, observable in many of those of the foliaceous series.

Usnea plicata and some other species or varieties are used as a dye, and *Roccella tinctoria* is not unfrequently adulterated with them in commerce. The generic name is said to be derived from the Arabic *âchneh* or *âchnen*, a general appellation for Tree Lichens. From their pendent position and hoary hue, the British species have in some parts of the country the names of Tree-beard, Old-man's-beard, &c., the 'Barba Jovis' of the old herbalists.

USNEA FLORIDA. *Flowery Usnea.* TAB. 2250.

Thallus nearly erect, rough, greenish-grey, much branched; the main branches bearing numerous small, horizontal, nearly simple, fibrous ones. Apothecia large, plane, pale flesh-colour, bordered with long radiating fibres or cilia.

Lichen floridus, Linn. E. B. 872. *Usnea florida*, Acharius Syn. 304. *Hooker Crypt. Part 1.* 226.

Frequent on the branches of old trees in hilly and mountainous countries. It forms upright, bushy, pale greenish-grey tufts, rising from a hard black base; the branches round, composed of a crustaceous bark or rind inclosing a tough white fibre. Each of the main branches bears numerous small, horizontal, bristle-like, simple or compound ones, terminating in a point, and of the same substance. The apothecia are large, flat, thin, circular discs, of a pale brownish or yellowish flesh-colour; at first lateral, but soon appearing terminal, the slender summit of the branch above them becoming reflexed and confounded with the numerous radiating spines with which their irregular border is fringed. Besides the ordinary fructification, there are occasionally met with on the younger branches, and similarly situated, small, prominent, rugged, flesh-coloured tubercles, very rarely surrounded by a few spines or cilia; these Sir J. E. Smith, in the previous edition of the present work, regards as the true or perfect, and the *orbilla* as an abortive form of the reproductive apparatus in this highly beautiful lichen.

I have specimens of this species, accompanying the next, *U. plicata*, from South America, attached to the *Cinchona* bark, and not differing in any respect from those of British growth.

USNEA PPLICATA. *Stringy Usnea.* TAB. 2251.

Thallus pendulous, very pale glaucous, smooth; branches lax, much divided, subfibrillose, the ultimate ones capillaceous. Apothecia plane, broad, ciliated; cilia slender, very long.

Lichen plicatus, Linn. E. B. 257. *Usnea plicata*, Acharius Syn. 305. *Hooker Crypt. Part 1.* 226.

Not uncommon, hanging from the branches of old trees in woods, especially in hilly or subalpine districts. The thallus often extends

to the length of one or two feet or even more, forming a thick entangled mass of branching fibres, which are cylindrical, all more or less divaricated and undulated, never straight. The hue is a greenish stone-colour; the surface very smooth at first, but in the older parts rough with minute warts. The main stems often crack here and there, discovering in the interstices a very tough, white, central fibre, which pervades the whole of the ramifications. Apothecia sparingly scattered, pale brown or grey, the margin fringed with radiating bristles.

Formerly used in medicine as a styptic.

USNEA HIRTA. *Common rough Usnea.* TAB. 2252.

Thallus nearly erect, greenish-grey, much branched; branches scabrous, very much divided, flexuose, spreading, intricate, subfibrillose; bearing flesh-coloured solid warts.

Lichen hirtus, Linn. E. B. 1354. L. floridus, β . Hudson. Usnea plicata, β . hirta, Acharius Syn. 305. Hooker Crypt. Part 1. 226.

Common on old trees and park-paling, but seldom bearing warts. So near in habit and colour to *U. florida* as to be scarcely distinguishable from it in the absence of its *orbilla*, a form of fructification never met with on the present. The branches are generally more divaricated and flexuose, and the smaller ones (ramuli) more irregular, intricate and shorter, but in other respects there is no very obvious difference. Our figures represent the extreme states of both as to habit, but there are intermediate forms that could scarcely be positively referred to either.

USNEA BARBATA. *Jointed Usnea.* TAB. 2253.

Thallus pendulous, smoothish, greenish-grey, very much branched; the main stem stout, articulated; the branches very long, slender, capillary, intricate; sometimes bearing fleshy tubercles or warts.

Lichen articulatus, β . E. B. 258, right-hand fig. L. barbatus, Linn. Usnea barbata, Acharius Syn. 306. Hooker Crypt. Part 1. 226.

Var. β . articulata; articulations of the stem remarkably swollen.

Lichen articulatus, Linn. E. B. 258, left-hand fig.

Found on the branches of trees in old woods in various parts of the kingdom, but chiefly in subalpine districts. The general habit of the plant is that of *U. plicata*, and it differs only from that species in the absence of *orbilla*, which have never yet been discovered upon it either in Britain or elsewhere, and in the curious transverse cracks of the stem and principal branches, giving it a jointed appearance: in the variety α . the interstices between the joints or articulations are here and there thickened in a very remarkable degree, but no one who compared it with β . would hesitate in pronouncing them the same species; and in regard to their mutual connexion with *U. plicata*, which, as observed by Sir J. E. Smith, has its main branches occasionally cracked, specimens in my possession exhibit every possible grade of variation between them. Hence, although republishing the four original plates of this genus in illustration of its most marked forms, I cannot avoid expressing an opinion that there are, at most, only two native species of *Usnea*, and that the positive distinction

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Usnea hirta?

Sept 1 1800 Published by J. J. Smith London

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2253



Usnea barbata?

2

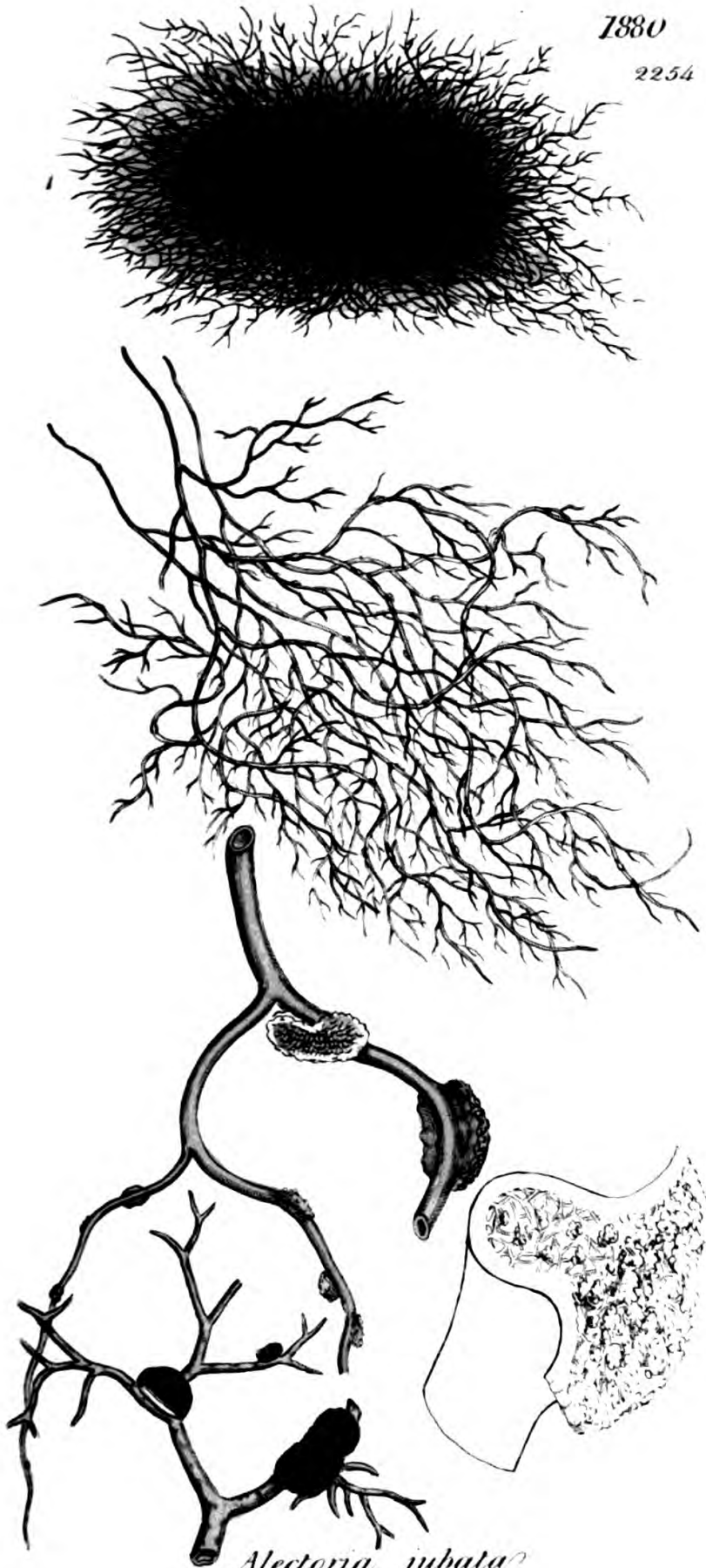
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1880

2254



Alectoria jubata

Mag. 1868. Published by Jot. Seewerby London.



between those two is yet problematical, *U. florida* representing the more perfect form of the erect plant, and *U. plicata* that of the pendulous.

A specimen of the variety β . now before me, in which the principal branch or stem is not thicker than a pin, has several of its nodular segments from a quarter to $\frac{3}{8}$ ths of an inch in diameter.

FAMILY XV. CORNICULARIÆ.

Thallus subfiliform or slightly compressed, without a central thread. Apothecia scutelliform.

GENUS DXCVII. ALECTORIA. *Alectoria*. *Rock-hair*.

GEN. CHAR. *Thallus* cartilaginous, subfiliform, branched, prostrate or pendulous, somewhat fistulose and cottony within. *Apothecia* orbicular, thick, sessile, plane or convex, more or less bordered, entirely formed of the thallus, and of the same colour.

The generic name is ill-chosen, and its derivation so very obscure that botanical etymologists are not at all agreed upon the subject. The Greek ἀλέκτωρ, from the privative α, and λέκτρον, a couch, signifies a cock, which rouses us from bed by his crowing; and by a forced interpretation, alluding to his comb or crest, it is by some rendered mane or hair, to accord with the general appearance of these plants; but the same word, differently interpreted, signifies in the original an unmarried person, and is supposed by other writers to refer to the obscurity of the fructification: both parties seeming to have overlooked the fact of *Alecto* having a similar derivation, and that one of our species, *A. jubata*, offers in its habit a miniature representation of the wild and entangled locks of the chief of the Furies.

The genus is as ill-defined as its name is ill-chosen, being scarcely, if at all, separable by written character from *Cornicularia*.

ALECTORIA JUBATA. *Wiry Alectoria*. *Rock-hair*. TAB. 2254.

Thallus tufted, generally pendulous, very much branched, smoky-brown, smooth, glossy; the branches filamentous, slender, often compressed at their axils; bearing powdery whitish warts. Apothecia sessile, blackish, with an entire border.

Lichen jubatus, Linn. E. B. 1880, middle figure. *Alectoria jubata*, Acharius Syn. 291. Hooker Crypt. Part 1. 227.

Var. β . *chalybeiformis*; branches shorter, suberect or decumbent.

Lichen jubatus, β . E. B. 1880, upper fig. *L. chalybeiformis*, Linn.

The first, the original *Lichen jubatus* of Linnæus, grows in long pendulous bunches from the branches of old trees in mountainous or subalpine woods, resembling the hair of a horse's mane, whence indeed the specific name: the variety β . forms straggling tufts on rocks, old paling, or other dead wood. The colour of both is a greyish or smoky-brown; the branches are slender, round, hollow without any central fibre, much subdivided and divaricated, more or less compressed at the axils of the older and larger divarications, taper-pointed, very smooth and glossy. The apothecia, or what have been so considered, are comparatively rare, in the long pendulous kind being seldom seen, but in their place the white, powdery warts or tumours are often abundant, presenting the appearance exhibited in our magnified figures. Messrs. Turner and Hooker first noticed the fructification in the smaller variety β . on the Highland mountains in 1807, an enlarged view of which is given at the bottom of the plate; it is sessile, almost black, roundish or oblong, the disc becoming cracked and rugged by age.

A. jubata seems to prefer the fir to all other trees, and, according to Linnæus, abounds so much in the forests of Lapland, chiefly composed of pine and spruce, as to add very greatly to their gloomy appearance and almost impenetrable shade. When the lichen pastures of the rein-deer are so thickly covered with ice and snow that the animal cannot obtain his natural food, the Laplanders cut down the old trees that are loaded with this species to place it within reach as a substitute.

ALECTORIA SARMENTOSA. *Trailing Alectoria.* TAB. 2255.

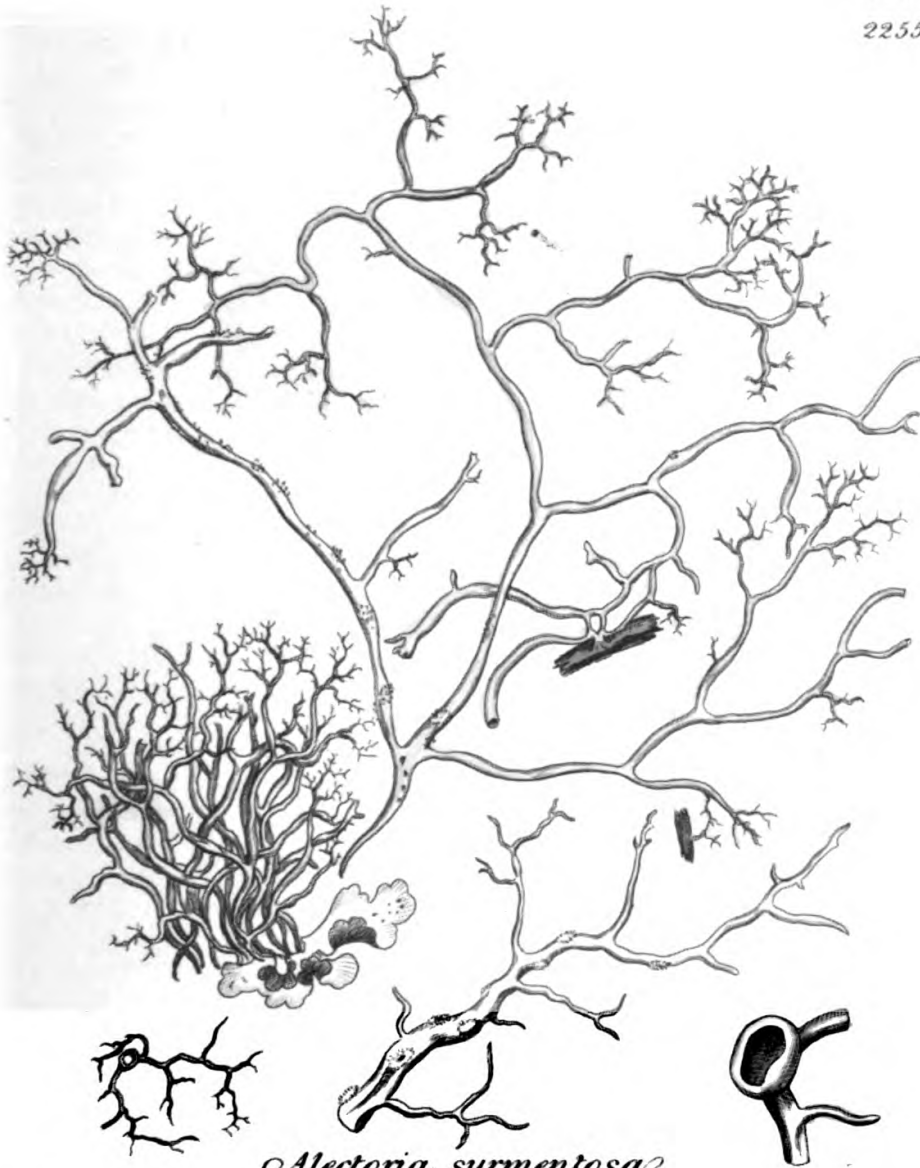
Thallus procumbent, somewhat compressed, pale sulphur-coloured, pitted, smooth, branched; the branches dichotomous, much divaricated, the ultimate ones short, capillary. Apothecia scattered, lateral, sessile, concave, greenish flesh-coloured, with an entire border.

Lichen sarmentosus, Acharius Prod. E. B. 2040. *Alectoria sarmentosa*, Ach. Syn. 293. Hooker Crypt. Part 1. 227. *Usnea dichotoma*, Hoffmann Pl. Lich. tab. 72.

A native of dry stony places on the more elevated of the Scottish mountains, especially on those of the Cairngorm range, where it was first found by Messrs. Borrer and Hooker in 1808, creeping "loosely over stones and tufts of *Azalea procumbens* and the alpine *Trichostoma*, fixing itself to them by the ends of some of its branches." Thallus of an ivory whiteness, very much branched and divaricated, the surface irregularly pitted, sometimes powdery; branches tubular, without any central thread, the ultimate ones very slender and numerous. The apothecia having never been found in Britain, a foreign specimen is figured; they are lateral and sessile, with a concave, greenish, somewhat flesh-coloured disc, and a smooth, elevated, entire border.

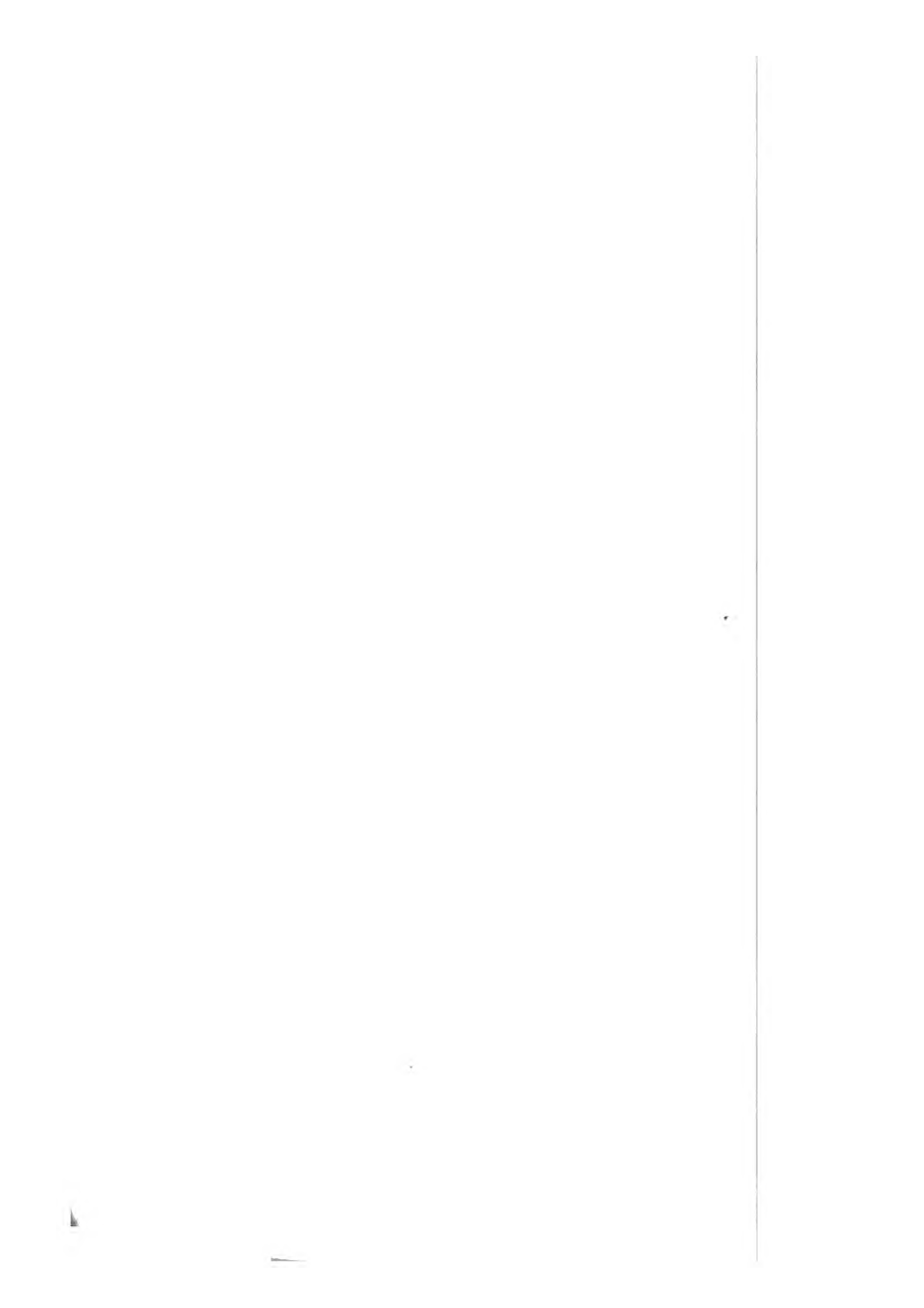
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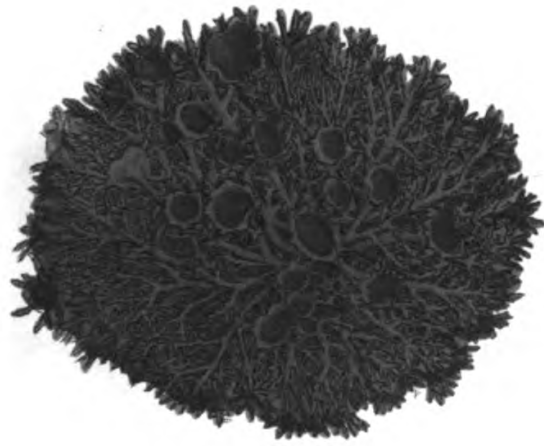


Alectoria surmentosa?

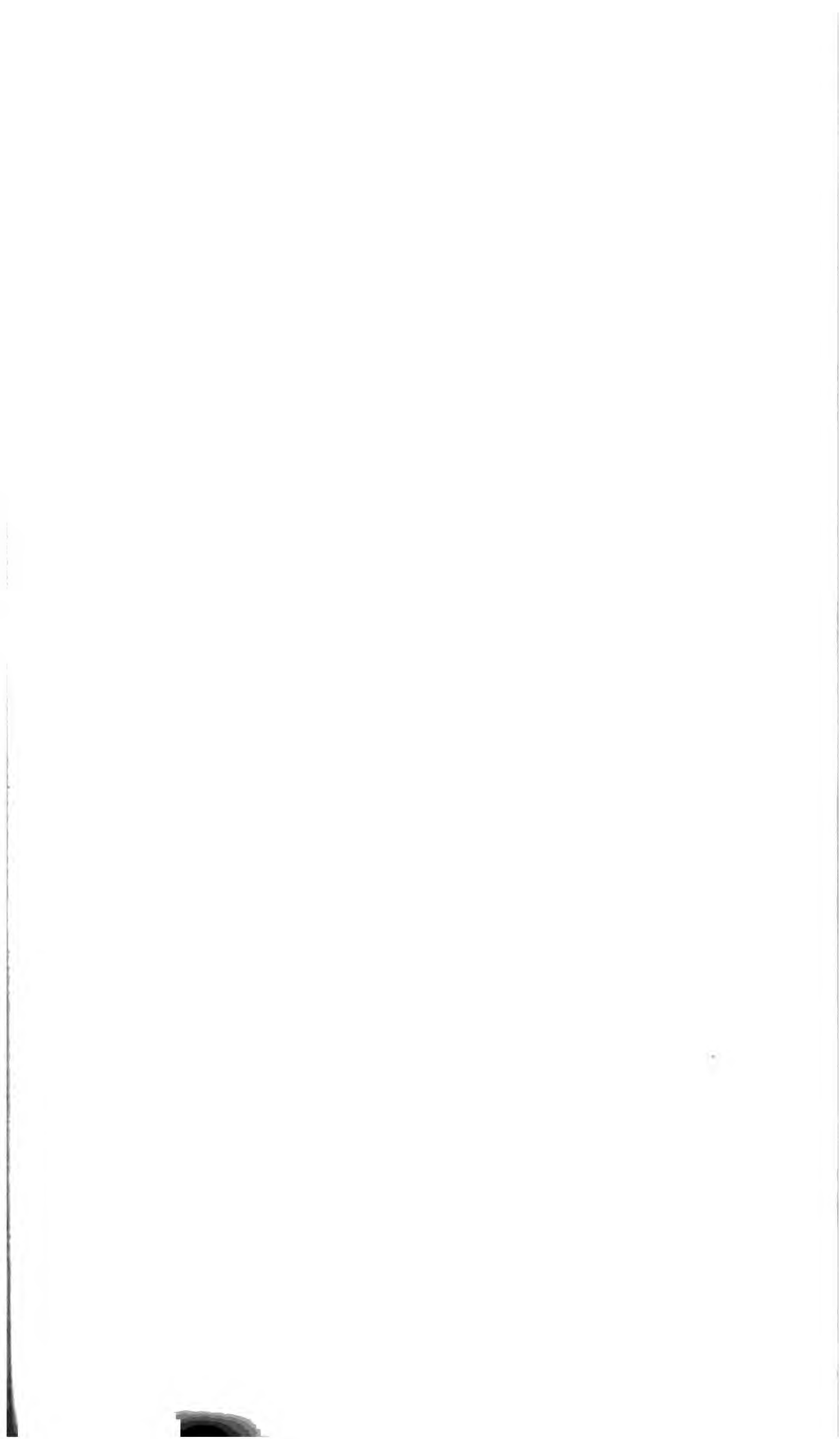
July 1869 published by J. Sowerby London.



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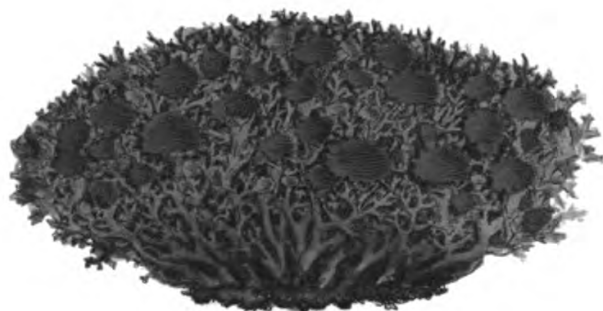


Cornicularia tristis.



452.

2257.



Cornicularia aculeata?

in -00. Published by the Society of London



GENUS DXCVIII. CORNICULARIA. *Cornicularia*.

GEN. CHAR. *Thallus* cartilaginous, branched, nearly solid and cottony within. *Apothecia* orbicular, terminal, obliquely peltate, entirely formed of the substance of the thallus, eventually convex, more or less bordered, and often toothed.

The terminal apothecia, and solid, not tubular, thallus afford the only characters of distinction between this genus and the last, and are rather general than positive features, the thallus of *C. ochroleuca* being more or less hollow, and *C. bicolor* and *C. heteromalla* never having been found in fructification. In habit *Cornicularia* differs scarcely, if at all, from *Alectoria*.

The name, from the Latin *cornicula*, *little horns*, is expressive of the forked extremities of the branches.

CORNICULARIA TRISTIS. *Dark radiated Cornicularia*. TAB. 2256.

Thallus suffruticose, tufted, branched, dark blackish-brown; the branches compressed, roughish, fastigiate, and somewhat distichous. Apothecia large, deep brown, flattish, with a (generally) radiated border.

Lichen tristis, *Weber*. E. B. 720. *Cornicularia tristis*, *Acharius Syn.* 69. *Hooker Crypt. Part 1.* 228. *Hoffmann Pl. Lich. tab. 34. fig. 1.* Lichen radiatus, *Hudson*. L. corniculatus, *Lightfoot*.

Frequent on alpine and subalpine rocks in various parts of the kingdom, especially on those of the micaceous order, on which it forms small, rounded, dense, and very rigid tufts, of a blackish-brown inclining to dark olive when wet, paler in the lower part or where sheltered from light. Branches very intricate, solid, a little compressed, pointed, sometimes bearing little warts. Apothecia terminating the principal branches, flattish, smooth, nearly of the same hue as the thallus, or darker; surrounded mostly by a radiated border.

CORNICULARIA ACULEATA. *Prickly Cornicularia*. TAB. 2257.

Thallus suffruticose, tufted, smooth, dark brown, much branched; the branches divaricated, slightly compressed, the ultimate ones small, spinulose. Apothecia large, rather concave, with a jagged or prickly, radiated margin.

Lichen hispidus, *Lightfoot*. E. B. 452. *Cornicularia aculeata*, *Acharius Syn.* 299. *Hooker Crypt. Part 1.* 228. *C. spadicea*, *Ach. Lich. Univ.* *Lobaria aculeata*, *Hoffmann Pl. Lich. tab. 5. fig. 2.* Lichen spadiceus, *Roth*.

Not uncommon, growing on the ground on dry heaths and moors,

especially in subalpine and mountainous districts, varying greatly in size and ramification in different habitats. Thallus forming shrubby, roundish tufts, very much and intricately branched; the branches rounded, obtusely divaricated, a little compressed at the divarications, terminating in many little, bristly spines. Apothecia terminating the principal branches, horizontal, concave, polished, surrounded with an erect border of little unequal prickles, which are occasionally more or less lengthened out and branched.

The whole plant is smooth and polished, and of a dark brown or chocolate-colour, paler in the lower parts, the prickles and apothecia being generally the darkest. The fructification, though copious on some specimens, is not of very frequent occurrence.

CORNICULARIA BICOLOR. *Black and grey Cornicularia.* TAB. 2258.

Thallus suffruticose, erect, rigid, black, much branched; with numerous spreading, compound, capillary, smooth, very slender, wavy, tapering branches, whose extremities are pale grey or brownish.

Lichen bicolor, *Ehrhart. E. B.* 1853. *Cornicularia bicolor*, *Acharius Syn.* 301. *Hooker Crypt. Part 1.* 228.

Found on dry rocks, among mosses, on the mountains of Wales and Scotland. The thalli form loose, erect tufts, with capillary, more or less spreading, round and smooth, rigid branches, black below but brownish, passing into a dull whitish-grey toward their attenuated and often curved extremities. No fructification has yet been found upon this species, and it is therefore only referred to this genus on account of its general habit and texture.

Sir W. J. Hooker remarks that it resembles coarse horse-hair as it grows scattered among mosses.

CORNICULARIA OCHROLEUCA. *Sulphur-coloured Cornicularia.* TAB. 2259.

Thallus cartilaginous, bushy, repeatedly branched, somewhat tubular, pitted, sulphur-yellow; ultimate branches divaricated, zigzag, entangled, with forked, blackish points. Apothecia sessile, orange-brown, with an inflexed border.

Lichen ochroleucus, *Ehrhart. E. B.* 2374. *Cornicularia ochroleuca*, *Acharius Syn.* 69. *Hooker Crypt. Part 1.* 228. *Usnea ochroleuca*, *Hoffmann Pl. Lich.* 2. 7. tab. 26. fig. 2, and tab. 68. fig. 5-7.

A native of the Highland mountains of Scotland, especially those of the Cairngorm range, where it forms dense, erect tufts. Thallus very rigid and hard when dry, softer when moist, sulphur-coloured, somewhat pitted, and bearing often small mealy warts or tubercles: branches hollow within, without any central thread, their little forked, spinous tips black. The apothecia are of very rare occurrence, and have never been found in Britain: Sir J. E. Smith searched for them in vain on the Alps of Savoy and Switzerland, where the species grows abundantly.

In some respects this comes very near to *Alectoria sarmentosa*, but has not the loose, straggling habit of that lichen, forming dense, erect

1853.

2258.

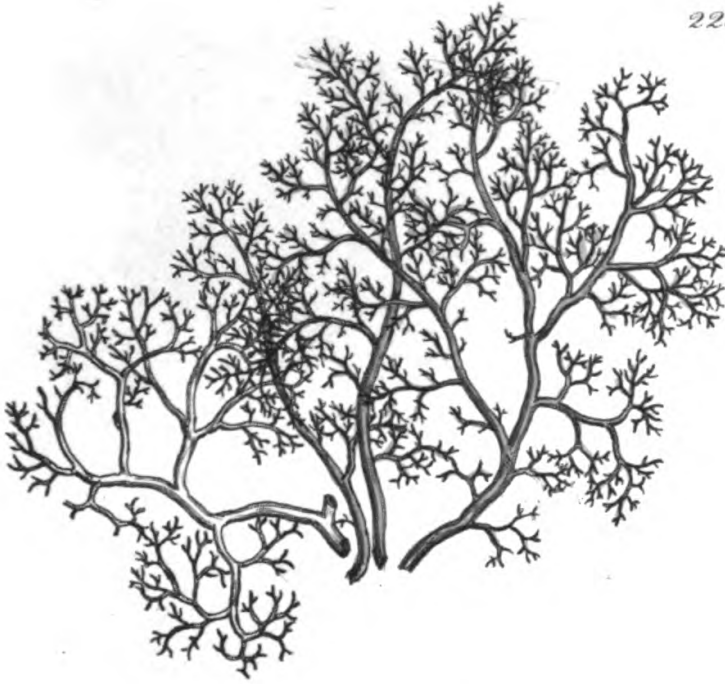


Cornicularia bicolor.

Feb. 1, 1868, Published by Jas. Sowerby, London.

2374

2259.

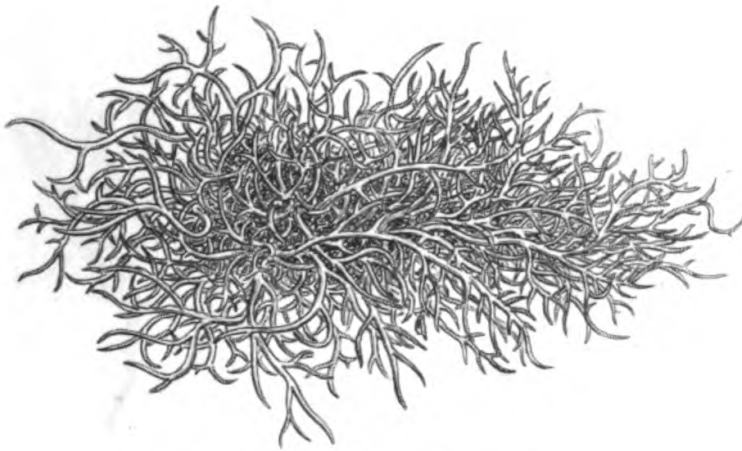
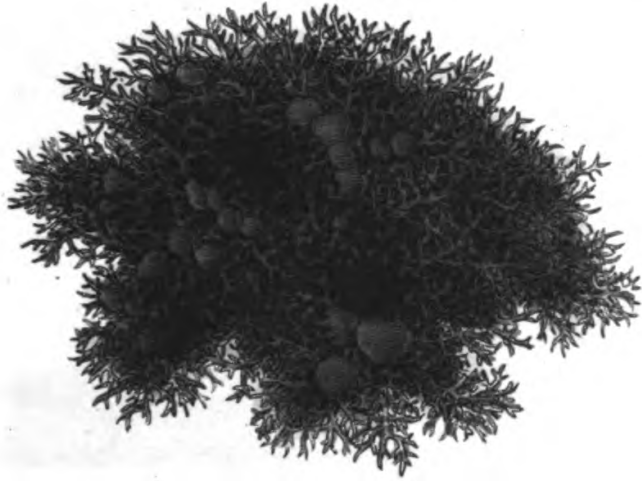


Comicularia ocbroleuca?

Jan. 1852, published by J. Sowerby London.

846.

2260.



Cornicularia lanata?

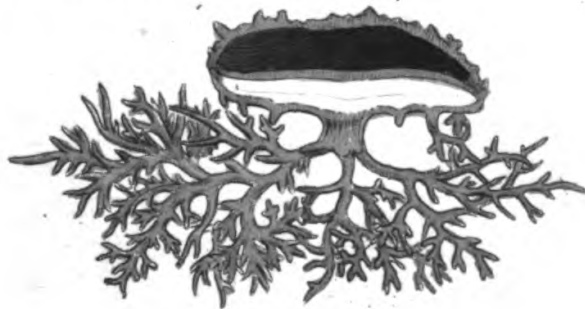
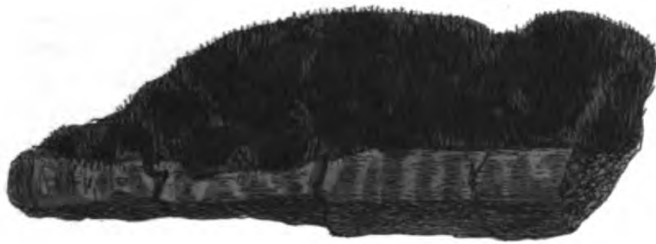


Fig. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

2240

2267.



Cornicularia heteromalla

Fels. 110, published by J. S. Edwards London



tufts : it likewise resembles, and perhaps more closely at first sight, *Cladonia rangiferina*, but is at once distinguishable from it by being always sulphur-coloured, not white. Without attention to these differences, which the general absence of apothecia renders important, the plant is likely to be overlooked.

CORNICULARIA LANATA. *Black woolly Cornicularia.* **TAB. 2260.**

Thallus decumbent, spreading, densely tufted; consisting of innumerable, slender, rounded, flexuose, intricate branches; smooth, brownish-black. Apothecia of the same colour, flat or slightly convex, with a jagged border.

Lichen lanatus, Linn. *E. B.* 846. *Schrader Spicil.* 100. *tab. 1. fig. 6.*

Cornicularia lanata, *Acharius Syn.* 846. *Hooker Crypt. Part 1.* 229.

It grows in dense elastic patches, creeping over the rocks of the high micaceous mountains of Scotland and the north of England. Thallus repeatedly and intricately branched: the branches unequal, roundish, solid, more or less polished, of a dark olive-brown, almost black, when dry; sometimes paler, especially in barren specimens. Apothecia seldom found, unless in very elevated situations, a little elevated, irregular, flattish, polished, rather blacker than the thallus, surrounded by an unequally toothed or spinous border.

CORNICULARIA HETEROMALLA. *Black plush Cornicularia.* **TAB. 2261.**

Thallus minutely shrubby, erect, densely tufted, repeatedly branched; branches entangled, cylindrical, corymbose, black, with palish, notched tips.

Lichen heteromallus, *Smith in E. B.* 2246. *Cornicularia heteromalla*, *Smith. Hooker Crypt. Part 1.* 229.

Gathered by Mr. Sowerby, in the autumn, growing in cracks of the bark of old elms in Hainault Forest, Essex. The thalli form wide, dense, black patches, from a quarter to half an inch thick, harsh and rigid, but not brittle, when dry; soft, elastic and spongy when wet. Each is repeatedly branched, from a slender base, in a corymbose manner upwards, so as to make a level surface at the top. The colour is a deep olive-black, rather shining, paler here and there, especially at the tips, which however are often quite black, and the whole, standing upright, are entangled laterally by their branches, so as to compose something like coarse velvet or plush. No apothecia have been observed; its reference therefore to *Cornicularia* is arbitrary, and even its claim to a place among the Lichens very doubtful, its habit and texture being much more like those of a Fungus.

FAMILY XVI. SPHÆROPHORÆÆ.

Thallus shrubby, rounded, solid, usually much branched, mostly erect. Apothecia globose, filled with a black powder (*cistulæ*) or solid.

GENUS DXCIX. ISIDIUM. *Isidium*.

GEN. CHAR. *Thallus* crustaceous, spreading, adnate, bearing solid, erect branches or *podetia*. *Apothecia* orbicular, convex, at length subglobose, solid, terminal upon the *podetia*, and more or less sunk in the extremity, so as to leave a border of the substance of the *podetium*.

“The situation of this genus is very doubtful; for the majority of the ramifications are so short and so combined as almost to constitute a flattish, warted crust, while the portions that bear the fructifications are considerably elongated.”—*Hooker*.

There are few genera among the lower orders of plants in which some partly anomalous species are not intruded, and this is the case with *Isidium*, which is however upon the whole a tolerably natural one. The apparently crustaceous thallus is not homogeneous in texture, but found on examination to consist of numerous minute, erect, branching fibres, sometimes so closely attached at the lower part as to form a compact mass, and only separate above, where they form the *podetia* or fruit-bearing processes: this structure may be traced without any difficulty in *I. corallinum*, *I. coccodes*, &c., but in others is more obscure, so that their place in the genus is only determinable by the fructification. The generic name is from the Greek *ἴσος*, a kind of coral, and *εἶδος*, form, the magnified branches resembling those of a coralline.

ISIDIUM LUTESCENS. *Yellowish Isidium*. TAB. 2262.

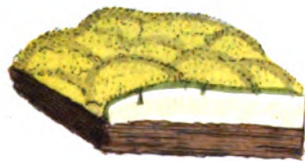
Thallus tartareous, thin, cracked into tumid areolæ, greyish, with a filmy zonate margin. *Podetia*? very abundant, minute, very short; yellowish, almost concealing the thallus.

Lepraria lutescens, *Acharius Meth.* E. B. 1529. *Isidium lutescens*, *Turner and Borrer. Hooker Crypt. Part 1.* 230. *I. phymatodes*, β . *phragmeum*, *Ach. Syn.* 282. *Lepra lutescens*, *Hoffmann Pl. Lich.* 1. 100. *tab. 23. fig. 1, 2.*

Found on the trunks of old trees, especially oaks, but neither frequent nor abundant, and chiefly to be met with in the southern and eastern counties of England. The whole plant is externally of a

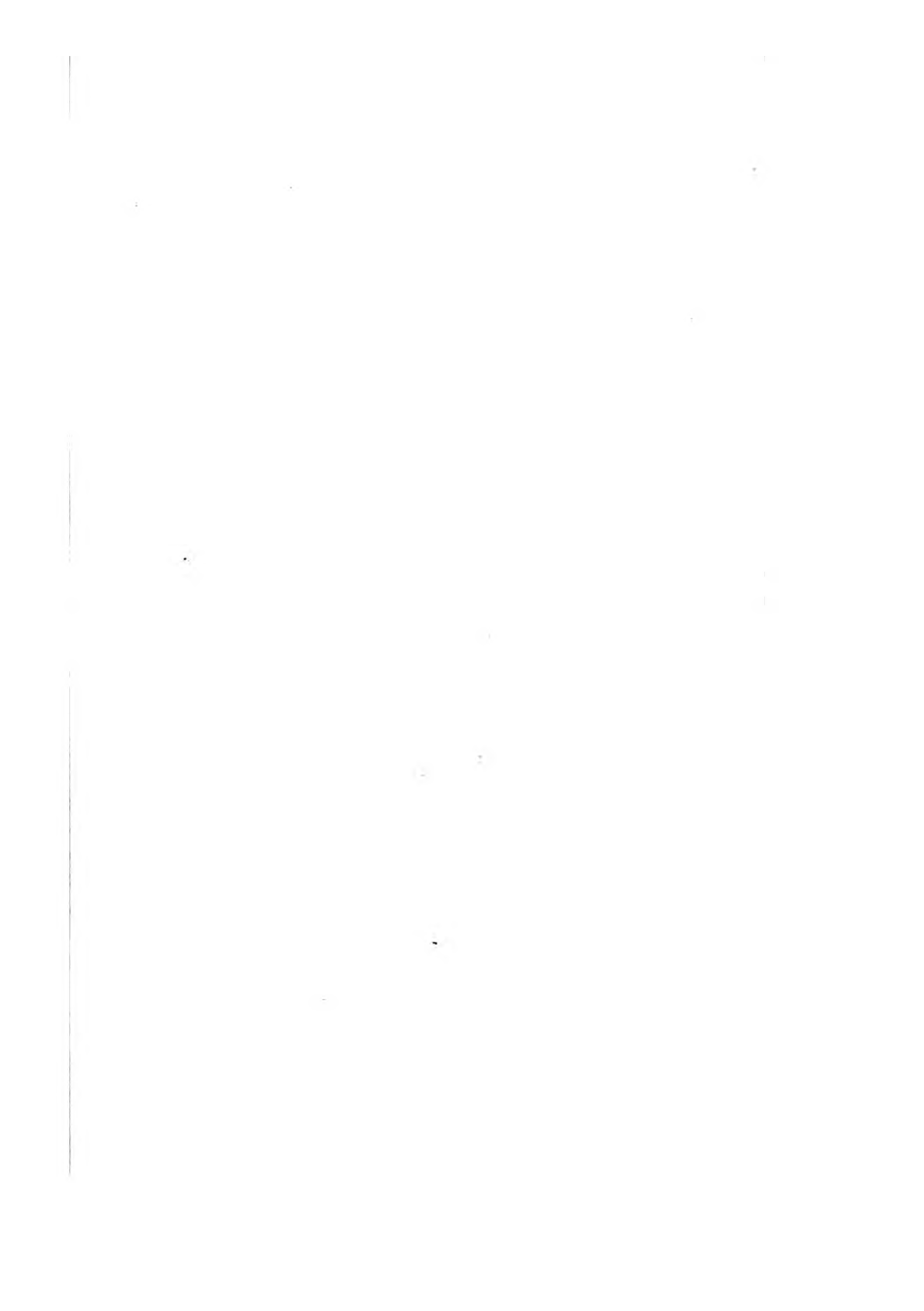
1529

2262.



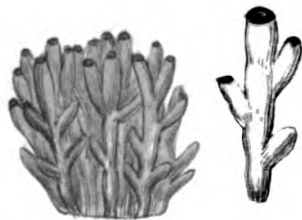
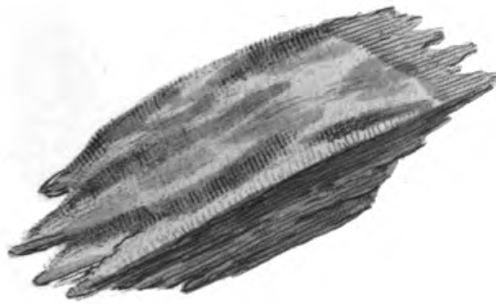
Isidium lutescens.

Nov. 1. 1805. Published by Ja. Sowerby. London.



1511

2263

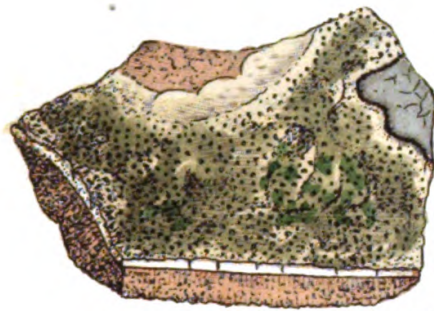


Isidium coccodes. .

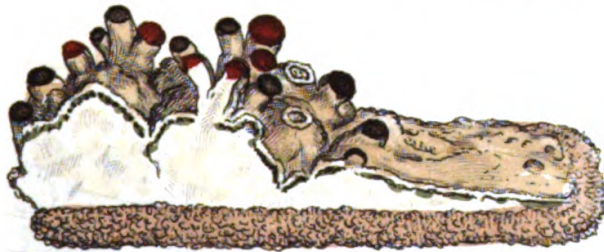
Oct. 1. 1805. Published by Jas. Sowerby, London

2204.

2264.



Isidium Westringii

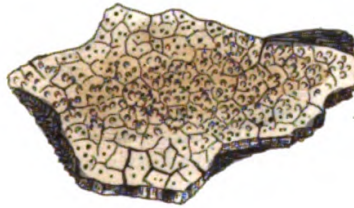
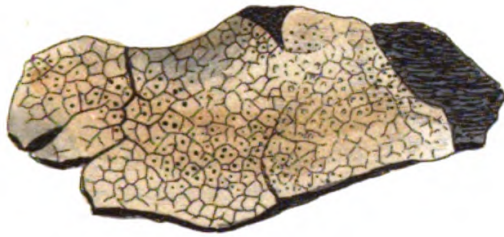


Oct. 1. 1870 published by J. Sowerby, London.



2243

2265.



Isidium microstictum?

Tab. 1, 1811, published by J. Sowerby London.



uniform buff or pale ochraceous yellow colour; white or chalky within; the surface very unequal and rugged, and clothed with minute grains, the podetia, if it be really an *Isidium*, but it has more the appearance of a *Lepraria*, at least in the imperfect state represented, in which only it has hitherto been found in this country.

ISIDIUM COCCODES. *Granulated Isidium.* TAB. 2263.

Thallus tartareous, thin, cracked into somewhat tumid, convex areolæ, greyish, with a filmy, zonate border. Podetia abundant, scattered and clustered in patches, simple or branched, nearly of the same colour as the crust. Apothecia brown, minute, immarginate.

Lichen coccodes, *Acharius Prod. E. B.* 1511. *Isidium coccodes*, *Ach. Syn.* 283. *Hooker Crypt. Part 1.* 230. *Turner and Borrer Lich. Brit.* 89.

Found on the bark of trees, old paling, and occasionally on old walls, as on Burgh Church, Suffolk. Thallus uneven, greyish, tartareous, cracked, bordered with a darker-coloured, thin, almost filmy zone. Podetia some scattered, some clustered; terminated by minute, convex, tubercle-like apothecia of a brown or glaucous hue.

I. phymatodes, *Acharius Syn.* 282, is referred by our best lichenologists to this species, as a variety differing chiefly in the whiter and more confluent podetia.

ISIDIUM WESTRINGII. *Speckled Isidium.* TAB. 2264.

Thallus tartareous, thickish, greyish-brown, cracked into tumid, very rugged areolæ; with a zonate border. Podetia scattered and clustered, simple, or branched in a connate manner, nearly of the same colour as the thallus. Apothecia minute, dark brown or reddish, immarginate.

Lichen Westringii, *Acharius Prod. E. B.* 2204. *Isidium Westringii*, *Ach. Syn.* 282. *Hooker Crypt. Part 1.* 231.

Found on rocks and walls, chiefly of micaceous stone, in the north of England, Wales, and Scotland, likewise about Dublin. Thallus of a dingy or greyish-brown, speckled, thickish and almost solid, cracked on the surface into irregular, rugged, more or less tumid spaces; the margin thin, close-pressed, spreading, sometimes limited by a black line. Podetia cylindrical, short, simple or branched, the latter state seeming rather to arise from two or three growing together. Apothecia dark brown or reddish, convex and subglobose in maturity.

ISIDIUM MICROSTICTICUM. *Small dotted Isidium.* TAB. 2265.

Thallus tartareous, cracked into smoothish areolæ and nearly even, of a brownish cream-colour, thinner towards the margin and nearly white. Podetia scattered, very short, simple, of the same colour as the thallus. Apothecia minute, blackish-brown, with an uneven border.

Lichen microsticticum, *Smith in E. B.* 2243. *Isidium microsticticum*, *Turner and Borrer. Hooker Crypt. Part 1.* 231. *Lichen punctatus*, *Dickson Crypt. fasc.* 3. 15.

Met with on slate and allied rocks in mountainous countries. The thallus spreads over the rocks in thin tartareous patches, remarkable for the extreme tenuity of their almost filmy margins; the surface is nearly even, cracked into small areolæ, of a brownish-white or cream-colour, becoming more brown by drying or in age. Podetia scattered, so small as to appear like minute papillæ. Apothecia minute, blackish, with an uneven, imperfect border of a darker hue.

ISIDIUM CORALLINUM. *White Isidium.* TAB. 2266.

Thallus tartareous, thin, cracked into tumid, rugged areolæ, whitish, with an indistinct zonate border. Podetia very abundant, densely crowded, branched and anastomosing, of the same colour as the thallus. Apothecia brownish, with a glaucous tinge, bordered.

Lichen corallinus, Linn. E. B. 1541. *Isidium corallinum*, Acharius Syn. 281. *Turner and Borrer Lich. Brit.* 100. *Hooker Crypt. Part 1.* 231.

Not unfrequent on rocks and stones in the mountainous parts of the kingdom, growing in more or less circular patches. Thallus nearly white, or with a slight yellow or brownish tinge, generally nearly if not wholly covered, the zonate margin excepted, with the numerous, densely crowded and branched podetia. Apothecia minute, brownish-grey.

The patches are sometimes very large; Sir J. E. Smith mentions one from Blackford, near Edinburgh, measuring nearly 12 inches in diameter, perfectly circular, and in the centre about half an inch thick, growing gradually thinner towards the edge, which was bordered by an uninterrupted, rugose, somewhat leafy margin, of a reddish-grey colour.

ISIDIUM OCULATUM. *Eye-like Isidium.* TAB. 2267.

Thallus indeterminate, filmy, very thin, continuous, white. Podetia simple or branched in a proliferous manner, marked with rings as if jointed, of the same colour as the crust. Apothecia disc-like, flattish, somewhat flocculose, glaucescent, bordered.

Lichen oculatus, Dickson *Crypt. fasc. 2.* 17. *tab. 6. fig. 3.* E. B. 1833. *Isidium oculatum*, Acharius *Meth.* *Hooker Crypt. Part 1.* 232. *Turner and Borrer Lich. Brit.* 103. *Lecanora oculata*, Ach. *Syn.* 148.

A native of the mountainous parts of Scotland, growing on rocks and on the bare soil, or overrunning mosses. Thallus very white, smooth and shining, spongy within. Podetia numerous, crowded, upright, cylindrical, constricted here and there as if jointed, generally but not invariably simple, brittle like a coralline when dry. Apothecium smaller than the summit of the podetium, which forms a border round it, immersed, flattish, somewhat flocculose in maturity.

A variety, found by Mr. Mackay, forming large patches on rocks in Connemara, and by Miss Hutchins, near Bantry, Ireland, presents the "podetia densely crowded together, their surface very rugged, their apices soredium-like, fastigiata, forming an areolate surface."

The terminal joint of the podetia being more or less turgid, and

1541
2266



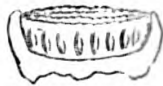
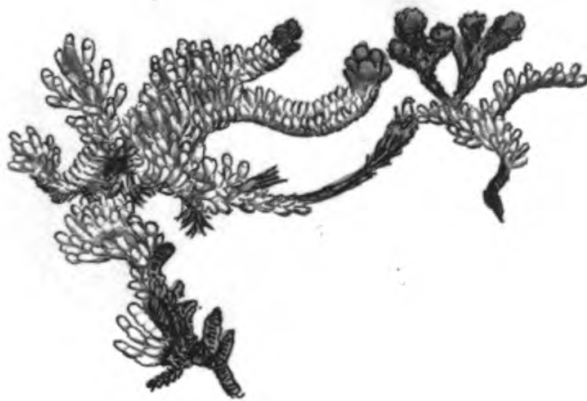
Isidium corallinum?

Isidium corallinum? Isidium corallinum?



1833

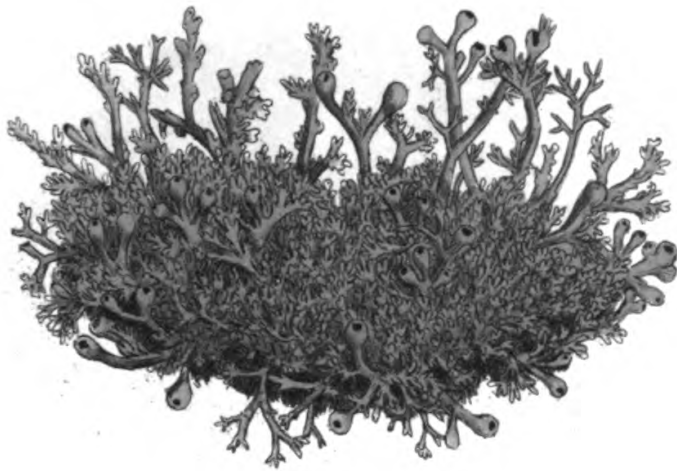
2267.



Isidium oculatum?

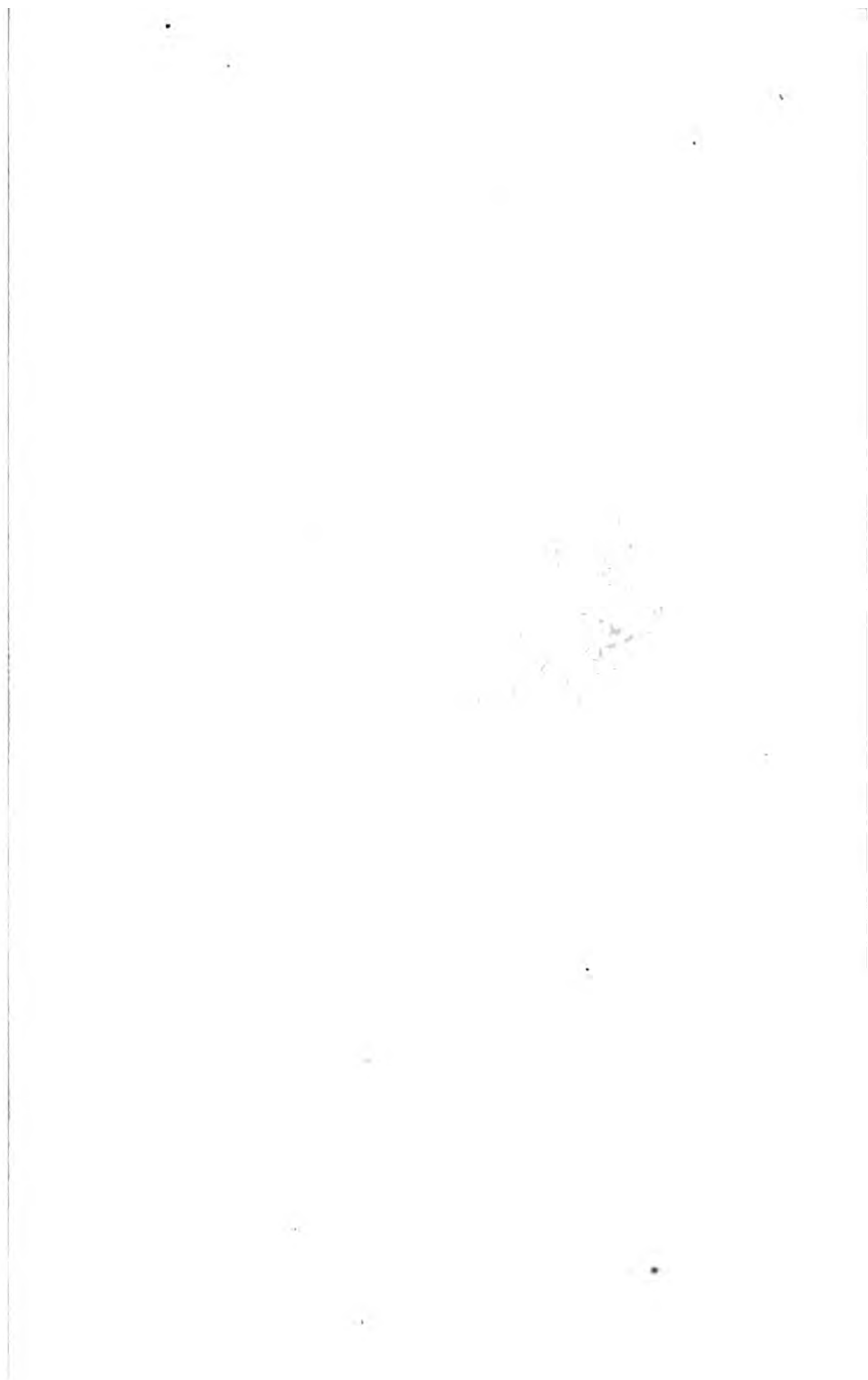
Jan. 1. 1833. Published by J. Sowerby, London.





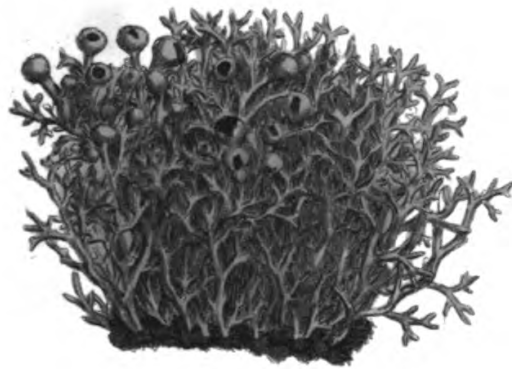
Sphaerophoron coralloides.

Sphaerophoron coralloides
1873



2574

2269



Sphaerophoron fragile?

Illustration by J. C. Sargent



bearing the fructification partly sunk in its extremity, presents a fanciful resemblance to the eye of an animal removed from its socket; hence the specific name.

GENUS DC. SPHÆROPHORON. *Sphærophoron*.

GEN. CHAR. *Thallus* crustaceo-cartilaginous, branched, suffruticose, solid within. *Apothecia* (*cistulæ*) subglobose, sessile, terminal on the branches of the thallus, and formed of it, breaking with a torn border, and containing a pulverulent black mass collected into a ball.

Well characterized by the apothecia. The species are among the most elegant of all the shrubby lichens, but our native ones approach so closely to each other in general structure and habit that it is doubtful whether they are not all varieties of the same.

The name alludes to the form of the apothecia, from the Greek *σφαῖρα*, a globe, and *φορὸς*, bearing.

SPHÆROPHORON CORALLOIDES. *Coral-like Sphærophoron*.

TAB. 2268.

Thallus suffruticose, unequally and irregularly branched, subcylindrical, brownish, polished. *Apothecia* spherical in every stage, the border of the old ones inflexed and rugged.

Lichen globiferus, Linn. E. B. 115. *Sphærophoron coralloides*, *Acharius Syn.* 287. *Hooker Crypt. Part 1.* 232.

A native of rocky mountainous places, growing on stone and occasionally on the trunks of trees. Abundant in Wales and Scotland, and not unfrequent in subalpine districts in England, as on Cromford Moor, near Matlock, Derbyshire, and on the sand-rocks of Sussex. The thalli form loose and rather spreading tufts. Branches very irregular, bearing numerous small, compound, lateral ones, brownish tipped with white, shining. *Apothecia* globular, opening by a small, somewhat irregular orifice.

SPHÆROPHORON FRAGILE. *Fragile Sphærophoron*. TAB.

2269.

Thallus suffruticose, densely tufted, brownish, brittle; branches subcylindrical, repeatedly dichotomous, with erecto-patent divisions. *Apothecia* spherical in every stage.

Sphærophoron fragile, *Acharius Syn.* 287. E. B. 2474. *S. coralloides*, β . *cæspitosum*, *Turner and Borrer Lich. Brit.* 1. 111. *Hooker Crypt. Part 1.* 232. *Coralloides fragile*, *Hoffmann Pl. Lich.* 2. 34. tab. 33. fig. 3. *Lichen fragilis*, Linn., not of E. B. 114.

Found in similar habitats to the preceding, from which it is distinguished chiefly by its more closely tufted and erect habit, and fasti-

giate, dichotomous branches, rising nearly to the same level, and, however frequently divided, destitute of the short lateral ones shown in our figure of *S. coralloides*. Whether really a distinct species, or a mere variety, the difference in habit is so far remarkable as to render the republication of both plates desirable.

SPHÆROPHORON COMPRESSUM. *Compressed Sphærophoron.*
TAB. 2270.

Thallus suffruticose, irregularly branched, compressed, white. Apothecia depressed in maturity, with a reflexed border.

Lichen fragilis, Hudson. E. B. 114, not of Linn. (unless confounded with the preceding). *Sphærophoron compressum*, Acharius Syn. 287.

A native of mountainous and subalpine districts, growing on rocks and stones, frequently in the same habitats with *S. coralloides*, as on Cromford Moor, near Matlock, and on the sand-rocks of Sussex; not often found in fructification unless in moist shady situations. The thalli form thick tufts of short, erect, bluntish branches, overspreading the rock like a crust. The fertile branches rise to the height of one or two inches, are more or less compressed, and much divided; each of the upper divisions terminating with an apothecium, opening widely, and losing its original subglobose form, and becoming depressed in maturity: the segments of the irregularly lacerated border often grow out into branches, or form a kind of tubercles with black tips. Many of the smaller lateral branches have often a jointed appearance, with small black tips representing abortive apothecia.

A pink hue is occasionally observed on this species, which, as remarked by Sir J. E. Smith, seems to be accidental and owing to some alkaline substance, probably the urine of animals. It is an indication of the capability of this, in common with many other suffruticose lichens, to yield a colouring principle in combination with ammonia.

GENUS DCI. STEREOCAULON. *Stereocaulon.*

GEN. CHAR. *Thallus* cartilaginous or somewhat woody, branched and fruticulose, solid within. *Apothecia* turbinate, sessile, solid, plane, scarcely rising above the border; the disc at length covering the border and reflexed.

The apothecia differ so much in structure from those of the two preceding genera, that it is impossible to confound *Stereocaulon* with either; indeed they approach the *cephalodia* of the next family, but the solidity of the thallus, a leading character of the *Sphærophoreæ*, shows this to be its proper place: hence too the generic name, from στερεόν, *solid*, and καυλός, *a stem*.

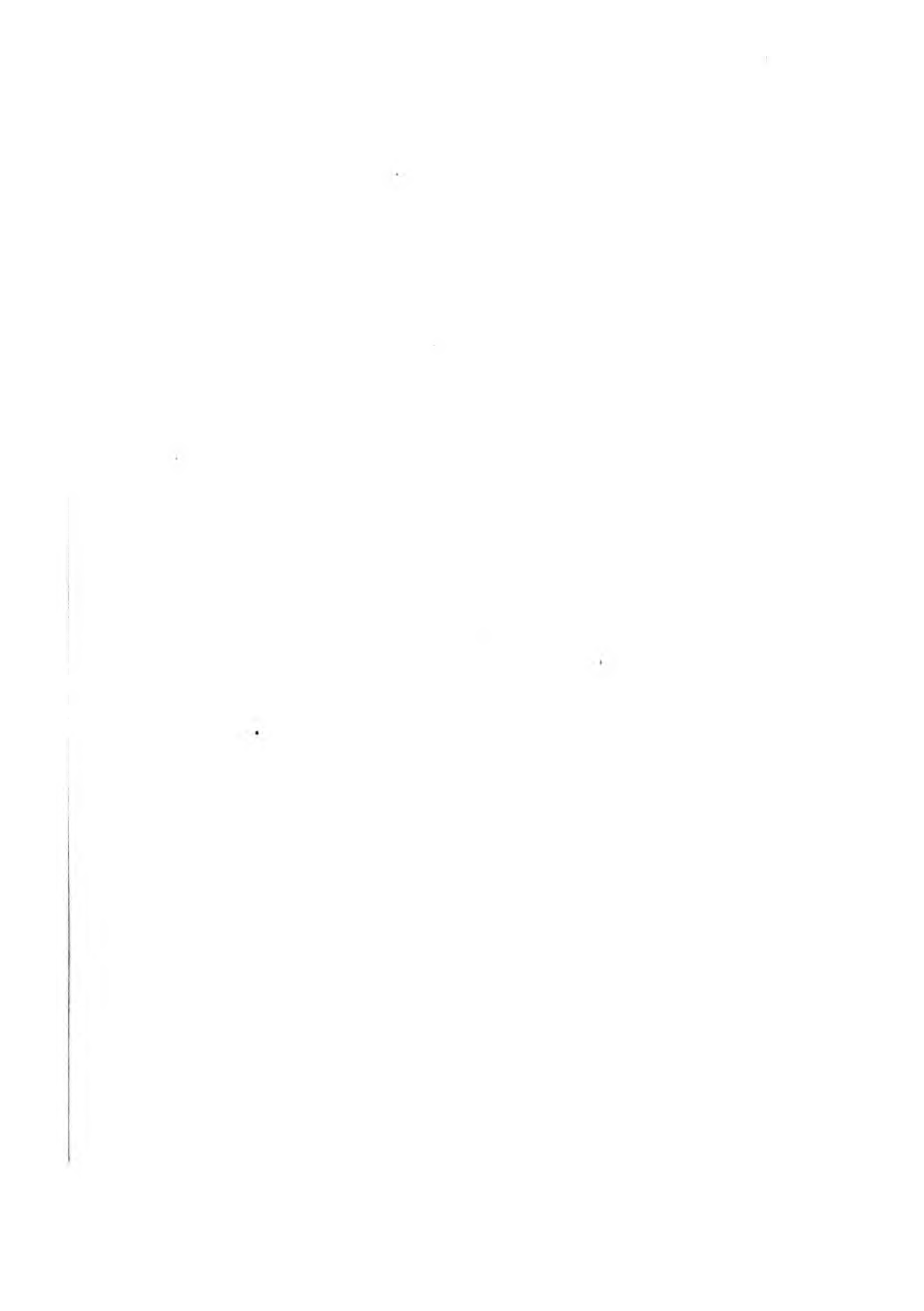
STEREOCAULON PASCHALE. *Much-branched Stereocaulon.*
TAB. 2271.

Thallus greenish-grey, very much branched, rough with granulated



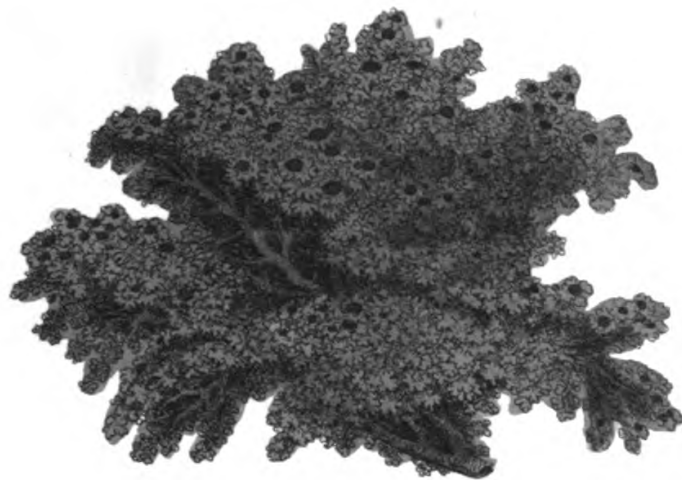
Sphaerophoron compressum?

1870



282

2271.

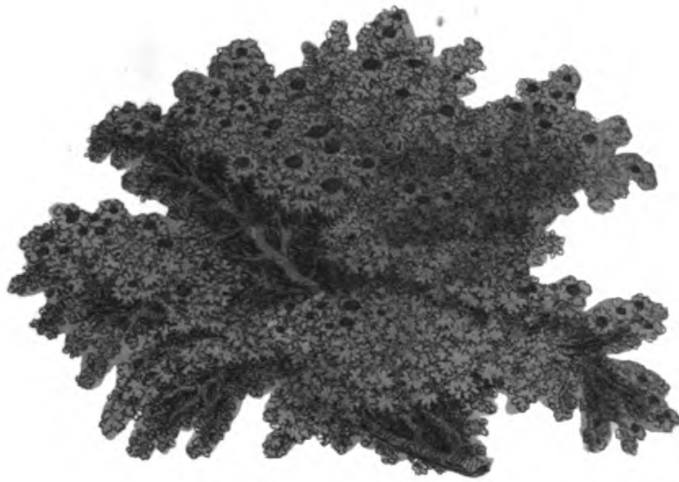


Stereocaulon paschale?

1812. Bot. Beechey's Exped. to Oregon.

282

2271.



Stereocaulon paschale?

1735. Bot. Beechey's Exped. to the Pacific Ocean.



excrescences ; branches crowded. Apothecia scattered and terminal, eventually convex, conglomerate, dark brown or blackish.

Lichen paschalis, Linn. *E. B.* 282. *Stereocaulon paschale*, *Acharius Syn.* 284. *Hooker Crypt. Part 1.* 233.

Abundant on rocks and stones on the higher mountains of the north of England, Wales, and Scotland. Principal divisions of the thallus very strong and almost woody in their texture, growing either erect or decumbent, and forming thick tufts ; very much branched, naked at the base, roundish and solid, clothed in their upper part with small, lobed, crisped, leafy granulations, of a greenish-grey when wet, whitish and very fragile when dry. Apothecia mostly terminal, either solitary or clustered, in maturity globose or turbinate, solid, entire, or apparently lobed from being confluent, somewhat stalked, brown, olive-coloured, or blackish.

It seems to prefer rocks of the micaceous series in this country, and Sir J. E. Smith observed it coating the lavas of Vesuvius, which looked at a distance, in many parts, as though covered with snow, owing to the abundance in which it vegetated there.

So variable is this beautiful lichen in its different habitats, that it is difficult to decide whether the following, *S. Cereolus* excepted, are really distinct.

STEREOCAULON NANUM. *Dwarf Stereocaulon.*

"Thallus whitish-grey, very slender, filiform, branched, branches subfastigate, floccoso-pulverulent. Apothecia lateral, crowded, convex, black-brown."

Stereocaulon nanum, *Acharius Syn.* 285. *Hooker Crypt. Part 1.* 233.

Bæomyces paschalis, β . *nanum*, *Wahlenberg Lapp.* 450.

Found in the north of England by the Rev. J. Harriman and Mr. Robertson.

STEREOCAULON BOTRYOSUM. *Clustered Stereocaulon.*

"Thallus whitish-grey, somewhat naked below, above very densely branched ; the ultimate branchlets passing gradually into clustered granules. Apothecia collected on the fertile branches, minute, dark brown."

Stereocaulon botryosum, *Acharius Syn.* 284. *Hooker Crypt. Part 1.* 233.

Mentioned as being found in Scotland, by Mr. Borrer in *E. B. Supp.* 2667, where he regards it as a dwarfish variety of *S. paschale*.

STEREOCAULON CONDYLOIDEUM. *Deformed Stereocaulon.*

"Thallus whitish, nearly naked, the branches short, crooked, somewhat lobed, knotted and granulose. Apothecia on the lateral branches, eventually dilated, flat, sessile and appressed, red-brown."

Stereocaulon condyloideum, *Acharius Syn.* 285. *Hooker Crypt. Part 1.* 233.

Found in the north of England by Mr. Thornhill.

STEREOCAULON CEREOLUS. *Simple-stalked Stereocaulon.*
TAB. 2272.

Fertile stalks simple, erect, podetia-like, rising from an uneven granulated crust. Apothecia terminal, black.

Stereocaulon Cereolus, *Acharius Meth.* 316. *tab. 7. fig. 1.* *Borrer in E. B. Supp.* 2667. *Hooker Crypt. Part 1.* 233. *S. cereolinum*, *Ach. Syn.* 285.

The smaller specimen figured, which shows the most regular state of the species, was found by the Rev. T. Salwey of Oswestry, and T. A. Knight, Jun., Esq., on Cader Idris; the larger one by the Rev. J. Harriman, at Egleston, Yorkshire. Mr. Cotton has collected the species on Ben Lomond. An uneven, loosely connected crust, composed of minute, grey or slightly cæsius, unpolished, tartareous, convex, irregularly lobed and rugged granules, spreads widely over the stone, intermixed with much larger, roundish, black or sooty-brown warts (clusters perhaps of abortive fructification), of a somewhat wax-like substance within, and with a convex, minutely granulated surface. The perfect stalks are numerous, erect, rarely a quarter of an inch high, nearly cylindrical, sometimes thicker upwards, simple, or a little divided at the summit, usually much encrusted with granules like those which form the base of the plant; their substance cartilaginous or horny; their hue, both internally, and superficially when any part of their surface is exposed, dark brown, occasionally blotched with red. Their apex is, in an early stage of the fructification, impressed with a minute dot, environed by a rounded margin, which being of the same hue as the disc, although formed from the substance of the stalk, gives it the appearance of a small patellula: by degrees the disc spreads, obliterating the margin and surpassing in width the diameter of the stalk, and is in some states flat and irregularly circular, in others reflexed at the edges, very convex, and almost spherical. A section shows, under the black surface, a thin dark grey layer, encompassing the browner head of the stalk.

FAMILY XVII. CLADONIEÆ.

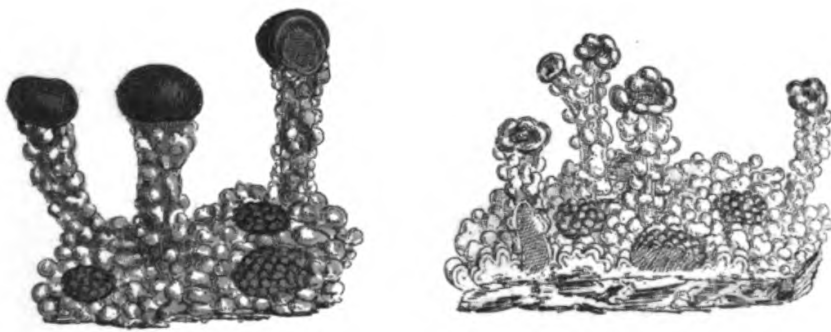
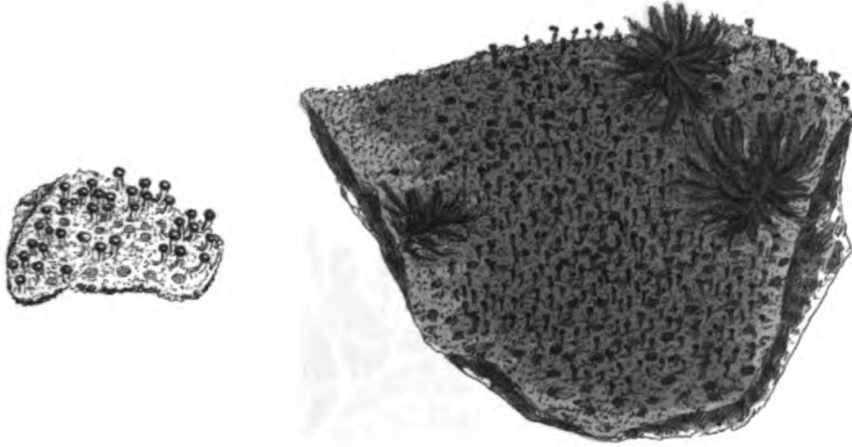
Thallus, or at least the podetia, fistulose. Apothecia hemispherical, fleshy (*cephalodia*).

GENUS DCII. CLADONIA. *Cladonia.*

GEN. CHAR. *Thallus* or *podetia* suffruticose, branched, or rarely simple, with leafy scales which are often evanescent; branches cartilaginous, rigid, fistulose, all attenuated and subulate, divided, fertile, generally perforated in the axils.

2667.

2272



Stereocaulon Cereolus.

November 1st 1830.



2029.

2273.



Cladonia *vermicularis.*



June 11. 1793 published by J. G. Smith, London.



174.
2274.



Cladonia uncialis.

J. Murray Del.

1794



Apothecia (cephalodia) sessile, orbicular, convex, capituli-form, not bordered, fixed by the circumference, free beneath in the centre, the sides reflexed, uniform within.

The structure of the fructification is the same in this and the following genus, and they are united by Acharius under the title of *Cenomyce*. The present chiefly differs in the absence of a distinct leafy or scaly spreading thallus, and in the branches of the podetia being attenuated and pointed, instead of dilating and forming cups at their extremities: these characters however are arbitrary, there being, in some species at least, a true horizontal thallus, more or less fugacious; while in *Scyphophorus* the ramifications of the podetia do not always form cups.

The name *Cladonia*, from the Greek κλάδος, *a branch*, is expressive of the general branched and shrub-like appearance of the species.

CLADONIA VERMICULARIS. *Vermicelli Cladonia*. TAB. 2273.

Podetia spreading horizontally, leafless, snow-white, subulate, simple, or but slightly branched, tapering to each end.

Lichen vermicularis, Swartz. E. B. 2029. Dickson, *Crypt. fasc.* 2. 23. tab. 6. fig. 10. *Cladonia vermicularis*, DeCandolle. *Hooker Crypt. Part 1.* 234. *Cenomyce vermicularis*, Acharius *Syn.* 278. *Cladonia subuliformis*, Hoffmann *Pl. Lich.* 2. 15. tab. 29. fig. 1-3.

Not unfrequent on dry alpine heaths among mosses in the north of England and Scotland. Several podetia often spring from the same base, spreading horizontally in various directions; they are of a pure white, unpolished, little branched, round, tapering to each extremity, so as to be often very sharp-pointed; their surface is a little pitted. The fructification is unknown. Mr. Dickson represents globose lateral tubercles, and Sir J. E. Smith found a similar appearance "on one of Mr. Menzies's American specimens, rather resembling the young thick-edged shields of a *Parmelia*."

The stems or branches, more or less curved or undulated, resemble, owing to their shape, small worms.

CLADONIA UNCIALIS. *Short perforated Cladonia*. TAB. 2274.

Podetia elongated, smooth, cylindrical, pale yellowish-white, dichotomous, the axils largely perforated; the branchlets short, patent, at the extremity acute and rigid. Apothecia minute, terminating the short terminal branchlets.

Lichen uncialis, Linn. E. B. 174. *Cladonia uncialis*, *Hooker Crypt. Part 1.* 234. *Cenomyce uncialis*, Acharius *Syn.* 276.

Very common on heaths and moors, varying from one to two inches in height, not tufted; terminal branches short, brownish, forming a sort of radiated crown of from 3 to 6 or 8 points. The perforations at the divarications of the principal branches very wide, seldom wanting.

The largeness of the perforations distinguishes this at first sight from some varieties of *C. rangiferina*, in which they are usually either wanting or comparatively small; but they are not present in all specimens, and from this and other causes several varieties have been described by authors, and sometimes as distinct species.

CLADONIA RANGIFERINA. *Reindeer Cladonia.* *Reindeer Moss.*
TAB. 2275.

Podetia erect, elongated, roughish, cylindrical, greenish-white, very much branched, the axils more or less perforated, perforations small; the branches scattered, intricate, divaricated, the ultimate ones drooping. Apothecia subglobose, brown, on short distinct branchlets.

Lichen rangiferinus, Linn. *E. B.* 173. *Cladonia rangiferina*, Hoffmann. *Hooker Crypt. Part 1.* 235. *Cenomyce rangiferina*, Acharius *Syn.* 277.

Frequent on heaths and moors in all parts of the kingdom, but more especially in the North, and in subalpine districts, but very variable in height, in the proportionate length of its branches and in its hue, and the fructification by no means common. Readily distinguished from the preceding by its more tufted and intricate habit, the smallness of its perforations, or the absence of them, and drooping ultimate branches. Surface hoary, or rough with minute warts. Very brittle, especially when dry.

Met with in almost all climates from the equator to the pole, but most abundant in the arctic countries, and especially in Lapland and Siberia, where it grows to the height of a foot or more. Linnæus, in his '*Flora Laponica*,' informs us that no vegetable production in that dreary region is so abundant as this lichen. The ground, for hundreds of miles in extent over the open plains and uplands and forests of scattered pines, is covered with it, presenting to the eye of the traveller the appearance of a vast tract of snow. These are the natural pastures of the Reindeer, the principal source of wealth to the Laplander, and of no less value in that part of the world than the richest meadows and pastures are in milder and more productive climates. It affords likewise excellent fodder for cows and other cattle in the winter season, for which purpose it is collected by rakes in rainy weather, when it is flexible and separates readily from the ground, and laid up in heaps. Notwithstanding its nutritive quality, it does not, however, appear to be eaten by man, even in those countries where the general dearth of the soil or inclemency of the climate renders human subsistence the most precarious; a neglect possibly arising from prejudice against it as the common food of domestic animals, possibly from experience of its inefficiency. Dr. Clarke, who tasted it in a raw state, remarks that it had the flavour of "wheat-bran; but after swallowing it there remained in the throat and upon the palate a gentle heat, or sense of burning, as if a small quantity of pepper had been mixed with the lichen:" he adds, that "it warmed the stomach when swallowed, and cannot fail of proving a gratifying article of food to man or beast during the dry winters of the frigid

173
2275



Cladonia rangiferina?

S. Swartz 1811 AM 1 1702



2444.

2270.



Cladonia pungens.

— det. by J. S. Burdick.

2444.

2276.



Cladonia pungens.

—col. by J. D. Hooker.

zone." On the destruction of a forest by fire, the Reindeer moss is the first vegetable covering that overspreads the soil.

On our moors and mountains it varies from 2 to 5 or 6 inches in height.

CLADONIA PUNGENS. *Pointed Cladonia*. TAB. 2276.

Podetia grey, forked, much-branched, without axillary perforations; branches twisted and entangled, taper-pointed. Apothecia minute, terminal, solitary, brownish-black.

Lichen pungens, *Acharius Prod. E. B.* 2276. *Cladonia pungens*, *Delise. Hooker Crypt. Part 1.* 235. *Cenomyce rangiferina*, β . *Ach. Syn.* 277. *Lichen uncialis*, β . *Lightfoot?*

Gathered by Mr. Borrer on Esher Common, Surrey. It comes very near *C. uncialis*, but is said to want the axillary perforations. We find however, not very unfrequently, lateral fissures below the origin of the clustered branches, but these are indeed different from the round central openings of the *C. uncialis*. The branches too are more twisted and zigzag; *Acharius* says they are also more brittle. The colour is a greenish-grey. The numerous sharp, tapering, ultimate branches are tipped with brownish-black; of which hue also are the small, solitary, round apothecia found at the extremities of some of them.

Surely this is a variety of *C. uncialis*, and not an uncommon one, in Surrey and Kent at least. I have not seen the original specimen of our plate, and those which appear to me to be synonymous are less branched and twisted than here represented; but that is the only difference: they were collected from the same spot with the ordinary form of *C. uncialis*, and there are gradations between them.

CLADONIA FURCATA. *Forked Cladonia*.

Podetia elongated, smooth or leafy, especially at the base, brownish-grey, dichotomous, without perforations; branches very slender, curved, their apices forked, divergent. Apothecia brown or reddish.

Cladonia furcata, *Hoffmann. Hooker Crypt. Part 1.* 236. *Cenomyce furcata*, *Acharius Syn.* 276. *Lichen furcatus*, *Hudson. Dillenius Musc. tab. 16. fig. 27.*

Var. β . *subulata*. Podetia elongated, glabrous, pale, dichotomous, the axils perforated and open, the apices of the branches patent, short, rigid. *Lichen subulatus*, *Linn. Cenomyce furcata*, β . *Acharius Syn.* 276. *Dillenius Musc. tab. 16. fig. 26.*

Var. γ . *spinosa*. Podetia elongated, smooth, eventually scaly, whitish-green, at length inflated, curved, branched; branches lax, subsecund, their apices divergent, spinulose. Apothecia pale reddish-brown. *Lichen spinosus*, *Hudson. Lightfoot. Cenomyce racemosa*, *Acharius Syn.* 275. *Hooker Fl. Scot. 2.* 64. *Dillenius Musc. tab. 16. fig. 25.*

We have no figures of this variable lichen, which in some of its modifications comes near to *C. uncialis*. The occasional leafy or scaly processes at the base of the podetia show, in their approach to the production of a horizontal thallus, the near resemblance between this

and the following genus. The several varieties, which, though by some regarded as distinct species, undoubtedly pass into each other, are frequent in woods and on heaths and mountain moors.

GENUS DCIII. SCYPHOPHORUS. *Scyphophorus*.

GEN. CHAR. *Thallus* foliaceous, imbricated. *Podetia* fistulose, cylindrical, dilated upwards, bearing cups, or attenuated and subulate; cups closed with a membrane or cleft at the extremity; often rayed in a somewhat digitate manner, the rays fertile. *Apothecia* (*cephalodia*) convex, capituliform, not bordered, free in the centre beneath, arranged around the edges of the cup, the margin reflexed, uniform within.

It is very difficult in this genus to determine between species and varieties, and of the nineteen here figured, it is probable that the larger proportion ought to rank among the latter; at the same time, the differences are too remarkable to admit of the republication of the whole being otherwise than useful, especially as the best lichenologists are divided on their reciprocal affinities.

The name, from *σκούφος*, a cup, and *φορὸς*, bearing, alludes to the cup-like terminations of the podetia in most of the species, whence likewise the English name of Cup-Moss.

* *Apothecia* brown. *Podetia* fleshy †.

SCYPHOPHORUS CARIOSUS. *Cariosus-stalked Scyphophorus*.
TAB. 2277.

Scales or leaves of the thallus small, lobed, crenate, greyish-green. Podetia roundish, cancellated, warty, divided at the summit into a few, thick, upright branches. Apothecia brown, clustered, confluent. *Cladonia cariosa*, Floerke. Borrer in *E. B. Supp.* 2761. *Cenomyce cariosa*, Acharius *Syn.* 273. *Bæomyces cariosus*, Ach. *Meth.*

A native of barren heaths, growing on the ground, apparently rare. Mr. Robertson sent the specimens figured from Teesdale, and Mr. D. Turner found it on Lound Heath, near Yarmouth. Scales of the

† In *S. cariosus* the podetia perhaps differ in character; but its near approach to *S. microphyllus* seems to justify its place in the same artificial section, in which, but from an oversight in numbering the plates, it should have followed that species.

The *Scyphophori* with fleshy podetia seem at first sight to approach the pseudo-fungous genus *Bæomyces*, but in that both the apothecium and its stalk are solid, and altogether of a different character from those of the present genus.

2761.

2277.



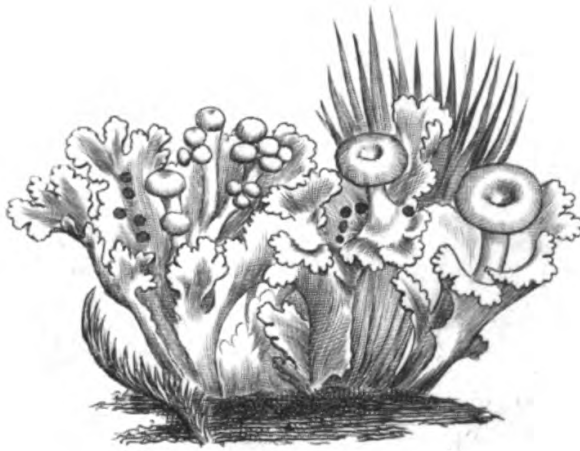
Cladonia cariosa?

Dec. 1^{re} 1832.



1796

2278.

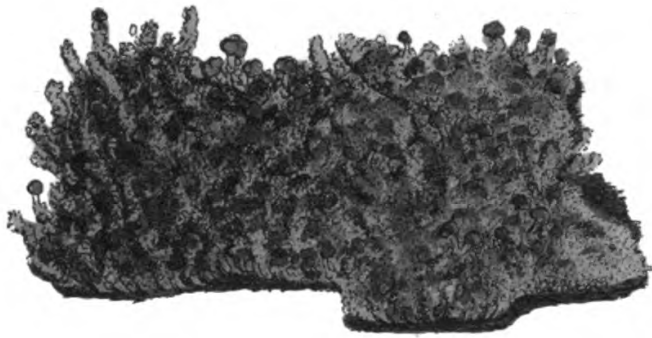


Scyphophorus caespitius

Oct 1, 1807. Published by Jas. Sowerby London.

2052.

2279.



Scyphophorus parasiticus.

(1847, 1860) published by J. Sowerby, London.

thallus pale, dull, greyish-green above, very white beneath, small, mostly crowded, variously divided, with ascending, crenate, rounded or oblong lobes. Podetia an inch or more in height, imperfectly cylindrical, contracted at the base, more or less dilated upwards, and divided from about the middle into a few simple, or again slightly divided branches, which are in general nearly equal in height, and sometimes so arranged as to form a sort of spurious, pervious cup; the surface very rugged, the greenish-grey epidermis being broken into small granules, which sometimes become leafy, and the white internal substance splits longitudinally, in an irregular manner, in clefts of various sizes, open to the central hollow. Apothecia brown, varying in intensity of hue, convex, confluent into a rugged capitulum of larger diameter than the branch that supports it, the summit of which it embraces with its reflexed edges; internally hollow, with some granules and intersecting fibres.

"*S. microphyllus*, tab. 2280, is so nearly allied to *S. cariosus*, that future observation may perhaps prove it not specifically distinct. It differs however by its smaller size, more entire thalloidal scales, and smooth and almost always undivided stalks."—*Borrer*.

SCYPHOPHORUS CÆSPITITIUS. *Green leafy Cup-Lichen.* TAB. 2278.

Thallus clustered, ascending, leafy, pinnatifid, cut and crisped, bright green above, white beneath. Podetia from the disc of the leaf, short, dilated upwards. Apothecia convex, subumbilicated, reddish-brown.

Lichen cæspititius, *E. B.* 1796. *Scyphophorus cæspititius*, *Hooker Crypt. Part 1.* 236. *Cenomyce cæspititia*, *Acharius Syn.* 249. *Bæomyces cæspititius*, *Persoon in Ust. Annal. fasc. 7.* 155.

Found by C. Lyell, Esq., on the mossy trunk of an aged oak in the New Forest, Hampshire. The thalli form broad patches among moss upon the ground, or on the decayed trunks of trees, and are upright or ascending, clustered, but not very closely crowded, a quarter to half an inch high, each spreading from a tapering tubular base into a sort of cornucopia form, dilated upwards, pinnatifid, jagged, crisped, and spreading at the extremities; the upper surface concave, of a bright pea-green; the under convex, and, as well as the crisped edges, white. Apothecia, one or more from the central upper part of each leaf, convex, often umbilicated, of a light red-brown, on shortish tubular pale stalks (podetia), one of which sometimes bears several apothecia. Small dark brown sessile warts also occur on the disc of the leaves.

This elegant species seems not to have been found in Britain by any botanist recently, if, indeed, at all since its discovery; it is rare upon the continent.

SCYPHOPHORUS DELICATUS. *Delicate Cup-Lichen.* TAB. 2279.

Thallus of minute, foliaceous, lobed and crenate scales, glaucous-green. Podetia somewhat fleshy, scaly, simple or branched, dilated

upwards, and bearing a cluster of pale brown, eventually black, apothecia.

Lichen delicatus, *Ehrhart. E. B.* 2052. *Scyphophorus parasiticus*, *Hooker Crypt. Part 1.* 237. *Cenomyce delicata*, *Acharius Syn.* 274. Lichen parasiticus, *Hoffmann Enum. Lich.* 39. tab. 8. fig. 5. *Bæomyces delicatus*, *Ach. Meth.*

Rare: found by Mr. Borrer on rotten rails in St. Leonard's Forest, Sussex; by Sir W. J. Hooker on the decayed trunk of a tree at Barham, Suffolk; and on an old wall in Scotland by Capt. Carmichael. It grows in broad dense patches of a glaucous-green or grey hue. Individual plants small, erect, branched, bearing numerous, crowded, minute, leafy scales, which are finely lobed, jagged and crisped, with mealy tips and edges. Podetia terminal, solitary, simple or divided, naked or scaly, more or less compressed, each bearing a head of tumid uneven apothecia, of a pale brown, becoming black with age or in drying.

SCYPHOPHORUS MICROPHYLLUS. *Small-leaved Cup-Lichen.*
TAB. 2280.

Thallus of minute, somewhat imbricated, rounded, nearly entire scales. Podetia simple, tubular, quite smooth and naked. Apothecia solitary, capitate, convex, somewhat lobed, brown.

Lichen microphyllus, *Smith in E. B.* 1782. *Scyphophorus microphyllus*, *Hooker Crypt. Part 1.* 237. *Bæomyces microphyllus*, *Acharius MSS.*

Found by Mr. Borrer on wet heathy places in Tilgate and St. Leonard's Forests, Sussex, in the winter, but not frequently. The thallus consists of crowded or imbricated, minute, green, round, concave scales or leaves, very slightly lobed and white beneath. Podetia scattered, ascending or erect, about a quarter of an inch high, simple, white and glossy, tubular, swelling upwards; each bearing a rounded, capitate, often somewhat lobed, reddish-brown apothecium, much exceeding it in diameter.

"This was at first thought to be the *Bæomyces cariosus* of Acharius, (*Cladonia cariosa* of E. B. Supp., *Scyphophorus cariosus* of the present work,) but on being sent to that able botanist was determined by him to be a new species, and named as above."—*Smith.* See the remarks of Mr. Borrer quoted above, under the species referred to.

** *Apothecia brown. Podetia not fleshy.*

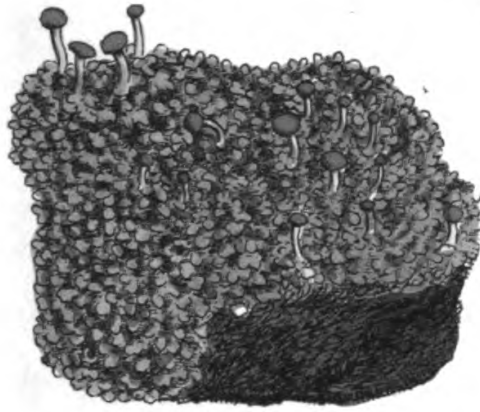
SCYPHOPHORUS SPARASSUS. *Torn-coated Cup-Lichen.* TAB. 2281.

Thallus of minute, cartilaginous, lobed and cut scales. Podetia cylindrical, repeatedly branched, rigid, ash-coloured, rough with innumerable foliaceous scales. Cups minute, toothed, pervious, repeatedly proliferous from their margins. Apothecia clustered, brown.

Lichen sparassus, *Smith in E. B.* 2362. *Scyphophorus sparassus*,

1782

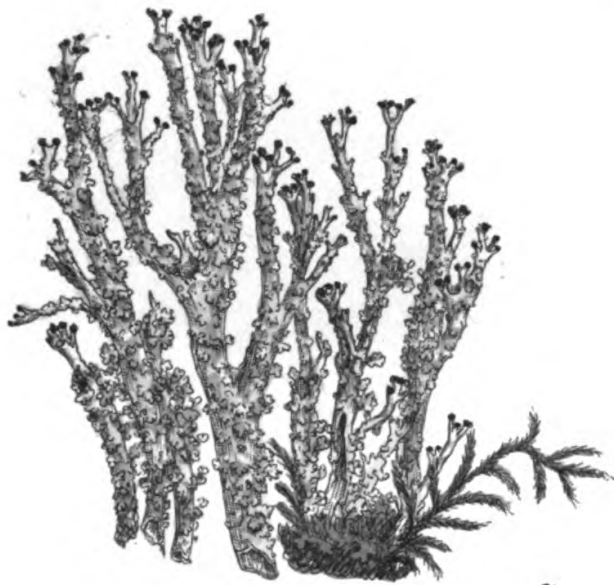
2280.



Scyphophorus microphyllus.
Aug. 21807. Published by J. & S. Sowerby London.

2362

2287

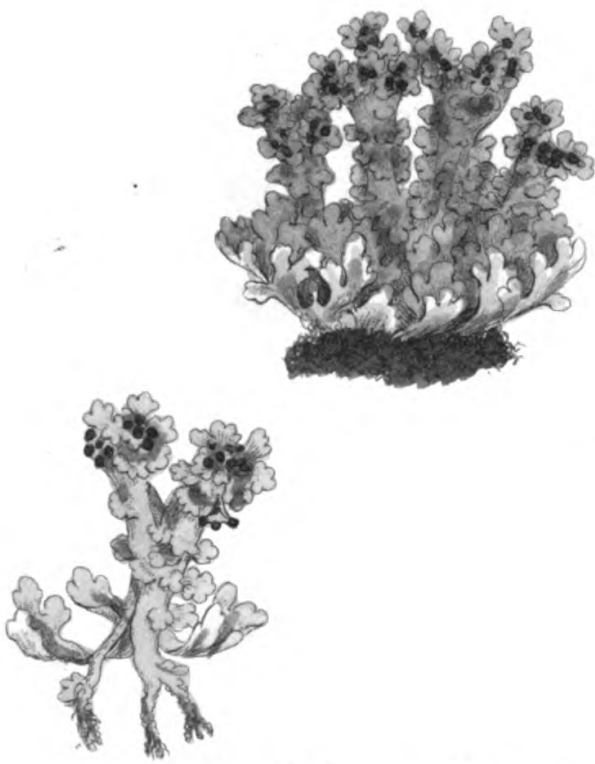


Scyphophorus sparassus.

Des. 1801 published by J. A. Smeeby London.

1392

2282.

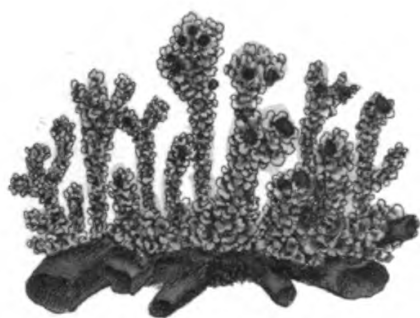


Scyphophorus alaicornis.

Dec. 1 1804 Published by J. Sowerby London.

1867

2283.



Scyphophorus anomæus.

Apr. 1868. Published by J. Sowerby, London.



Hooker Crypt. Part 1. 237. Cenomyce sparassus, Acharius Syn. 273. Bæomyces sparassus, Ach. Meth. Lichen ventricosus, Lightfoot.

Found in mossy woods and on the decayed stumps of trees, in Wales, Scotland, and the north of England. Thallus of minute, lobed and cut scales, green above, white beneath, but often evanescent. The podetia, rough with innumerable leaf-like scales, form large tufts, adhering to each other and to the surrounding moss or grass, so as to break when gathered, especially if tender from wet: they are 2 or 3 inches high, tubular, thin, erect, repeatedly branched, rigid though brittle, cracked or perforated above the origin of every branch, and ending in very small, compound, irregular, toothed or forked cups, which are likewise pervious. Innumerable little, brown, crowded apothecia terminate the points or teeth of the cups.

SCYPHOPHORUS ALCICORNIS. *Elk's-horn Cup-Lichen.* TAB. 2282.

Thallus foliaceous, very pale green; segments ascending, subpalmated, repando-dentate, obtuse, inflexed. Podetia elongato-turbinate, all cup-bearing, leafy or smooth. Cups regular, crenate, their margins eventually leafy and proliferous. Apothecia brown.

Lichen alcicornis, Lightfoot. E. B. 1392. Scyphophorus alcicornis, Hooker Crypt. Part 1. 238. Cenomyce alcicornis, Acharius Syn. 250. Bæomyces alcicornis, Ach. Meth. Lichen foliaceus, Withering. L. pyxidatus, θ. Hudson.

Frequent on barren, mountainous heaths, forming tufts of a pale green colour. Segments of the thallus leafy or subcartilaginous, variously lobed and cut, sometimes pinnatifid, nearly upright. Podetia more or less clothed with small leafy processes, which are often deciduous, especially when old. Cups simple at first and regular, afterwards branching out into short stalks, tipped with small round apothecia of a dark brown hue, and accompanied by small leafy scales.

SCYPHOPHORUS ANOMÆUS. *Confused branch-headed Cup-Lichen.* TAB. 2283.

Thallus cartilaginous, brittle, ash-coloured, of numerous minute, imbricated scales. Podetia cylindrical, rough, leafy. Cups turbinate, closed; eventually dilated and radiated. Apothecia marginal, sessile or stalked, brownish-black.

Lichen anomæus, E. B. 1867. Scyphophorus anomæus, Hooker Crypt. Part 1. 238. Cenomyce gonorega, Acharius Syn. 259. Bæomyces anomæus, Ach. Meth. Lichen pyxidatus, var. Hudson.

Found on heathy ground in several parts of Great Britain, and occasionally on thatched roofs, as on that of a barn at Lakenham, Norfolk. One of the most irregular in its growth of all the Cup-Lichens. Thallus formed of minute, crenated, imbricated scales, ash-colour, variegated with brown above, white beneath. Podetia clothed with similar scales, or naked, always rough; generally simple, terminating in rather imperfect cups, which are closed when young, then dilated and radiant, more or less scaly. Apothecia dark brown, either ses-

sile among scales on the margin of the cup, as in our figure, or raised on short irregular stalks.

Nearly allied to the preceding, according to Sir J. E. Smith, who only admitted its distinctness as a species on the authorities of Dillenius and Acharius.

SCYPHOPHORUS ENDIVIFOLIUS. *Endive-leaved Cup-Lichen.*

TAB. 2284.

Thallus spreading, leafy, cartilaginous, deeply lobed; the segments forked and pinnatifid, flattish, slightly twisted; yellowish-green above, white beneath. Podetia from the upper side, cup-bearing, mostly simple. Apothecia marginal, reddish-brown.

Lichen endivifolius, *Dickson Crypt. fasc. 3. 17.* *Hort. Sicc. fasc. 9. 24. E. B. 2361.* Scyphophorus endivifolius, *Hooker Crypt. Part 1. 238.* Cenomyce endivifolia, *Acharius Syn. 250.* Bæomyces endivifolius, *Ach. Meth.*

A native of dry, heathy places in Scotland and Surrey, and found by Mr. Turner on sand-hills at Hensby near Yarmouth. The thalli form broad patches, conspicuous on the dark soil by the bright yellowish-green of their upper side and the pure white of the under, which in dry weather is turned upwards: the segments are nearly linear, deeply forked and pinnatifid, with wavy edges. The podetia spring from the upper surface, and sometimes attain the height of an inch; they are turbinate, with a more or less leafy margin, bearing small, sessile, reddish-brown apothecia.

Very near to *S. cervicornis*, if not indeed one of the states of that plant.

SCYPHOPHORUS CERVICORNIS. *Buck's-horn Cup-Lichen.*

TAB. 2285.

Thallus cartilaginous, nearly upright, pinnatifid, glaucous, pale beneath, the segments oblong. Podetia from the upper surface, terminating in cups, eventually proliferous. Apothecia numerous, marginal, sessile, blackish.

Lichen cervicornis, *Acharius Prod. E. B. 2574.* Scyphophorus cervicornis, *Hooker Crypt. Part 1. 238.* Cenomyce cervicornis, *Ach. Syn. 251.* Bæomyces cervicornis, *Ach. Meth.*

A native of moist rocks in the mountainous districts of both Great Britain and Ireland. The whole plant is rigid, and sometimes almost woody at the base. Segments of the thallus oblong, crenated, glaucous, changing to a brownish hue. Podetia from the disc of the segments, slender below, spreading upwards into a cup, which is often proliferous.

SCYPHOPHORUS PYXIDATUS. *Common Cup-Lichen. Cup-Moss.* **TAB. 2286.**

Thallus foliaceous, the segments crenulated, ascending. Podetia turbinate, elongated, cup-bearing, eventually granulated, warty, rough, greyish-green. Cups regular; their margins eventually proliferous. Apothecia brown.

2361

2284.



Scyphophorus endivifolius.

Scyphophorus endivifolius f. *Scyphophorus*

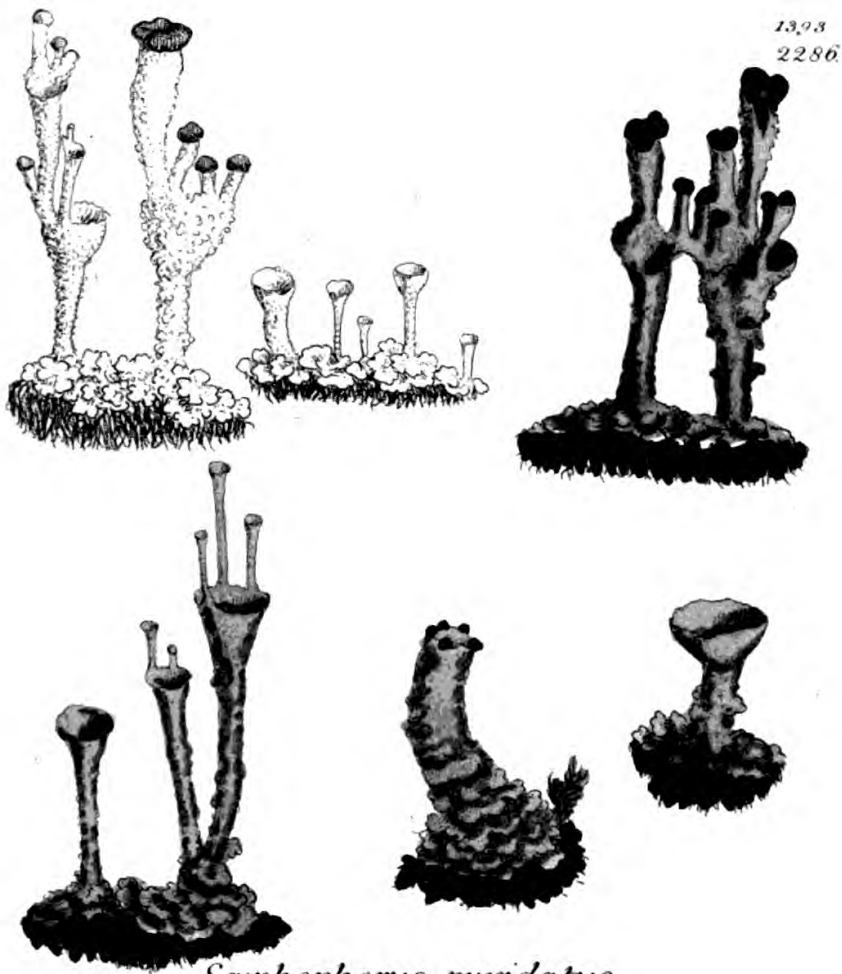
2574

2285.



Scyphophorus cervicornis

Loose & 1863 published by J. G. Harvey & Co.



Scyphophorus pyxidatus.

Dec' 1. 1864. Published by J. Sowerby, London.



2438.
2287.



Scyphophorus fimbriatus.

July 1852, published by Geo. Sowerby, London.

1835

2288.



Scyphophorus radiatus.

Jan. 1. 1808. Published by Ja. Sowerby London.



Lichen pyxidatus, Linn. E. B. 1393. *Scyphophorus pyxidatus*, *Hooker Crypt. Part 1.* 238. *Cenomyce pyxidata*, *Acharius Syn.* 252. *Bæomyces pyxidatus*, *Ach. Meth.*

Common on heaths, moors, and in dry woods, in all parts of the kingdom. The thalli form broad perennial patches, composed of minute, imbricated, lobed and crenulated segments, of a greyish-green when wet, hoary and almost white when dry. Podetia copious, various in height and thickness, dilating at the summit into a very regular and entire cup, whose margin in maturity bears numerous small, brown apothecia, that are more or less stalked. Very often the marginal stalks, instead of bearing apothecia, become as long and thick as the primary podetium, and bear apothecia proportionally large: more rarely they bear other cups, whose margins are again and again proliferous: still more unfrequently it happens that the centres of all the cups are repeatedly proliferous. These variations give the plant appearances so different, that they might readily, by the general observer, be regarded as distinct species. Several forms are exhibited on our plate.

The Cup-Moss was once esteemed as a remedy for the whooping-cough, but has long been neglected: it has the general properties of lichenaceous plants, but is not entitled to any farther medicinal reputation; indeed, is far inferior as a pectoral to the Iceland Moss.

SCYPHOPHORUS FIMBRIATUS. *Fringed Cup-Lichen.* TAB. 2287.

Thallus cartilaginous, lobed and crenate. Podetia cylindrical, white, dilated at the summit into an impervious cup, fringed with acute teeth, which are tipped with small brown apothecia.

Lichen fimbriatus, Linn. E. B. 2438. *Scyphophorus fimbriatus*, *Hooker Crypt. Part 1.* 239. *Cenomyce fimbriata*, *Acharius Syn.* 254. *Bæomyces fimbriatus*, *Ach. Meth.* *Lichen pyxidatus*, δ . *Hudson.*

Found on heaths and moors, but chiefly in mountainous districts. It appears to be as distinct from *S. pyxidatus* as most others of the genus. The slenderness and white hue of the podetia are characteristic, and the sharp, triangular teeth, which border the cups, are peculiar. The apothecia also are very different, being always minute, reddish-brown, and terminating the teeth. The margin is occasionally proliferous, and in some of the younger cups the apothecia are almost confluent and sessile, but each seems to become subsequently elevated.

SCYPHOPHORUS RADIATUS. *Radiated Cup-Lichen.* TAB. 2288.

Thallus somewhat cartilaginous, greenish-white. Podetia elongated, slender, powdery. Cups irregularly radiated, their points tipped with small, acute, reddish-brown apothecia.

Lichen radiatus, *Schreber.* E. B. 1835. *Scyphophorus radiatus*, *Hooker Crypt. Part 1.* 239. *Cenomyce radiata*, *Acharius Lich. Univ.* C. *fimbriata*, β . *Ach. Syn.* 255. *Cladonia radiata*, *Hoffmann.* *Lichen pyxidatus*, ρ . *Hudson.*

Found on the ground, on bushy heaths, and in woods. The thallus consists of little greenish scales, and some of a similar character are usually scattered about the lower parts of the podetia. The podetia are about 2 inches high, slender, cylindrical, simple or slightly branched, and their surface always powdery. Cups tapering, irregular, with several more or less radiating or erect, sharp points, each of which is tipped with a minute reddish-brown apothecium, approaching in some specimens to scarlet. Some of the podetia are simple, without cups, and bearing a single apothecium on the summit.

SCYPHOPHORUS CORNUTUS. *Horned Cup-Lichen.* TAB. 2289.

Thallus cartilaginous, greyish- or greenish-white. Podetia cylindrical, scarcely dilated into cups; bearing small, brownish-red or scarlet apothecia, which are often confluent, often barren and branched.

Lichen cornutus, Linn. E. B. 1836. *Scyphophorus cornutus*, Hooker *Crypt. Part 1.* 239. *Cenomyce cornuta*, Acharius *Lich. Univ.* C. fimbriata, L. *Ach. Syn.* 257. *Lichen pyxidatus*, λ. Hudson.

Frequent in woods and on bushy heaths, especially in hilly or mountainous countries. Podetia one to three inches in height, mealy, cylindrical, slender, simple or branched; the branches awl-shaped, acute, more or less curved. Cups scarcely more than a slight dilatation of the summit of the podetium; bordered with a series of small apothecia, of a reddish-brown or almost scarlet hue, which are sometimes stalked, but more frequently sessile and confluent, or even forming one continued tubercle, rendered annular by a central perforation, the cavity of the small cup on whose margin they are developed.

The branched podetia are very frequently barren, and their tops are then usually dichotomous, the character which gives name to the species.

SCYPHOPHORUS GRACILIS. *Slender Cup-Lichen.* TAB. 2290.

Thallus minute, fugacious. Podetia long, slender, smooth, cartilaginous, greenish-brown, eventually somewhat branched. Cups obconical, sharply toothed. Apothecia brown.

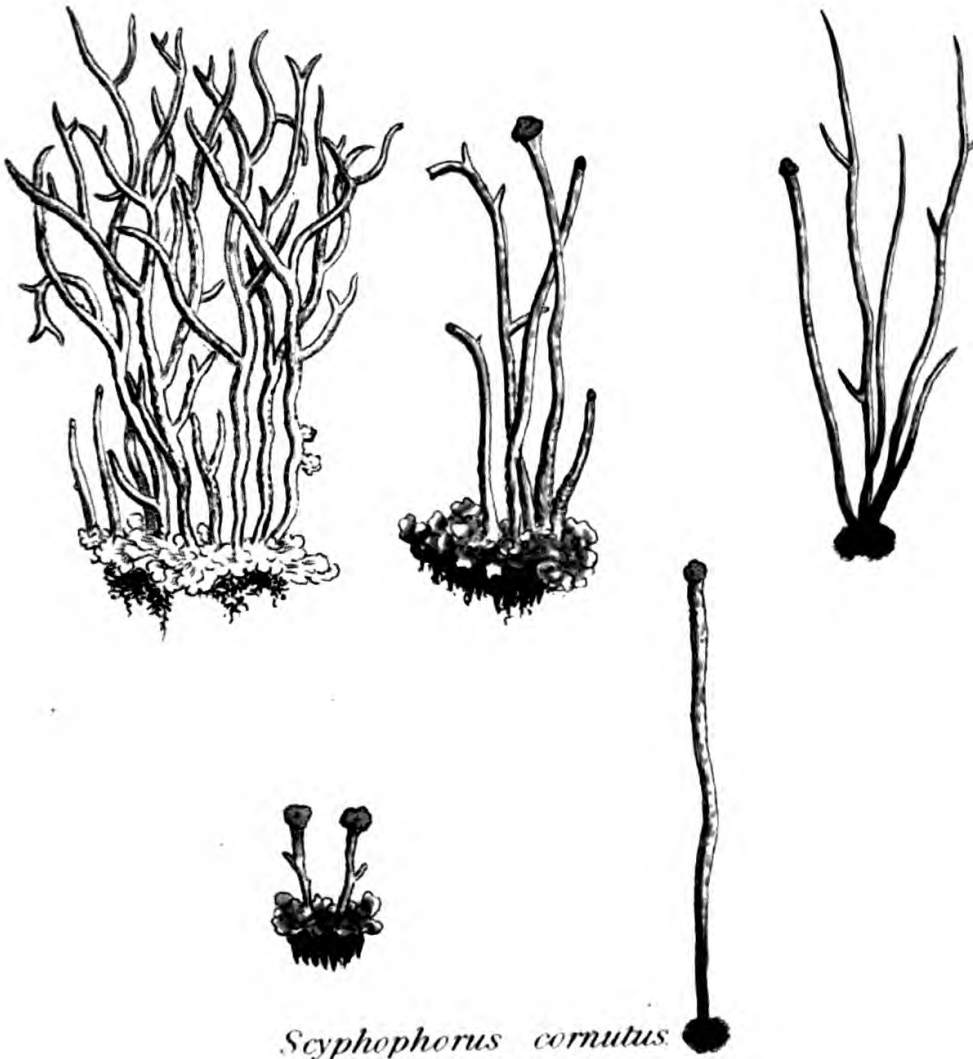
Lichen gracilis, Linn. E. B. 1284. *Scyphophorus gracilis*, Hooker *Crypt. Part 1.* 239. *Cenomyce ecmocyna*, a. Acharius *Syn.* 261. *Cladonia gracilis*, Hoffmann. *Lichen pyxidatus*, π. Hudson.

A native of woods, heaths, and dry moors, in mountainous districts. The thallus consists of a few very minute, lobed or crenated scales, which are generally soon obliterated. Podetia tufted, cylindrical, very long and slender, mostly smooth, olive-coloured, brown upwards; when barren sharp-pointed, but generally terminating in small, obconical, brown cups, sharply and irregularly toothed at their edges, and there studded with little, round, smooth, chestnut-coloured apothecia. The podetia are often from 3 to 5 inches in length and occasionally branched; the cups not unfrequently proliferous.

On this species, which, except in hue and almost perfect smoothness

1836

2289.

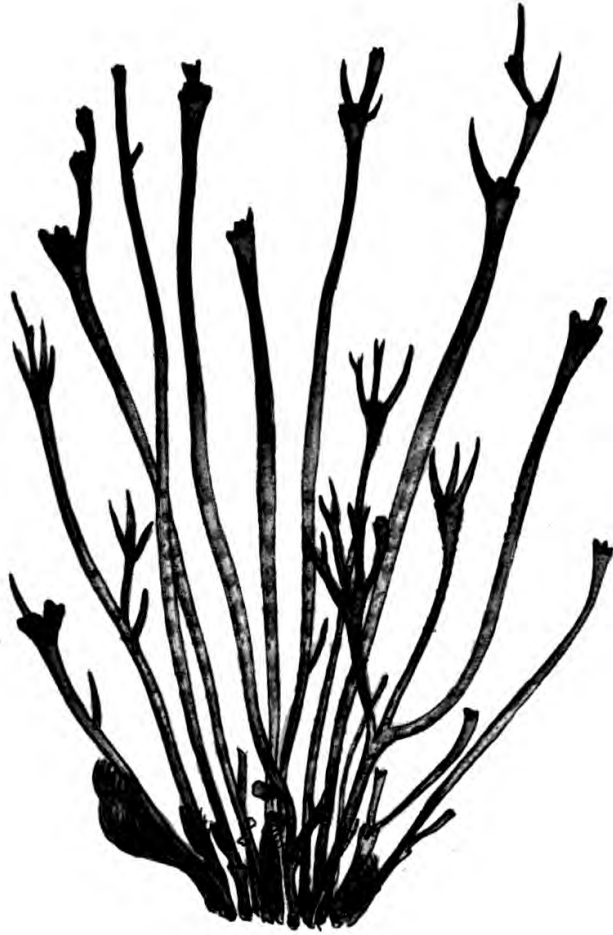


Scyphophorus cornutus.

Jan. 1836. Published by Jas. Sowerby, London.

1284

2290.



Scyphophorus gracilis.

March 7 1904 Collected by J. S. Searles, Ind.

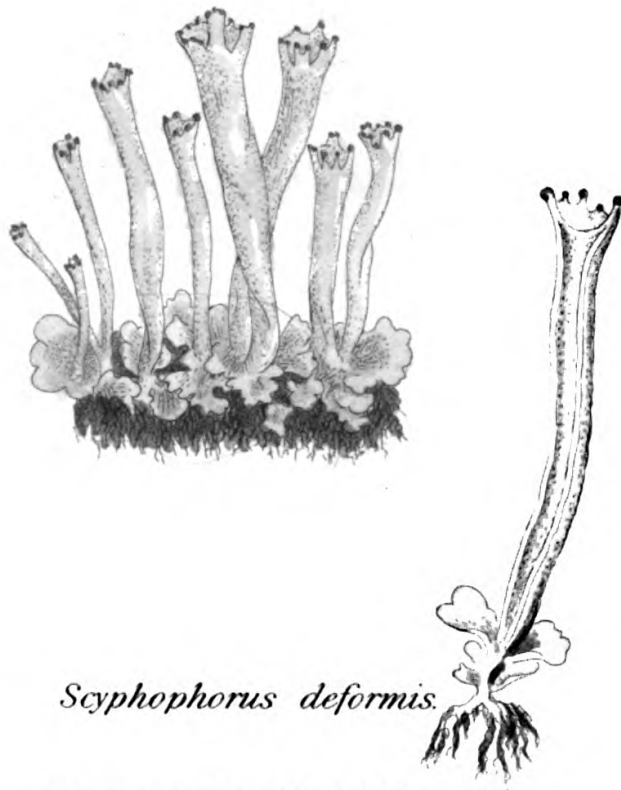
2291.



*Scyphophorus
filiformis.*

For a more complete description see the original work.

1394
2292.



Scyphophorus deformis.

Dec. 1 1864. Published by J. Sowerby, London.



of the podetia, really seems a large variety of *S. radiatus*, Sir J. E. Smith has the following remarks in the first edition: "To determine the species among the Cup-bearing Lichens is one of the most difficult problems in botany. Mr. Hudson cuts the Gordian knot by uniting them all into one, but surely nothing can be more rash. On the other hand, it may perhaps be allowed that other botanists have subdivided them beyond the limits of nature. If any of them be distinct species, that in our plate is one."

*** *Apothecia scarlet or deep red.*

[The apothecia of *S. radiatus* and *S. cornutus* of the preceding section are sometimes red, or even scarlet, but not uniformly so.]

SCYPHOPHORUS FILIFORMIS. *Thread-shaped Cup-Lichen.*
TAB. 2291.

Thallus cartilaginous, greenish-white; the scales imbricated, sinuated and crenate. Podetia cylindrical, simple, scaly. Cups cylindrical, bordered with minute, scarlet apothecia.

Lichen filiformis, *Acharius Prod. E. B.* 2028. *Scyphophorus filiformis, Hooker Crypt. Part 1.* 239. *Cenomyce bacillaris, Ach. Syn.* 266. Lichen tubiformis, *Lightfoot.* L. pyxidatus, ζ. filiformis, *Hudson.* L. macilentus, *Ehrhart.*

Met with on turfy heaths in various parts of the kingdom, but chiefly in subalpine districts; the specimen figured was sent from the New Forest, Hampshire, by Mr. Lyell. Scales of the thallus greenish above, white beneath. Podetia about an inch in height, simple, cylindrical, scaly or mealy; terminating in very slender cups of scarcely their own diameter, whose rims are generally entire, but sometimes divided or toothed. Apothecia marginal, very small, bright scarlet.

SCYPHOPHORUS DEFORMIS. *Clumsy indented Cup-Lichen.*
TAB. 2292.

Thallus coriaceous, pale yellowish-grey; the scales roundly lobed. Podetia thick, mostly simple, nearly smooth. Cups small, irregular, sharply toothed. Apothecia terminating the teeth, minute, scarlet.

Lichen deformis, *Linn. E. B.* 1394. *Linn. Fl. Lapp.* 433. tab. 11. fig. 5. *Scyphophorus deformis, Hooker Crypt. Part 1.* 240. *Cenomyce deformis, Acharius Syn.* 268. Lichen pyxidatus, μ. *Hudson.*

Found in dry woods about the roots of old trees, and occasionally on heaths, mostly in mountainous and subalpine countries. Scales of the thallus dilated, roundly lobed, conspicuous. Podetia generally simple, thick and clumsy, more or less inflated here and there, or wrinkled, smoothish, not scaly; terminating in a somewhat dilated, shallow cup, which is very irregularly and sharply toothed on the margin, each tooth bearing a little bright scarlet apothecium. The whole plant is of a pale yellowish, fungus-like hue, rendering it very con-

spicuous. Perhaps a variety of *S. filiformis*, from which it chiefly differs in hue, and in its shallow, deeply indented cup.

SCYPHOPHORUS DIGITATUS. *Fingered Cup-Lichen.* TAB. 2293.

Thallus pale grey, mealy; the scales minute, lobed and crenated. Podetia subdivided, digitate and radiating; imperfectly cup-bearing. Apothecia terminal, deep scarlet or crimson.

Lichen digitatus, Linn. E. B. 2439. *Scyphophorus digitatus*, Hooker *Crypt. Part 1.* 240. *Cenomyce digitata*, Acharius *Syn.* 267. *Lichen pyxidatus*, ξ. Hudson.

A native of barren heaths and woods, in subalpine districts especially, growing on the ground and about the roots of decaying trees. Perhaps a variety of the next and very common species, *S. cocciferus*, but an exceedingly beautiful one, differing in the almost total absence of cup, but in its stead bearing numerous branches that spring from a common centre, and are either simple or divided, each tipped with an apothecium of a deep scarlet or bright crimson colour, that forms a conspicuous contrast to the grey mealy hue of the thallus and podetium.

SCYPHOPHORUS COCCIFERUS. *Scarlet Cup-Lichen.* TAB. 2294.

Thallus coriaceous, pale greenish-grey, mealy; the scales minute, lobed and crenated. Podetia elongated, turbinate, mealy, all cup-bearing. Cups dilated, more or less toothed, often radiated, bearing the scarlet apothecia.

Lichen cocciferus, Linn. E. B. 2051. *Scyphophorus cocciferus*, Hooker *Crypt. Part 1.* 240. *Cenomyce coccifera*, Acharius *Syn.* 269. *Lichen pyxidatus*, ι. Hudson.

Frequent in woods and on heaths and moors. It varies much in size and figure, and certainly, but for its scarlet apothecia, comes very near to *S. pyxidatus*. The podetia are, however, more mealy and less leafy, and, as well as the thallus, of a paler hue; though how far such differences are deserving of notice in the plants before us is very problematical. The beautiful hue of the apothecia will bear no comparison with the dingy brown of those of the common Cup-Lichen.

The margins of the cups are sometimes proliferous; it is then *Lichen cornucopioides* of Lightfoot.

SCYPHOPHORUS BELLIDIFLORUS. *Daisy-flowered Cup-Lichen.* TAB. 2295.

Thallus foliaceous, pale green; the scales crenated, imbricated. Podetia elongated, cylindrical, club-shaped, rigid, glaucous, mostly simple, squamose or foliaceous throughout. Cups narrow, their margins fertile and proliferous. Apothecia scarlet, crowded.

Lichen bellidiflorus, Acharius *Prod.* E. B. 1894. *Scyphophorus bellidiflorus*, Hooker *Crypt. Part 1.* 240. *Cenomyce bellidiflora*, Acharius *Syn.* 270.

2439

2203.

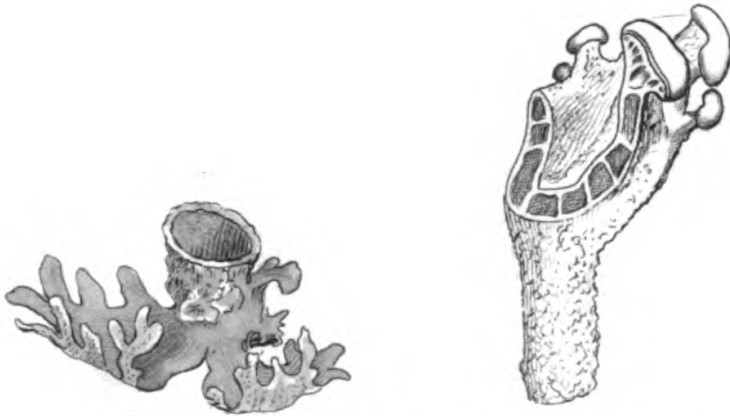
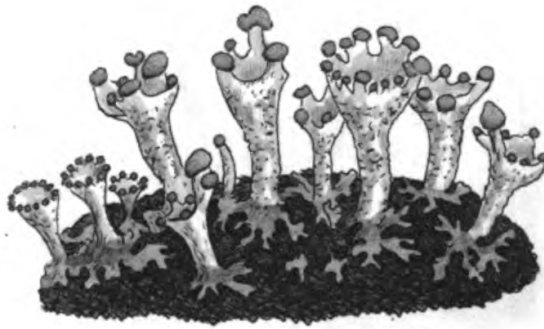


*Scyphophorus
digitatus.*

July 1851. Collected by J. S. Cooper, Esq.

2051.

2294.

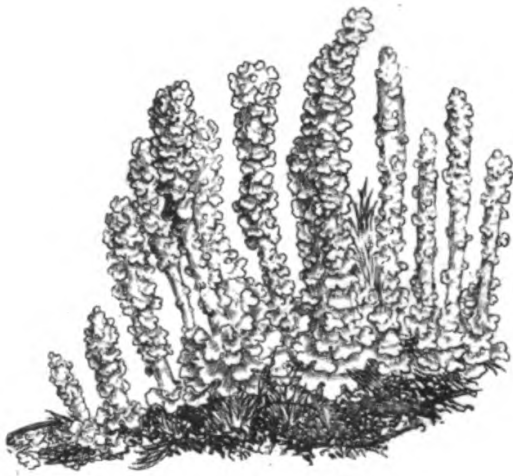


Scyphophorus cocciferus.

(Magnified 9, published by J. Sowerby London.)

1894

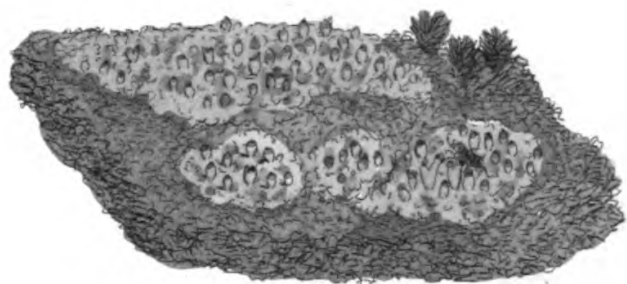
2295.



*Scyphophorus
bellidiflorus.*

907

2296.



Pycnothelia Papillaria

Aug. 1. 1801. Published by Jas. Sowerby, London.

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This, the largest and most elegant of all the Cup-Lichens, is frequent on the Highland mountains of Scotland, where it was first noticed as a British species by Messrs. Turner and Hooker. Thallus of a light but bright green hue, consisting of angular, crenated scales. Podetia numerous, cylindrical, simple, or sometimes a little branched at the top, thickly clothed with small leaves or scales resembling those of the thallus; the base slender, and more or less orange or tawny. Cups swelling from a taper base upwards, shallow or closed; their borders and segments crowded with small, globular apothecia of a rich deep scarlet, often not unaptly resembling the flower of a double red daisy.

It differs from *S. cocciferus* in its larger size and roughness, green, not grey hue, and smaller, more clustered, and rather deeper-coloured tubercles.

GENUS DCIV. PYCNOTHELIA. *Pycnothelia*.

GEN. CHAR. *Thallus* subcrustaceous, uniform. *Podetia* mostly simple, short, hollow. *Apothecia* (*cephalodia*) orbicular, not bordered, capituliform, thickened, inflated beneath, terminal, reflexed at the margin, uniform within.

The species upon which this genus is founded is peculiar in its appearance, and at first sight might be considered to be very unlike the rest of the *Cladoniae*, of which, however, it really approaches *Scyphophorus* very nearly in the minutely scaly thallus, while the absence of cup and terminal apothecium accord with the character of *Cladonia*: to neither of these genera, however, can it with propriety be referred.

The name, from the Greek *πυκνός*, *crowded*, and *θηλή*, *a little breast*, alludes to the frequently crowded fructification and its form.

PYCNOTHELIA PAPILLARIA. *Papillary Pycnothelia*. TAB. 2296.

Thallus subcrustaceous, uniform, greyish-green, formed of very minute, subimbricated scales. Podetia erect, ventricose, smooth, pale or whitish, very short, mostly simple. Apothecia terminal, solitary, globose, brown.

Lichen Papillaria, *Acharius Prod.* E. B. 907. *Pycnothelia Papillaria*, *Hooker Crypt. Part 1.* 241. *Cenomyce Papillaria*, *Ach. Syn.* 248. Lichen madræporæformis, *Wulfen in Jacq. Coll.* 3. 105. *tab. 3. fig. 2.*

A native of dry, exposed heaths and moors in various parts of the kingdom, not unfrequent in Norfolk. Most conspicuous in the winter season. Thallus very pale green, appearing granulated under a slight magnifier, but really formed of minute lamellæ or scales. Podetia whitish, inflated in the middle, rarely branched and more slender. Apothecia globular, brown, terminal.

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[Synonyms and names incidentally mentioned are printed in Italics.]

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— <i>Scotinum</i>	43	2200	— <i>gelida</i>	8	2128
— <i>sinuatum</i>	43	2200	— <i>hypnorum</i>	5	2118
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Printed by Richard and John E. Taylor, Red Lion Court, Fleet Street.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. This is essential for ensuring the integrity of the financial statements and for providing a clear audit trail.

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