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THE LICHEN-FLORA
OF
GREAT BRITAIN, IRELAND, AND THE
CHANNEL ISLANDS.
OSWESTRY:
PRINTED BY WOODALL AND VENABLES,
CAXTON WORKS.
THE LICHEN-FLORA

OF

GREAT BRITAIN, IRELAND, AND THE
CHANNEL ISLANDS.

BY THE

REV. W. A. LEIGHTON, B.A.,
OF ST. JOHN'S COLLEGE, CAMBRIDGE, FELLOW OF LINNÆAN SOCIETY OF LONDON,
FELLOW OF THE BOTANICAL SOCIETY OF EDINBURGH, HONORARY MEMBER
OF THE CRYPTOGRAMIC SOCIETY OF SCOTLAND, HONORARY CORRESPONDING
MEMBER OF NATURAL HISTORY SOCIETY OF CHERBOURG, ETC., ETC.

THIRD EDITION.

SHREWSBURY:
PRINTED FOR THE AUTHOR.

1879.
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"Think of the beauty which God has spread abroad for our use; its profuseness in desert spots where none can see it; its minuteness, so that much can only be discovered by a microscope; and its extent, embracing all things."—Sevell.

"Meek creatures! the first mercy of the earth, veiling with hushed softness its dentless rocks; creatures full of pity covering with strange and tender honour the sacred disgrace of ruin, laying quiet fingers on the trembling stones to teach them rest. No words that I know of will say what these Mosses and Lichens are; none are delicate enough, none perfect enough, none rich enough. They will not be gathered like the flowers, for chaplet or love-token; but of these the wild bird will make its nest, and the wearied child its pillow, and as the earth's first mercy so they are its last gift to us. When all other service is vain from plant and tree, the soft Mosses and grey Lichens take up their watch by the headstone. The woods, the blossoms, the gift-bearing grasses have done their parts for a time, but these do service for ever. Trees for the builder's yard, flowers for the bride's chamber, corn for the granary, Mosses and Lichens for the grave."—Ruskin.

"All organic life commences with excessively minute structures, which are continually reproduced in inconceivable numbers. On land the Lichens first appear on rocks, and the bark of trees, covering them with coloured spots and bands.—Heer.

Seeds, to our eye invisible, will find
On the rude rock the bed that fits their kind;
There, in the rugged soil they safely dwell,
Till showers and snows the subtle atoms swell,
And spread th' enduring foliage; then we trace
The freckled flower upon the flinty base;
These all increase, till in unnoticed years
The stony tower as grey with age appears.—Crabbe.
To

Charles Larbal estier, Esq.,

B.A., St. John's College, Cambridge,

Of Roche Vue, St. Aubin's, Jersey.

To no one can I more appropriately dedicate this Third Edition of my Lichen-Flora than to you, whose marvellous researches in the West of Ireland and elsewhere, conducted with consummate scientific skill, zeal, and perseverance, have added so largely to our knowledge, and whose unvarying kindness and friendship in communicating authentic specimens of novelties have rendered me service in the preparation of this work altogether inappreciable.

Believe me, gratefully, to remain,

Ever sincerely and affectionately yours,

W. A. Leighton.

Luciesfeld,  
Shrewsbury,  
March 25th, 1879.
INTRODUCTION.

The Lichenes are a Natural Order of aerial cellular plants intermediate between the Algae and Fungi, approaching the former principally, but not exclusively, through the Collemacei—and the Ascomycetes of the latter, by having the spores in 'asci or thece and their hymenium often included in a closed receptacle or peritheciun. Their own peculiar characteristic is that they have gonidia or minute spherical cellules containing chlorophyll or some green granular matter, generated by the action of light, immediately underneath the cortical layer of the thallus.

They may be found everywhere, clothing rocks, trees, old palings, stones, and earth, and giving to these localities those beautiful patches of colour which the artist delights to touch in, and which give such brilliance and finish to his landscape sketches.

The living strains which Nature’s hand alone,
Profuse of life, pours forth upon the stone,
For ever growing; where the common eye
Can but the bare and rocky bed desery.—Crabbe.

Nevertheless, Lichens are not indifferent to either their substratum or locality; some prefer the harder rocks, as granite, micaeous-schist, gneiss, quartz, or sandstone, others calcareous rocks, others the bark of trees and old partially decayed or decaying wood, others the earth, whether calcareous, siliceous, or produced from the decay of vegetable matter; others grow on decayed mosses or jumergannine, others on the leaves of evergreens, others again on various substances, as iron, bone, leather, flints, and glass; others again, reduced to apothecia alone, become parasitical on the thalli or apothecia of other Lichens, and others affect both rocks and trees indifferently.

Certain Lichens are peculiar to mountains, others to subalpine regions, others to plains, others to moist places, others to shady places, some like the neighbourhood of water, or even contact with water, others are constantly or partially submerged either in the rocky beds of rivers or on the sea shore, and others again on the under-surface of stones in stone walls or in caves, or on the under-surface of overhanging masses of rock.

They obtain no nutrition by absorption through the prehensile rhizinae or the hypothallus by which they are attached to the substrata or surfaces on which they grow. All their nutrition is derived from the atmosphere, the water or humidity of which acting chemically on the elements of the different surfaces to which
they are attached, supplies to them in the state of very complex solutions the substances necessary to their existence. Their growth is, therefore, necessarily slow and intermittent, depending on the dryness or humidity of the atmosphere, on dry or rainy seasons. In the earliest stage of their existence their growth is very rapid under favourable conditions, but when they have attained to a certain size, growth would seem to be arrested and becomes slow. Their duration of life, especially in the fecundity of the reproductive organs, is remarkable and excessive, probably extending to many centuries. They will not grow in a flourishing or perfect condition in the immediate neighbourhood of towns, or where the air is impregnated with smoke, soot, or other deleterious ingredients. In such situations they exist only in a goniial or rudimentary state, appearing on the trees, walls, &c., as green dust, in which state they will continue for ages, increasing by bisecion like the Algae, but never developing into perfect lichens. The pseudo-genus Lepraria of the elder botanists represented this condition. Their abundance in a fully developed and fructiferous condition is a sure and certain indication of the purity of the air and salubrity of the climate.

A lichen consists of a thallus or vegetative portion, bearing the fructification in the apothecium or female fruit, and the spermogonium or supposed male fruit. There are also other bodies, occasionally found on the thallus, termed pycnides, which some consider as a kind of secondary fruit, and others as fungilli.

The thallus is very variable in form, size, colour, and consistence, and is either horizontal and membranaceous or foliaceous, or pendulous and filamentose, or occurring in small erect shrublike clusters, or else forming a more or less thick crumbly or powdery crust, investing the surface of rocks and trees, and becoming lobed in various modes in the circumference. If, then, we make a vertical section through a membranaceous thallus, it will be seen to consist generally of a cortical layer on the upper surface formed of minute, closely compacted cellules, immediately underneath which is the gonidial layer consisting of bright-green spherical cells arranged in an interrupted manner, immediately above the medullary layer which consists of interlacing tubular and articulate colourless filaments. The lower surface is either naked, or has a cortical layer similar to the upper one, and also rhizinae or rootlike filaments which attach it to the surface upon which it grows.

If again we make a similar vertical section through a crustaceous thallus, it will exhibit a cortical layer on the upper surface with a gonidial layer immediately underneath, and then the medullary layer, which instead of consisting of filaments has become dead, and transformed into a tartareous mass of abundant molecular granulations, often of oxalate of lime. Underneath the entire lichen is the hypothallus, generally of a black or dark-brown colour, formed of filaments or compacted cells, and which in fact is the primordial
vegetation arising from the germination of the spores, and upon which the several other layers of the thallus are gradually and eventually deposited. This hypothallus is often only perceptible in a dark border around the thallus. The thallus is conspicuous enough in the forms above mentioned, but is often hypophilaedal or concealed beneath the epidermis of the bark on which it grows, or evanescent, existing only in scattered portions on or under the friable face of the rocks, or in other cases altogether wanting when the apothecia grow parasitically on the thallus, or apothecia of other lichens.

The gonidia are produced in cells of very young thalli and even in older thalli and are of two sorts—either a simple cell containing granular matter termed a gonidium, or clusters of two, three or more spherical granules without any proper cellular membrane, containing green granular matter and named granula gonima. These gonidia, together with the molecular granulations, and filaments of the medullary layer, are often protruded through the cortical layer to the surface of the thallus in powdery or granular eruptions of a globular shape termed soredia.

The apothecium of whatever form, whether patellulate, lirellate, or enclosed in wartlike perithecia or nuclei, has a similar internal structure, and when viewed in a vertical section is seen to consist of an excipulum, dark or pale, formed of cells generally compact, subtending the hypothecium, of similar structure, and either dark or colourless, from whose upper surface in an erect position grow the ascii or thece and the paraphyses constituting the hymenium or thalamium, and are conglutinated by a jellylike mucus termed the gelatina hymenea. The paraphyses are slender filaments having minute globular or clavate apices filled with coloured granular matter, which, by their close proximity, constitute the disk or epitezium, and to which they give their peculiar colour. Around this disk or epitezium is a margin formed by the edges of the excipulum or hypothecium and of the same colour, or else formed by the thallus, and partaking of its peculiar colour. The former is termed a proper margin, the latter a thalline margin. The ascii or thece are linear, clavate, or globular sacs or vesicles containing the spores, which in different species are variable in form, size, and colour, either brown or colourless, simple or divided by septa or otherwise into several cells, and in number generally 8, but sometimes 1, 2, 4, 6, or innumerable. The spores contain either granules or oily nuclei, and have an outer and inner paries or wall termed respectively epispora and endospora.

The spermogonia are minute globular conceptacles imbedded in the thallus, distinguishable on its surface as minute tubercles, and in section exhibiting a colourless receptacle from which arise minute filaments either simple (sterigmata), or articulate (arthrosterigmata), bearing on their summits or joints very minute rodlike or cylindrical straight or curved bodies (spermata), which the slightest pressure detaches and protrudes in a cloudy stream through a pore in the apex of the spermogonium.
The pycnides are minute dark-coloured conceptacles, like the perithecia of Sphæriaæ, sessile on the thallus and containing simple filaments (basidica) bearing singly on their apices, bodies, often oblong, but variable in form and size (stylospores).

On the under-surface of the thallus of the Stictæi are minute urceolate pale excavations termed cyphellæ, whose function is unknown. These are generally empty, but when filled with white or citrine powder are called pseudocyphellæ.

The thallus of several genera bears on its upper surface orbicular and flattened, or globular tubercles named cephalodìa, consisting internally of cells or granula gonîma. Their use is unknown. This upper-surface is also frequently found exuberant with minute, erect, coral-like excrescences with dark-coloured apices, and then constitutes the old pseudo-genus Isidium, which is now known to be really an anomalous state of the thallus of some Pertusaria. Black powdery patches or spots are scattered on the thallus not unfrequently, which formerly constituted the old pseudo-genus Spiloma, but are now considered to consist of minute parasitical fungilli.

In the genus Pertusaria the apothecia become abortive and sterile and converted into soredìa, on which state was anciently founded a pseudo-genus Variolaria.

The apothecia of certain lichens possess the power of dissolving the surface of the calcareous rocks on which they grow, by means of carbonic acid obtained from the atmosphere, thus forming minute shallow cavities or foveoli, in which they partially bury themselves.

Of the uses to which Lichens may be applied it may suffice to state generally that the "Iceland Moss," Cetraria islandica, contains starch and a bitter principle, and is used as a tonic and demulcent in medicine, and in Iceland boiled in milk as food. Cetraria nivalis is also nutritious. Roccella tinctoria, Lecanora pærella, Lecanora tartarea, Parmelia saxatilis, P. conspersa, &c., afford valuable dyes. In Sweden, Norway, Finland, and Russia, alcohol or brandy is distilled from Cladina rangiferina, which lichen and other Cladonice are also invaluable in the northern and arctic regions as the food of Reindeer and cows. And in Africa the curious Lecanora esculetæ which rolls, in a detached state, over the sandy plains, is collected as food for men and horses.

The geographical distribution of Lichens over the world varies according to the different zones, and may be stated generally thus:—In the Arctic regions the Cladoniceæ and Stereocaulœ occur in immense abundance, covering tracts of country, many square miles in extent, to the almost exclusion of other vegetation, but diminish in profusion gradually as the warmer regions are approached. In the Temperate zone the corticolæ Lichens, such as Lecanorei, Lecidei, Graphidææ, and Verrucariæ abound. In the Tropical zone Lichens attain their maximum development in the Stictææ, and Parmeliacæ; the leaves of evergreen trees are covered with Strigulæ;
and the bark with the genera *Thelotrema*, *Verrucaria*, *Trypethelium*, *Chiædecton*, *Graphis*, &c. The *Graphideae* which abound in this and the temperate zone diminish in number and profusion as the arctic zone is approached. Certain species, especially the saxicolar ones, are cosmopolitan. Our British Lichen-Flora may be taken as a fair representative of the lichens of the Temperate Zone.

If we particularise the several Tribes their distribution may be shown more clearly, thus:—

- **Byssacei**; entirely in Temperate zone.
- **Lichinei**; Temperate.
- **Collemei**; Temperate, very few Tropical.
- **Myriangiei**; Temperate, Arctic and Tropical.
- **Calicic;** Temperate, few Tropical.
- **Sphærophorri**; Temperate, very few Tropical.
- **Bromycei**; Temperate and Tropical.
- **Cladoniei**; Arctic, Temperate, decreasing towards Tropics.
- **Stereocauli**; Temperate and Arctic, especially decreasing towards Tropics.
- **Roccelli**; Temperate and Tropical.
- **Siphulei**; Temperate and Tropical.
- **Usni**; Cosmopolitan.
- **Ramalinei**; Cosmopolitan.
- **Cetrarii**; Arctic, Temperate, few in Tropics.
- **Peltigerei**; Temperate, Arctic, few in Tropics.
- **Parmeli**; Temperate, Arctic, decreasing in number in Tropics, but there attaining maximum development in the Stictei.
- **Gyrophorri**; Arctic, Temperate, decreasing towards Tropics.
- **Lecanorei**; chiefly Temperate, Arctic numerous, and Tropics.
- **Lecideinei**; chiefly Temperate, numerous in Arctic and Tropical.
- **Graphidei**; chiefly Temperate, few Arctic, numerous Tropical.
- **Peridei**; Temperate.
- **Pyrenocarpei**: chiefly Temperate, Arctic many, Tropics comparatively less numerous.

Their variation in altitude is also very great, as may be readily observed in the ascent of lofty hills and mountains, the lichens of the plains occurring at the bases and lower altitudes, and the subalpine lichens making their appearances as one ascends upwards to the very summit. Nevertheless *Cetraria Islandica* and *Cetraria aculeata* occur plentifully, the latter in fructification, on North Wootton Heath, Norfolk, and in Lincolnshire only 200 feet above the level of the sea, probably brought there in a glacial era and surviving on the retreat of the glacier. On the other hand Sir J. D. Hooker observed *Placodium miniatum* with *Physcia flavicans* on the Himalayan mountains, on the very summit of Bhomtso, alt. 18,590 feet. The former *Placodium miniatum* is the most Arctic, Antarctic, and Alpine lichen in the world, colouring the rocks of an orange-red, as at Bhomptso, and on Cockburn Island in the Antarctic Ocean. *Thamnolivia vermicularis,
Placodium miniatum, Placodium elegans, Lecanora oreina, Lecanora chlorophana, Lecidea geographica, and Lecidea atroalba, all alpine European and Arctic species, occurred in the Donkia Pass, alt. 19,800 feet. At 17,000 feet alt. Parmelia physodes, Lecanora ventosa, Lecanora canadaria, Lecanora glaucoma, Lecanora atra and Squamaria chrysoleuca, all European species, were noted. At 18,300 feet alt. on one stone only, GYrophora cylindrica, (tripe de roche.) At 22,000 feet alt. on Irgatzilhassa, Kianglah Mountains, Physcia flavicans was also found.

With a view to shew the Geographical Distribution throughout Great Britain and Ireland a line of figures or numbers is added to each Species, corresponding with the Botanical Provinces of Mr. H. C. Watson's Cybele Britannica, and Moore and More's Cybele Hibernica. By this means the student will see at a glance in what counties any particular species has been already gathered, and also what counties are still unexplored for it.

**BOT. PROV.**

1. = Cornwall, Devon, Somerset.
2. = Wilts, Dorset, Hants, Sussex, Isle of Wight.
6. = Cardigan, Radnor, Brecon, Glamorgan, Carmarthen, Pembroke.
7. = Anglesea, Carnarvon, Flint, Denbigh, Merioneth, Montgomery.
8. = Derby, Nottingham, Leicester, Rutland, Lincoln.
17. = Caithness, Sutherland, Cromarty, Ross.
19. = Kerry, South Cork.
22. = Wexford, Wicklow.
23. = Kildare, Dublin, Meath, Louth.
24. = Limerick, Clare, East Galway.
In collecting Lichens it is requisite to be furnished with a geological hammer and iron chisels of good temper, to detach thin pieces from the rocks, with the lichens growing thereon, and also with a strong, sharp clasp-knife, or strong oyster-knife, to cut or prize off lichens from the bark of trees or from old palings, &c., and a pocket lens. All that is necessary to preserve such specimens is immediately to fold them in soft paper, to prevent injury from rubbing against each other in carriage home. They require no drying or pressure, and are always in a condition proper for examination. Generally speaking, it will be advisable to collect specimens in dry weather. Rain is apt to swell up the parts of lichens so much as to render them rather difficult to be distinguished from each other in their native localities, and specimens gathered in wet weather will not unfrequently be found destitute of spores, which by the lateral pressure on the asci occasioned by the swelling of the adjacent parts by the moisture have been ejected. The practice which will be found useful is, on return home, to fix the specimens on paper, with strong glue, writing the locality from whence obtained, and then arranging them roughly in genera. This arrangement, leading to the successive examination of several species, or specimens, in any particular genus, will be found to facilitate, by comparison and contrast, their satisfactory determination.

Every lichenist is unfortunately well aware of the great difficulty of preserving specimens of lichens which grow on the earth. Too frequently he finds, on consulting his herbarium, that the earth on which such lichens grew has become dry and crumbled into dust, involving in such disintegration the destruction of the lichen itself, especially when this happens to possess a crustaceous thallus. To remedy this, an effective preparation has been discovered by M. J. M. Norman, of Trömso, Norway. It consists of a solution of isinglass in spirits of wine, such as is used in the preparation of English adhesive plaster, which a chemist informs me is better known as "Prout's Plaster." This composition when liquefied in a vessel plunged into water of the temperature of 25—30° C., is greedily imbibed by the earth on which the lichen grows, and becomes inspissated into a solid gelatine, at a temperature below 15°. The solution may be applied by a camel's-hair pencil until the earth becomes saturated, but care should be taken that the lichen itself be not moistened with it, for otherwise it would become discoloured. When the surface has become dry, the specimen may be submitted to moderate pressure, which, after some days, produces the requisite hardness and tenacity.
The mode of arrangement or preservation in the herbarium must be left to individual taste and convenience. The following may be adopted as practically most convenient. Having individual specimens glued down on small or suitably-sized pieces of paper with their names, localities, collector’s name, date of collection, and drawings or notes of spores and internal structure appended, fasten these with small pins on quarto single sheets of good cartridge paper, from which any particular specimen can be readily removed for examination and replaced as occasion requires. These single sheets are then placed in a cover of cartridge paper also of quarto size, and the name of the species written on the left hand corner at the bottom on the outside. These covers, each containing a single species, are enclosed in a quarto cover of thick pasteboard, folded bookwise, marked on the back with the name of the genus, and are kept bookwise on shelves in cabinets, arranged according to the system, and in the larger genera to the sections, adopted in the following work. Reference to any particular specimen is thus readily practicable, even in the most extensive genus, and constant use and practice insensibly and gradually impress on the mind a lasting knowledge of systematic arrangement.

The successful study of lichens is not really so difficult as persons imagine, if only they will bring to the work, careful painstaking observation, delicate manipulation in dissection, and a microscope with a good object-glass of ¼ inch focus. The mode of examination which may be adopted is this. Moisten the apothecium with water, then applying a watchmaker’s lens to the eye, make, with a sharp surgeon’s knife or scalpel, a very thin vertical section through the centre of the apothecium. Place this on the lower glass of a compressor, in a drop of hydrate of potash which assists in loosening the cohesion of the parts, and swells the spores to their proper shape, bring down the upper glass of the compressor with slight pressure, and place the whole under the microscope, increasing the pressure by the screw of the compressor gradually as vision shows to be necessary. A view is thus obtained of the asci, spores, paraphyses, structure, and colour of the hypothecium, &c., and drawings may be made of any of them most readily either with a camera lucida or by throwing the microscope into a horizontal position and placing an oblique steel disk on the end of the eye-piece, on looking through which a picture of the object is thrown on paper and may be traced with a pencil, the extraneous light being excluded by covering the head with a dark-coloured cloth.

If the spores be mature the application of an aqueous solution of iodine will tinge them or the gelatina hymenæa blue, or of a red-wine colour, with or without a preceding blue tinge. This re-action occurs only in some lichens, whilst in others there is no such re-action produced, hence it proves useful as a slight confirmatory character. The formula by which the solution is to be prepared is;—Iodine
gr. j.; Iodide of Potash, gr. ii.; Distilled water, \(\frac{1}{3}\) oz., which must
be kept in a glass-stoppered bottle of dark-coloured glass, or covered
with tinfoil to exclude light. In using this test, the section of
the apothecium must be placed in the iodine solution at once, and
not previously in the hydrate of potash, which would nullify the
re-action. To test the thallus either on its cortical layer, or in
the medulla, hydrate of potash is used, compounded of equal
weights of caustic potash and water. Hypochlorite of lime
(chloride of lime and water) is another reagent, which may be made
of any strength. These are applied by small brushes made of spun
glass, one brush being kept exclusively for each reagent, and also
a separate vessel used for each. The modus operandi is this: touch
the cortical layer or the medulla (exposed by scraping off a morsel
of the cortical layer) with the hydrate of potash, and while
still moist apply the hypochlorite of lime, and note whether any
re-action, and of what kind, results. Sometimes the hydrate of
potash produces a distinct yellow tinge, which may be symbolised
as \((K+)\) or if only faint as \((K^+\)). This yellow re-action is
sometimes persistent \((K^+)\), but in other lichens immediately
changes to a red colour \((K\text{ yellow then red})\). In others the yellow
produced by the hydrate of potash is changed into red, or the
yellow is deepened, by the immediate application of hypochlorite
of lime, symbolised \((K\text{ yellow C red})\) or \((K\text{ yellow, C deep-yellow})\).
Again the hydrate of potash may produce no re-action, but the
immediate subsequent application of hypochlorite of lime elicits
red or yellow as the case may be, symbolised thus \((K-C+\text{ red})\) or
\(K-C+\text{ yellow}\). Sometimes neither reagent produces any re-action
and is thus noted \((K-C-)\). A very convenient mode of symbol-
is the re-action of the cortical layer and medulla of the same
lichen is to place the re-action of the former above that of the
latter thus \((K^+ = C)\). These re-actions, which may be generally
obtained on any portion of the thallus, are frequently more vivid
on the younger or circumferential portions. Success depends on
the reagents being freshly compounded and of the proper strength,
and temperature has also something to do with it, as in very
severe cold weather the re-action takes place very slowly and im-
perfectly, and perhaps at all times it would be advisable to warm
the reagent. Great cleanliness must be observed with the brushes
and vessels, which should be thoroughly wiped dry after using.
None of the liquid reagent should be left exposed to the air from
one day to another, nor a fresh supply added to any which has
been so exposed, nor must any which has been once used be
returned to the stock bottles, which should always have close fit-
ting glass-stoppers. Neglect of these precautions results in failure
and uncertainty. The aqueous solution of iodine is also useful as
a test on the exposed medulla in certain cases.

The following work is arranged as to Families, Tribes, and
Genera, with some slight modifications, on the system of Dr. W.
Nylander, of Paris, as being simple and philosophical, founded on
a general consideration and balancing of all the parts of lichens, their external and internal structure, and as exhibiting their combination with the Algae and Fungi to which Lichens are intermediate. To facilitate the student's labour in the ready and accurate determination of his specimens, the species, especially in the more extensive genera, such as Lecanora, Lecidea, Verrucaria, &c., have been thrown into small groups, distinguished either by the peculiar external character of the thallus or the forms and colour and septa of the spores, and in the largest genus, Lecidea, each of such groups is again subdivided into lesser ones according as the hypothecium is dark or colourless. Objectionable as such an arrangement confessedly is in separating allied species, it is believed it will be nevertheless found convenient and useful. In the diagnoses the prominent and distinguishing characters are printed in italics, and the chemical re-action added as a confirmatory aid. Its general habitat, relative frequency or scarcity, date of first discovery in Britain, (also appended afterwards to the name of its discoverer,) are given. The synonymy has been purposely made concise, retaining only a reference to the work in which each lichen was first described and named, and also to the works of Acharius, the Linnaeus of Lichenology; and finally to the various works of Dr. W. Nylander; and to those of humbler students, where necessary. By a reference to these works the synonymy may be, if desired, followed out in extenso. References are made to characteristic figures of the lichen, its spores, &c. Micrometric measurements of the spores are also given, from the works of Mudd, Nylander, and T. M. Fries, to which are added my own measurements.

References are made to various published Exsiccati, Continental and British, enumerated hereafter; and in the preparation of the work the Herbaria of Mr. Dawson Turner, Mr. Borrer, and the Hookerian Herbarium at Kew; many original specimens from Acharius; the collections of Dr. Greville, Dr. George Johnston, Mr. Carroll, Mr. Crombie, Mr. Larbalestier, and many others have been consulted and examined, and where necessary microscopically. To which must be also added my own immense Lichen-Herbarium (without exaggeration the finest and most extensive private one, both as to British and Tropical lichens, in the kingdom, and destined at my death to be presented to the National Herbarium at Kew) comprised in 400 quarto cases occupying, bookwise, shelves 120 feet in length. The names of Botanists on whose authority those localities rest are appended, and a note of admiration (!) added where a specimen from any locality has been personally examined. Those localities to which no name is appended have been ascertained by the personal research of the author, and for these he alone is responsible.

The marvellous discoveries of Mr. Larbalestier in the West of Ireland, and the inferior, but very interesting, ones of Mr. Crombie, Dr. Stirton, Mr. McAndrew, Dr. Bainbridge, and
others in the North of Scotland, and of myself in North and South Wales, have raised our Lichen-Flora to an equality in numbers and rarity, with that of any other country in Europe.

The number of species and forms or varieties comprised in the second edition of this work amounted to 1,156, whilst in the present edition they have risen to 1,710, and may be tabulated as follows:

<table>
<thead>
<tr>
<th>Genus</th>
<th>Species or Total Form</th>
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<tr>
<td>Sirosiphon</td>
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Carried forward... 339 Total... 1710

I have purposely omitted any mention of the Schwendenerian Theory of Lichens, as I cannot but regard it as purely imaginary, "the baseless fabric of a vision;" which even if it could be proved to be true, which is not yet the case, cannot make lichens to be less lichens, nor interfere with their systematic study.

It will be well for us ever to bear in mind the sound remarks which Mr. Bentham embodied in 1872 in one of those admirable addresses which, as President of the Linnaean Society, he annually delivered. "There is a very common readiness to take at once as proved any paradox, or theory, opposed to general belief, when
a new discovery appears to afford some plausible argument in its favour. In Lichens, according to Schwendener, we have the supposed parasite surrounding and enclosing its presumed victim, cutting it off from all communication with the outer world from which it has to derive its nutriment; and yet we are to believe that the poor prisoner not only sustains its own life and feeds its hosts, but flourishes, grows, and multiplies. If the hyphae feed upon the enclosed gonidia, what do the gonidia feed upon? If there really is parasitism in the case, which is very doubtful, may not the gonidia be the parasites, the lichen, the host? or may not the gonidia be mere stages of existence of certain lichens falsely ascribed to Algae? The whole question is a very curious one, and, notwithstanding the skill and acuteness of Schwendener and others, requires much more observation and study before the conclusions derived from them can be taught as an established theory. And whatever be the result, the group of lichens is so distinct in its vegetative characters, and at the same time so extensive and varied a one, that it seems more methodical to treat it, as heretofore, as a distinct class, than to absorb it in that of fungi, notwithstanding the close affinity shown by its reproductive organs.

Should the student desire to possess microscopical preparations of sections of the thallus, spores, &c., of lichens, I can confidently refer him to my friend, the Rev. J. E. Vize, Forden Vicarage, near Welshpool, Montgomeryshire, whose slides, prepared with great scientific knowledge and skilful manipulation, are unrivalled, and cannot be surpassed for beauty and usefulness.

Mr. E. M. Holmes, F.L.S. (30 Arthur Road, Holloway, London N.), and Mr. W. Joshua, F.L.S. (Cirencester), are also doing great service to practical science in issuing fasciculi of microscopical preparations (in slides) of sections of the thallus, spores, &c., which will enable the student to attain a more thorough and adequate knowledge of internal structure. The examples I have seen are most beautiful and excellent, and are deserving of the highest commendation.

I take this opportunity to make known that my friend, Mr. Larbalestier proposes to publish under the title of "LARBALESTIER'S LICHEN-HERBARIUM" a series of dried Lichens of Ireland, England, and the Channel Islands, four fasciculi of which will be issued each year, each containing 40 species, nearly all rare or little known plants, at 12/6 each fasciculus. Mr. Larbalestier also intends to issue fasciculi of "LICHENES RARISSIMI" at 20/- each, independent of the above.
THE

LICHEN-FLORA

OF

GREAT BRITAIN, &c.

CLASS OF LICHENS.

Thallus furnished with a stratum of gonidia or granula gonima variously disposed, very often (at least in the crustaceous species) containing crystals of oxalate of lime. Fructification consisting of spores in thecae or asci; gelatina hymenae in most species becoming blue, in others reddish, on the application of an aqueous solution of iodine. Spermogonia in pyrenodine conceptacles distinct from the apothecia, and occurring either generally on the same thallus with the apothecia (monocious), or sometimes separately on different thalli (dioecious).

Lichens are distinguished from Fungi by the peculiar type, form and structure of the thallus. The families and their principal subdivisions are chiefly based on the diversities of the thallus, though sometimes the differences of the apothecia and spermogonia determine these.

Thallus byssaceous. = Family I. BYSSACEI.
Thallus gelatinous. = Family II. COLLEMACEI.
Thalamium cellulose, with superimposed theciferous cavities = Family III. MYRIANGIACEI.
Thallus not gelatinous. = Family IV. LICHENACEI.

Fam. I. BYSSACEI.

Thallus byssaceous; granula gonima in a thalline vagina. = Tribe I. SIROSIFHEI.

Fam. II. COLLEMACEI.

Thallus filiform, branched. = Tribe I. LICHINEI.
Thallus membranaceous, lobate. = Tribe II. COLLEMEI.

Fam. III. MYRIANGIACEI.

Thalamium cellulose, with superimposed theciferous cavities. = Tribe I. MYRIANGIEI.
THE LICHEN-FLORA

Fam. IV. LICHENACEI.

- Spores pulverulent on surface of fructification. = Series I. Epiconiodei.
  - Thallus foliolose; apothecia terminal on podetia, biatorine. = Series II. Cladodei.
  - Thallus efoliolose, fruticulose or filamentose; apothecia lecanorine. = Series III. Ramalodei.
  - Thallus foliaceous, depressed, lobed. = Series IV. Phyllodei.
    - Thallus crustaceous, squamose, radiate, granulose, powdery, or evanescent. = Series V. Placodei.
    Fructification in closed receptacles. = Series VI. Pyrenodei.

Series I. EPICONIOIDEI.

Thallus horizontally expanded; apothecia stipitate, cupuliform, or sessile. = Tribe I. Caliciei.
  Thallus fruticulose, ramose; apothecia nucleiform. = Tribe II. Sphérophorei.

Series II. CLADOIDEI.

Thallus horizontal; apothecia substipitate. = Tribe III. Bæomycei.
  Thallus foliaceous; apothecia biatorine on scyphiform or simple podetia. = Tribe IV. Cladonieii.
  Thallus cæspitose, podetiiform; apothecia terminal or lateral, lecideine. = Tribe V. Stereocaulei.

Series III. RAMALODEI.

Thallus branched, white; apothecia lateral. = Tribe VI. Roccellieii.
  Thallus podetiiform; apothecia unknown. = Tribe VII. Siphulei.
    Thallus branched, terete, or compressed, medullary axis firm; apothecia peltate. = Tribe VIII. Usneei.
    Thallus branched, round or compressed, medullary axis woolly; apothecia lateral or terminal. = Tribe IX. Ramalinei.
    Thallus compressed, fruticulose or membranously dilated; apothecia marginal. = Tribe X. Cetrarieii.

Series IV. PHYLLODEI.

Apothecia peltiform. = Tribe XI. Peltigerei.
  Apothecia marginal, on under side of thallus. = Sub-tribe 1. Nêphromei.
  Apothecia marginal, on upper side of thallus. = Sub-tribe 2. Peltidei.
Apothecia lecanorine. = Tribe XII. Parmelieii.

Thallus laciniato-lobate; spores ellipsoid, simple; paraphyses indistinct. = Sub-tribe 2. Imbericariæ.

Thallus stellato-orbicular; spores bilocular; paraphyses distinct. = Sub-tribe 2. Physciæ.

Apothecia lecideine, gyrose. = Tribe XIII. Gyrophorei.

Series V. PLACODEI.

Apothecia lecanorine. = Tribe XIV. Lecanorei.

Thallus squamulose, gonidia large, distinct. = Sub-tribe 1. Psoromei.

Thallus squamulose or granulose, with granula gonima (no gonidia). = Sub-tribe 2. Pannariæ.

Thallus pulverulent. = Sub-tribe 3. Amphiliomei.

Thallus radioso-laciniate or cartilagineo-squamose; spores ellipsoid, simple. = Sub-tribe 4. Squamarœi.

Thallus radiate (not radioso-laciniate); spores ellipsoid, bilocular; cells united by a longitudinal tube. = Sub-tribe 5. Placodei.

Thallus crustaceous, granulose; spores simple or variously septate. = Sub-tribe 6. Eulecanorœi.

Apothecia endocarpoid, enclosed in verrucae of thallus; spores very large, ellipsoid. = Sub-tribe 7. Pertusariæ.

Apothecia in thalline verrucae, but with an open epithecium; spores plurilocular or murali-divided. = Sub-tribe 8. Thelotremæi.

Apothecia biatorine or lecideine or gyalectine. = Tribe XV. Lecideinœi.

Apothecia lirelline. = Tribe XVI. Graphidei.

Hymenia covered by a black rimuloso-dehiscent peridium. = Tribe XVII. Peridiæi.

Series VI. PYRENODEI.

Apothecia pyrenodine. = Tribe XVIII. Pyrenocarœi.

Fam. I. BYSSACEI.

Tribe I. Sirosiphei.

Thallus cæspitose, distinctly vaginate. = Sirosiphen.

Thallus cæspitose, granula gonima concatenate into a central axis; apothecia biatorine. = Gonionema.

Fam. II. COLLEMACŒI.

Tribe 1. Lichinei.

Thallus cæspitose, granula gonima in transverse strata; apothecia lecideine. = Spilonema.
THE LICHEN-FLORA

Thallus fruticulose, granula gonima connate in transverse strata; apothecia endocarroid in swellings of the thallus. = Ephbe.

Thallus fruticulose, fucoid, granula gonima caeruleascent; apothecia in terminal globose receptacles. = Lichina.

Thallus appressed; granula gonima moniliformi-concrete; apothecia lecideine. = Pterygium.

Thallus fruticulose; granula gonima moniliformi-concatenate; apothecia lecideine. = Leptogidium.

Tribe 2. Collemei.

Thallus granulato-arcolate, internally rubricose, granula gonima in globular cells; apothecia urceolato-innate; spores simple. = Pyrenopsis.

Thallus granulose or fruticulose, granula gonima in globular cells; apothecia innate, lecanorine or endocarroid; spores simple. = Synalissa.

Thallus without cortical layer, granula gonima moniliform; apothecia lecanorine; spores multilocular, rarely simple. = Colema.

Thallus with distinct cortical layer, granula gonima moniliform; apothecia lecanorine; spores multilocular, rarely simple. = Leptogium.

Thallus internally green; granula gonima submoniliform; apothecia subgyalectoid. = Collempsis.

Thallus minute, stellato-divided, or cespitellose, or confluento-effuse; apothecia pyrenocarpous, verrucarioid. = Pyrenidium.

Fam. III. MYRIANGIACEI.

Tribe I. Myriangei.

Thalamium cellulose, with superimposed theciferous cavities. = Myriangium.

Fam. III. LICHENACEI.

Series I. Epiconiodei.

Tribe I. Calicii.

Thallus none; apothecia parasitic on Pertusaria globoso-turbinate, sub sessile, black; spores nigrescent, simple. = Sphinctrina.

Thallus granuloso-pulverulent; apothecia globoso-turbinate, stipitate, black; spores nigro-fuscous, simple or 1-septate. = Calicium.

Thallus pulverulent; apothecia globoso-pulverulent, stipitate, yellow; spores colourless. = Conioctbe.

Thallus granulose; apothecia cupuliform, sessile, black; spores nigricant, 1-septate. = Trachylia.
OF GREAT BRITAIN.

TRIBE II. SPHEROPHOREI.

Apothecia terminal, nucleiform, globose, irregularly dehiscent; spores sphaerial, violet-black. = SPHEROPHORON.

SERIES II. CLADOODEI.

TRIBE III. BæOMYCEI.

Thallus gelatinoso-conglutinate; apothecia stipitate clavato-capitate; spores filiform, multiisepatate. = GOMPHILLUS.

Thallus crustaceo-granulose or subsquamulose; apothecia stipitate or sessile, biatorine. = BæOMYCES.

TRIBE IV. CLADONIEI.

Thallus foliolose, or squamulose, or granulosocrustaceous; podetia fistulose, laciniato-ramose or scyphose; apothecia terminal, biatorine, livido-fuscosus or scarlet. = CLADONIA.

Thallus verrucoso-granulate, bearing large fuscescent sessile cephalodia; podetia rigid, simple, minute; apothecia terminal subglobose, black. = PILOPHORON.

TRIBE V. STEREOCAULEI.

Podetia covered with variously-shaped fragile granules; apothecia fuscosus; spores cylindraceo-fusiform, 3-9-septate; cephalodia verrucoso-gglomerulose. = STEREOCAULON.

SERIES III. RAMALODEI.

TRIBE VI. ROCCELLIEI.

Thallus fruticulose, from a common base, terete or compressed; spores oblong or fusiform, 3-septate. = ROCCELLA.

TRIBE VII. SIPHULEI.

Thallus of prostrate subulate stipites, acute at the apices, fistulose. = THAMNOLLA.

TRIBE VIII. USNEEI.

Thallus filamentose, pale cinereo-virescent; apothecia conceolorous. = Usnea.

TRIBE IX. RAMALINEI.

Thallus cylindrical, horny; spores simple. = ALECTORIA.

Thallus applanate, flaccid; spores simple. = EVERNIA.

Thallus compressed, rigescent; spores 1-septate. = Ramalina.
THE LICHEN-FLORA

Tribe X. Cetrariei.

Thallus spadiceous, laciniose or fistulose. = 

Thallus various in colour, membranaceous-dilatate and lobate. = 

Series IV. Phylloidei.

Tribe XI. Peltigerei.

Sub-tribe I. Nephromei.

Cortical layer continuous on the nerveless lower surface of the thallus; spores septate. = 

Sub-tribe II. Peltidei.

Cortical layer not continuous on the nerved and rhizinose lower surface of the thallus; spores 3-5-7-septate. = 

Sub-tribe III. Solorinei.

Cortical layer not continuous on the obsoletely-nerved lower surface of the thallus; spores 1-septate. = 

Tribe XII. Parmeliei.

Sub-tribe I. Stictei.

Gonidial stratum of the thallus consisting of glauco-virescent or glauco-cærulescent granula gonima in pluri-locular nodules. = 

Gonidial stratum of the thallus consisting of free, true, bright or yellow-green gonidia; rhizinæ simple. = 

Under surface of thallus with fasciculate rhizinæ; spores 1-3-septate. = 

Sub-tribe II. Imbricariæ.

Spores simple. = 

Sub-tribe III. Physciæ.

Spores polari-bilocular or 1-septate. = 

Tribe XIII. Gyrophorei.

Thallus monophyllous, umbicularly affixed. = 

Series V. Placodei.

Tribe XIV. Lecanorei.

Sub-tribe I. Psoromei.

Gonidial stratum of thallus consisting of large distinct gonidia = 

= Psoroma.
OF GREAT BRITAIN.

SUB-TRIBE II. PANNARIEI.

Gonidial stratum of thallus consisting of granula gonima. = PANNARIA.

SUB-TRIBE III. AMPHILOMEL.

Thallus white, granuloso-pulverulent. = AMPHILOMA.

SUB-TRIBE IV. SQUAMARIEI.

Spores simple. = SQUAMARIA.

SUB-TRIBE V. PLACODEI.

Spores polari-bilocular. = PLACODIUM.

SUB-TRIBE VI. EULECANOREI.

Apothecia internally colourless; spores 8 or numerous, simple or variously divided, colourless or fuscous. = LECANORA.

Apothecia tuberculoso-lecanorine; hypothecium black; spores fusiform, 3-septate. = DIRINA.

SUB-TRIBE VII. PERTUSARIEI.

Apothecia endocarpoid, or lecanoroid or variolaroid; spores 1-2-4-8, simple, very large, ellipsoid, with a thick episporium. = PERTUSARIA.

Apothecia erumpent, rotundato-difform; spores 1-2, murali-divided. = PHLYCTIS.

SUB-TRIBE VIII. THELOTREMEI.

Apothecia verrucoseform, open; spores 8, murali-divided. = THELOTREMA.

Apothecia urceolate; spores murali-locular. = URCEOLARIA.

TRIBE XV. LECIDEINEI.

Thallus crustaceous, squamose, scurfy, powdery, granulate, areolate, continuous, rimulose, or evanescent; spores 8 or numerous, colourless or fuscous, simple or variously septate. = LECIDEA.

Thallus evanescent; apothecia gymnotremoid, naked, black; spores 2-septate. = ODONTOTREMA.

Thallus evanescent; apothecia lecideine, elevated, naked, black; spores numerous. = SCHIZOXYLON.

TRIBE XVI. GRAPHIDEL.

Apothecia black, linear, parallel, plane, internally cinerascent; spores 8, simple. = XYLOGRAPHIA.
Apothecia prominent, with 2 or 4 longtitudinally parallel hymenia in each; spores 8, simple. = Ptychographa.

Apothecia red, rotundate or oblong, biatorine, plane, internally colourless; spores 8, simple. = Agyeium.

Apothecia black, tumid; hypothecium black, entire; spores 8 or numerous, simple or 1-septate. = Lithographa.

Apothecia black, superficial; peritheciun black, entire; spores 8, obovate or fusiform, 1-multiseptate; paraphyses indistinct. = Opegrapha.

Apothecia black, impressed in thalline verrucæ and surrounded with a spurious thalline margin; hypothecium black; spores fusiform, 3-septate = Platygrapha.

Apothecia brownish, punctiform or elongate, immersed; hypothecium colourless. = Stigmatidium.

Apothecia black, innate or immersed; spores 8, oblong or linear-elongate or cylindrical, pluri-locular; paraphyses distinct. = Graphis.

Apothecia substellato-radiate, immersed in white rounded verrucæ; spores fusiform, 3-septate. = Chiodecton.

Apothecia intricate-flexuose, immersed in white plano-depressed verrucæ. = Glyphis.

Apothecia black, superficial, arthonoid; spores 1-septate; paraphyses distinct. = Melaspilea.

**Tribe XVII. Peridiei.**

Apothecia containing many hymenia conjoined as in a common excipulum, but without peritheciun. = Mycophorum.

Apothecia rotundate, depressed in the centre, dehiscing by a subradiate fissure. = Rimularia.

**Series VI. Pyrenodei.**

**Tribe XVIII. Pyrenocarpei.**

Apothecia single in citrine spherical thalline verrucæ; spores numerous. = Thelocarpon.

Perithecia black, immersed in a squamulose thallus; spores 8, septate. = Normandina.

Perithecia pale, immersed in a peltate or squamaeform thallus; spores 8, simple. = Endocarpon.

Perithecia black, rarely coloured, entire or dimidiate, semi-immersed or sessile; spores 8 or numerous, simple or variously septate. = Verrucaria.

Foliicolous. = Strigula.

Perithecia numerous, minute, black, imbedded in a round or oblong blackish plane apothecium. = Melanotheca.

Perithecia several, stellato-congregate, their ostiola converging into one common central poriform epithecium. = Astrothelium.
Fam. I. BYSSACEI.

Thallus black or fuscous, filamentose, byssoid; granula gonima in 1-2 or 3 series enclosed in a vagina.

Tribe I. SIROSIPHEI.

Thallus minute, filamentose, densely implexed or compacted, vaginate, granula gonima in 1-2-3 series.

I. SIROSIPHON. Ktz.

Filaments branched, distinctly vaginate, composed of gelatinous cellules, each enclosing a solid gonimic nucleus, arranged in simple or 2-3-fold series within the vagina.

1. S. compactus, Ktz. black, densely intricate, filaments ascending, rigid, curved, coalescent below, vagina cartilagineous, fuscous; cellules in single series.

On rocks, frequent. 1876.


Fig.:—Hassall Algæ, t. 68. f. 3.

Geog. Distrib.:—Europe.


Ireland:—Rocks south side of Kylemore Lake, co. Galway, Mr. Larbalestier. (1876.)

II. GONIONEMA. Nyl.

Thallus filiform, granula gonima concatenated into a single central axis. Apothecia concolorous, biatorine. Spermatia minutely oblong, simple.

I. G. velutinum, Nyl. dark-brown, slender, entangled; apothecia dark-brown, terminal, centre depressed, margin swollen, pale within; spores 8, colourless, ellipsoid, simple; paraphyses slender.

On sub-alpine rocks rare. 1864.

Syn.:—Nyl. Prod. 16 (1857); Syn. 88; Scand. 23; Collema, Ach. Syn. 329.

Fig.:—Ann. and Mag. Nat. Hist. July 1865, t. 4, f. 1, 2, 3, 4, 5, 6: Nyl. Syn. t. 1, f. 11.


Geog. Distrib.:—Europe, Scandinavia, France.

Bot. Prov.:—1...7.


Wales:—Barmouth! Craig Breidden! (northern precipices) Montgomeryshire (1864); Snowdon! Owms Bochhwyd! Owms Idwal! Owms Cywion! Aran Mawdyy!

"Gelatina hymenea I. blue, then vinous-red. Spores .009—.010 mm, long, .007 mm. broad." (Nyl.) Spores .013—.014 mm. long, .007 mm. broad.

Fam. II. COLLEMACEI.

Thallus black, fuscous, dark olive, rarely cinerascent or glanscent, variable in form; granula gonima either moniliform or variously dispersed in the gelatinous substance of the thallus. Apothecia generally lecanorine, rarely biatorine, rarely endocarpoid, generally rufescent, rarely black, internally whitish or pale,
THE LICHEN-FLORA

TRIBE I. LICHINEL

Thallus small or minute, filiform, cæspitose-fruticulose, or depresso-impressed; granula gonima moniliform, connate, or variously concreta. Apothecia lecanorine, biatorine or lecideine or endocarpoid. Spores 8, colourless.


Thallus filiform, branched, fruticulose; granula gonima large, subtransversely arranged in little heaps, 2, 4, or more together. Apothecia endocarpoid, in thickened portions of the thallus. Spermatia straight, cylindrical.

1. E. pubescens, Fr. blackish-brown, slender, cæspitose, entangled, branched, slightly rugulose; spores 8, colourless, lineari-oblung or subfusciform, 1-septate; paraphyses indistinct.

On subalpine rocks, not unfrequent. 1851.


GEOG. DISTRIB.:—Scandinavia, E. Lapland, France, Switzerland, Algeria, Greenland, N. America.

BOT. PROV.:—1...7...11...15...16...19...23...26.


SCOTLAND.:—Loch Awe; Achallater, Braemar; Craig Guie; Rev J. M. Crombie.


WALES.:—Summit of Pen-maen-mawr!; (1851) Barmouth! Glyder Vach!, Cwm Bochlywd! Pass of Llanberis!

Consult Grevillea, 5. 124. "Spores .011—16 mm. long, .003—4 mm. broad." (Nyl.) Spores .013—.014 mm. long, .0035 mm. broad.

II. SPILONEMA. Born.


1. Sp. paradoxum, Born. blackish-brown, slender, cæspitose, entangled, branched; apothecia black, terminal, hemispherical, immarginate; hypothecium nigrescent; spores 8, colourless, oblong, simple; paraphyses thick, articulate.

On maritime rocks, rare. 1856.

SYN.:—Bornet in Mem. Cherb. Dec. 1856, p. 4; Nyl. Prodr. 17; Syn. 89; Scand. 23. Mudd Man. 35.


EXS.:—Leight. 347.

GEOG. DISTRIB.:—France, Pyrenees, Finland.

BOT. PROV.:—7...16.

SCOTLAND.:—Appin. Rev J. M. Crombie.

WALES.:—Rocks near Harlech Turnpike, Barmouth! (1856); Glyder Vach! Snowdonia! Llyn Cae! Cader Idris! Cwm Cywion! Cwm Pymnon lloer!
Attention to the regular transverse arrangement, grouping and size of the granula gonima will distinguish this from *Ephebe pubescens* which it generally resembles.

"Spores .009 mm. long, .004 mm. broad. Gelatina hymenea I. intense blue then dusky violet." (Nyl.) Spores .009 mm. long, .004 mm. broad.

2. *Sp. revertens*, Nyl. black or fuscos-black, effuse, minutely coralloide-compact, more generally forming small verrucose pulvini, more or less crowded; *apothecia* black, lecideine, adnate, somewhat convex, immarginate, internally entirely obscurely cinerascant; *spores* 8, colourless, oblong, simple, the thin lamina of the apothecium somewhat cæruleuscent; *epithecium* black, paraphyses thickish, their apices incassate denigrate; *hypothecium not obscure*; gelatina hymenea I. blue, the apices of the these more intensely tinged.

On granitic and micaceo-schistose rocks, rare. 1863.

**SYN.** — Nyl. in Flora 1865 p. 601.

**Geog. Distr.** — Finland, Eastern Lapland.

**Bot. Prov.** — 15.

**Scotland.** — Ben Lawers and Craig Tulloch (but only in sterile state, therefore uncertain). *Rev. J. M. Crombie* (1863).

"On the thallus occur minute colourless immersed globose pycnides with curved stylospores. Spores .003—.011 mm. long, .005—.006 mm. broad." (Nyl.)

3. *Sp. Scoticum*, Nyl. black or fuscos, effuse, minutely coralloide, in *small compact verrucose pulvini*; *apothecia* black, minute; *epithecium* impressed or somewhat convex; *hypothecium colourless*; *spores* 8, colourless, oviformi-oblong, 1-septate; *paraphyses* slender, distinct; gelatina hymenea tinged blue, the asci violet, by iodine.

On alpine micaceous-schistose rocks, rare. 1869.

**SYN.** — Nyl. in Flora 1869 p. 82; Crombie Bot. Prov. 15.


"Spores .010—.14 mm. long, .0045 mm. broad." (Nyl.)

**III. LICHINA. Ag.**


1. *L. pygmea*, (Lightf.) cæspitose, ramose, small, compressed upwards.

On maritime rocks, not unfrequent. 1777.


**Exs.** — Leight. 290. Hepp 423. Larbal. 51.

**Geog. Distr.** — Europe, Scandinavia, Chili.

**Bot. Prov.** — 1-6...10, 11...14...18...23...26...30...31.


IRELAND:—Maritime rocks, Mr. Carroll. Ardglass co. Down, Dr. Maingay. Dublin, Dr. Moore. Mullaghglass! Galway, Mr. Larbalestier.

WALES:—Caswell Bay! Mumbles.

CHANNEL ISLANDS:—Coast of Jersey; Shores of Sark, Herm, and Jethou! Mr. Larbalestier.

Spores .002—29 mm. long, .011—16 broad. "Spores .005 in. long, by .0025 in. broad." (Mudd.) "Spores .028 mm. long, .012 mm. broad." (Nyl.) Epispore narrow.

2. L. confinis, (Ach.) densely cæspitose, very small, round, not compressed.

On maritime rocks, not unfrequent. 1813.


EXS:—Larbal. 1. Rabb. 782.

GEOG. DISTRIB:—Europe. Scandinavia, France, Spain, Portugal, Faroe Islands.

Bot. Prov:—1...6, 7...15...19...23...30, 31.

ENGLAND:—Mounts Bay! Cornwall. Mr. Ralfs. Whitesand Bay, Cornwall. Dr. Holl.

SCOTLAND:—Kincardine, Eastern coasts from Firth of Forth northwards.

Rev. J. M. Crombie.


CHANNEL ISLANDS: South Coast of Jersey; Mr. Larbalestier.

Spores .0185 mm. long, .011 mm. broad. Epispore broad.

IV. PTERYGIIUM. Nyl.

Thallus appressed, laciniate-multifid, very fragile, in section polished; granula gonima often moniliformi-concrete, principally arranged under the cortical layer (see Nyl. Syn. t. 2. f. 11, 12, & 13). Apothecia lecideine. Spermogonia having long arthrosterig mata (see Nyl. l. c. t. 2. f. 14 & 15).

1. Pt. pannaricllum, Nyl. nigrescent, microphyllino-coralloid, decumbent, granula gonima generally moniliformi-concatenate; apothecia lecideine, margined with a black annular excipulum; spores 8, colourless, oblong, 2-3-septate.

On limestone rocks, very rare.


Bot. Prov:—15.

SCOTLAND.—Craig Tulloch, Blair Athole, Perthshire, Rev. J. M. Crombie.

2. Pt. Lismorensae, Cromb. nigricant, or olivaceo-nigricant, sub-furfuraceous, thin, slightly or obsolesely radiose, variously confluent; apothecia black, lecideine, small, margined, internally dark; hypothecium violacentsi-nigricant; epithecium caerulescenti-nigrescent; spores 8, colourless, oviform, 1-septate.

On calcareous maritime rocks. 1876.

SYN:—Crombie in Grevilsea 5. p. 108 (1877). Nyl. in Flora 1877 p. 221.

Bot. Prov:—16.

SCOTLAND:—Island of Lismore, Argyleshire. Rev. J. M. Crombie (1876).
OF GREAT BRITAIN.

Allied to *Pt. aspersulum* (Ach.) Nyl., but differs in the thallus and spores. Spores .010—11 mm. long, .005.6 mm. broad. *Gelatina hymenea* I blue, then dusky lutescent.

V. LEPTOGIDIUM, Nyl.

Granula gonima moniliformly concatenated. "Syngonimia scytonemoid."

1. *L. dendriscum*, Nyl., virescent, towards the base flavo-pallescens, opake, round, or obsolescent somewhat compressed, excessively branched, slender, small, forming intricate fruticuli; apothecia pale or pale-rufous, smallish; epithecium at length somewhat convex; spores 8, colourless, ellipsoid, simple; *Gelatina hymenea* I blue.

On mossy trees on lofty mountains, rare. 1861.


**Fig.**—Trans. Bot. Soc. Edinb. 7. t. 10. f. 2.

**Geog. Distrib.**—Brazil, Isle of Bourbon, Papetiti and New Caledonia.


**Ireland**—Glena, Killarney, *Dr. Carrington* (1861). Glengariff! *Adm. Jones*. Cromble, in *Journ. Bot.* says, "On submitting a specimen of *Leptogium Moorei*, Hepp. to Nylander he pronounced it to be entirely the present species. In all the specimens which I have seen in herb. Carroll & ex herb. Jones, there are no apothecia present, and it is most likely that the anomalous *apothecia* hitherto described were simply spermgones, though even these, which are not unfrequent in the specimens referred to, are scarcely rightly developed. This is another of those interesting exotic species which find their way to S.W. Ireland."

**Tribe II. Collemel.**

Thallus very various, crustaceous, granulose or lobate, laciniate or microphylline; granula gonima glaucous-green, either moniliform or variously dispersed. *Apothecia* lecanorine or biatorine or endocarpoid.

I. SYNALISSA.  *Dr. Nyl.*

Thallus nigricant, minute, of various form, thinly incrusting, submembranaceous, granulose, fruticulo-divided, granula gonima in globular cells; *apothecia* innate, concolorous, lecanorine or endocarpoid. *Spermatia* oblong.

1. *S. symphorea* (DC.) black, fastigiato-divided, branches terete, obtuse, sometimes only noduliform; *apothecia* terminal, concolorous, punctiformi-impressed, at length dilated, *thalline* margin tumid; spores 8-24, colourless, ellipsoid or sphaerical, simple.

On maritime calcareous rocks, rare.


**Fig.**—Hepp Sporent t. 11. f. 89. Nyl. Syn. 1. c. t. 3. f. 2.

**Exs.**—Zw. 366. Hepp 89. Anzi It. S. 1, Anzi Venet. 6.


*Gelatina hymenea* I.—"Spores .009—.012 mm. long, .006—.9 mm. broad." *(Nyl.)* "Spores .00125 in. diam. *(Mudd t. 1. f. 2).*"
THE LICHEN-FLORA

II. PYRENOPSIS. Nyl.

Thallus crustaceous, thin, granuloso-areolate, laxly cellular, internally rubricose, granula gonima agglomerated in globular cells. Apothecia concolorous, minute, urceolate-innate in a prominent margined receptacle, margin somewhat swollen and connivent. Spores simple.

1. *P. haematopis*, (Smrft.) dark or rubricoso-fuscous, crustose, opaque, verrucoso-unequal, thickish, dibract, internally subconcous or more nigrant in the lower portion; spermatia very minute, ellipsoid; apothecia superficial, urceolate, margins somewhat swollen and connivent. Spores simple.

On alpine rocks, rare. 1865.

**Syn:**—Smrft. Lapp. 117. (1829). Nyl. Lapp. or 104. Crombie En. 2.

**Geo. Distr.:—** Lapland.

**Bot. Prov.:—** 15.

**Scotland:**—Ben Lawers. Adm. Jones (1865).

3. *P. homceopsis*, Nyl. brown, thin effuse, subgranulose; apothecia concolorous, lecanorine, small, internally pale; epithecium colourless; paraphyses slender; spores 8, colourless, ellipsoid, simple; gelatina hymenea vinous-red with iodine.

On micaceous boulders, rare. 1867.


**Bot. Prov.:—** 15.

**Scotland:**—Loch-na-cat, Ben Lawers. (1867) Rev. J. M. Crombie

Allied to *P. grumulifera*, Nyl. but distinct.

"Spores .011—.18 mm. long, .007—.10 mm. broad." (Nyl.)

4. *P. fuscaula*, Nyl, darkly fuscous or brown-black, minute, noduloso-granulate, effuse, granules agglomerate and confluent in depressed glomerules, more or less distinct, or irregularly scattered; "apothecia non rite evoluta visa."

On maritime rocks, rare. 1866.


**Geo. Distr.:—** France.

**Bot. Prov.:—** 7. 15. 31.

**Scotland:**—Cairn Gowar (3690 ft.) Rev. J. M. Crombie.

**Wales:**—Barmouth!

**Channel Islands:**—Noirmont and La Moye, Boulay Bay, Jersey. Mr. Lorbalestier. (1866).

5. *P. furfuracea*, Nyl. fuscous-black or black, when moist rubricoso-nigrant or rubricoso-rufescent, granulato-areolate; apothecia nearly urceolariform; spores 8, colourless, ellipsoid, simple; gelatina hymenea vinous-red with iodine.

On alpine rocks, rare. 1864.


**Bot. Prov.:—** 15.

**Scotland:**—Summit of Ben Lawers !; near Loch Tay and in Glen Dochart. Adm. Jones. (1864).

6. *P. phylliscella* Nyl. dark-brown, effuse, squamulose, squamules subverruculosu-unequal, subadnate, aggregated, but not continuous, rotundato-deformed; apothecia endocarpoid, very minute,
5-15 in each thalline squamule; epithecium punctiform, concolorous, with thalline margin; spores 8, oblongo-ellipsoid; paraphyses few, slender; gelatina hymenea bluish, and thece dark-violet.

On quatzose boulders in sub-alpine streams, rare. 1870.

Syn := Nyl. in Flora. 1875 p. 102.

Bot. Prov := 15.


"Nearly allied to P. Tasmanica, Nyl. Spores .005—7 mm. long, about .003 broad. Thalline squamules composed of minute coalescent granules. Spermata slender, oblong or fusiform-oblong" (Nyl.)

7. P. haemalea, (Smrft) fuscescenti-rufous, crustiform, diffracto-rimose, granulato-rugose; apothecia very much crowded, innate, plano-convex, shining, nigrescent, when moist olivaceo-fuscescent, thalline margin crenate, at length excluded.

On alpine rocks, rare. 1871.

Syn :=—Collema haemaleum, Smrft. Lapp. 117. (1826.) Stirton in Grevillea. 2. 71.


Scotland :=—Ben Lawers. Dr. Stirton (1871).

Ireland :=—Doughnagh mountain, Galway. Mr. Larbalestier.

8. P. granatina, (Smrft.) fusco-rufescens, tartaraceous, effuse, rimoso-diffract, granulose, granules rugoso-nodulose, somewhat plane, opaque, often contiguous, rotundato-difform; apothecia minute, numerous in each thalline granule, internally whitish, reddish, shining, margin thin, entire, whitish; spores 8, colourless, ellipsoid, simple, or spuriously 1-septate; gelatina hymenea and thece blue with iodine.

On mountain rocks, very rare. 1865.


Exs :=—Fellm. 4.

Geog. Distrib :=—Russia, Lapland.


Wales :=—Cader Idris. Dr. Holt.

"Spores .009 — .012 mm. long, .0045—.0055 mm. broad." (Nyl.)

III. COLLEMA. Ach. Nyl. *

Thallus very various, granula gonima moniliform, no distinct cortical layer. Apothecia rufescent, lecanorine. Spores 8, simple or variously divided, septate and murali-locular.

* Spores unknown.

1. C. tichinodeum, Nyl. fuscous-black, lineari-laciniose, lacinia ligulate, 2-3-divided, apices obtuse, internally almost as in Ephebe but with small brown moniliform gonima; apothecia unknown.

On decaying mosses on alpine rocks, rare. 1865.

* In this genus and Leptogium I have entirely followed the arrangement of Dr. Nylander and Mr. Crombie in Journ. Bot. (1874).

GEOG. DISTRIBUTION:—Prussia.

BOTANICAL PROVINCIAL:—15.

SCOTLAND:—Summit of Ben Lawers! plentiful, but sterile. Adm. Jones (1865).

Crombie l.c. remarks that "probably this species belongs to a distinct genus, which may be named Lichinopsis, though as the fructification is at present entirely unknown, it is best retained as constituting a separate section of Colema."

** Spores simple.**

2. C. chalazanum, Ach. black, difforni-lobate or laciniate, margins crenulato-granulate; apothecia rufous, small, thalline margin tumid; spores 8, colourless, ellipsoid, simple; paraphyses slender; gelatina hymenea vinous-red with iodine; spermatia slender, obtuse at each apex.

On sub-alpine calcareous rocks, rare. 1834.


FIG:—Hepp Sporent. t. 75 f. 661.


GEOG. DISTRIBUTION:—Germany, Italy, Switzerland.

BOTANICAL PROVINCIAL:—1. .5...19, 20.

ENGLAND:—Cheddar, Mr. Borrer. St. Vincent’s Rocks, Bristol. Mr. Thwaites.

SCOTLAND:—Ferrow, Mr. J. Taylor. (1834). Near Fermoy, Mr. T. Chandler.

WALES:—Eglwys rocks ! near Llangollen. "Spores .020—28 mm. long, .010—13 mm. broad." (Nyl.)

3. C. chalazanodes, Nyl., similar to C. chalazanum, Nyl., but with much smaller often subglobose spores .012—17 mm. long, .008—.015 mm. broad. Thece clavate.

On rocks.

SYN:—Nyl. in Flora, 1869, p. 293.

GEOG. DISTRIBUTION:—Norway.

Crombie l.c. says "Intermediate, as it were, between the preceding and the following species, with larger subglobose spores."

4. C. myriococcum, (Ach.) black, difforni-lobate or laciniate, crenulato-lobate; apothecia rufous, small, thalline margin tumid; spores 8, colourless, sub-globose, simple, small.

On mossy walls, rare. 1869.

SYN:—Nyl. in Flora, 1869, p. 293. Crombie En. 4.

GEOG. DISTRIBUTION:—Norway.

BOTANICAL PROVINCIAL:—1. 5.

ENGLAND:—Bradley wood, near Newton Bushell, Devon! Dr. Hall. (1869). Ablington, Barnsley Park, near Cirencester, Gloucestershire, Mr. Joshua.

Crombie l.c. remarks, "This species is with difficulty to be distinguished from the two preceding ones, and probably all three are referable to one and the same variable species."

"Spores .009—.012 mm. diam." (Nyl)

5. C. confertum, Ach. nigricant, small, crowdedly and turgidly squamulose, squamules generally cyathoid or podetiform, nearly all fertile; apothecia (one in each thalline squamula or lobe, urceolate at the summit) subconcolorous, impressed, thalline margin tumid; spores 8, colourless, ellipsoid or fusiform-ellipsoid, simple; paraphyses slender; gelatina hymenea and especially asci blue with iodine.
On the earth, rare. 1810.

Syn.:--Ach. L.U. 634 (1810); Nyl. in Flora, 1867. p. 330.

Bot. Prov.:--A.


Mr. W. Joshua.

"Spores .017--23, mm. long, .008--.010 mm. broad." (Nyl.)

*** Spores 3-septate.

6. C. ceraniscum, Nyl. brownish-olive, or greenish-black, cespitose, laciniato-lobate, lobes dilated upwards, erect, crowded, fastigate, elongato-cylindrical, obtuse; apothecia pale brown, minute, plane, thalline margin thin, smooth; spores 4, colourless, broadly oblong, 3-septate or irregularly mural-locular.

On earth in alpine localities, very rare.

Syn.:--Nyl. in Flora 1865. p. 353. C. ceranoides, Mudd Man. 41, (non Borr.).


Bot. Prov.:--A.

Scotland:--Summit of Ben Lawers. Adam Jones.

7. C. auriculatum, Hffm. dark-green or darkly viridi-glasescent, rigid, opake, dilated, lobate, lobes somewhat imbricate, more or less granulate, irregularly repando-crenate; apothecia Rufous, innate or emergent, margin thick, more or less granulose; spores 8, colourless, ovoid, 3-septate.

On mossy walls in sub-alpine localities, rare. 1869.


Fig.:--Schärf. Enum. t. 10, f. 3.

Exs.:--Zw. 162. A.E. Schärf. 432

Geog. Distri:--Switzerland, France, Germany.

Bot. Prov.:--A.

Scotland:--Appin, Argyleshire, Rev. J. M. Crombie. (1869).

Forma membranacea, Kplhb. thallus membranaceous.

Scotland:--Rare in S. W. Highlands near Inverary. Rev. J. M. Crombie.

Var. pinguescens. Nyl. thallus thicker, lobes more divided.

On shady walls and calcareous rocks, amongst decayed mosses, scarce.


Scotland:--Finlarig, Killin, CraigTulloch, Blair Athole. Rev. J. M. Crombie. Crombie l.c. states, "this, according to the authentic specimen ex herb. Sowerby in Herb. Mus. Brit. mane Borrer, is entirely identical with C. dermatainum, Borr."

8. C. furvum, Ach. dark fuscos-green or nigro-olivaceous, membranaceous, granulate, lobate, lobes complicate, often undulate, bloody-red with iodine; apothecia fuscos, plane, thalline margin entire; spores 8, colourless, ovoid or ellipsoid, 3-septate, irregularly mural-locular.

On sub-alpine rocks, not unfrequent. 1741.


Lichen granulatus, Sm.

Fig.:--E. Bot. t. 1357.

Exs.:--Hepp. 414.

Geog. Distri:--Europe, Sweden, Finland, Switzerland.

Bot. Prov.:--1, 2, 3...7...10, 11,12...19...30.

THE LICHEN-FLORA


Wales:—Garregwen rocks. Mr. Griffith.

Crombie l.c. says, "The true plant, which is best distinguished by the reaction with I from other species, with which it might be confounded, does not appear to be at all common in this country. The form tunaforme, Ach. is characterised merely by having the lobes of the thallus longer and more deeply incised."

9. C. pulposum, (Bernh.) dark green or fusco-olivaceous, orbicular, lobate, lobes subimbricate, often plicate; apothecia rufescent, moderate, plane, thalline margin entire; spores 8, ovoid, 3-septate, often with longitudinal septa.

On calcareous earth in sub-alpine places, not unfrequent. 1785.


Geo. Seand. 30.

Fig:—Bernh. l. c. t. 1. f. 1. Scher. En. t. 10, f. 5. E. Bot. t. 834.


Bot. Prov:—1, 2, 3, 4, 5, 7... 12... 15... 19... 26... 31.

England:—Oxford, Dr. Sibthorp. Cambridge, Rev. R. Belchan. (1785.) Cumberland! Mrs. Stanger. Cliftops, between Newhaven and Rottondean; Crocker Hill, Slindon; Horsham Church; Sonthover, Lewes; Hurstspierpoint; Tunbridge Wells. Mr. Borrer. Budleigh Salterton. Prof. Dickie. near Keston Common; Wrotham; Wye; Folkestone; Shoreham; Sandwich; Kent. Mr. Holmes. Lydiard Tregoze, Wilts; Gloucestershire. Mr. Joshua. Llanymynch Rocks! Llanymynch Hill! High Rock, near Bridgnorth, Shropshire!


Ireland:—On walls, frequent. Mr. Carroll. Killarney. Dr. Carrington.

Ballinahinch! Galway. Mr. Larbalestier.

Channel Islands:—Doye Pillar, Guernsey, and common on all the Islands. Mr. Larbalestier.

"Spores .016—24 mm. long, .007—.010 mm. broad." (Nyl.)

Forma granulatum, Sw. lobes of thallus and margins of apothecia more or less granulated.

In limestone districts, frequent, rarely fertile. (Crombie l.c.)

Forma compactum, (Ach.) thallus closely imbricated; apothecia immersed.

England:—Rare in S. & W., hardly fertile, though spermogoniferous. Rev. J. M. Crombie. (l. c.) near Cirencester, Mr. Joshua.

Forma hydrocharum, (Ach.) glaucous, thalline lobes thick, discrete, expanded and radiant, oval, repand and incised.

On damp calcareous rocks, very sparingly and infertile.

Scotland:—Craig Tulloch. Rev. J. M. Crombie (l.c.)

Var. ceranoides, Borr. olive-brown, sub-virescent, or nigrant, rotundato-pulvinular, lobate, lobes imbricated, ascending, dilated upwards, proliferous, narrowly and elongato-laciniate, laciniae sub-cylindrical, graniform, fastigate, crowded, turgid; apothecia brown, sessile, convex, margin entire or crenulate or elongato-granulate: spores 8, colourless, 3-septate.

On chalk, rare. 1831.

Syn:—Borrer in E. Bot. Suppl. 2794. (1831); Crombie En. 6.

Fig:—E. Bot. Suppl. t. 2794. f. 2,
OF GREAT BRITAIN.

BOT. PROV. — 2, 3...5.
Crombie I.e. says, "This, according to the fragment of the original specimen in Herb. Sowerby, attached to the fig. drawn for E. Bot. Suppl. seems to be referable to the present species, but the characters of the plant in Herb. Borrer at Kew are not very definite."

Var. pulposum, Nyl. much smaller than the type, minutely granuloso-lobulate, sub effuse; apothecia with an entire thalline margin.

On the earth, very rare.
ENGLAND. — Near Cirencester. Mr. Joshua.

Var. tenax, Ach. darkly glaucescent or virescent; apothecia rufous, innate, thalline margin less prominent.

On earth, in upland mountainous districts, rare. 1811.
Fig. — E. Bot. 2349. Hepp Spore. t. 11, f. 87.
GEOG. DISTRIB. — Switzerland.
BOT. PROV. — 2...5...7...10...16...19.
IRELAND. — Blackstone Bridge, co. Cork. Mr. Carroll.

Of this I have seen no specimen, nor has any diagnosis been published.
Crombie I.e. says, "sufficiently similar to C. pulposum, but with much larger spores."

11. C. limosum, Ach. dark green, thin, appressed, lobes small, scattered, thick and pulpuy when moist, slightly crenulate; apothecia rufous, plane, moderate, margin prominent, entire or slightly crenulate; spores 8, colourless, ovoid, 3-septate, with occasional longitudinal septa.

On wet clayey soil, not unfrequent. 1831.
Fig. — E. Bot. Suppl. t. 2704. f. 1.
GEOG. DISTRIB. — France, Sweden.
BOT. PROV. — 2, 3...5...7.
ENGLAND. — Hurstpierpoint, Sussex. Mr. Borrer. (1831), near Wooton-under-Edge, Mr. W. Joshua. near Chelsfield, Kent. Mr. Holmes.
WALES. — Nevin!
Crombie I.e. says, "easily recognised from the allied species by the adglutinated evanescant thallus and the appressed thinly-margined apothecia."

12. C. crispum, (Huds.) olivaceo-virescent or fusco-virescent, orbicular, lobato-divided or subradiate, margin granulate and crenate; apothecia darkly rufescent, thalline margin granulate; spores 8, colourless, ovoid, 3-septate, irregularly muriformi-locular.
On gravelly earth, frequent. 1831.
THE LICHEN-FLORA


Fig. —E. Bot. Suppl. t. 2716. f. 1. Dill. t. 19. f. 23.

EXS. —Leight. 106. Madd. 2. Zw. 159. Fellm. 7.

Geog. Distrib. —N. and Central Europe.

Bot. Prov. —1, 2, 3, 5...10, 11, 14, 15, 16...19, 20...31.

England: —Sussex. Mr. Borrow. (1831); Coastham Marshes, near Redcar, Cleveland; Mr. Madd. Dawlish. Mr. Parfit. Hudhead, Berwick-on-Tweed. Dr. G. Johnston. Gloucestershire. Mr. Joshua. Westerham; Chelsfield, Kent. Mr. Holmes.


Ireland: —On limestone rocks and walls, common, Mr. Carroll.

Channel Islands: —Shore of Herm. L'Etacq, Jersey. Mr. Larbalestier.


Var. cristatulum, Nyl. thallus microphylloid.

Herm. Mr. Larbalestier. Gloucestershire. Mr. Joshua.

13. C. cheileum, Ach. dark-olive or fusco-nigrigant, lobate or crenato-granulose; apothecia rufous, plane, moderate, thalline margin granulata; spores 8, colourless, oblongo-ellipsoid, 3-septate, or submurali-divided.

On walls and calcareous rocks, frequent.


Fig. —Hepp Sporen t. 105. f. 923.


Hepp 923. Larbal. 52.

Geog. Distrib. —Central Europe, Sweden, Algeria.

Bot. Prov. —1, 2, 3, 5, 6...10, 15...19...31.

England: —Pinchingthorpe, Yorkshire. Mr. Madd. Torquay. Mr. Parfit. near Hastings; and near Shanklin, Isle of Wight. Dr. Holt. near Cirencester. Mr. W. Joshua. Postling. Maidstone; Wrotham; Boughton Monchelsea; Sevenoaks; Brasted, Kent. Mr. Holmes.


Ireland: —Killarney. Mr. Hardy.


Channel Islands: —Quenuvais, Jersey, and common on all the islands. Mr. Larbalestier.

Forma nudum, (Scher.) thalline lobes broader, egranulose.


Ireland: —South parts.

Forma monocusporum, (Duf.) thallus microphylline or nearly obliterated; apothecia with a crenulate thalline margin.

SYN. —Nyl. Syn. p. 111. (1858.)

Geog. Distrib. —France.


England: —Near Cirencester. Mr. Joshua.

14. C. melaninum, Ach. nigricant or nigro-olivaceos, orbiculate, laciniate, lacinice elongate, convex beneath, margins elevated, undulato-crispate, crenate, sometimes complicate; apothecia reddish-brown, plane or somewhat concave, thalline margin crenulata; spores 8, colourless, ovoid, 2-3-septate and longitudinally divided, irregularly murali-locular; gelatina hymenea intense blue with iodine.

On calcareous rocks, frequent. 1741.


Fig. —E. Bot. t. 1924.


Geog. Distrib. —Central Europe, Germany, Pyrenees, Scandinavia.

Bot. Prov. —1, 5...7, 8...10, 11, 14...17...19...26, 27...30, 31.
OF GREAT BRITAIN: 21


Wales:—Caernarvon. Mr. Hudson. near Cefn House, Denbighshire. Mr. Griffith.

Channel Islands:—Quenvais and La Moie, Jersey! Mr. Larbalestier.

"Spores .021—27 mm. long, .009—.011 mm. broad." (Nyl.)

Forma marginale, (Huds.) imbricate, multifid, dentato-crenate; apothecia marginal, plane, nigro-fuscous.

On rocks.

Syn:—Huds. Fl. Angl. 534. (1778.)

England:—Shipton, Gloucestershire. Mr. Joshua.

Forma jacobcifolium, (Schrank.) lobes deeply laciniate, laciniae radiant, straight, narrow, elongate, broader outwards, lacero-pinnatifid; apothecia marginal.


Ireland:—South-western portions, Crombie. l.c.

Channel Islands:—Crombie. l.c.

Forma gyrosum, Ach. lobes gyroso-complicate; apothecia marginal.

Scotland:—Craig Tulloch. Rev. J. M. Crombie.

Var. complicatum, Schl. Schar. laciniae elongate, somewhat conca
evate, imbricato-lobulate, lobes complicate, margins entire; apothecia large.

On calcareous rocks, frequent.

Syn:—Scher. Enum. 255. (1850); Crombie En. 5.

Fig:—Scher. En. t. 10, f. 4.

Exs:—Scher. 418, 419.

Geog. Distrib:—Switzerland.

Bot. Prov. :—16.

England:—Teesdale. Mr. Baker.


15. C. hypergennum, Nyl. nearly similar to C. melaznum, but with larger spores .026—36 mm. long, .010—16 mm. broad.

On calcareous rocks. 1876.

Syn:—Nyl. in Flora 1876. p. 232.

Ireland:—Tullywhee Bridge, Kylemore, Connemara. Mr. Larbalestier. (1876.)

16. C. granuliferum, Nyl. nigricant or nigro-olivaceous, orbiculate, firm, sprinkled more or less with isidiose globules, laciniae, laciniae in a dry state on the under surface often longitudinally and crowdedly thinly rugulose-plicate; apothecia moderate, reddish, thalline margin at length subcrenate; spores 8, colourless, oblong, 3-septate, sometimes with 1—2 connecting septules.

On old walls and calcareous rocks, rarely among mosses on the ground.
SYN:—Nyl. in Flora. 1875. p. 103.

**THE LICHEN-FLORA**

**SYN:**—Nyl. in Flora. 1875. p. 103.

**Query:** Something in Flora. 1875. p. 103.

**Geog. Distri:**—Europe.

**Bot. Prov:**—3...5...15.


**Scotland:**—Appin. Rev. J. M. Crombie.

**Ireland:**—Killarney, Mr. Hardy.

"In general aspect somewhat similar to C. melanum, Ach. Spores 0.025—32 mm. long. 0.003—12 mm. broad." (Nyl.)

**Forma meizolobum,** Nyl. lobes of thallus larger.


**Ireland:**—Muckross, Killarney, Mr. Hardy.

**Forma minor,** Cromb. thallus poorly developed, resembling C. pulposum, f. granulatum, Sw.

17. C. granuliforme, Nyl. fuscous-black, granulato-areolate, forming dilated patches, areole small, granuliform or subverrucose; apothecia unknown.

On granitic rocks, very rare, 1876.

**Syn:**—Nyl. Lich. Scand. p. 28. (1861.)


**Ireland:**—South side of Kylemore Lake, co. Galway. Mr. Larbalestier. (1875.)

18. C. cristatum, (Hoffm.) Schar. blackish-green, coriaceous, laciniate, closely adnate, when moist turgescent and olive-green, lacinice abbreviate, somewhat broad, imbricato-aggregate, margins undulate, crispato-crenulate, extremities inciso-crenate; apothecia fuscous, large, superficial.

On calcareous rocks.


**Fig:**—Dill. t. 19 f. 28.

Crombie l.c. says, "Differ from the preceding (C. melanum.), though perhaps only as a sub-species, in the imbricato-aggregated lacinia, and the slightly different character of the spores, probably not very rare in upland tracts, though, till recently, overlooked as a British plant."

19. C. polycarpacon, (Schar.) migrant or nigro-olivaceous, orbicular, lacinice radiate, nearly undivided, narrow, margins thickened and elevated; apothecia very numerous, covering nearly the entire thallus, reddish-brown, plano-convex, thalline margin entire, paler, thickish, elevated, or somewhat incurved; spores 8, colourless, elongato-ovoid, 2-3-septate, cells nucleolate.

On calcareous rocks, rare.


**Fig:**—Hepp Sporent. t. 105. f. 919. Arnold in Flora 1867. t. 3. f. 67, 68.


**Geog. Distri:**—Scandinavia, Switzerland, Italy, Pyrenees, Bavaria.

**Bot. Prov:**—5...16.

**England:**—Cheddar Cliffs; near Kendal, near Oaksay, Gloucestershire. Mr. Joshua.

**Scotland:**—Appin, Argyleshire. Rev. J. M. Crombie.

Crombie l.c. says, "Distinguished by the pulvinate thallus, and the spores at length 3-septate."

20. C. Laureri, (Fw. Krb.) dark-olivaceous, membranaceous-cartilaginous, subflaccid when moist, centrifugal, inciso-lobate, lacinice
undulate, lobulate, margins erect, under surface albo-fibrillose; apothecia moderate, scattered, numerous, very shortly stipitate, reddish-brown, plane, proper margin very thin and obscure, thalline margin thickish, granuloso-rugulose; spores 8, colourless, linear-oblong, 3-septate.

On stone-walls, rare.

**SYN:**—Korb. S. L. G. 414. (1855); Arnold in Flora 1867 p. 135. Crombie in Journ. Bot. n.s. 2. 133. Synnichoblastus complanatus, Mudd Man. 44. (in part).

**Fig.**—Mudd l. c. t. 1. f. 6. Hepp Spores, t. 106. f. 331. Arnold in Flora 1867. t. 4. f. 51—84.

**EXS.**—Hepp 931. Anzi Langob. 5.

**GEOG.** Distrib.:—Pyrenees, Italy, Switzerland.

**BOT.** Prov.:—11.

**ENGLAND:**—Near High Force Inn, Teesdale, Durham. *Mr. Mudd.*

Crombie l. c. says, "Distinguished by having the thallus broader, and the spores 3-septate and obtuse at either apex, but apparently a somewhat doubtful British lichen."

**** Spores plurisepatae.

21. *C. stygium,* (Del.) black, laciniate, laciniae deeply incised, rotundato-lobate at the extremities; apothecia atro-rufous.

On stone walls, and calcareous rocks, rare.


**Fig.**—Whlb. N. Act. Stockh. 27. p. 145, t. 4. f. 5. Flora 1867. t. 3. f. 69—72.

**GEOG.** Distrib.:—Switzerland.

**BOT.** Prov.:—5...11...12...26.


**IRELAND:**—Kylemore Lake, *Mr. Larbalestier.*

Crombie l. c. says, "Similar to the preceding species, but with 3-5-septate spores."

22. *C. fluccidium,* Ach. dark-green or fuscous-green, membranaceous, undulato-plicate, lobate, lobes large, expanded, flexuose; apothecia rufescent, plane, margin entire; spores 8, colourless, ovoid or broadly fusiform-oblong; 4-6-septate.

On rocks and walls and trees in mountainous districts, not unfrequent, but rare in fruit. 1783.


**Fig.**—E. Bot. t. 1653.


**GEOG.** Distrib.:—Europe.

**BOT.** Prov.:—1. 2...5...7...10...12...15...19...20...26, 27...30.


**CHANNEL ISLANDS:**—St. Martin’s, Jersey. *Mr. Larbalestier.*

"Spores 028—28 mm. long, .007—010 mm. broad." (Nyl.)
23. C. fasciculare, (Linn.) dark-green or fusconivrescent, suborbicular, crenato-lunate, generally in erect, sub-podocellate conglomerations, dilated upwards, (with iodine blood-red); apothecia rufescent, crowded, biatorine, somewhat convex, margin thin, undulate; spores 8, colourless, fusiform, 3-septate.

On old trees, rare. 1741.


Fig.—E. Bot. t. 162. Nyl. syn. t. 3, f. 1.

Exs.—Zw. t. 102.

GEORG. DITHEM:—Central Europe, France, Germany.

Bot. Prov.—2, 3, 4...7...11, 12, 13...15, 16.


WALES:—Nant Glyn, Denbighshire. Mr. Griffith. “Spores. 0.16—20 mm. long. 0.04—6 mm. broad.” (Nyl.)

Crombie l. c. remarks, “Easily recognized by the fasciculate lobules of the thallus and the biatorine apothecia.”

24. C. multipartitum, Sm. fusco-olivaceous or nigrescent, laciniate, radiate, lacinia narrow, multifid, somewhat convex, lobato-partite at the apex, lobes divergent; apothecia atro-rufous, moderate, plane, thalline margin thickish, even; spores 8, colourless, cylindrical, curved, olocoso-locular; paraphyses thick, pauci-articulate.

On sub-alpine calcareous rocks, not unfrequent. 1782.

SYN.—Sm. E. Bot. 2582. (1814); Nyl. Syn. 116.

Fig.—E. Bot. t. 2582. Nyl. Syn. t. 2, f. 8.

Bot. Prov.—1...5...7, 8...10, 11, 12...16...19...36...28.


WALES:—Little Orme's Head! Eglwyseg rocks! “Spores. 0.2—48 mm. long. 0.007 mm. broad.” (Nyl.)

25. C. nigrescens, (Huds.) nigro-virescent, thin, membranaceous, submonophyllous, orbicular, depressed, rotundato-lobate, radiato-rugoso-plicateul, naked or granulate, ascending in the centre, depresso-adnate at the circumference; apothecia dark-rufous, plane, small, crowded, thalline margin entire; spores 8, colourless, fusiform-cylindrical, pluri-septate.

On old trees, not unfrequent. 1741.


Fig.—Himm. Fl. Lich. t. 37, f. 2, 3.


GEORG. DITHEM:—Europe, Algeria, America, Asia, Polynesia, N. Zealand.

Bot. Prov.—1...2, 3, 4...5...7...14, 15...31.


Ireland:—On old trunks frequent. Mr. Carroll.


"Spores .034—42 mm. long. .005 mm. broad." (Nyl.)

26. C. aggregatum. Ach. nigro-virescent, membranaceo-lobate, rigid, plicate, not radiato-rugose, nor appressed, deformed, lobes crenate, margin granuloso-crispate; apothecia rufescens, crowded, moderate, plane, thalline margin thin, entire; spores 8, colourless, fusiform-cylindrical, straight or curved, pluri-septate.

On old trees and rocks, rare.


Fig:—Nyl. Syn. t. 2. f. 9.

Exs:—M. & N. 453.

Geog. Distr.:—Europe, Asia, America, Polynesia.

Bot. Prov.:—1, 2, 3...19.


Ireland:—Killarney. Dr. Moore.

"Spores .068—65 mm. long. .001—.005 mm. broad." (Nyl.)

27. C. terrulentum. Nyl. olive-brown, thin, granulose; apothecia spadiceo-reddish, small, margined by the thallus; spores 8, colourless, ellipsoid or oblongo-ellipsoid, 5-septate, submurali-divided; gelatina hymenea and especially theca I. bluish.

On old ash-trees. 1874.

Syn:—Nyl. in Flora. 1874. p. 305.

Geog. Distr.:—Europe.

Bot. Prov.:—15.


"Spores 0.018—24 mm. long. 0 010—12 mm. broad."

IV. LEPTOGIUM. Ach.

Thallus very various, thin, granula gonima moniliform, cortical layer cellulose, distinct. Apothecia lecanorine or sub-biatorine. Spores 8, variously septate or divided.

1. L. biatorinum. Nyl. fuscous or fusco-virescent, granuloso-lubulate, imbricate; apothecia rufescens, biatorine, moderate, urceolate, gyrophile; spores 8, hyaline, ovoid, 3-4-septate, sparingly longitudinally divided; gelatina hymenea and asci blue with iodine.

On mossy walls, chiefly in chalk districts, rare. 1866.


Geog. Distr.:—France.

Bot. Prov.:—3...31.


Channel Islands:—Under Fort Essex, Alderney. Mr. Larbalestier.

"Spores .025—28 mm. long. .011—12 mm. broad." (Nyl.)
2. *L. microphyllum*, Ach. *darkoline or fuscos-green, microphylline, imbricated, lobes granulato-crate, minute, often verrucoso-diffract, effuse; apothecia pallid-o-rufescent, small, crowded, urceolato-concave, thalline margin nearly concolorous, entire; spores 8, colourless, ovoideo-ellipsoid, 3-septate; gelatina hymenea blue with iodine.

On old elms, rare. 1810.


FIG:—E. Bot. Suppl. t. 2721.


GEOG. DISTRIB:—Central Europe, France, Sweden, Germany, Switzerland, Algeria.

BOT. PROV:—1, 3, 4, 5...10.

ENGLAND:—Near Burry St. Edmund’s, Suffolk. Rev. G. R. Leathes. (1810). Dunsford near Exeter, Devon; Mr Parfitt. Ingleby Park, Cleveland. Mr Muudd. Lyndhurst, New Forest. Rev. J. M. Crombie. Danny; Ockley Green, Surrey. Mr. Borrer. near Worcester. Dr. Holl. CHANNEL ISLANDS:—St. Martin’s Quenvais, Jersey. Mr. Larbalestier. Crombie l.c. states that “the two preceding species form a natural transition between *Collema* and *Leptogium*, the thallus having the structure of *Leptogium*, while the apothecia are those of *Collema*."

“Spores .016—24 mm. long. .008—.010 mm. broad.” (Nyl.)

3. *L. amphineum*, (Ach.) Nyl. *olivaceous or fusco-virescent, adnate, slightly spread about or subcrustoseform, unequal, scarcely truly lobate; apothecia obscurely rufescent, small, somewhat concave; spores 8, colourless, ellipsoid or ellipsoideo-void, 3-septate and variously divided.

On the earth, sparingly. 1872.

SYN:—Nyl. Scand. 32. (1861); Crombie in Journ. Bot. u. a. 2. 133.

GEOG. DISTRIB:—Scandinavia.

BOT. PROV:—1...5.

ENGLAND:—Newlyn Cliff! near Penzance, Cornwall. Mr Curnow. near Stroud, Gloucestershire. Mr. Joshua.

“Spores .023—27 mm. long. .009—.011 mm. broad.” (Nyl.)

4. *L. rhyparodes*, Nyl. *fuscos or fusco-nigrescent, furfuraceous, thin, or subgranulose, diffuse, vinous-red with iodine; apothecia concolorous or rarely rufescent, small, somewhat plain and eventually biatorine; spores 8, colourless, ovoid, one or both apices attenuate, submurali-divided; paraphyses slender; gelatina hymenea blue with iodine.

On alpine rocks, rare. 1863.


BOT. PROV:—15.


Crombie l.c. says “in its less developed and more obscure state, as on the summit of Ben Lawers, originally named by Nylander *Collema psorellum*. Flora 1865. p. 602.”

5. *L. tenuissimum*, (Dicks.) *fusco-virescent, imbricated, microphylline, digitato-multifid, laciniae linear, unequal, subciliate; apothecia biatorine, urceolate, margin entire, thick, paler; spores 8, colourless, ovoid or oblong, irregularly murali-locular.

On mossy earth, not common. 1782.

OF GREAT BRITAIN.

27

**L. fragile**, (Tayl.) dark-olive or fusco-olivaceous, firm, laciniato-lobate, rosulate, lobes radiate, crenate, granuloso-unequal; granula gonima variously dispersed, rarely moniliform; apothecia pale brown, urceolato-innate, at length nearly plane, thalline margin thickish; spores 8, colourless, ovoid, variously divided.

On sub-alpine calcareous rocks, very rare.

**Syn:** —Collema, Tayl. Fl. Hib. 2. 109; Leptogium, Nyl. Syn. 120.

**Exs:** —Arl. 156.

**Bot. Prov:** —19

**Ireland:** —Dunkerron. Dr. Taylor. Crombie l.c. remarks that "this rare Irish species is externally somewhat similar to young states of Collema multipartitum, but the character of the cortical stratum and of the apothecia is widely different."

"Spores .029 mm. long. .013 mm. broad." (Nyl.)

7. L. cretaceum, Sm. olivaceo-fuscous or olive-brown, microphylline, rosulato-lobulate or stellato-laciniate, lobes unequally crenate, somewhat imbricate; granula gonima simple, rarely moniliform; cortical layer rather indistinct; apothecia Rufous, nearly biotorme, concave or gauleticiform, small, margin paler; spores 8, colourless, ovoid, variously divided, 3-7-septate, with longitudinal septa.

On chalk and flint, excessively rare. 1800.

**Syn:** —Sm. E. Bot. 738. (1800); Ach. Syn. 318. Nyl. Syn. 120.

**Fig:** —E. Bot. t. 738.

**Geog. Distriib:** —France.

**Bot. Prov:** —2, 3, 4, 5.


"Spores .022—40 mm. long. .011—17 mm. broad." (Nyl.)

8. L. pusillum, Nyl. olivaceo-fuscous or virescenti-fuscous, most minute, adnate, lobulato-granulose; granula gonima few, moniliform; cortical layer rather indistinct; apothecia Rufescent, minute, elevated, prominent, in a thalline excipulum whose margin is concolorous with the epithecium; spores 8, colourless, ovoid, or narrower at either apex, 3-4-septate.

On old walls, very rare. 1867.

**Syn:** —Nyl. Syn. 121. (1861); Scand. 33. Crombie En. 7.

**Exs:** —(forma effusa) Arn. 356 Larbal. 54.

**Geog. Distrib:** —Sweden, Germany.

**Bot. Prov:** —1, 5, 31.

**England:** —(Forma effusa,) Bath. Dr. Holl. near Cirencester. Mr. Joshua.
CHANNEL ISLANDS: -- (forma effusa) St. Brelade's! St. Peter's, Jersey. Mr. Larbalestier. (1867.)

Crombie l.c. remarks that "the structure of the thallus is almost as in L. biatorinum and L. microphyllum, but distinguished from the former by the thalline excipulum and the character of the spores."

"Spores .08—.26 mm. long. .008—.010 mm. broad." (Nyl.)

9. L. lacerum, (Ach.) plumbeo-fuscescent, membranaceous, longitudinally rugulose or plicululate, lacero-laciniate, margins ciliato-dentate or dentate and crisped; apothecia pallido-rufous, moderate, rare, margin thick, smooth; spores 8, colourless, ovoid or narrower at either apex, mural-locular.

On mossy rocks and walls, frequent. 1741.


GEOG. DISTRIB: -- Central Europe, Germany, Austria, Sweden, Pyrenees, France, Italy, Algeria, N. America.

Bot. Prov: -- 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 15, ...19, 26, 27, 30, 31.


WALES: -- Garn Dingle, Denbighshire, Mr. Griffith. The Torrent Walk, Dolgelley! Mr. Lees. Dollymellyn; Garth Isaf, Merionethshire. Mr. Borrer. Eglwyswyg Rocks! Bettws-y-Coed! Tremadoc!


"Spores .084—.48 mm. long. .010—.16 mm. broad." (Nyl.)

FORMA Fimbriatum, Hoffm. (Fl. Germ. 104. Dill. t. 19. f. 31. c.) lobes broader and more entire, margins densely fimbriate and ciliate, cilia excessively branched.


"Probably not very rare, but scarcely ever seen in a fertile condition." Crombie l. c.

VAR. Pulvinatum, (Hoffm.) dark brown, smaller, pulvinate, lobes minute, much crowded, denticulato-laciniate.

On mossy rocks, &c., not common.


GEOG. DISTRIB: -- Scandinavia, Germany, Switzerland.

BOT. Prov: -- 5, 7, 8, 11, 12, 16, 28, 30, 31.


Prof. Dickie.

Wales:—Dolgelley. Dr. Holl. Eglywseg Rocks!

Channel Islands:—Quenwais, Jersey; Herm; Mr. Larbalestier.

Var. lophaeum. Ach. thallus still smaller, elongated, ciliato-dissected or ramoso-fimbriate, sterile.

On mossy rocks &c., rare.


Exs.:—Anzi Langob. 412 a.

Geog. Distrib.:—Italy, Russia.

Bot. Prov.:—5...16...31.


Scotland.—Appin. Rev. J. M. Crombie

Channel Islands:—"Sparingly in Channel Islands." Crombie. l. c.

Var. intermedium. Arr., aspect intermediate between lacerum and tremelloides.

England:—Near Chalford, Arr., near Arundel, Sussex. Mr. Joshua.

10. L. subtle, (Schrad.) dark dull green, microphyline, laciniate, laciniae variously dissected, narrow, elongato-lobate, imbricated, internally entirely cellulose; apothecia pallido-rufescens, small, concave, gyrate, margin thin, entire; spores 8, colourless, ovoid, 3-5-septate with longitudinal septa.

On the earth, rare. 1791.

Syn.:—Schrad. Spic. 95 (1794); Nyl. Syn. 121.

Fig.:—E Bot. t 1008, Mudd Man t. f. 8.

Exs.:—Nyl. 2. Zw. 175.

Geog. Distrib.:—Central Europe.

Bot. Prov.:—2, 3, 4, 5, 19...


Scotland:—Reeky Linn, Forfarshire. Mr. W. Gardiner.

Ireland:—"On wet clay, not uncommon" Dr. Taylor.


Crombie l. c. remarks, "Must carefully be distinguished from L. tenuissimum and all the somewhat similar states of L. lacerum."

"Spores .020–.23 mm. long. .010 mm. broad." (Nyl.)

Forma latiusculum, Nyl. laciniae broader.

On banks, rare. 1875.

England:—Near Stonehouse, Gloucestershire, Mr. Joshua.

11. L. sinuaturn, (Huds.) plumbeo-fusecens, rotundato-lobate, reticulato-rugulose, lobes crowded, rounded, imbricate, margin entire or crenate, suberect; apothecia brown, scattered, minute, sessile, concave, margin smooth, entire, elevated; spores 8, colourless, oblong, attenuated at the apices, irregularly murali-locular.
On old mossy walls in upland limestone districts, rare. 1741.


**Fig.:** — E. Bot. t. 772. Hepp Sporen t. 74. f. 653.


**Geog. Distr.:** — Europe, Scandinavia, Sweden, Finland, Austria, Germany, Algeria, New Zealand.

**Bot. Prov.:** — 1...3, 4, 5...7, 8...11...14, 15, 16...19, 20...28...30.


**Wales:** — Garn Denbighshire. *Mr. Griffith*. Barmouth! "Spores .024—41 long. .008—.016 mm. broad." (Nyl.)

**Forma Polintieri, (Del.) thallus bright green.**

**Ireland:** — Rare, on Dunkerron and near Cork. *Crombie l.c.*

**Var. crenulatum, (Nyl.) thallus smaller, its margins crenato-incised. Intermediate between the type and *L. lacetum*.**

**On trees.**

**Syn.:** — *L. fragrans*. Mudd Man. 46.

**England:** — Near Ayton, Cleveland. *Mudd. Herb.*

12. *L. fragrans*, (Sm.) *olivaceo-fuscous* or virescent or nigricant, rotundato-lobate, lobes minute, ascending, crowded, smooth, margins thickened, crinate; apothecia trunca-brown, scattered, minute, sessile, convex, margin entire, thick, tumid; spores 8, colourless, ovato-subpyriform, 3-5-septate, irregularly murali-locular.

**On old trees, not common. 1808.**

**Syn.:** — Sm. E. Bot. 1912. (1803).

**Fig.:** — E. Bot. t. 1912.

**Bot. Prov.:** — 2, 3, 5...10.


13. *L. plicatilis*, (Ach.) *fuscus-virescent, imbricato-lobate, lobes erect or ascending, acutely plicate, crisped at the margin; apothecia rufescent, scattered, entirely margined by the thallus; spores 8, colourless, broadly fusiformi-elliptoid, generally 3-septate; gelatina hymena blue with iodine; spermatia incrassate at either apex.**

**On maritime rocks, not unfrequent. 1811.**


**Fig.:** — E. Bot. t. 2483.

**Geog. Distr.:** — Central Europe, Norway, Sweden, Algeria.

**Bot. Prov.:** — 1, 2, 3...7, 10, 19...31.

**England:** — Southover; Lewes; Old Shoreham; St. Michael’s Tor, near Torquay; Steyning; Albourne. *Prof. Borrer*. Aston Keynes, Gloucestershire. *Mr. Joshua*, near Boxley Hill, Maidstone; Broughton Monchelsea; near Pant Woods and Banning, near Maidstone, Kent. *Mr. Holmes*. 
IRELAND:—Killarney. Mr. Hardy.
WALES:—North Wales. Mr. Griffith. (1811) Barmouth.

**Forma minor**, Crombie l. c. "thallus smaller, when dry somewhat angulose, probably identical with Collema fusciculare, Smmrf.


14. *L. palmatum*, (Huds.) fuscocent, fusco-cineruscent or fusco-glaucescent, thin, membranous, laciniate, laciniae erect, sublinear, corniculato-convolute; apothecia rufescent, small, sessile, irregularly scattered, concave, margin elevated, entire; spores 8, colourless, ellipsoid, attenuated at the apices, irregularly murali-locular.

On mossy sandy ground, rare. 1696.


**Geog. Distrib:**—Central Europe, France, Germany, Switzerland, Sweden, Algeria, Canaries.

**Bot. Prov.** =—2; 3, 4...10...15...22...28...31.


**CHANNEL ISLANDS:**—Guernsey! Mrs. Collings. Herm. Mr. Larbalestier.

Crombie l. c. remarks "easily distinguished from *L. sinuatum* by the revolute margins of the lacinia, most visible when moistened and which are either broader or narrower, and linear." "Spores .028—.40. mm. long. .016—.18 mm. broad." (Nyl.)

15. *L. tremelloides*, (L.) plumbeo-glaucescent or plumbeo-avivaceus, thin, membranaceous, smooth, lobate, imbricated and crissate; apothecia rufous or rufescent, elevated, urceolate or plano, margin thick, entire, elevated, lead-coloured; spores 8, colourless, ellipsoid, 3-septate, irregularly murali-locular.

On sub-alpine and maritime rocks, frequent. 1782.


**Bot. Prov.** =—1...5, 6, 7...10...14, 15, 16...19...26...29, 30, 31.


**CHANNEL ISLANDS:**—Gargate Mill! St. Peter’s Valley! Jersey. Mr. Larbalestier.

"Spores .021—.027. mm. long. .008—.09 mm. broad." (Nyl.)
F. polyphyllum, Nyl. rocks Doughruagh, very rare. 1876. Mr. Larbalestier.

16. L. de matinum, Borr. olive-green or olive-brown, subcoriaceous, rotund-lobate; margins ascending, sinuate or inciso-crenate, smooth or minutely granulate; apothecia rufous, plane, margin narrow, entire or minutely crenulate; spores 8, colourless, ellipsoid, 3-septate, murali-locular.

On calcareous rocks, not common.


Fig. — E. Bot. Suppl. t. 2716, f. 2.

Bot. Prov. — 1, 2...5, 6, 7, 10...12...26.


Scotland :— Mr. Borrer.

Ireland :— Tulleywee Bridge, Galway. Mr Larbalestier.

Wales :— Limestone Rocks! Mr. Griffith in Herb. Borrer. Stackpole, Pembroke, Rev. T. Salwey.

17. L. fluviatile, (Huds.) dark olive or olive-black, coriaceo membranaceous, laxly imbricated, lobate, lobes oblong or obovate, convex, proliferous, canaliculate beneath; apothecia brown, small, globular, sessile, conca, thalline margin smooth, pale; spores 8, colourless, obovate, 3-septate, irregularly murali-locular.

On rocks in mountain streams, rare. 1724.


Fig. — E. Bot. t. 2039.

Bot. Prov. — 7...10...13...15.

England: — Malham Cove, Yorkshire. Dr. Richardson. (1724)


Wales :— Snowdon. Dillenius. In River Elwy, about half way from the ford opposite the cave to Pont-Newydd, 4 miles from Denbigh. Mr. Griffith. "Spores .016—.23 mm. long. .007—.9 mm. broad." (Nyl.)

18. L. chloromelum, (Sw.) lead-coloured or plumbeo-virescent, membranaceous, lobate, plicate, longitudinally rugose, lobes undulate; apothecia rufous or fuscorufous, concave or plane, thalline margin thick, rugoso-plicate or furfuraceo-granulate; spores 8, colourless, ellipsoid, attenuated at either apex, 3-5-septate, with longitudinal septa.

On mossy trunks in sub-alpine regions, rare.


Exs. :— Wright 8.


Bot. Prov. — 2...7...19

England :— Charlton Forest, Sussex. Mr. Borrer.

Ireland :— Killarney and Southern counties. Miss Hutchins.

Wales :— Barmouth. I.ev. T. Salwey. Garth, near Dolgelley. Dr. Holl. "Spores .020—.37 mm. long. .010—.17 mm. broad." (Nyl.)

19. L. saturninum, (Dicks.) plumbeo-fuscecent or olivaceo- fusceous, monophyllous and lobato-inciised, or polyphyllous and
complicate, sinuate and plicate, nigricanti-furfuraceous above, beneath cinereous or albo-cinereous and densely incano-tomentellose; apothecia dark-rufous, scattered, plane, thalline receptacle cupular and prominent, margin entire; spores 8, colourless, ellipsoid, 3-septate.

On old trunks in sub-alpine localities, rare. 1790.


GEOG. DISTRIB:—Europe, Pyrenees, Italy, Bavaria, Switzerland, Scandinavia, Sweden, E. Lapland, Hungary, Austria, N. America.

BOT. PROV:—11...15. 16.

ENGLAND:—Teesdale, Durham. Rev. J. Harriman.

"Spores .020—22 mm. long. .010—11 mm. broad." (Nyl.)

20. L. Burgessii, (Lightf.) dark lead-colour or plumbeo-fuscescent large, laciniate-lobate, complicate, lobes crenulate or variously dissected, curled and crispatate beneath, cinerascend and minutely albidotomentellose; apothecia dark-rufous, large, plane or concave, thalline margin subfoliaceous, densely sinuato-laciniate and crispatate; spores 8, colourless, ellipsoid, attenuated or apiculate at either apex, 3-5-septate and irregularly murali-locular.

On calcareous rocks and old trunks in sub-alpine regions, rare. 1774.

EXS:—Hepp 927. Mandon 35.

GEOG. DISTRIB:—Denmark, Switzerland, Canaries, America, Amazonas, Madeira.

BOT. PROV:—6, 7...12, 13...15, 16...19...26...30.

ENGLAND:—Cumberland! Dr. Burgess. Gowbarrow Park! and Keswick! Mrs Stanger.


"Spores .030—40 mm. long. .013—17 mm. broad." (Nyl.)

21. L. turgidum, (Ach.) dark olive-green, thick, rotundato-lobate, smooth or granulated, lobes turgid, ascending and imbricated in the centre, concave, undulate and plicate at the circumference; apothecia reddish-brown or nigricant, moderate, plane; margin thick, turgid, more or less granulate; spores 8, colourless, oblong or ovato-oblong, 3-septate.

On rocks and sandstone walls, not common.

GEOG. DISTRIB:—France, Switzerland.

BOT. PROV:—3, 4, 5...10...12.
THE LICHEN-FLORA


Crombie l. c. remarks, "confined apparently to S. and W. England, easily recognised from all states of Collema pulposum and L. plicatile, by its subfruticulose habit."

22. L. Schraderi, (Bernh.) darkish olive-green, capsitose, small, erect, dichotomously branched, lobes sublinear; irregularly undulate-sulcate-rugose and angular, constriicted at the base and apices, dilated in the middle; apothecia reddish, lateral, concave, margin entire, paler.

Among mosses in calcareous soil, rare. 1783.


Fig :—E. Bot. t. 2284.

Geog. Distrib:—France, Germany, Bavaria, Algeria.

Bot. Prov:—1, 2, 4, 5, 8, 13, 19, 26, 28.


Channel Islands:—L'etacq, Jersey; Herm. Mr. Larbalestier.

23. L. microscopicum, Nyl. olivaceo-nigricant, most minutely fruticulose, effuse, branched, erect, unequally terete, branchlets elongato-papillate.

On rocks, rare.


Fig:—Nyl. Syn. t. 4 f. 17.

Bot. Prov:—3... 5... 81.


Channel Islands:—Jersey. Mr. Larbalestier.

Crombie says l. c. "approaches, in habit at least, nearer to the preceding than to any state of L. lacera, while the discovery of the apothecia by me recently, near Shire, in Surrey, shows that it is not, as might have been suspected, an undeveloped state of some other species."

24. L. musicolum, (Sw.) fuscosus, or olivaceo-fuscosus, small, pulvinar, fruticuloso-ramosa, branches filiformi-terete or sub-compressed, variate, apices slightly attenuate; apothecia fusco-rufescens or fuscosus, terminal, appressed, concave, margin thin, smooth, entire, paler; spores 8, colourless, oblongo-fusiform, 1-septate.

On mossy rocks and walls in sub-alpine districts, rare. 1790.


Fig:—Dicks. Br. Crypt. 2. t. 6 f. 9. Schar. En. t. 10 f. 1 b. E. Bot. t. 2294. Nyl. Syn. t. 4 f. 11... 15.

Geog. Distrib.:—Europe, France, Scandinavia, Sweden, Russia, Pyrenees, Germany, Italy, Algeria. 

Bot. Prov.:—1..5. 7. 10, 11...15...22...31. 


Wales:—Garthmeilio. Mr. Griffith. Barmouth! Cross Foxes! near Dolgelley; Craig Breidden! 

Channel Islands:—Guernsey. Rev. T. Salwey. Quenvais, Jersey. Mr. Labradorier. 

"Spores .023—27 mm. long, .007 mm. broad." (Nyl.) 

V. Collemopsis. Nyl. 

Thallus internally glaucous-green. Gonimia submoniliformly arranged. 

1. C. Schereri, (Mass.) fusco-cinerascent or cinereo-nigrescent, subtartarous, effuse, thinly scobiformi-granulate, subareolate, sub-spongiosa; apothecia atrorufous or dark blue, very minute, crowded, globoso-truncate, punctiformi-impressed, then disciformi-dilated, margined; spores 8, colourless, globoso-ovoid, simple. 

On calcareous rocks, rare. 


Fig.:—Hepp Sporen t. 57. I. 496. 


Geog. Distrib.:—Europe. 

Bot. Prov.:—3...5...15. 


Scotland:—Craig Guie, Braemar, 'Craig Tulloch, (900 ft.) Blair Athole. Rev. J. M. Trombie, 

"Absence of any proper hypothallus at once separates it from Pannaria, which otherwise it closely resembles." Crombie. I. c. 

2. C. lecanopoides, Nyl. fuscos-black, opake, thin, granulos-areolate or nearly continuous, somewhat scabrous; apothecia concolorous, urcolette, thalline margin prominent, connivent; spores 4-8, colourless, ellipsoid, simple; paraphyses slender, not crowded. 

On maritime calcareous rocks, rare. 1866. 


Geog. Distrib.:—Pyrenees. 

Bot. Prov.:—18...19. 


"Spores .014—20 mm. long, .006—.010 mm. broad." (Nyl.) 

3. C. furfuracea, Nyl. black or fuscos-black, either entirely furfuraceo-granulose and effuse, or dispersed in small furfuraceous verrucae, with larger convex fertile granules intermixed; apothecia subpyrenodes-lencanorine impressed in the fertile granules; spores 8, colourless, shortly ellipsoid, simple; paraphyses distinct; gelatina hymenea vinous-red with iodine; spermatia oblongo-cylindrical. 

On alpine rocks, very rare. 1865. 

In external aspect like a Pyrenopsis, but with moniliform granula gonima.
THE LICHEN-FLORA


**Geog. Distrib**. — Finland, Sweden.

**Bot. Prov**. — 15.


"Spores .011—17 mm. long, .008—.011 mm. broad." *(Nyl.)*

4. *C. oblongans*, Nyl. olive-brownish, *granuloso-crustaceous*, thin, confluent; *apotheecia* bright, or red-testaceous, somewhat concave, minute, margin thickish; spores 8, colourless, oblong, simple or sparselyly 1-septate; *gelatina* hymenea I very faintly vinous-red.

On the ground, in fissures of rocks, 1874.

Allied to *C. Arnoldiana*, (Hepp) and *C. Flotowiana*, (Hepp), but differing in oblong shape of spores.

**Syn**. — Nyl. in Flora 1874. p. 305.

**Geog. Distrib**. — Europe.

**Bot. Prov**. — 12.


"Spores .016—30 mm. long, .006 mm. broad."

5. *C. diffundens*, Nyl. black, opake, thin, *areolato-squamulose*; *squamae* somewhat *chaffy*, small, variable, effuse; *apotheecia* rufescent, *innate*, often *gyalectoid*, but variable, and somewhat plane, internally entirely pale; spores 8, colourless, ellipsoid, simple; paraphyses distinct, slender; *gelatina* hymenea at first blue then vinous-red with iodine.

On green-sand rocks, rare. 1865.

**Syn**. — Nyl. in Flora. 1865. p. 602. *Crombie*. En. 3.

**Bot. Prov**. — 3.


"Spores .011—23 mm. long, .007—.011 mm. broad." *(Nyl.)*

6. *C. Arnoldiana*, Nyl. *olivaceo-fuscos*, thin, *granulose*; *apotheecia* rufous or *dark rufous*, *biatorine*, impressed *almost gyalecti-form in the centre*, small; paraphyses articulate; spores 8, colourless, ellipsoid, simple, containing minute oleose guttules, one larger.

In old oolite quarries, rare. 1875.


**Fig**. — *Hepp* Sporen t. 11. f. 92.

**Exs**. — *Arn. 32. 33.*

**Geog. Distrib**. — Europe.

**Bot. Prov**. — 3...


"Spores .017—20 mm. long, .010—.0105 mm. broad. *Gelatina hymenea I* pale-blue then dilutely vinous-red." *(Nyl.)*

7. *C. leptogiiella*, Nyl. *olivaceo-fuscos*, slightly *subcoralloideo-furfuraceous*, effuse; *apotheecia* testaceo-lurid, minute, like those of a *Leptogium*; *epitheciun* somewhat impressed or at length nearly plane, with a small margin; spores 8, colourless, ellipsoid or oblongo-ellipsoid; paraphyses slender, thicker at the apices.

On quartzose rocks, rare. 1876.

Spores .010—17 mm. long, .006—7 mm. broad. *Gelatina hymenea I* vinoso-fulvo-rubescent. A very peculiar species, resembling *Leptogium microsco- picium*.

**Syn**. — Nyl. in Flora. 1877. p. 220.


**Ireland**. — Lough Inagb, Connemara. *Mr. Larbalestier*. (1876).
VI. PYRENIDII. Nyl.

Thallus minute, stellato-divided or cespitellose or confluendo-effuse, of the same structure as that of Leptogium. Apothecia pyrenocarpous verrucarioid.

1. *P. actinellum*, Nyl. dark olivaceous, adnate, forming small patches, stellato-divided, rays distinct, attenuated at their apices, ascending or suberect, vinous-red with iodine; apothecia pyrenocarpous, in the centre of the thallus, prominent, perithecium entirely black; spores 4, fuscous or fuscescent, oblong, 3-septate; paraphyses few, slender or obsolete.

On chalk, very rare. 1865.

**Fam.** III. MYRIANGIACEI.

**Tribe I. MYRIANGIEI.**

I. MYRIANGIUM. Mnt. & Berk.

Thallus black, noduloso-pulvinate, cellulose, unstratified. Apothecia sublecanorine, sphaeroidea-cellulose. Spores 8, colourless, oblong, irregularly septate, or almost murali-divided.

1. *M. Duriaeii*, M. & B. black, opaque, small, tuberculato-gloerate or noduloso-confluent, often depresso-pulvinate; apothecia minute, black, slightly impressed; spores 8, colourless, oblong or oblongo-ovoid, variously septate; gelatina hymenca vinous with iodine.

On ash and elm, rare. 1836.


**Fig:** - Nyl. Syn. t. 4. f. 1. 5.

**Exs.:** - Mass. 37.

**Geog. Distr.:** - Europe, France, Algeria, Mexico, Australia, N. America.

**Bot. Prov.:** - 1, 2...13...31.


**Ireland:** - Carrigaline! near Cork; near Crosshaven, Cork. Mr. Carvoll.

**Roughly, Kerry. Dr. Taylor. (1836).**

**Channel Islands:** - Sark! Rev. T. Salwey.

**Fam.** IV. LICHENACEI.

Thallus various in colour, white, whitish, cinerascent, flavicant, rufous, fuscous, and very rarely nigricant, and very various in form, filamentous, foliaceous, squamose, crustaceous, pulverulent or evanescent. In most species the stratum gonidiale formed of true gonidia, in a few only of granula gonima. Apothecia either stipitate or lecanorine or peltate, or patellulate, or pyrenocarpous.

**Series I. EPICONIODEL.**

Apothecia with the spores naked, collected into a sporal mass on the surface. Spores 8, in asci.
THE LICHEN-FLORA

TRIBE I. CALICIEL

Thallus crustaceous, granulose, or obsolete, yellow or flavo-virescent or cineraceous or whitish. Apothecia cupuliform, constricted below into a stipes, or sessile.

I. SPHINCTRINA. Fr. pr. p. D.N.

Thallus none. Apothecia parasitic on Pertusaria, globosoturbinate, shining, black, sessile or shortly stipitate. Spores nigrescent, simple.

1. S. turbinata, (Pers.) Apothecia subsessile, small; spores small, globose or subglobose; iodine pale blue, then obscured.

On Pertusaria communis, common. 1796.


GeoD. Distri:—Europe, Scandinavia, Portugal, France, Algeria, North America.

Bot. Prov:—2, 3, 5, 7...10...15...19.


Ireland:—Blarney, Cork! Mr Carroll.

Channel Islands:—Rozel, Jersey. Mr. Larbalestier.

Wales:—Capel Curig! Builth!

"Spores .001 to .00125 in. diam." (Mudd.) "Spores .003—6 mm diam." (Nyl.) Spores .005—6 mm diam.

2. S. anglica, Nyl. apothecia subsectipitate, on grey thallus; spores globose, ellipsoid and oblong, moderate, iodine blue.

On old rails &c, rare. 1805.


Fig:—E. Bot. 1865. Nyl. Syn. t. 5. f. 3.


Bot. Prov:—2...4...5...8...20.

England:—Albourne! Sussex; Caistor, near Yorkworth. Mr. Borrer. (1805.)


"Spores .00125 to .002 in. diam." (Mudd.) "Spores .008—.013 mm long, .006—.009 mm broad." (Nyl.) Spores .009 mm long, .008 mm broad.

3. S. microcephala, Nyl. apothecia sessile, fusaceous; spores nigricant, fusiformi-ellipsoid, simple, large.

On Pertusaria, rare. 1869.


Fig:—Tul. Mem. Lich. t. 15. f. 20. Nyl. Syn. t. 5. f. 2.


GeoD. Distri:—Europe, France, Pyrenees, Ceylon, Madeira.

Bot. Prov:—2.

Thallus granulose, powdery, squamulose or altogether evanescent. Apothecia black, stipitate or subsessile, capitula globose or turbinate or cupular. Spores fuscous or nigrescent. Spermatia short, oblong.

A. Spores simple.

1. **C. diploellum**, Nyl. obsolete; apothecia black very shortly stipitate, capitulum turbinate, open, sporal mass scarcely prominent; spores nigrescent, oblong, simple (or 1-septate.)

On holly, very rare. 1868.

The smallest of all the species, and easily recognized. Its place is near *disseminatum*.

**SYN:** — *C. diploellum*, Nyl. in Flora 1868. p. 161.

**BOT. PROV.** — 19

**IRELAND:** — Cromaglown, Killarney. Mr Caroll.

“Spores .006—9 mm. long. .003 mm. broad.” (Nyl.)

2. **C. chrysocephalum**, Ach. citrine or yellow-green, granulate, verrucoso-conglomerate or evanescent; apothecia black, shortly stipitate or elongate, capitula turbinato-lentiform, citrino-suffused beneath and at margin; sporal mass umber or ferruginous; spores fuscous, globose.

On palings, &c., rare. 1804.


**GEOG. DISTRIBUTION:** — Europe, N. America.

**BOT. PROV.** — 3, 4, 5... 10... 14.

**ENGLAND:** — Sotterley, Suffolk. Mr. D. Turner. (1804). Norfolk; Suffolk; Essex. Sir W. J. Hooker. Rosedale, and Baysdale, Cleveland, Yorkshire! Mr. Mudd. Shipbourne, Kent. Mr. Jenner. Downton Castle! Herefordshire.

**SCOTLAND:** — Near Slateford. Dr. Greville.

“Spores .0015 in. long. by .001 in. broad.” (Mudd.) “Spores .003—6 mm. diam.” (Nyl.)

**f. melanoccephalum**, Nyl. apothecia fasciculato-ramose, stipites black, capitula black, citrino-suffused at margin only; spores globose or ellipsoid, pale-fuscous, larger.

**SYN.** — Nyl. Syn. 147.

**FIG.** — Nyl. l. c. t. 5. f. 19.

**EXS.** — Leight. 134 in part.

**ENGLAND:** — Downton Castle! Herefordshire, on same palings with common form.

“Spores .004—.016 mm. long. .004—8 mm. broad.” (Nyl.)

3. **C. phaeocephalum**, Borr. pallido-cinerascent or darkly flavicant, minutely granuloso-squamuliform, crenate, congested; apothecia with slender black or fuscous stipites, capitula turbinato-lentiform, flavo-viridi-pruinose, sporal mass fuscous; spores fuscous, globose.

On boards, palings, &c., rare. 1807.

THE LICHEN-FLORA

Fig. — E. Bot. 1540. Nyl. Syn. t. 5. f. 13.
GEOG. DISTRIBUT.: Scandinavia, Germany, Helvetia, N. America.
Bot. Prov.: — 2, 3, 4, 5.

"Spores .001 in. diam." (Mudd.) "Spores .003—5 mm. diam." (Nyl.)

4. C. aciculare, (Sm.) cinerascent, very thin or obsolete; apothecia with obconico-turbinate capitula flavoviridi-suffused, sporal mass brown, much protruded; spores fuscescent, globose.
On oaks, firs, hollies, &c., rare. 1812.

Fig. — E. Bot. 2385. Nyl. Syn. t. 5. f. 14.
GEOG. DISTRIBUT.: Europe.
BOT. PROV.: — 2, 3, 16...24.
IRELAND: — Tervoe, near Limerick! Mr. Carroll.
"Spores .001 in. diam." (Mudd.)

5. C. trichiale, Ach. flavido-cinerascent or cinereo-glaucensce, minutely granulos-squamulose; apothecia black, stipes slender, capitula black, globoso-lenticular, cinereo-suffused beneath, sporal mass umbur, convex, or hemispherical; spores fuscescent, spherical, minute.
On trees, timber, &c., rare.

Fig. — V. Ak. H. 1816. t. 8. f. 14. Nyl. Syn. t. 5. f. 16.
GEOG. DISTRIBUT.: — N. Europe, N. America.
BOT. PROV.: — 5, 10...14.

SCOTLAND: — Binnie Woods, Haddingtonshire. Dr. Maingay.
"Spores .0025—.0045 mm. diam." (Nyl.)

Var. cinereum, (Pers.) cinerascenti-or albido-granulose, stipites and capitula cinereo-suffused.
On old pines and oaks.

Fig. — Pers. Icon. and Descr. Fung. t. 14.
EXX.: — Scher. 452.
GEOG. DISTRIBUT.: — Germany, Helvetia, France, Scandinavia, Finland.
BOT. PROV.: — 20...24.
IRELAND: — Deer Park, Castlemartyr, co. Cork; Tervoe, near Limerick. Mr. Carroll.

Var. stemoneum, Ach. yellow or flavido-cinerascent, leproso-granulato; apothecia black orfuscous-black, capitula cinereo-purinose or nearly naked beneath.
On trees.
Fig. — E. Bot. 2502. Nyl. Syn. t. 5. f. 15.
OF GREAT BRITAIN.


Geog. Distrib.—Europe.

Bot. Prov.:—2, 4...6...10.


Wales:—Builth! (on birch).

Var. ferruginenum, (Borr.) pale-cinerascent, conglomerato-granulose or leprose; apothecia large, subassise; spores pale-fuscous, large.

On oaks, pales, &c. 1839.


Fig.:—E. Bot. 2473. Nyl. Syn. t. 5. f. 18.

Exs.:—Mudd 249. Leight 315.

Geog. Distrib.:—Germany, France.

Bot. Prov.:—3, 4, 5...10.


“Spores .004—.011 mm. diam.” (Nyl.)

Var. brunneolum, (Ach.) evanescent; stipes slender, elongate, capitulum small; spores spherical, minute.

On old trees, &c.


Fig.:—V. Ak. H. 1816. t. 8. fig. 12. Nyl. Syn. t. 5. f. 16.


Geog. Distrib.:—Europe, N. America.

Bot. Prov.:—2, 3...10.


“Spores .0025—.004 mm. diam.” (Nyl.)

6. C. elassosporum, Nyl. glaucescens or glauco-virescent, gonidia conglomerate in differed syngonidia; apothecia black, stipes robust; spores globulose, small.

On putrescent alder wood, rare. 1874.

Syn:—Nyl. in Flora 1875. p. 441.

Bot. Prov.:—15.


“Nearly similar to a stronger form of C. brunneolum, but with smaller gonidia and spores diam. .0025 mm. or less.” (Nyl.)

7. C. melanophaeum, Ach. whitish, granulose; stipes strong, black; naked, capitula black, turbinate, sporal mass umber; spores fuscescent, globose, moderate.

On firs, &c., rare.


Fig.:—V. Ak. H. 1816. t. 8. F. 8. Nyl. Syn. t. 5. f. 17.


Geog. Distrib.:—Scandinavia, Germany. Helvetia, France, N. America.

Bot. Prov.:—2, 3...5...10, 11...15.

THE LICHEN-FLORA

"Spores .0025—.003 mm. diam." (Nyl). Spores .009 mm. diam. 
C. trichiale var. ferrugineum should be compared with this. Are they not both states of the same plant?

8. C. Kyllemoriense, Labr. Parasitical on a whitish thallus, apparently that of Leccanora cinerea, (L.) ; apothecia excessively minute, shortly stipitate; capitulum crateriform, nigro-fuscous, somewhat shining; stipes very short, of a paler whitish colour; paraphyses entangled branched; spores fuscous or fusco-nigrescent, spherical, with a distinct narrow epispore, variable in size.

On shady rocks, rare. 1877.

SYN:—Leight. in Linn. Trans. 2d. ser. 1. 242. 
BOT. PROV:—26. 
IRELAND:—Miderlin! near Kylemore. Mr. Larbatesler. (1877). 
A very beautiful new species. Spores .006—.008 mm. diam.

B. Spores 1-septate. 
* Corticola.

9. C. hyperellum, Ach. flavo-virescent, granulose or subleprose; apothecia black, capitulum globoso-lentiform, stipes black, elongate, sporal mass black orumber-black; spores nigrescent, ellipsoid, 1-septate, small.

On oak, alder, lime, &c. very common. 1783.

FIG:—E. Bot. 1832. Nyl. Syn. t. 5. f. 23. 
Mudd 245. Reich. and Schub. 122. 

GEOG. DISTRIB:—Europe, Scandinavia, N. America. 
BOT. PROV:—3, 4, 5...7; 8...10...15...19...30. 
ENGLAND:—Barsham, Norfolk. Sir J. E. Smith. near Bury, Suffolk. Mr. D. Turner. Kildale and Baysdale, and Brantsdale, Cleveland, Yorkshire. Mr. Mudd, Ashre, Norfolk; Ditcheling, and Hurstspierpoint, Sussex! Mr. Borrer. 
Penshurst Park; Chiltons Park, near Lenham; Broome Park, near Sibberts- 
woold, Kent. Mr. Holmes, near Cirencester. Mr. W. Joshua. Pevensey road, 
Eastbourne. Mr. Roper. Shropshire! Herefordshire! Leicestershire! 


WALES:—Near Bala! Mr. Brittain. Bettws-y-coed! Buith! 
"Spores .002 to .003 in. long, by .001 in. broad." (Mudd.) "Spores .009— 
.016 mm. long, .004—.006 mm. broad." (Nyl.)

10. C. trachelinum, Ach. cinerascens, thin, granulose or obsolete, apothecia black, capitulum tubinato-globose, rufescent beneath; spores nigricant, ellipsoid, 1-septate, constricted, large.

On trees, pales, &c., not common. 1778.

Mudd Man. 258. 
Leight. 270. Mudd 246. 
GEOG. DISTRIB:—Europe, N. America, Peru. 
BOT. PROV:—1, 2, 3, 4, 5...7...10, 11, 12...14, 15...19...22...30, 31. 
Kildale. Dr. Meth. Kildale, Ingleby, Osgaray Hill, Newton Wood, Cleveland, 
Yorkshire! Mr. Mudd, Cumberland. Mrs. J. Stanger. Oswestry, Shropshire. 
Rev. T. Salwey. Pophills, Warwickshire. Mr. Purton. Wheatfield Park!


WALES:—Edderton! Montgomeryshire.

CHANNEL ISLANDS:—Noirmont Bay, Jersey. Mr. Larbalestier.

"Spores .002 to .0025 in. long, by .001 in. broad." (Mudd.) "Spores .008—.013 mm. long, .004—.007 mm. broad." (Nyl.)

Var. hemiplodum, Nyl., stipes rufescens, thickened at the base and upwards gradually into the capitulum, which has a thin whitish margin.

New Forest, near Lyndhurst! Mr. Larbalestier. (1873).

11. C. quercinum, Pers. greyish-white, granulose, or nearly smooth, or subprose or evanescent; apothecia black, moderate, capitulum turbinato-lentiform, cinereo-pruinose beneath; disk plano-convex, white, pruinose or naked, with grey margin; spores nigrant, ellipsoid, 1-septate, slightly constricted, small.

On oaks, wood, &c. 1805.


Fig.:—E. Bot. 1405. Nyl. Syn. t. 5, f. 25.

EXS:—Nyl. 14. M. & N. 473, Scherr. 247, 505, Zw. 98. Mudd 244.

GROS. DISTR.:—Europe, N. America.

BOT. PROV.:—2.


WALES:—Built! Scotland:—Auchindenny. Dr. Greville.

"Spores .0016 to .0025 in. long, by .001 to .00125 in. broad." (Mudd.) "Spores .003—.005 mm. long, .003—.005 mm. broad." (Nyl.)

12. C. curtum, Borr. cinereascens, thin or obsolete; apothecia strong, capitulum turbinato-cylindrical, margin albo-suffused, sporal mass black, protruded; spores nigrant, ellipsoid, 1-septate.

On wood, pales, &c., common. 1813.


Fig.:—E. Bot. 2053.


GROS. DISTR.:—Europe, Scandinavia, Kamtschatka, N. America, N. Zealand.

BOT. PROV.:—2, 3, 4, 5...10...15...31.


IRELAND:—Deer Park, Castle Martyr, co. Cork! Mr. Carroll.

WALES:—Bala! Mr. Brittain. Towyn!
CHANNEL ISLANDS:—Rozel, Jersey, Mr. Larbalestier.

"Spores .0015 to .002 in. long, by .001 in. broad." (Mr. Mudd.) "Spores .007—.014 mm. long, .004—7 mm. broad." (Nyl.)

13. C. subtile, (Pers.) greyish-white, thin, filmy; apothecia minute, stipes short, slender, black, capitula minute, subgloboso or turbinato-lentiform, disk slightly convex, brownish-black; spores fuscescent, oblong, or ellipsoid, 1-septate.

On dead trees, timber, &c., rare. 1812.

SYN.:—C. subtile, Pers. Fung. Suppl. 60, Mudd Man, 259.

FIG.:—E. Bot. 2462.


GEOG. DISTRIBUTION:—Europe, Germany, France, Scandinavia, N. America.

BOT. PROV.:—2, 3...5...10...14.


SCOTLAND:—Auchindenny Woods. Dr. Greville. between Tunbridge Wells Common and Hurst Wood, Kent. Mr. Holmes.

14. C. populneum, (De Broude.) macular, pale or whitish; apothecia entirely black, slight, somewhat shining, stipes slender, capitulum turbinato; spores nigrescent, ellipsoid, simple, large, 1-septate.

On poplars, rare. 1813.


GEOG. DISTRIBUTION:—W. France.

BOT. PROV.:—19.

IRELAND:—Killarney. Sir T. Gage. (1813).

15. C. retinens, Nyl. white, opake, thin, subfarinaceous, effuse; apothecia black, minute, sessile, lecideiform, sporal mass indistinct; spores nigrescent, oblong, or oblongo-cylindrical, conspicuously 1-septate; hypothecium rubricoso-fuscescent.

On oak. 1868.

SYN.:—C. retinens, Nyl. in Flora 1868, p. 161.

BOT. PROV.:—31.

CHANNEL ISLANDS:—Jersey. Mr. Larbalestier. (1868).

"Spores .006—.011 mm. long, .0025—.0035 mm. broad. (Nyl.)

** Saxicolae.

16. C. citrinum, (Leight.) parasitic on thallus of Leeidea lucida; stipes short and stout or elongated, rusty-brown, flavo-pulverulent, capitulum globoso, sporal mass yellowish-brown; spores minute, linear-oblong, simple, or unisepate, fuscescent.

On the under surface of stones in walls. 1856.


EXS.:—Leight. 269. Zw. 286. Rab. 787.

GEOG. DISTRIBUTION:—Saxony.

BOT. PROV.:—7...10...12...15.

WALES:—Between Corwen and Bala! (1866). Tygwyn! near Dolgelley. South base of Moel-y-gest! near Tremadoc.

ENGLAND:—Stavely, near Kendal. Westmoreland, and Dent, Yorkshire. Mr. Martindale.

SCOTLAND:—Glen Fender, Blair Athole. Rev. J. M. Crombie.
“Spores .0015 to .002 in. long. by .0005 in. broad.” (Mudd.) “Spores .006—.011 mm. long. .0025—.03 mm. broad.” (Nyl.) Spores .008 mm. long. .003 mm. broad.

C. Spores 3-septate,

17. C. septatum, (Leight.) obsolete; apothecia brownish-black, stipites short, stout and smooth, capitulum clavato-pyramidiform, truncate, incurved at the margin; disk depressed, dark brown; spores 8, very large, elliptical, 3-septate, umber-coloured, cells granular.

Parasitic on thallus of Thelotrema lepadinum and on holly 1856.


GeoG. Distr.:—Bavaria, France.

Bot. Prov:—2...10...19...36.


IRELAND:—Near Killarney and Old Deer Park, Castlemartyr, co. Cork; Glenbower, Killeagh, Mr. Carroll. Lough Inagh! Galway, Mr. Larbalastier.

“Spores .008 to .012 in. long. by .0035 to .004 in. broad.” (Mudd.) “Spores .018—.036 mm. long. .007—.011 mm. broad.” (Nyl.) Spores .044—.052 mm. long. .018—.019 mm. broad.

All the authentic specimens of C. traejectum, Nyl. which I have received from Mr. Crombie and Mr. Larbalastier, are precisely identical with my C. septatum.

18. C.byssaceum, Fr. obsolete; apothecia minute, slender, dispersed; spores nigrescent, oblongo-fusiform, simple or ultimately 1—3-septate.

On dead alder twigs and sloe, rare.


Fig:—Nyl. Syn. t. 5. f. 27.


GeoG. Distr:—Scandinavia, East Lapland, Sweden, Lombardy, Bavaria.

Bot. Prov:—5...7...15.

ENGLAND:—Hay Park, Herefordshire!


WALES:—Tan-y-bwlch Wood, Capel Curig! Mr. W. Phillips. Dolgelley!

“Spores .015—.033 mm. long. .005—.007 mm. broad.” (Nyl.)

III. CONIOCYBE. Ach. Nyl.

Thallus leprose or powdery, effuse or evanescent. Apothecia yellow or pale (not black), stipitate, excipulum very open. Spores spherical, colourless or flavescent, forming the globoso-pulverulent capitulum.

1. C. furfuracea, Ach. sulphureous or sulphureo-virescent, apothecia sulphureo-suffused, or with flavio-virescent, naked, elongate stipites, sporal mass yellow or pale amber; spores colourless or pale fuscecent, spherical, minute.

On roots of trees and sandy ground, not common. 1805.


GeoG. Distr:—Europe, Switzerland, Italy, Germany, Lapland, N. America.
THE LICHEN-FLORA

Bot. Prov. — 2, 3, 4, 5...7...10, 11, 12...14, 15...30.

Esher, Surrey; near Halesworth, Suffolk; Shanklin, Isle of Wight; Henfield,
Sussex; Mr. Borrer, Cumberland! Mrs. Stanger. Red Wood, Cottleswold,
Brentsdaile, Yorkshire. Mr. Mudd. near Gatehead, Durham. Mr. Robertson.
Bartley Lodge, New Forest. Mr. Lyell. Cow (close, near Ravensworth, and
Long Acre Wood, Durham; Felton Wood; Wansbeck; Wallington; North-
umberland. Mr. Winch. near Stourbridge, Worcestershire. Mr. Scott. Black-
water! Hants. Mr. Joshua. Chislehurst, Kent. Mr. House. Hug lith! near
Church Stretton; High Rock! near Bridgnorth; and Berrington! and

Scotland: — Edinburgh. Dr Mainay. Cramb's Wood, near Glamiss, For-
Largo! Fifeshire. Rev. C. Howie.

Ireland: — Near Belfast. Mr. Templeton.

Wales: — Edderton! Montgomeryshire; Betwys-y-Coed!

"Spores .00075 in. diam." (Mudd.) "Spores .0025—.003 mm. diam." (Nyl.)
Spores .002—.003 mm. diam.

Var. sulphurella, Fr. cinerascent, very thin, or obsolete; apothecia
very slender.

On old trees, very rare. 1869.

Fig.: — Hepp Sporen t. 18. f. 154.

Geog. Distri.: — Europe, Sweden, Switzerland, France, Bavaria, Germany.

Bot. Prov.: —.


Var. fulva, (L.) greenish yellow, apothecia more compact and with
shorter stipites.

On dead stems of Rosa canina, rare. 1870.


Fig.: — Wahl. in V. A. H. 1806. t. 4. f. 7.
Exs.: — Scher. 296.


2. C. pallida, Fr. albicans, very thin, or obsolete; apothecia
small, stipites hyaline or pale yellow, rarely fusescens upwards,
capitulum globose, sporal mass white or pallescens; spores colour-
less, sphaerical, large.

On trees, rare. 1805.

f. 38.
146. Smrct. 54.

Geog. Distri.: — Sweden, Switzerland, Germany, Pyrenees, N. America.

Bot. Prov.: — 3...9...11.

England: — Near Eglestone, Durham; East Common Wood, near Hexham

"Spores .00125 in. diam." (Mudd.) "Spores .004—.009 mm. diam." (Nyl.)
Spores .008 mm. diam.

3. C. hyalinella, Nyl. nearly obsolete; apothecia with a
slender hyaline stipites, sporal mass globose, white or pallido-rufescens;
spores colourless, sphaerical, very minute.

On old wood, rare. 1865.

Fig.: — Nyl. Syn. t. 5. f. 40.
Thallus thin, granulose, or subleprose, or foreign. Apothecia black, sessile, cupuliform, open, sporal mass black. Spores nigricant or fuscos-black, ellipsoid or oblong, 1-septate, rarely plurisep-tate. Spermatia oblong or ellipsoid.

1. T. *tigillaris*, Fr. *flavo-virescent or citrine*, granulose or granuloso-aracelate; *apothecia black, innate* or slightly prominent; spores fusco-nigricant, oblong or ellipsoid, 1-septate. (K—)

On old posts, pales, &c., rare. 1805.


**Fig.:**—E. Bot. t. 1590. Nyl. Syn. t. 5. f. 29.


**Bot. Prov.:**—Scandinavia, Germany, Switzerland, Italy.


“Spores .003 to .0035 in. long, by .00175 to .002 in. broad.” (Mudd). “Spores .015—.025 mm. long, .008—.011 mm. broad, spermatia ellipsoid.” (Nyl.)

2. T. *tympanella*, Fr. *albicant* or *cinerascens*, granulose or granuloso-concrescent; *apothecia black, prominent, margin of excipulum cinereo-or albo-suffused*, sporal mass black, slightly cinereo-pruinose; spores fuscos, oblong, 1-septate. (K+)

On posts, palings, &c., very common. 1800.


**Fig.:**—E. Bot. t. 310. Nyl. Syn. t. 5. f. 32.


Leight. 88 Mudd 240.

**Geog. Distri:**—Scandinavia, Switzerland, Italy, Algeria.

**Bot. Prov.:**—2, 3, 4, 5, 10...31.


**Ireland:**—Curraghmore, near Waterford. Adm. Jones.

**Channel Islands:**—Jersey. Mr. Larbalestier.

“Spores .003 to .0035 in. long, by .0015 to .00175 in. broad.” (Mudd). “Spores .010—.018 mm. long, .007—.012 mm. broad.” (Nyl.)

3. T. *stigonella*, Fr. *parasitic* on *Pertusaria*; *apothecia scarcely prominent*, entirely black, plane; spores fusco-nigricant, ellipsoid, 1-septate, obtusely rotundate at the apices.

On old oaks.

In T. *stigonella*, the reaction K is at first bright yellow, then changing to sanguineous.


**Fig.:**—Nyl. Syn. t. 5. f. 33.

Thallus fruticulose, ramose and ramulose, the apices subglobo-sincrassate enclosing the apothecia; apothecia nucleiform, enclosed, ultimately exposed by the dehiscence of the thalline covering; sporal mass black.

I. SPHÆROPHORON. Pers.

Thallus cæspitoso-fruticulose, smooth, polished, fragile; apothecia seated on the apices of the thallus, receptacle irregularly and variously dehiscent. Spores nigricant or violaco-nigricant, spherical or subglobose, covered with a black powder. Spermatia oblong.

1. S. compressum, Ach. pallido-albicant, ramose, plano-compressed; apothecia obliquely inunate on the apices, receptacle lacero-dehiscent or discoid and open; spores nigricant, spherical. (K—)

On rocks, rare. 1799.


GEOG. DISTRI:—France, Switzerland, Germany, N. & S. America, Australasia, Ceylon.

Bot. Prov:—1, 2, 3...7, 8 10, 11 14, 15 26...31.


CHANNEL ISLANDS:—Guernsey Rev. T. Salvey.

"Spores .0015 to .00175 in diam." (Mudd) "Spores .007—.011 mm. diam." (Nyl.) Spores .006—.007 mm. diam.

2. S. coralloides, Pers. pale or whitish or reddish-brown, minutely and copiously branched, round, shining; apothecia black, terminal, globose, receptacle irregularly dehiscent above, persistent; spores violaco-nigricant, spherical. (K—) I medulla blue.

On rocks, common. 1794.
OF GREAT BRITAIN.

49


GEOG. DISTR.—Europe Madeira, Antarctic America, Australasia.

BOT. PROV.—I, 2, 3...5...7, 8...10, 11...14...16...18, 19.


3. S. fragile, Pers. whitish, lurid-cinernaceous or brownish, round, sparingly branched, densely cespitose; apothecia black, terminal, globose, receptacle irregularly dehiscent above, persistent; spores violaceo-virgicent, spherical or globoso-ellipsoid. (K + ) medulla I.—

On rocks, common.


GEOG. DISTR.—Europe, Arctic Europe, Antarctic America.

BOT. PROV.—I, 2, 3...5...8...10...14; 15...18, 19...29.


“Spores .007—.016 mm. diam.” (Nyl.) Spores .007—.013 mm. diam.

SERIES II. CLADODEI.

Thallus generally erect; apothecia terminal on podetia (rarely without), biatorine, rarely lecanorine; spores 8, colourless, generally oblong and simple, sometimes elongate and septate; paraphyses distinct.

TRIBE. III. BÆOMYCELI.

Thallus horizontally expanded, crustaceous. Apothecia pale or rufescent, sessile or podetiform-stipitate; spores simple or septate.
I. GOMPHILLUS. Nyl.


1. *G. calycoïdes*, Nyl. cincrascent or cinereo-virescent, thin, effuse or obsolete; apothecia small, stipitate, capitulum subtrabinate, nigricant; spores very long, cylindrical, 60-100-septate.

On mosses, &c., rare.

**Syn:** —*G. calycoïdes*, Nyl. Prodr. p. 146. Syn. 175.

**Fig.** — Nyl. Syn. t. 7. f. 3.


**Geog. Distrib.** — France, Italy.

**Bot. Prov.** — 7...19...26.


The Irish plant is the var. *microcephala*, Nyl. Syn. 175. "minor, apotheciis minoribus parum stipitatis."

**Wales:** — Dolgelley! Mr. W. Phillips.

"Spores 160—200 mm. long." (Nyl.)

II. B. EOMYCES. Pers.

Thallus crustaceous, pulvcreous, granulose or squamulose; Apothecia biatorine, sessile or stipitate. Sterigmata articulate. Spermatia cylindrical, straight.

1. *B. rufus*, DC. albo-virescent or albido-glaucouscent, thin, effuse, minutely granulose or squamulose or leprose, granules depressed (K. yellow); apothecia carneo-rufescent or carneo-fuscescent, somewhat convex, immarginate, stipes moderate or very short, whitish; spores 6 or 8, *oblongo-ellipsoid*, simple, colourless.

On earth and stones, not uncommon.


**Geog. Distrib.** — Europe, America, N. Zealand.

**Bot. Prov.** — 1, 2, 3, 4, 5...70...10. 11...13. 14...18...20...26...31.


**Ireland:** — Doughbrugh Mountain! Tully! co. Galway. Mr. Larbalestier.

**Wales:** — Barmouth! Buith!

**Channel Islands:** — Rozel Manor, Jersey. Mr. Larbalestier, Guernsey. Rev. T. Saltrey.

When hydrate of potash is applied, the thallus becomes yellow (K+) but it has no effect on the apothecia (K—). The thallus when growing on stones is
minute depresso-granular, but when growing on the earth the granules become squamulose, and it then constitutes the variety 

carneus, Flk. D.L. 8, which occurs in the Channel Islands, and at Glengariff, Ireland. see Larb. 7.

“Spores .006—12 mm. long, by .005 in. broad.” (Mudd.) “Spores .006—12 mm. long, .0025—.004 mm. broad.” (T. M. Fr.)

Forma sessilis, Nyl. apothecia small, cinerascen-carnaceous, sessile.

On rocks, rare, 1876.


GEOG. DISTRIBUTION:—E. Lapland. Lombardy.

B. BARRETT.—26.

IRELAND:—Galway Road! Mr. Lorbaleaster. (1876).

2. B. roseus, Pers. whitish, granuloso-crustaceous, (K faint yellow); apothecia roseo-carnose or albo-carnose, subglobose, stipitate, (K orange); stipes white, roundish, short; spores 6 or 8, fusiform-oblong or fusiform, simple or obsoletely 1-septate; iod. faint bluc.

On the earth, rare.


GEOG. DISTRIBUTION:—Europe, America, N. Zealand.

B. BARRETT.—26.


Mr. W. Gardiner. Blueberry Hill! Perth. Dr. Lindsay.

IRELAND:—Near Connel! Mr. Wright. Connemara. Dr. Moore. Killarney. Dr. Carrington.


“Spores .004 to .006 in. long, by .005 in. broad.” (Mudd.) “Spores .011—.026 mm. long, .0025—.003 mm. broad.” (Nyl.) “Spores .011—.026 mm. long, .002—3 mm. broad.” (T. M. Fr.) Spores .017—.021 mm. long, .003 mm. broad.

3. B. placophyllus, Ach. whitish or glaucescent, crustaceo-imbricate, adnate, corrugate or squamoso-lobate, plicate and sub-crenulate, (K yellow); apothecia carneo-rufescent or carneo-fuscescent, stipitate, (K—) stipes apically divided, and bearing several aggregate and confluent apothecia; spores oblongo-ellipsoid, simple.

On the earth, very rare.


FIG:—Ach. Meth. t. 7. f. 4.

EXS:—Tuck. 42. Arr. 448.

GEOG. DISTRIBUTION:—N. Europe, N. America.

B. BARRETT.—5...7...10, 11...14, 15...19...25, 26.


Mr. W. Gardiner. Blueberry Hill! Perth. Dr. Lindsay.

IRELAND:—Near Connel! Mr. Wright. Connemara. Dr. Moore. Killarney. Dr. Carrington.

WALES:—At foot of Cader Idris. Mr. Ralf. Arran Fowdysy. Mr. Borrers. rocks behind Union Workhouse, Corwen; Barmouth. Rev. T. Salwey. Cwm Cywion!
"Spores .0025 in. long. by .0005 in. broad." (Mudd.) "Spores .010—15 mm. long. .0095—.004 mm. broad." (Nyl.) "Spores .010—15 mm. long. .002—4 mm. broad." (T. M. Fr.)

4. B icmadophilus, (Ehrh.) glaucescent or whitish, granulatogenous or subleprose, moderate, (K yellow); apothecia pale flesh-coloured, discoid, biatorine, plane, or sub-lecanorine, (K brown); spores 6 or 8, fusiform, 1—3 septate; iod. pale blue.

On the earth, not common.


Fig.:—E. Bot. 372. Nyl. Syn. t. 6. f. 7, 8, 9, 10, 11. & t. 7. f. 2.

Geog. Distrib.:—Europe, N. America, E. Indies.

Bot. Prov.:—2...4...8...10...26.


Wales:—Owm Bychan! Rev. T. Sawney, near Dolgelley!

"Spores .0035 to .0045 in. long. by .001 in. broad." (Mudd.) "Spores .013—.027 mm. long. .004—6 mm. broad." (Nyl.) "Spores .013—.027 mm. long. .004—6 mm. broad." (T. M. Fr.) Spores .033 mm. long. .008 mm. broad.

Tribe IV. CLADONIEI.

Thallus partly or entirely laciniate-foliolose, or squamoso-foliolose, or fruticulose or cespitose, with fistulose podetia, often ramose. Apothecia biatorine, or cephalodine, convex, immarginate, on the podetia, rarely on the leaflets. Spores simple.

I. CLADONIA, Hoffm.

Thallus either tubulose or laciniform, podetia generally dilated at the apex into scyphi; thallus generally foliolute, or squamulose at the base, sometimes only granuloso-crustaceous. Apothecia variously coloured, but never black, internally hollow. Spores small, oblong.


Thallus crustaceous; podetia clavate, papilliform, simple or branched, glabrous; apothecia fuscous.

* Reaction, (K+C—). 

1. P. papillaria, Duf. pale and yellowish, granuloso-crustaceous; podetia small (½ inch), erect, clavato-cylindrical, simple or branched.

Heathy ground, not common.

Fig.:—E. Bot. t. 907. Dill. t. xvi. t. 28. Sturm D. F. t. 22.
Exs.:—Leight. 208.
Geog. Distrib.:—Europe, N. America.
Bot. Prov.:—2...5...7, 8...10, 11, 12...15, 16...19. 23, 24...26.

SCOTLAND:—Appin! Capt. Carmichael, Ben Nevis! Sir W. J. Hooker, Loch Callater! Mr. Croall.


WALES:—Near Barmouth; Llandrindod Wells, Radnorshire. Rev. T. Salwey. Llyn Crafnant!

SUB-GENUS II. CLADONIA. Hoffm. Nyl.

Thallus leafy; podetia scyphiphorous or branched, more or less pulveraceous and squamose; apothecia terminal, bitarotine, pale or red.

A. Phaeocarpace, apothecia fuscous or pale.

* Reaction, \((Kf + C +)\).

1. C. endiviaefolia, Fr. thallus macrophylline, spreading, yellow-green above, whitish beneath, lacinia (1–2 inch) long, multifid, rotundo-crenate at the apex; podetia rare, small, cylindrical, from upper surface of the lacinia; apothecia pale or fuscous.

Dry heaths and rocks, rare.

Distinct from alcicornis, \((K-C +)\) by the different reaction.


EXS:—Scher. 456. Nyl. 106. Larbal. 56.

GEOG. DISTRIB:—Switzerland, Italy, Spain, Portugal, Algeria, Canaries.

BOT. PROV:—1, 2, 3, 4..6..15..20..31.


SCOTLAND:—Carse of Ardiesier! Mr. Croall.


WALES:—Giltar Point, Tenby! Rev. T. Salwey.


** Reaction, \((K + C +)\).

2. C. pungens, Flk. thallus squamulose, evanescent; podetia fruticos, (1–3in.) erect, much and intricately-branched, attenuato-subulate, and divergenti-furcate at the apex, pale greyish green, glabrous, more or less sub-decorticate, or adnate verrucous, and squamose; apothecia small, sub-spherical, pale. .

Hilly slopes, common. 1812.


FIG:—E. Bot. t. 2444. Dill. t. xvi. f. 30.

EXS:—Leight, 16. 369 374.

GEOG. DISTRIB:—Europe, Africa, India, Tropical America, S. America, Australasia.

BOT. PROV:—2, 3, 4..7..15..28.

ENGLAND:—Esher Common! Surrey. Mr. Borrer. (1812) Thetford! Sir W. J. Hooker. Basingstoke! Kent, and Winchfield! Hants. Mr. R. S. Hill. Morant’s Court Hill; Lydd Beach, Kent. Mr. Holmes.

SCOTLAND:—Tay Bank, West Water; White Hill; Baldoran Woods! Forfarshire. Mr. W. Gardner. Blueberry Hill! Perth. Dr. Lindsey.

IRELAND:—Near Tully! co. Galway. Mr. Larbalestier.
THE LICHEN-FLORA

Wales:—Barmouth.
CHANNEL ISLANDS:—Jersey. Mr. Larbalestier.
A foliaceous form (f. foliosa, Flk = Mudd Brit. Clad. 56!) in a dense entangled depressed mass, occurs in Durham! Kent! and Leicestershire! and Hants! and is identical with *nivem*, Ach. spec. in lb. Kew!

The smooth pale greyish-green cortex is more or less parted by irregular whitish reticulations, and often becomes sub-decorticate, with adnate verrucose, which sometimes are developed into scales or leaflets. This is also the case in *furoca*, but the different chemical reaction will always distinguish them.

3. *C. turgoida*, Hffm. *whitish or glauco-cinerascens*, basal leaflets laciniform, variously divided and crenate, more or less ascending, *podetia smooth, squamoso-decorticate, turgoida-cylindrical, branched, slightly dilated, and open at the truncate, dentato-radiate apices.

In rocky mountain ranges, rare. 1870.


EXS:—Fellm. 87. Tuck. 24. Fries 147. (fide Nyl).

GEOG. DISTRI:—Northern Europe, Asia, Himalayas, N. America, Chili.

ROT. PROV:—15.


4. *C. Lamarckii*, (Del.) according to Nyl. in Flora 1875 p. 447 is represented by Coem. Clad. Belg. 91 & 93, and is distinguished by K tingling the thallus of a slight yellow which quickly changes to a pale ochraceous tint and by the impervious scyphi.

It is said to have been found on the ground, rare, (1875.) at Appin, Argyleshire, by Rev. J. M. Crombie.

*** Reaction, (K + C—).***

5. *C. cervicornis*, Scher. thallus macrophylline, *cespitose, sub-erect, narrowly lacinio-multifid*, crenate, cartilaginosus, glaucous-green above, white beneath, purplish-black at the base; *podetia from disk of laciniae, short, slender, smooth or subverrucose, scyphiferous; scyphi simple and leafless, or irregularly proliferous, and more or less squamose.*

Hills and rocky places, common. 1782.


FIG:—E. Bot. t. 2574.

EXS:—M. & N. 749. Scher. 457.

GEOG. DISTRI:—Europe, Anatolasia.

BOT. PROV:—1...3...5...7...10. 11...13. 14. 15. 16...18. 19...26...31.


WALES:—Barmouth! Llyn Crafant! Cwm Cywion! Gwydir Woods! Betwsy-coed.


Laciniae frequently more or less thickened, and slightly recurved at the margins, rimoso-reticulate on upper surface, obscurely longitudinally veined beneath, and minutely verrucose at apex, but these characters do not seem constant.
The different reaction keeps this distinct from gracilis, verticillata, and sobolifera.

F. stipata, Nyl. (in Flora 1876 p. 239) basal squamæ elongate, sublinear, crenato-incised, erect, stipate, rarely fertile.

On rocks.

IRELAND:—Kylemore, co. Galway, Mr. Larbalestier. (1876.)

6. C. cariosa, Flk. thallus ashy-green, scales minute, crenate, more or less investing the base of the podetia; podetia whitish, ½—1 in. high, cylindrical, dilated upwards, carioso-cancellate or eroso-lacunose, granulato-velvutose, scyphi digitato-partite, fastigate.

On the earth, rare. 1832.

The re-action separates from pyxidata, pityrea, decorcitata, degenerans, botrytes and mitrula.

I have seen small specimens from Ireland, similar to “forma juvenilis,” Hepp 541 and 542, and probably referable to synymphcarpa, Aeh ! in hh. Kew. L. microphyllus, E. Bot. 1782 is referable to leptophylla of C. pyxidata.


FIG.:—E. Bot. Suppl. t. 2761.

EXS.:—M. & N. So. Scher.510.

GEOG. DISTRIBUT.:—Europe. N. America.

BOT. PROV.:—2, 4...10, 11...13...19.


IRELAND:—Near Bantry! Miss Hutchins.

7. C. delicata, Flk. thallus caespitose, microphylline, white or brownish-grey, leaflets minute, eroso-lacinate, lanceolate narrow, minutely incised or crenate and granular at the margins; podetia slender, simple or divided, ½ in., thickened upwards, cartilaginous, glabrous, longitudinally ribbed or fissured, more or less with granular scales.

On old rails, not common.

The reaction (K + C—-) distinguishes this from caespititia, Flk. (K—C—), from squamosa. Hfmm. (K—C—), from pyxidata, var. pityrea, (K—C—), and that and the characters of the podetia, would seem to ally this with cariosa.


FIG.:—E. Bot. t. 2052.

EXS.:—Leight. 382.

GEOG. DISTRIBUT.:—Europe. Tropical America.

BOT. PROV.:—2, 3, 4, 5...10, 11...16.


SCOTLAND:—Appin. Capt. Carmichael.

IRELAND:—Common. Dr. Taylor.

VAR. subseqamosa, Nyl. thallus squamulose; podetia whitish, (1—2 in.), partially glabrous, cartilaginous, longitudinally ribbed or fissured, clothed at intervals at the base with spreading incised and crenate scales, granulate in the upper part, branched, radiato-cristate, subcorymbose.

Woods and rocks, rare.
Different reaction keeps this distinct from pyxidata var. decorticata, and from squamosa.


**Geog. **Distrib.:—N. Europe, N. America, S. America, India.

**Bot. Prov.**—8...5...3...10...19...26.


**Ireland**—Dunkerron. Dr. Taylor. Killarney. Mr. Carroll. Kylemore! Mr. Larbalesier.

**** Reaction, \((K—C + )\).

8. **C. alcicornis**, Flk. thallus macrophylline, foliaceous, spreading, yellow-green above, white beneath, laciniae narrow, palmato-mutilate, inciso-crenulate at apex, margins with black fibres; podetia springing from upper surface of laciniae.

Dry heaths, not common.

Smaller and narrower than, but similar in general appearance to endivefolia, from which the above characters, and the different reaction keep it distinct.


**Fig.**—Dill. t. xiv. f. 12. A.; Vaill. Paris. t. 21. f. 3.

**Exs.**—Leight. 15.

**Geog. **Distr.:—Europe, Africa, America.

**Bot. Prov.**—1...3, 4, 5...10, 11...14, 15...19...31.


**Scotland**—Pentland Hills and Dunearn, Edinburgh. Dr. Greville. Glamions, **Rev. J. M. Crombie.** Isle of May. Firth of Forth. Mr. Sadler.

**Ireland**—Killarney. Dr. Carington.

**Channel Islands**—Guernsey. **Rev. T. Salwey.** Jersey, Sark. Mr. Larbalesier.

**** Reaction, \((K—C — )\).

9. **C. pyxidata**, Fr. thallus squamulose, ashy-green; podetia cartilagineo-corticate, verrucose, or coarsely granulato-pulveraceous, or scaly downwards; scyphi cyathiform, more or less proliferous.

Heaths, woods, hedge banks, common.


**Exs.**—Leight. 407.

**Geog. Distrib.**—Europe, India, N. & S. America, Australasia.

**Localities**—Generally throughout England, Scotland, Hebrides, Ireland, N. and S. Wales, and Channel Islands.

It seems only to create perplexity, to attempt to describe or particularize the innumerable modifications of this polymorphous species, which in reality have no definite limit, and arise from local circumstances of climate, humidity, &c. They may be all readily referred to the following varieties, by careful attention to the prominent character.

**Var. vera pyxidata**, podetia continuously corticate, granulato-verrucose.

**Exs.**—Leight. 437!
Var. pityrea, Ach. podetia pulverulento-granulosofurfuraceous, ashey-white, smooth and decorticate, and often ribbed or laciniose in the upper part.


In the Hookerian herb. at Kew there are specimens gathered at Killarney, (hb. D. Turner) and Forfarshire, (A. Croall) identical with acuta, Tayl. which appears to be only a subulate form of pityrea.

Var. chlorophaea, Flk. podetia pulverulent, granules coarser at the base, sulphury-yellow.

**Exs.**—Larbal. 58.


Var. cespititia, Flk. thallus cespitose compressed; leaflets laciniato-lunate, margins crenate, or ero-ro-laciniate; podetia arising from disk of lacinia, very short, simple or divided, glabrous, subcostate, sometimes sub-verrucose or scaly; apothecia conglomerate, apparently sessile, pale flesh-brown.

On earth and rocks, not common.

Coëmans in Clad. Achar. says he has frequently observed the transition from pityrea into cespititia. The different reaction separates it from delicata.


**Fig.**—E. Bot. t. 1796. (orig. spec.in hb. Borrer!)

**Exs.**—Leight. 388! Mudd Clad. Brit. 44! Bohl. 72!

**Geog. Distrib.**—Europe, America.

**Bot. Prov.:**—2, 3...5...7...11, 12...15...19...26...31.


**Scotland:**—Loch Katrine! Lochaber. Rev. J. M. Crombie.

**Ireland:**—Miss Hutchins & Sir T. Goge! Killarney. Dr. Carrington. near Lough Imagh, Galway. Mr. Lorbalester.

**Wales:**—Hill above Bodowen, Barmouth. Rev. T. Salwey.

**Channel Islands:**—Gorey! Rozel! Jersey. Mr. Lorbalester.

Var. leptophylla, Flk. thallus squamulose, squamules small, disperse, rounded, nearly entire; podetia short, simple or divided, glabrous or subverrucose, subcostate; apothecia solitary, capitulate, brown.

*Wet heathy places, rare.*

Of this I have seen no British specimens, but possess an authentic one from Dr. Nylander, collected in Java, 7000 ft. alt. Coëmans (Clad. Achar.) states that the Acharian herbarium at Helsingofors, contains a specimen of this lichen from England, and that he considers it as a variety of cariosa, which it certainly generally resembles, but the different reaction keeps them quite distinct.


**Fig.**—E. Bot. t. 1782.

**Exs.:**—Coëm. Clad. Belg. 22! Hepp 543!

**Geog. Distrib.**—France, Switzerland.

**Bot. Prov.**—2.

**England:**—Tilgate and St. Leonard's Forests, Sussex. Mr. Borrer.

Var. fimbriata, Hoffm. thallus white, squamulose; podetia membranaceo-corticata, deliquescing into a fine white impalpable powder, sometimes scaly from the base upwards.
THE LICHEN-FLORA


GEOG. DISTRIB.:—Europe, Africa, India, N. & S. & Tropical America, South Atlantic, Australasia, South Indian Ocean.

B O T. P R O V.:—1, 2...11.

Of this common lichen, there are two conspicuous forms or states:—tubo-formis in which the podetia are elongated and trumpet-shaped (Schaer. L.H. 58! and Leight. 377!) and corruado-radiata, in which the podetia are very much elongated, simple, corruate, or irregularly scyphiferous and radiato-fimbriate. (Leight. 376! and Mudd Br. Clad. 19!)


f. costata, Flk. (Clad. 66) podetia granuloso-pulverulent, at length denuded, and discovering their costate substance.

Near Kylemore, co. Galway. Mr. Larbalestier. (1876.

Var. decorticata, Flk. podetia elongated, cylindrical, attenuated, white, decorticate, squamose at the base, coarsely granulato-pulverulent above.


E X S:—Coûm. Clad. Belg. 95! 99!

GEOG. DISTRIB.:—Africa, India, N. Tropical and S. America, Australasia.

B O T. P R O V.:—7, 8...10, 16...20.

E N G L A N D:—Leicestershire ! Rev. A. Bloxam.

S C O T T L A N D:—Killin; Grampians. Rev. J. M. Crombie.

I R E L A N D:—Kylemore, near Fermoy ! Mr. Carroll.

W A L E S:—Aberdovey ! Rev. A Bloxam.

10. C. gracilis, Hoffm. thallus pale ashey-green or livid brown, leaflets at the base often evanescence; podetia elongate, filiform, subulate, or scyphiferous and proliferous, corticate, glabrous; apothecia pedicellate or sessile, fuscous.

Mountains and heaths, common.

Of the primary robust scyphiferous and proliferous form hybrid a, (Ach.) represented by Dill. t. XIV, f. 13. B. and Scher.66; nor of the robust gigantic extended form macroceras, (Ach.) represented by Scher. 68; nor of the slender elongated form elongata, Ach. represented by Tuck. 28; nor of the squamulose form, aspera, Flk. represented by Scher. 67. 641; nor of the var. cornuta (C. cornuta, Fr. 225. Nyl. Syn. 198.) podetia stout, elongate, chiefly subuliform-cornute, a few with narrow irregular subradiate scyphi, glabrous at the base, and subpulverulent above, represented by Anl Clad. Cisalp. 9 Fellm. Lapp. Or. 31; I have seen no British specimens, except a doubtful one of this latter from Ireland, Miss Hutchins in bb. Hook.


GEOG. DISTRIB.:—Europe, N. and S. America, Australasia, India.

The forms or varieties which occur in Britain are these:—

Var. chordalis, (Ach.) podetia slender, subuliform, with narrow cup-shaped scyphi denticulate on the margins.

SYN.:—Ach. Syn. 262 (1817).

FIG.:—E. Bot. t. 1284.

E X S:—Scher. 64, Leight. 296, Mudd Br. Clad. 34! 35! 37! 30!

GEOG. DISTRIB.:—Europe, Arctic and Antarctic America.

B O T. P R O V.:—1, 2, 3, 4, 5...7...10, 11, 12...14, 15...19...30, 31.

E N G L A N D:—Yorkshire ! Mr. Mudd, Aldershot ! Hants, Mr. R. S. Hill, Keswick ! Mrs. Stanger. Blackstone Rock, Devon. Mr. Parfitt. Northumberland and Durham. Mr. Winch. Malvern Hills, Worcestershire. Mr. Purton,

Scotland:--Glen Callater! Lion's Face! and Sidlaw Hills! and Morne! Mr. Croatt! Ben Lawers! Mr. D. Turner. Pentland Hills. Dr. Grevelle.

Ireland:--Derry. Dr. Moore. Bantry! Miss Hutchins.

Wales:--Barmouth!

Channel Islands:--Guernsey, Rev. T. Salwey. Jersey, Sark, &c. Mr. Larbalestier.

Var. abortiva, Schær. podetia subuliform, recurved or hooked at the apex, sterile.

Ex:--Schær. L. H. 69! Mudd Br. Clad. 36!

England:--Yorkshire! Mr. Mudd.


Rare, Cleveland, Yorkshire! Mr. Mudd.

11. C. verticillata, Flk. thallus foliaceo-squamulose, leaflets lacinieform, crenate-inised; podetia ashey-grey, corticate, glabrous or subverrucose, scyphiferous, scyphi denticulate at the margins, 2—4 times repeatedly verticillato-proliferous and scyphiferous from centre of scyphi; apothecia fuscos.

Rocks and mountainous districts, rare.


Ex:--M. & N. 644! Mudd Brit. Clad. 3!

Geog. Distrib:--Europe, N. America, Australasia.

Bot. Prov:--2...7...10...26...31.

England:--Yorkshire! Mr. Mudd. Broadwater Forest, Tunbridge Wells! Mr. Jenner.

Ireland:--Kylemore Pass! co. Galway. Mr. Larbalestier.

Wales:--Barmouth!

Channel Islands:--Jersey. Mr. Larbalestier.

Var. sobolifera, Del. thallus foliaceous, laciniae narrow, inciso-crenate, glaucous-green above, whitish beneath, podetia ½—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, glabrous, subverrucose, sometimes leafy, ¼—⅔ in. high, cylindrical, gla

Rocky mountains, probably not unfrequent, but confounded with cervicornis, from which the different reaction distinguishes it.


Fig:--E. Bot. t. 1392. looks much more like this than aclicornis.


Geog. Distrib:--Europe, N. & Tropical America, Africa, India.

Bot. Prov:--4, 5...7...10.


Ireland:--Ballyedmond, co. Cork. Mr. Wright.

Wales:--Barmouth! Holyhead Mountain.

12. C. degenerans, Flk. thallus squamulose; podetia whitish or brown, cartilaginous, glabrous, nigrescent and albo-guttate at the base, scyphophorous, scyphi proliferous, cristato-ramose.
Heaths and mountains, rare.


**Geo. Distribs:**—Europe, N. America, Australasia, India.

**Bot. Prov.:**—15...31.


**Channel Islands:**—Jersey. Mr. Larbalestier.

**Forma anomae,** (Ach.) podetia covered with leafy scales.


**Fig.:**—E. Bot. t. 1867.

**Bot. Prov.:**—3, 4...14...23.


**Scotland:**—Pentland Hills, near Edinburgh. Sir J. E. Smith.

**Ireland:**—Kelly’s Glen. Dr. Moore.

13. *C. furcata,* Hffm. thallus squamulose, evanescent; podetia elongated, pale whitish or brownish green, fruticose, glabrous, branched, branches attenuato-subulate, divergenti-furcate; apothecia small, fuscous.

Heaths and mountains, frequent.

**Reaction distinguishes furcata from pungens.**


**Fig.:**—Dill. t. xvi. f. 27. A & C.


**Geo. Distribs:**—Europe, N. and S. and Tropical America, India, Australasia.

**Bot. Prov.:**—1, 3, 4, 5...7, 8, 9, 10...14, 15, 16...18, 19...31


**Ireland:**—Killarney. Dr. Carrington.


**Wales:**—Moel-y-gest near Tremadoc.

**Var. racemosa,** Flk. podetia like those of the type, leafy or sealy.

**Fig.:**—Dill. t. xvi. f. 27. B.

**Exs.:**—Mudd Br. Clad. 46! 47!


**Var. recurva,** Hffm. podetia recurved, leafy.

**SYN:**—Mudd Man. 58, Br. Clad. 22.

**Fig.:**—Dill. t. xvi. f. 27 D.

**Exs.:**—Mudd Br. Clad. 49! 49! 52!


**Fig.:**—Dill. xvi. f. 25.

OF GREAT BRITAIN.

Var. adspersa Flk. podetia elongate, squamoso-furfuraceous, sparingly branched, branches subsimple.

IRELAND:—Tully, Kylemore. Mr. Larbalestier. (1875.)

14. C. scabriuscula, Del. podetia cespitose erect, apices scabrid, turgid, pulverulento-foliose, branched, apices furcate recurved, branches subalternate intricato-divaricate; apothecia terminal, large, irregularly globose, subfuscous.

On mossy rocks, rare. 1875.

Syn.:—Duby Bot. Gall. 693 (1829.) Nyl. in Flora 1875, p. 447.

Exs.:—Dill. t. 15. f. 27. E.

Geog. Distr.:—France, Belgium.

Bot. Prov.:—16.

SCOTLAND:—Barcaldine, Argyleshire. Rev. J. M. Crombie. (1875.)

15. C. crispatula, (Ach.) whitish, or pallido-cinerascens or subspadiceous, basal leaflets small, incised and crenate; podetia glabrous, branched, 3 or 4 times iterato-proliferous, apices and axis infundibuliform, open, the apertures denticulato-cristate at the margins.

In mountain ranges, very rare. 1869.


Exs.:—Tuck. 31.

Geog. Distr.:—N. Europe, N. America.


SCOTLAND:—Ben-a-board. Rev. J. M. Crombie. (1869.)

16. C. squamosa, Hfmm. thallus squamulose; podetia cespitose, whitish-green, cylindrical, 2in. high, erect, repeatedly branched, proliferously denticulate, or subulate from margins of the minute irregular scyphi, apices rigid subcorymbosse radiato-cristate, glabrous, longitudinally sublacunose, cortex entire, clothed with minute leaflets or scales; apothecia clustered, fuscous.

Mossy woods, not uncommon.

Distinguished from delicata var. subsquamosa by different reaction; from pyxidata v. decorticiata by the entire cortex and the podetia throughout clothed with scales; and from furcata f. adspersa, Flk. by different habit.


Fig.:—E. Bot. 2362.

Exs.:—Mudd Br. Lich. 13! Brit. Clad. 40! 41!


Bot. Prov.:—1...5...7, 8 10, 11...15...19...26...31.


SCOTLAND:—Sidlaw Hills and Glen Callater! Mr. W. Gardiner. Doune! Mr. Mc Kinlay.

IRELAND:—Killarney! Mr. Drummond, near Kylemore, Mr. Larbalestier.


CHANNEL ISLANDS:—Guernsey, Jersey, Sark, etc. Mr. Larbalestier.

Forma cucullata, Del. thallus minute, foliaceous, laciniatocrenulate, cucullate, discoloured, above glanco-virescent, beneath whitish; podetia elongate, curvate, subramose, irregularly scyphiferous or attenuate, pale; apothecia terminal subfuscous.
On the earth, rare. 1876.

SYN:—Duby Bot. Gall. 626 (1829).

IRELAND:—Killery Bay near Kylemore, Galway. Mr. Larbalestier. (1876)

B. Erythrocarpa, apothecia red.

Reaction, (K f + C +).

15. C. cornucopioides, Fr. thallus squamulose, pale yellow-green, crenate and crenato-incised; podetia 1—1 inch, granuloso-verrucose, glabrous or minutely squamulose, simple, dilated upwards into cyathiform simple or proliferous scyphi; apothecia sessile or podicellate.

On earth, &c., common.

In the typical form, the scyphi are short and broadly dilated, on short glabrous granuloso-verrucose podetia. In the extensa form, the podetia are much more elongated, and the scyphi proliferous from the margins; and in the phylophora form, the podetia and scyphi are entirely clothed with minute scales or leaflets. In the pleurota form (which also presents the above 3 states) the cortex of the podetia deliquesces into a fine dust, probably from growing in humid localities.

The glabrous verrucose state is analogous to C. pyzidata, and the pleurota or pulvulrent state to fimbriata among the phaeocarps.


Fig:—E. Bot. t. 2051. Larur in Sturm D. Fl. t. 23. a. and 25. (typica) — 23. b. and c. (extensa) — 24. e. (phylophora).


Geog. Distrib:—Europe, N. & S. America, India, Australasia.

Bot. Prov:—1, 2, 3, 4, 5, 6, 7, 8...10, 11...15. 18, 19...31.


Dr. Carrington.

Wales:—Aberdovey! Rev. A. Bloxam. Barmouth!

Channel Islands:—Portalaat Bay, Jersey. Mr. Larbalestier.

16. C. vestita, Ach. thallus foliaceo-squamulose; podetia 1—2 inches high, flavescent, cylindrical, simple, corticate, glabrous, cortex breaking into adnate or scabrous portions or verrucose, which eventually become crenate squamules; scyphi cylindrical, narrow, short, or shortly proliferously divided; apothecia conglomerate. Mountains, rare.

No doubt confounded with bellidiflora, which it much resembles, but distinct by different reaction.

SYN:—Ach. l. U. 541. (1810).

Fig:—Dill. xv. fig. 15. B. as to general form but not colour of apothecia.


Bot. Prov:—15.
SCOTLAND:—Ben Ferrog! Mr. Borrer. Aberdeen! Ben-na-Bourd, Braemar! Mr. W. Gardiner.

17. *C. deformis*, Hffin. thallus foliaceous, leaflets pale green, inciso-crenate, whitish beneath; podetia 1—3 inches, leafless, tubular, sulphureo-pulverulent, turgid, simple, scyphiferous, scyphi regular or deformed, margins erect, crenato-dentate.

Shady woods, rare.

The podetia are cylindrical, leafless, thickened upwards, or sometimes turgid and narrowed under the thallus, and are either entirely pulverulent, or corticate at the base, pulverulent above.

**Syn.:** Hffin. Fl. Germ. 120 (1795); Nyl. Syn. 222; *Scyphophorus deformis*, Hook. Brit. 240; Genomyee deformis, Hook. Scot. 63; *Cladonia coccifera* v. deformis, Mudd Man. 61. v. deformis a, Mudd Brit. Clad. 30.

**Fig.**—E. Bot. t. 1374; Dill. t. xv. f. 18. A.

**Exs.:**—Bohl. 29. Mudd. 25. Schar. 47. 48. 49.

**Geog. Distr.**—Europe, N. and S. America, India, Australasia.

**Bot. Prov.**—1. 2...5...10. 11. 12..14. 15. 16...23.


**Ireland**—Howth. Dr. Moore.

**Reaction, (K + C—).**

18. *C. digitata*, Hffin. thallus foliaceous at base, leaves small, lobato-crenate, pale green above, white beneath; podetia ochroleuco-pulverulent, cylindrical, 1—2 inches, simple, scyphi narrow, margin digitato-dentate incurved, or dilated and proliferous.

Moosy woods, rare.

Podetia sometimes corticate at the base, pulverulent above, sometimes entirely pulverulent, either leafless, or often with a few scattered leaflets, or sometimes leafy at the base, the leaflets diminishing in size upwards.

**Reaction,** colour, and incurved margins of scyphi distinguish this from *deformis*.


**Fig.**—Laur. in Sturm D. Fl. t. 15. 16.

**Exs.:**—Scher. 44! 46! Nyl. 25!

**Geog. Distr.**—N. America, Australasia.

**Bot. Prov.**—1. 5...8...11...14. 15. 16...23.


**Ireland**—Kelly’s Glen. Dr. Moore.

**Channel Islands**—Jersey. Mr. Labuleastier.

Mudd, in his Manual, cites to his digitata E. Bot. t. 1386, which if it were not described as having scarlet apothecia, I should refer to some form of *furcata*. Certainly it does not represent the typical *digitata*, nor does E. Bot. t. 2439, which Hooker quotes as illustrative of *digitata*, but rather represents var. *macilentula* f. *polydoctyla*. Mudd’s specimens, 68, 69, 70, in his Br. Clad. from the incano-pulverulent colour approach *macilentula*.

**Var.** *macilentula*, Hffin. thallus foliaceous or squamulose; podetia incano-granulosopulverulent, cylindrical, ½—1 in. high, slender, simple, sometimes shortly divided at the apex, ascyphous; apothecia terminal, tuberculose.
Mountainous turfry heaths, not unfrequent.


Fig.:—E. Bot. t. 2028.

Exs.:—Scher. 33! 34! M. & N. 750! Hepp 113! Anzi Clad. Cis. 19 B. C. Mudd L. Br. 29!

Geog. Distri.:—Europe, N. America, Australasia.

Bot. Prov.:—1..2..3..5..8..10, 11..14, 15..19..26.


Channel Islands:—Jersey. Mr. Larblestier.

f. clavata, (Ach.) podetia white, subventricos-cornute, sterile.


Exs.:—Scher. 75. Leight. 273! 297! 403!

Geog. Distri.:—Europe.

Bot. Prov.:—1, 2..5..7, 8.


Wales:—Barmouth! Conway Falls!

f. polydactyla, Flk. podetia scyphiferous, scyphi digitato-cristate.

Syn.:—Mudd Man. 62. (1861).

Fig.:—E. Bot. t. 2437.


Geog. Distri.:—Europe.

Bot. Prov.:—2..3..7, 8..10..12, 13..15..19..31.


Scotland:—Carr Hill! Lnn of Dee! Mr. W. Gardiner. Loch Minech.

Aberdeen! Mr. Croall. Kirkmichael, Dumfriesshire, Mr. Mc Garrock.

Ireland:—Bantry! Miss Hutchins.

Wales:—Moel-y-Golfa! Montgomeryshire.

Channel Islands:—Jersey. Mr. Larblestier.

f. caricata, Ach. podetia leafy and squamulose.


Geog. Distri.:—Europe.

Bot. Prov.:—8..7 11, 12..15..19..31.


Scotland:—Craig-y-Barns, Dunkeld! Dr. Lindsay.

Ireland:—Killarney Hill. Dr. Moore.

Wales:—Moel-y-Golfa! Montgomeryshire.

Channel Islands:—Jersey. Mr. Larblestier.

f. ostreatiformis, thalline leaves adscending and imbricate, rotundate, thickened and pulverulent at the margins, green above, white pulverulent beneath, podetia similar to those of clavata.

Fig.:—Can E. Bot. t. 2112. be this?


Geog. Distri.:—Europe.

Bot. Prov.:—5..10.
ENGLAND:—Yorkshire! Mr. Mudd, Laurence Hill! Shropshire.
Passing insensibly into digitata. Similar in general appearance to C. bacillaris but distinct by different reaction.

*f. coronata*, Ach. podetia cylindrical pulverulent and sub-squamulose, branches digitato-radiate; apothecia terminal, sub-globose, red.

On the earth. 1877.


FIG.:—Dill. t. 15. f. 19. C.

IRELAND:—Near the Lake, Ballinaheich, Galway. Mr. Larbalestier. (1877).

*** Reaction, (K—C—)***

19. *C. Florkeana*, Fr. thallus squamulose, evanescent; podetia 1—1½ inch, white or brown, cylindrical, slender, cartilaginous, glabrous, continuously corticate, verruculose or squamoso-decorticate, nigrescent at the base, scales and granules innate, apex thickened, obsolesely scyphiferous and shortly divided; apothecia conglomerate.

Mountainous heaths, rare.


Fig.:—Laur. in Strum D. Fl. t. 14. f. a. d.


GEOG. DISTRIB.:—N. America, Australasia.

BOT. PROV.:—3..10...15...19, 20.

ENGLAND:—Yorkshire! Mr. G. Dickson, Leith Hill, Surrey. Mr. W. Joshua.

SCOTLAND:—Ben-a-Bourd. Mr. W. Gardiner.


VAR.* bacillaris*, Ach. similar to *Florkeana* in general characters, but the cortex deliquesces into a granular ashey-grey or a fine white impalpable powder, or the granules are developed into minute leafy scales, which more or less entirely cover the podetia.

Mountainous heaths, not unfrequent.

Hitherto confused by external aspect and characters alone with *C. macilenta*, but separated by different reaction. Analogous to *Florkeana*, as *pleurota* to *cornucopioides* and * fimbrata* to *pyxidata*.


EXS.:—Scheer. 36, 37, 56. Mudd Br. L. 24. Br. Clad. 70. 71. 73.

GEOG. DISTRIB.:—Europe, N. Tropical and S. America, India, Australasia.

BOT. PROV.:—8...5..7, 8...10...15, 16., 19. 26. 31.


IRELAND:—Ireland! Miss Hutchins & Sir T. Gage, near Kylerrmore and Letterfrack. Mr. Larbalestier.

WALES:—Barmouth!

CHANNEL ISLANDS:—Jersey. Mr. Larbalestier.

20. *C. bellidijlora*, Schær. thallus folioso-squamaceous; podetia flavescent, 1—2 inches, elongated, glabrous, cylindrical, simple, verrucoso-scabrous or foliaceo-squamulose, cyphi narrow, sometimes divided; apothecia conglomerate.

Lofty mountains, very rare.
Distinct by reaction from *vestita* (K f + C +) with which it has been hitherto confounded.


**Fig:** — E. Bot. t. 1894.

**Exs:** — Schar. 42. Anzi Clad. Cis. 16 B!

**Geog. Distri:** — Europe, N. America.

**Bot. Prov.:** — 1...7...11...14, 15, 16...23...30.

**England:** — Lustleigh Cleve, Devon. Mr. Purfitt. Prestwick Carr; Hexham and Dilston Fels; Cheviot, Northumberland; Teesdale and Weardale, Durham. Mr. Winch. Swinnop and Top of West Allen Carrs, Northumberland. Rev. W. Johnson.


**Ireland:** — Near Belfast. Mr Templeton. Kelly's Glen, Dublin. Dr. Moore.

**Wales:** — Diffwys, near Barmouth. Rev. T. Salveys.

**Sub-genus 3. Cladina. Nyl.**

Thallus leafless; podetia without scyphi, repeatedly branched, more or less smooth; apothecia terminal, biatorine, pale or red.

A. *Phaeocarpe*, apothecia pale or fuscous.

* Reaction (K f + C +).

1. *C. sylvatica*, Hffm. podetia 2—6 inches high, white or pale straw-coloured glabrous, branched, terminal branches radiato-cymose, fastigate, apices subsecund nodding.

Hills, mountains, heaths, &c., probably not uncommon.

Separated from *rangiferina* by the above characters and different reaction.


**Exs:** — Coem. Clad. Belg. 158, 159. Leight. 57.

**Geog. Distri:** — Europe, N. & S. America, India, Australasia.

**Bot. Prov.:** — 8...11, 12...14, 15...19...26.

**England:** — Market Rasen! Lincolnshire. Dr. F. A. Lees. West Allen Carrs, Northumberland; Foresfield Fell, Cumberland. Rev. W. Johnson.

**Scotland:** — Pentland Hills! Dr. Greville. Deerhill Wood! Sands of Barrie! Mr. W. Gardiner. Callander! Mr. Mc Kinlay.

**Ireland:** — Killarney. Dr. Carrington. Kylemore! Mr. Larbalestier.

*f. scabrosa*, podetia scabrous, with minute whitish irregular points or verrucose.

**Exs:** — Mudd Br. Clad. 57. 60.

In similar situations with type, but differences owing probably to age or climate.


*f. alpestris*, Linn. podetia white or pale straw-coloured, verrucose, intricately and divaricately branched, densely thyrsoid at the apex.

Similar habitats with type; rare.


**Fig:** — Dill. t. xvi. f. 29. E. F.

**Exs:** — M. & N. 1063!
f. portentosa, Duf. podetia very thick and turgid, verrucoso-leprous, branches short, turgescent, apices denticulato-cristate.

f. pumila, Ach. densely cespitoso-pulvinular.

2. C. amaurocereæ, (Flk.) straw-coloured or whitish-straw-coloured, efoliolar; podetia glabrous or slightly squamoso-decorticate, straight, subulate and slender, much branched, some scyphiferous, scyphi cupuliform, denticulo-cristate or subulato-spinose, often proliferous. In sub-alpine regions, very rare. 1869.


Distinguished from sphatèca by the above characters and different reaction.

f. Reaction, (K+C—).

4. C. uncialis, Hoffm. podetia greenish-straw-coloured, glabrous, cylindrical, fistulose, dichotomous, branches short, apices subulate denticulate or digitale.
Heaths and moors, common.


**Figs.**—E. Bot. f. 174.

**Exs.**—Scher. 82. Leight. 58.

**Geog. Distrib.**—Europe, N. America.

**Bot. Prov.**—1...4, 5...7, 8...10, 11...15, 16...18...20...26.


*f. turgescens*, Fr. podetia thickened and turgid upwards, apices dilated, denticulato-stellate.

Heaths and mountains, rare.

**Syn.**—*C. turgescens*, Fries L. E. 244 (1831). Mudd Man. 59; *Cladonia stellata b. turgescens*, Mudd Man. Clad. 27.

**Exs.**—Scher. 84.

**Geog. Distrib.**—Europe.

**Bot. Prov.**—2...5...15...26.

**England.**—Hants! Mr. R. S. Hill.

**Scotland.**—Ben Lawyers; Ben Vorlich, Dr. Greville. Hill of Ardo, near Aberdeen! Rev. J. M. Crombie.

**Ireland.**—Kylemore! Mr. Larbalestier.

**Wales.**—Cwm Idwal!

*f. obtusata*, Ach. podetia aggregate, short, turgid, ramulose, branches excessively short, subincrassate obtuse and with black denticulations at the apex.

Bogs, very rare. 1876.


**Ireland.**—Bogs near Kylemore. Mr. Larbalestier. (1876).

*f. adunca*, (Ach.) podetia elongated, somewhat turgid, branches hooked.

Similar situations with type, not uncommon.

**Syn.**—f. adunca (Ach.) Hook. Soot. 64; *Cladonia stellata B. elatior*, Mudd Man. 59! *Cladonia stellata B. adunca*, Mudd Br. Clad. 26!

**Figs.**—Dill. XVI. f. 21. A.B.

**Exs.**—Scher. 513, 514. Mudd L. Br. 21! Br. Clad. 62!

**Geog. Distrib.**—Europe.

**Bot. Prov.**—2...10, 11...15...20.

**England.**—Hants! Mr. R. S. Hill. Yorkshire! Mr. Dixon. Cheviot! Teesdale. Mr. Winch.

**Scotland.**—Ben Nevis! Dr. Lindsay. Summit of Bassier, Clova! Sidlaw Hills! Forfar. Mr. W. Gardner.

Dr. Taylor in Mack. Hib. 79, mentions a var. *attenuata* gathered by Mr. Templeton on the side of Devis Mountains, to which he quotes Dill. xvi. f. 22. H. and thus characterizes; thallus of minute lobed basal scales; podetia brown, subdivided at the summits, beset with minute scales. Whatever this may prove on inspection of the specimens, it certainly does not belong to this sub-genus *Cladina*.
II. PILOPHORON. Tuck.

Thallus subsquamaeaco-granulose. Podetium rigid, cylindrical, simple, or branched upwards, granululate. Apothecia nigro-rufous, capituliform, subglobose, internally solid. Spores 8, colourless, ellipsoid, or oblongo-ellipsoid, simple. Sterigmata simple. Spermata cylindrical, curved or straight.

1. *P. fibula*, Tuck. whitish, subsquamaeaco-granulate, concrecenti-areolate, appressed; podetia solid, erect, terete, very short, simple, subsquamaeaco-granulate; apothecia subglobose, depressed; spores 8, colourless, ellipsoid, or ellipsideo-fusiform; cephalodia thalline, fusco-nigrigent, minutely tuberculose.

On perpendicular wet rocks, rare.


**Fig.:**—Th. M. Fries Mon. Ster. & Pil. t. 19. f. 5. Nyl. Syn. t. 7. f. 6.

**Geo. Distr.:**—N. America, Lapland, Norway, Sweden, Finland.

**Bot. Prov.:**—5...7...16...26.

**Scotland:**—Morrone, Ben Cruachan. Rev. J. M. Crombie, near Cuchullin Hills, near Sligachan, Isle of Skye! Mr. Pigott.

**Ireland:**—Kylemore Castle! Salrock Road! co. Galway! Mr. Lorbalestier.

**Wales:**—Llyn Cae! Llyn Aran! and the Giant's Pebbles! Cader Idris! Arran Mowddy! Pass of Llanberis! Snowdon! Cwm Cywion! Cwm Ffynnon Lloer! Cwm Clwyd! Capel Curig!

"Spores .017—20 mm. long, .006—8 mm. broad." (Nyl.)

A single specimen of another species, named by Dr. Nylander in a letter to Rev. J. M. Crombie, 1875, and noted by the latter in Journ. Bot. May, 1875, as *P. strumaticum*, Nyl. was collected by Mr. Crombie on mi- caceo-schistose rocks at Morrone, Braemar, in 1869. But no diagnosis of this excessively rare species nova has as yet been published, therefore I am ignorant of its peculiar characteristics, particularly as I have seen no specimen.

**Tribe V. STEREOCAUELI.**

Thallus generally cespitose, formed of podetia with a solid cartilaginous medullary axis, around which the white exterior fragile granulose portions of the thallus are congregated. Apothecia terminal or lateral, lecideine, nigrigent or fuscescous.

**I. STEREOCAULON.** *Schreb.*

Podetia covered with fragile granules of various forms. Apothe- cia fuscescous or fusco-pallescenc, internally solid. Spores cylindraceo-fusiform, with few or many septa, (3—9). Sterigmata simple. Spermata aciculari-bacillar, straight, or slightly curved.

1. *S. coralloides*, Fr. cespitose, ramose, glabros, granules cinerascent, substibrillose or digitato-divided; apothecia terminal and lateral; spores cylindraceo-fusiform, 3-septate; cephalodia cinerascent, verrucose, minutely granululate, sessile.

On rocks, common.


**Fig.:**—Nyl. Syn. t. 7. f. 16. Scher. En. t. 6. f. 5.
2. *S. paschale*, Ach. densely stipate, ascending, nearly glabrous, granules albo-cinerascent or *whitish*, crenate; apothecia terminal; spores fusiformi-cylindrical, 3 (sometimes 5—9)—septate; cephalodia verrucose, cinerascent, sessile.

On rocks, common. 1724.


**Fig.** — E. Bot. 282. NyL Syn. t. 7. f. 18—26.


**Geog. Distri:** — Europe, Asia, N. America, Ceylon.

**Bot. Prov.:** — 1, 2, 3, 7, 8, 10, 11, 12, 13, 14, 15, 18, 19, 26.


**Scotland:** — Hill east of Glen Callater! Braemar; Caerlaverock, Dumfries; and opposite Birnam, Dunkeld. Dr. Lindsay. Inchnadaff, Berwickshire. Sir W. C. Trevelyan. Strathmartin, Forfarshire. Mr. W. G. Gardiner. Callernish, Lewis. Dr. Lindsay.


**Wales:** — Cader Idris and Snowdon. Dillenius. Craig Breiddin! Montgomeryshire! Treffirw!

"Spores .005 to .009 in. long, by .0005 to .00075 in. broad." (Mudd.) "Spores .018—40 mm. long, .003—.045 mm. broad." (NyL) "Spores .024—39 mm. long, .003—.04 mm. broad." (T. M. Fr.)

3. *S. tomentosum*, Fr. podetia *densely arachnoideo-tomentose, whitish*, *divaricato-ranose*, granules albido-cinerascent, crowded, rounded or *crenate*; apothecia terminal and lateral; spores fusiformi-bacillar, 3, (rarely 5—7)—septate.

On rocks, rare.


**Geog. Distri:** — Europe, Asia, Peru, N. & S. America.

**Bot. Prov.:** — 10...12...15.


"Spores .006—.008 in. long. by .0005 to .00075 in. broad." (Mudd.) "Spores .023—.37 mm. long. .0025—.0015 mm. broad." (Nyl.) "Spores .022—.37 mm. long. .002—.003 mm. broad." (T. M. Fr.)

Var. alpinum, Laur. podetia less tomentose, granules whitish, turgid, verrucoso-conglomerate. On rocks.


ENGLAND:—Cumberland! Mrs. Stanger.


Var. botryosum, Nyl. podetia glabrous, granules thyroideo-conglomerate on the extremities of the branches. On rocks.

SYN:—Nyl. Scand. 64. Exs:—Scher. 264. GEOG. DISTRIB:—Switzerland, Scandinavia. BOT. PROV:—10.

ENGLAND:—Teesdale. Mr. Mudd.

4. S. denudatum, Flk. podetia slender, simple or branched, attenuate at the apex, glabrous, granules whitish, or albo-cinerascentsubpeltate, medio-depressed, the centre virescents, margin white crenulate; apothecia fuscous, small, plane or convex, terminal or lateral; spores elongato-fusiform, 3—(rarely 5—7)—septate; cephalodia olivaceo-fuscescent, verrucoso-glomerulose. On rocks, not uncommon.

SYN:—S. denudatum, Flk. D. L. 79, (1815). Nyl. Scand. 65. Syn. 247. Mudd. Man. 66. FIG:—Nyl. Syn. t. 7. f. 29. Exs:—M. & N. 466. Fr. 346. Anzi Langob. 15. Smrft. 163. GEOG. DISTRIB:—Europe, Asia, America. BOT. PROV:—1...5...7...10...11...15...18...19...20...26...30.


SCOTLAND:—Aumbre! Perthshire; Caerleverock Wood! Dumfries; Ben Nevis! Dr. Langob. 15. Smrft. 163. GEOG. DISTRIB:—Europe, Asia, America. BOT. PROV:—1...5...7...10...11...15...18...19...20...26...30.


WALES:—Pen-y-gwryd. Mr. W. Joshua. Llyn Aran! Llyn Cae! Cader Idris! Arran Mowddy! Pass of Llanberis! Snowdon! Cwm Idwal! "Spores .005 to .008 in. long. by .0005 to .00075 in. broad." (Mudd.) "Spores .026—.46 mm. long. .003—.004 mm. broad." (Nyl.) "Spores .021—.40 mm. long. .002—.004 mm. broad." (T. M. Fr.)

5. S. condensatum, Hffm. very small, podetia very short, strong, simple, naked, granules whitish or cinerascents, nodulose, crenulate, condensed into a lax-granulose crust; apothecia fuscous, sessile; spores fusiform or cylindraceo-fusiform, 3—7 septate. On the earth and rocks, rare.

Fig. — Nyl. Syn. t. 7, f. 31.


Bot. Prov. — 1...5...7...10...11...15...19.

England: — Batterby Moor; Ayton Moor! Cleveland. Mr. Mudd.


Ireland: — Mangerton, Killarney. Mr. Carroll.


Channel Islands: — La Moie, Jersey; Tortavel, Guernsey. Mr. Larbalestier.

"Spores .005 to .007 in. long, by .0005 to .00075 in. broad." (Mudd.) "Spores .026—36 mm. long, .003—.4 mm. broad." (Nyl.) "Spores .020—36 mm. long, .0015—25 mm. broad." (2. M. Fr.)

Var. cereolinum, Ach. thallus closely affixed to the rock; podetia slender, glabrous, often sorendiferous at the apices; cephalodia verrucoso-gleromulose, darkly cinereo-fuscescent.

On rocks, rare.


Fig. — E. Bot. Suppl. 2667.


Bot. Prov. — 1...7...11...15...19...26...30.


Wales: — Llyn Aran! near Llyn Gwernon! Cader Idris. "Spores .003 to .004 in. long, by .001 to .00125 in. broad." (Mudd.) "Spores .020—38 mm. long, .004—5. mm. broad." (Nyl.)

Var. condyloideum, (Ach.) thallus smaller, podetia slender, simple or branched, branches shortly ramentoso-divided at the apices.

On rocks, rare.


Exs. — Leighton. 295.


Bot. Prov. — 10, 11, 12...15.


"Spores .015—30 mm. long, .0025—35 mm. broad." (Nyl.)

S. evolutum, Graewe. densely cespitose, glabrous, very much branched upwards, granules cinereo-glauccous or whitish, crowded, ramentoso-divided, plano-compressed; apothecia terminal, large, margined, at length convexo-difformed; spores firm, oblong or oblongo-fusiform, obtuse, 3-septate.

On granite boulders, rare. 1870.


Exs. — Rabhb. 858.

Geogr. Distript. — Sweden, Finland.
6. _S. nanum_, Ach. very small, flocculoso-pulverulent; podetia slender, cespiteoso-congested, simple or branched upwards, branches subfastigate, obsoletely arachnoid, granules albido-glaucescent or subceruginose, minute, nodulose or powdery; apothecia unknown.

On earth and fissures of rocks, rare.


GEOG. DISTRIB: — Europe, Algeria, America.

BOT. PROV: — 1...3...7...10...13...60.


SERIES III. RAMALODEI.

Thallus fruticulose or filamentose, erect or pendulous, terete, or variously compressed or angular, without any leaflets or granular or basal crust, internally tubulose with a hollow medulla, or solid. Apothecia generally lecanorine.

TRIBE VI. ROCCELLEI.

Thallus ramose, terete or compressed, whitish, sub-cartilaginous internally with a copious filamentose medulla. Apothecia adnate, nigrant. Spores oblongo-fusiform, 3-septate.

I. ROCCELLA. _DC._

Thallus fruticulose, terete or compressed, albicant, or cinereolurid, opake, smooth, internally dense. Apothecia lateral, lecideine, lecanorine or irregular; hypothecium thick, black. Spores oblong or fusiform, 3-septate, straight or curved. Spermatia acicular, arcuate.

1. _R. tinctoria_, DC. terete or sub-compressed, whitish, _vermiculari-elongate_, simple or _bifurcate_; apothecia lecideine, black, albido-pruinose; _spores oblongo-fusiform_, 3-septate (C red.)

On rocks by seaside.


GEOG. DISTRIB: — Europe, Africa, E. Indies, Central America.

BOT. PROV: — 1, 2...31.
THE LICHEN-FLORA


“Spores .005 in. long, by .001 in. broad.” (Mudd.) “Spores .014—22 mm. long, .004—6 mm. broad.” (Nyl.)

2. R. phytophysis, Ach. terete or slightly compressed, whitish, or much branched and densely cespitose; apothecia lecideine, black, naked or pruinose; spores fusiformi-oblong, 3-septate, (C red but soredia—).

On maritime rocks.


GEOG. DISTRIBUT:—Europe, Africa.

BOT. PROV:—1, 2, 31.


“Spores .012—16 mm. long, .003—4 mm. broad.” (Nyl.)

Forma tenuior, Larb. very slender, branched at the apices, subterete.

CHANNEL ISLANDS:—La Moye, Jersey! Mr. Larbalestier. (1873).

3. R. fuciformis, Ach. compressed, whitish, albido-glaucuscent or glauco-fuscosecent, polished, fuciformi-branched, rigid; apothecia marginal, lecanorine or dirinoid, superficial, pruinose; spores fusiform or oblongo-fusiform, 3-septate; (C—but soredia red.)

On maritime rocks.


Fig.—E. Bot. 728. Nyl. Syn. t. 8. f. 5.


GEOG. DISTRIBUT:—Europe, Africa, Centra America.

BOT. PROV:—1, 2, 31.


“Spores .005 to .006 in. long, by .001 in. broad,” (Mudd). “Spores .020—30 mm. long, .004—6 mm. broad.” (Nyl.)

TRIBE VII. SIPHULEI.

Thallus podetiiform, whitish, opake, fistulose. Apothecia unknown.

I. THAMNOLIA. Ach.

Thallus consisting of stipites or podetia which are cylindrical or sub-compressed, cornate, imperforate, simple or branched, apices acute, internally fistulose. Apothecia unknown. Spermatia cylindrical.
1. *T. vermicularis*, Sw. chalky-white, 2-4 inches, prostrate, ascending or erect, subulate or turgid, simple or bifurcate, smooth or longitudinally rugulose, dispersed or stipate. (K +).

On mossy earth, rare. 1799.


**Fig.** — E. Bot. 2029. Hoffm. Pl. Lich. t. 29. f. 1. 2. 3. Nyl. Syn. t. 3. f. 6.


**GEOG. DISTR.:** — Europe, Asia, Central and S. America, New Holland.

**BOT. PROV.:** 1...7...12...15. 16.

**ENGLAND:** — Skiddaw, Cumberland, Mr. Pilkington.


**WALES:** — Cader Idris. Rev. T. Salwey.

**TRIBE VIII. USNEE.**

Thallus whitish or pallido-virescent, fruticulose, ramose and ramulose, tough, terete, erect or pendulous, cortical on all sides, internally with a firm filiform cartilaginous axis, affixed by a more or less spreading point or base. Apothecia lecanorine, peltate, thalline margin ramuloso-ciliate. Spores colourless, small, ellipsoid. Paraphyses indistinct.

**I. USNEA.** *Dill. Ach.*

Thallus fruticulose, filamentose, erect or pendulous, fibrillosoramulose, medullary axis solid. Apothecia concolorous orbicular, or peltate, terminal or lateral. Spores small, ellipsoid, colourless, simple. Storigmtata simple. Spermatia straight, cylindrico-acicular, apically truncate, fusiform-turgid basally.

1. *U. barbata*, (L.) Fr. albido-glaucenscent or pale cinereo-virescent, terete, variously branched, erect or pendulous; apothecia concolorous, rather large, fibrilloso-radiate; spores shortly ellipsoid, simple.

On trees, pales, &c. common. 1778.

f. 1. *florida*, (L.) Fr. erect, scabrid, divergenti-ramose; apotheca large, plane, pallido-carneous, pruinose, with long ciliæ at the margin.


**Fig.** — E. Bot. 872. Hoffm. Pl. Lich. t. 30. f. 2. Mudd Man. t. 1. f. 15.

**GEOG. DISTR.:** — Throughout the World.

**BOT. PROV.:** 1...2...5...7...10, 11, 12...14, 15...26...30.


**GEOG. DISTR.:** — Europe, Asia, Africa, America, Australasia.

**BOT. PROV.:** 1...5. 6...10. 11...14. 15...30. 31.


IRLAND:—Near Belfast. Mr. Templeton. various places, co. Galway. Mr. Larbalestier.

WALES:—Hafod, Cardiganshire. Sir J. E. Smith. CHANNEL ISLANDS:—Jersey. Mr. Larbalestier.

"Spores .002 in. long, by .001 in. broad." (Mudd.) "Spores .006—8 mm. long, .008—4 mm. broad." (T. M. Fr. J.

The cartilaginous axis consists of longitudinal filaments closely compacted & lies in a loose acheneoid mass of anastomosing filaments, amongst which are the large anastomosations of bright green gonidia. The cortical layer is very thin & fragile, easily ruptured transversally. The medullary axis spreads out more or less at the base & thus fixes the plant to the substratum or matrix on which it grows. Ascii narrow, clavate, Paraphyses coherent, apices colourless, Gela-
tina hymenias I blue. Spores .009—.011 mm. long, .006—.007 mm. broad.

f. 2. hirta, (L.) Fr. erect, minutely and abundantly fibrillose, much branched, often only verrucoso-sorediate.

On trees and pales, common. 1724.


f. 3. dasypoga, (Ach.) Fr. elongato-pendulous, clothed with numerous short spreading fibrillae.


f. 4. plicata, (L.) Fr. pendulous, entangled, not fibrilloso-ra-
mose, smooth.

On trees and rocks, frequent. 1696.


f. 5. stolonifera, (L.) Fr. stoloniferous, clothed, not fibrillosa-ra-
mose, smooth.

Ireland: — Dewros river, Galway. Mr. Labbalestier.


f. 5. articulata, Ach. pendulous, elongato-ramose, smooth, articulato-constricted, more or less inflated.

On trees, rare. 1724.


Fig: — E. Bot. 268. Dill. Musc. t. 11. f. 4.

Exs: — Dickens, 2d. Schar. 497. Arn. 34.

Geog. Distrib: — Europe, Asia, America, Canaries, Australasia.

Bot. Prov: — 1...2...5...7...9...15...23.


Scotland: — Doxford, and other Woods, Forfarshire. Mr. W. Gardiner.

Ireland: — Malahide. Mr. Mackay. Portmarnock, near Dublin. Dr. Taylor.


f. 6. ceratina, Schr. thallus erect or pendulous, papilloso-scabrous, variously fibrilloso-ramose.

On trees, rare.

Syn: — Schr. Spicil. 505. (1840), Nyl. Scand. 69.

Fig: — Schr. Enum. t. 1. f. 1. Nyl. t. 8. f. 8.


Bot. Prov: — 2...6...11...15.


f. 7. rubiginosa, Ach. rubiginose; apothecia concolorous.

On trees, rare. 1869.


Exs: — Anzi Lang. 413.

Geog. Distrib: — N. America, Brazil, Cape of Good Hope, Lombardy.

Bot. Prov: — 2...5.


Tribe IX. RAMALINEI.

Thallus terete or compressed, erect or pendulous, internally with a woolly medulla. Apothecia concolorous or discolorous, lecanorine, thalline margin entire; paraphyses distinct or indistinct. Spores various. Spermatia various.


Thallus terete or compressed, erect, prostrate or pendulous, filamentose, internally arachnoid or hollow, intricato-ramose,

1. *A. bicolor*, (Ehrh.) black or fusco-nigricant or castaneo-fuscescent, terete, erect, much branched, divaricato-fibrillose, densely intricate, paler at the apices; apothecia lateral, adnate to an obtuse knot of the thallus, small, nigricant; spores 8, small, shortly ellipsoid. (K = C = )

On alpine rocks. 1795.


**Fig.:**—E. Bot. 1853.


**Geog. Distr.:**—Arctic Europe, Switzerland, France, Arctic America, Himalaya.

**Bot. Prov.:**—1—17. 10. 15.


“Spores .007—8 mm. long. .005—6 mm. broad.” (Nyl.) “Spores .007—8 mm. long. .005—6 mm. broad.” (T. M. Fr.)

2. *A. divergens*, (Ach.) fusco-castaneous or spadiceo-fuscescent, roundish or subangulate, erect or prostrate, rigescent, somewhat shining, very much branched, branches divergenti-dichotomous, (K = C red); "apothecii innato-sessilibus, crenulatis, discocastaneo." Fr.

On the earth in alpine places; very rare. 1872.


**Fig.:**—Ach. Meth. t. 6. f. 1.


**Geog. Distr.:**—Scandinavia, Austria, Arctic America.

**Bot. Prov.:**—I.

**Scotland:**—Summit of Cairngorm in Braemar, small state, Rev. J. M. Crombie. (1872).

2. *A. nigricans*, (Ach.) castaneo-nigrivant, paler at base, terete, or sub-compressed, erect or ascending, opaque, dichotomously branched intricate, axils more or less lacunose-impressed; apothecia biauro-fuscous, lateral or terminal, adnate; spores 2-3, colourless, large, ellipsoid. (K yellow C red).

On alpine rocks, rare.


**Fig.:**—Nyl. Syn. t. 8. f. 17.

**Exs.:**—Fellim. 54. Korb. 241. Th. Fr. 28.

**Geog. Distr.:**—Europe, America.

**Bot. Prov.:**—15.


In herbaria it tinges the paper with a reddish colour. “Spores .021—35 mm. long. .015—20 mm. broad.” (T. M. Fr.)
3. A. ochroleuca, (Ehrh.) ochroleucous, fruticulose, erect, rigescent, terete or compressed, smooth, lacunoso-impressed, albo-sorediate, branched, ramuli attenuate, apically denigrate; apothecia dark brown, large, receptacle appendiculate; spores 2 or 4, fuscos, large, ellipsoid. (K f + C +)

On the earth in alpine places.


GEOG. DISTRIBUTION:—Alps & Arctic Europe & N. America, Himalaya, Mexico, Japan, New Holland.

Bot. PROV:—7...11...15.


“Spores .028—.42 mm. long, .014—.24 mm. broad.” (Nyl.) “Spores .028—.42 mm. long, .014—.24 mm. broad.” (T. M. F.) Spores .028 24 mm. long, .015 mm. broad.

f. tenuior, Cromb. smaller, erect, branches slenderer, concolorous at the apices.

On alpine mountains. 1808.


Fig:—E. Bot. t. 2040 (larger figure).


Var. cincinnata, Fr. prostrate, compressed, thicker, dilated below, lacunose or foveolate, with long slender attenuate entangled branches above. (K f + C +) medulla K—C reddish.

In alpine places, rare. 1808.

SYN:—Fr. L. E. 22. (1880). Nyl. Scand. 73.

Fig:—E. Bot. t. 2040. (larger specimen).

EXS:—Fellm. 53.

GEOG. DISTRIBUTION:—Europe, America.

Bot. PROV:—15, 16.


Var. sarmentosa (Ach.) pendulous, elongate, complicate, flaccid, distantly branched, axils compressed, apices attenuate concolorous.

Alectoria sarmentosa, Ach. L. U. 595. is a distinct species with chemical reaction (K=C+) and is represented in Th. Fr. 27. M. & N. 755, 464. and in Hoffm. Pl. Lich. t. 72.

Amongst mosses in alpine localities, very rare.


4. A. capillaris, (Ach.) Nyl. pallido-canescens or pale flavidorufescens, pendulous, elongate, dichotomously branched, flaccid, densely entangled, sub-compressed, angular and sublacunose below, filiform and capillary above; apothecia unknown. (K + C +)

On trees, &c.

SYN:—Alectoria jubata, var. cana & setacea, Ach. L. U. 593. (1810.)
THE LICHEN-FLORA

**Fig.**—Westr. S. L. Parg.—Hist. V. 1. n. 14. Fig. B.


**Geog. Distr.**—Europe.

**Bot. Prov.**—10. 15.

**England:** Yorkshire! Mr. Dixon.

**Scotland:** Killin, Braemar. Rev. J. M. Crombie.

The different chemical reaction appears to separate this as a distinct species from all forms of *A. jubata.*

*A. subcana,* Nyl. MS. is said to have been gathered on trunks of old firs, on Ben Lawers and Glen Derry, Braemar, by Rev. J. M. Crombie; but I have seen no specimen, nor am I aware of any published diagnosis.

5. *A. jubata,* (Linn.) Nyl. fuscous or nigricant, livido-fuscaceous or pallescent, terete, filiform, elongate, slender, ramose, pendulous or prostrate, entangled; apothecia brown, plane or convex, small; spores 8, colourless, small, elliptical. (K—C—)

On trees and rocks in mountainous places.


**Exs.**—Scher. 396. 397. 496. Mudd St. Leight. 72.


**Bot. Prov.**—1, 2, 5, 7, 8, 10, 11...14, 15...18...22. 23.


"Spores .006—9 mm. long. ,004—5 mm. broad." (Nyl.) "Spores .006—1 mm. long. ,004—5 mm. broad." (T. M. Fr.)

**Var. chalybeiformis,** Ach. olivaceo-black, flexuose, decumbent, subfilamentose, wiry and rigid, shortly branched, intricate.

(K—C—)

On alpine rocks and boulders.


**Fig.:**—Dill. t. 13, f. 10.


**Geog. Distr.:**—Europe.

**Bot. Prov.**—10, 11...15.

**England:**—Battersby Bank! Cleveland. Mr. Mudd. Charnberry, near Eglestone, Durham. Mr. Winch.


6. *A. lanata,* (L.) nigricant or fusco-nigricant, filiform, terete,
slender; decumbent, ramose, entangled, shining; apothecia lateral, concolorous, margin sub-entire or granulato-unequal; spores 8, colourless, elliptical, simple; medulla white K—C—.

On alpine rocks. 1724.


FL:—E. Bot. 846 (middle fig).


GEOG. DISTRIBUTION: Europe.

BOT. PROV.: 1-5...7...11. 12...15...19...23...26.


"Spores .00225 in. long, by .00125 in. broad." (Mudd). "Spores .009—.012 mm. long, .007—.008 mm. broad." (Nyl.) "Spores .007—.011 mm. long, .006—.008 mm. broad." (T. M. Fr.)

F. minuscula, Nyl. filaments entangled, diminutive, scabrous. On alpine rocks.


FL:—E. Bot. t. 2318 (small right hand fig).

EXS:—Fellm. 83.

GEOG. DISTRIBUTION:—Scandinavia.

BOT. PROV.: 7...15.

SCOTLAND:—Ben Lomond, Herb. Sowerby.


Var. parmelioidees, Crombie. thallus suborbicular; somewhat closely appressed, black or blackish (not olive-brown), opaque, laciniae shorter, more intricately divided, margin of apothecia granulato-unequal or ciliated.

On alpine rocks.


FL:—E. Bot. t. 846. (upper and lower fig.) Dill. Musc. t. 17. f. 32.

EXS:—Crombie. 20.

GEOG. DISTRIBUTION:—Scandinavia.

BOT. PROV.: 15.

SCOTLAND:—Morrone, Braemar; summit of Ben-y-gloe. Rev. J. M. Crombie.

F. subciliata, Nyl. margin of apothecia ciliated with spinuliform papillae.

On calcareous rocks.

SYN:—Nyl. in Flora 1868 p. 346. Crombie l. c.


II. EVERNIA. Ach. Nyl.

Thallus flaccid, crept or ascending or prostrate or pendulous, planate or suberete, laciniose, or very much branched, destitute of rhizine beneath, internally stuppeus. Apothecia lateral, lecano-

1. *E. furfuracea*, Mann. cinerascens, dichotomously multi-laciniate, upper surface isidioso-furfuraceous or fibrolose, under surface canaliculate black or exsio-migrant; apothecia sub-marginal, badio-rufous, receptacle smooth; spores ellipsoid. (K + C+) medulla K—C red.

On trees, pales, &c. common.


**Fig.**—E. Bot. 984. Hoffm. Pl. Lich. t. 9 f. 2. Hepp Sporens. t. 95 f. 834.


Leight. 37. Reich. & Schub. 12.


**Bot. Prov.**—1...5...7...10. 11. 15...23.


**Wales.**—Cwm Bychan, near Barmouth. Rev. T. Salwey.

"Spores .00175 in. long. by .001 in. broad (t. 1 f. 16)." (Mudd.) "Spores .007—.010 mm. long. .0035—.055 mm. broad." (Nyl.) "Spores .007—.10 mm. long. .004—.05 mm. broad." (T. M. Fr.)

2. *E. prunastri*, (L.) whitish, or albido-palaceous or albido-flavescent, multi-laciniate, lacunoso-rugose, margins generally abso-rediate, subcanaliculate and pale beneath; apothecia lateral or marginal, badio-rufous, receptacle rugose; spores ellipsoid. (K + C + medulla K—C—)

On trees, common.


**Fig.**—E. Bot. 859. Hepp Sporens. t. 95. f. 833.


**Geog. Distrib.**—Europe, N. Africa, Asia, N. America, Peru.

**Bot. Prov.**—1...3...5...7...10. 11. 12...15...19. 20...30. 31.


**Ireland.**—Castlebernard Park! Bandon! Blarney! Castlemarty! near Cork. Mr. Carroll. near Belfast. Mr. Templeton. near Bantry. Miss Hutchins. near Killarney. Mr. Gough.

**Wales.**—Cessel Cwm and Cwm Bychan, near Barmouth. Rev. T. Salwey. Breidden!
CHANNEL ISLANDS:—Jersey, Guernsey, Mr. Larbalestier.

"Spores.002 in. long, by.001 in. broad." (Mudd.) "Spores.007—9 mm. long, by.0045—55 mm. broad." (Nyl.) "Spores.007—10 mm. long, .0045—60 mm. broad." (T. M. Fr.)

Var. **stictocera**, Ach. laciniae scattered over with prominent dark fuscous cephalodia.

On trees, not uncommon.


**Fig:** —Ach. l. c. t. 10. i. 3. B.

**Bot. Prov.:—** 5...15.


**Scotland:**—Firwood above manse at Killin. Rev. J. M. Crombie.

Var. **gracilis**, Ach. thallus with small fuscous or fuscous-black tubercles on the apices (K+C+).

On sandy banks and shrubs.

**Syn:** —Ach. L. U. 442.

**Fig:** —E. Bot. t. 1353 Westring Faergh. t. 11 C.

**Geo. Distrib.:—** Sweden.

**Bot. Prov.:—** 1...31.

**England:**—Warren opposite Exmouth, Devonshire. Mr. Brodie.

**Channel Islands:**—Quenvais, Jersey! Mr. Larbalestier.

Mr. Parfitt (in litt.) says, "The habits of this plant in this locality (Exmouth), so far as I know, have not been described. The plant grows attached to the stems and branches of Erica tetralix, and nearly all the branches of the Evernia, but more particularly in the largest plants, become decumbent and attach themselves to the branches of the Erica, also and in every instance where this is the case the apices secrete these dark disks. An examination of these dark dots under a high magnifying power shows them to be composed of a number of minute hyaline filaments surmounted with a dark brown gummos mass of cells, which are more or less teneacious or glutinous when moist, and adhere firmly to anything to which they may attach themselves."

III. **RAMALINA. Ach. Fr.**

Thallus whitish or pale, compressed, somewhat shining, rigescent, erect or prostrate, laciniate, alike on both sides. Apothecia scattered or marginal, concolorous. Spores colourless, oblong, curved, 1-septate. Paraphyses distinct. Sterigmata elongato-pauci-articulate with anastomosing filaments. Spermata cylindric-al, or oblongo-cylindrical, straight.

1. **R. thranausta**, (Ach.). pale straw-colour, filiform-terete or subterete, here and there compressed, somewhat shining, very slenderly divided, and excessively branched, capitilli-attenuate and interwoven at the apices; cortical layer filamentose; medulla K—; apothecia unknown.

On old firs and sandy soil in subalpine regions, rare. (1860).


**Exs:** —Fries L. S. 267. Arn. 574. a. b. c. d. e.

**Geo. Distrib.:—** Europe.

**Bot. Prov.:—** 17.

**Scotland:**—Bay of Nigg, Coast of Kincardineshire. Rev J. M. Crombie. (1860).

2. **R. calicaris**, (Hffm.). pale glauco-grey, or albido-flavescant, rigescent, erect, dichotomously branched; laciniae linear, compressed, elongated, attenuate at the apices, longitudinally lacunoso-
canaliculate; cortical layer filamentose; medulla K—; apothecia terminal, subtended by the deflexed and elongated extremities of the laciniae; receptacle rugose beneath; spores 8, colourless, ellipsoid, straight, 1-septate; spermogonia in pale or colourless receptacles.

On trees, common.


**Fig:** — Dill. t. 23, f. 62, A, B; Moris. 3, § 15, t. 7. f. 5; Ach. Act. Holm. 1797, t. 3. f. 1, E.

**Exs:** — Anzi Lich. Ital. Sup. 63; Anzi Langob. 419.

**Geog. Distrib.:** — Europe, Asia, Africa, North and South America.

**Bot. Prov.:** — 1, 2, 3, 5, 7, 9, 11, 13, 15.


**Scotland:** — Ayrshire!, Mrs. Dobie. Johnstone Hill, Forfar! Dr. Gilchrist.

**Wales:** — Llandrindod! Radnorshire. Rev. T. Salveyn. Trefriw!

“Spores .010—16 mm. long, .005—7 mm. broad.” (Nyl.)

**Var. subampliata,** Nyl. laciniae of thallus broader and more dilated, similarly to *R. fraxinea*, longitudinally nervoso-rugose, lacunose and canaliculate; apothecia marginal and terminal; receptacle rugose; spores straight.

On trees.


**Fig:** — Ach. Act. Holm. 1797, t. 9, f. 1, g, k.

**Exs:** — Anzi Lich. Ital. Sup. 63; Anzi Langob. 419.

**Bot. Prov.:** — 1, 2, 3, 5, 7, 9, 11, 13, 15.


**Var. subfastigiata,** Nyl. similar in general appearance to *R. fastigiata*; apothecia terminal; receptacle rugose; spores straight.

On rocks and trees.


**Fig:** — Ach. Act. Holm. 1797, t. 9, f. 1, k.

**Exs:** — Welv. Lustit. 44; Maudon Mad. 24.

**Geog. Distrib.:** — France, Portugal, Algeria, East Indies.

**Bot. Prov.:** — 6...12...19.


**Ireland:** — Rocks near Coachford, 11 miles west of Cork! Mr. Caroll. near Fermoy! Mr. Chandler.

**Wales:** — Llandrindod! Rev. T. Salveyn.

Mr. Crombie, t.c. mentions a somewhat unusual state, with laciniae much attenuated (*L. attenuata*, Cromb.) in New Forest; and also a singularly cespitose condition with very short and crowded laciniae from Swanston Wood, near Edinburgh. Mr. Sadler.

3. *R. farinacea* (L.) whitish, pale straw-coloured or glaucous, erect, subrigescent, dichotomously branched; laciniae linear, elongated, undulato-attenuated at the apices, compressed, plane and polished, sometimes sublacunose, canaliculate with white, oblong, more or less confluent soredia on the edges; cortical layer filamentose; medulla K—; “apothecia testaceopallida vel glau-
cescentia, receptaculo infra laevi; spores, ellipsoideo-oblongae vel fusiformi-ellipsoideae, rectae” (Nyl. Mon. 35); spermogonia in pale or colourless receptacles.

On trees and palings, frequent, rare in fruitication.


Fig.—E. Bot. t. 889; Ach. Act. Holm. 1797, t. 11. f. 1.

EXS.—M. & N. 366; Anzi Etr. 6; Anzi Ital. Sup. 67; Schar. 494; Mudd 45. Rabb. 892.

Geo. Distrib.:—Europe, Asia Africa, North and South America, Polynesia, Australia.

Bot. Prov.:—1, 2, 4, 5, 6, 7, 10, 11, 12, 13, 15.


SCOTLAND:—Balthayock Woods! Perth. Dr. Lindsay, Ayrshire! Mrs. Dobie.

IRELAND:—Fermoy! Mr. Chandler. Dunkerron (fruit) Dr. Taylor.

WALES:—Carmarthenshire! (fruit). Mr. Forster. Glynn, near Capel Curig! Bettwy-y-Coed! Breidden!

Very variable; many forms, minute in size, frequently occur, but scarcely worth distinguishing. When the soredia in R. farinacea are touched with K they exhibit no reaction or only sometimes a very faint yellow, which, on the immediate application of C. becomes of a full yellow. “Spores .008—.016 mm. long, .004—.007 mm. broad.” (Nyl.)

4. R. fraxinea, (L.) pale straw or yellowish, or glaucescent, pendulous, straggling, subrigescent; laciniae compressed, more or less broadly applanato-dilated, lacunose, longitudinally rugose or nervous, elongated and attenuated at the apices; cortical layer filamentosum; medulla K—; apothecia large, marginal and superficial, brownish-yellow or glaucescent; receptacle rugose or plicato-rugose; spores 8, colourless, oblong, curved, 1-septate; spermogonia in pale colourless receptacles.

On trees, very common.


Forma typica tuniciformis, Ach. laciniae moderately dilated, very much elongated, attenuate at the base and apex, longitudinally rugose or nervoso-plicate.


Fig.—E. Bot. t. 1781; Westr. Faergh. t. 12. c.

EXS.—Anzi Ital. Sup. 60, and 59, a. b. d. Mass. Ital. 116; M. & N. 158 (two lower specimens); Schar. 492; (left hand specimen).

Geo. Distrib.:—Europe, Asia Africa, North and South America, Polynesia, Australia.

Bot. Prov.:—1, 2, 4, 5, 6, 7, 11.


“Spores .011—.016 mm. long, .005—.007 mm. broad.” (Nyl.)
The lichen-flora

Forma ampliata, Ach. Laciniae excessively and very broadly applanato-dilated, lacunose, longitudinally coarsely rugose or nervous, and transversely subreticulato-rugose, apices obtuse and deformed.

Syn.: R. fraxinea, var. ampliata, Ach. L. U. 603; Nyl. Mon. Ramal. 37. Fig.: Hoffm. Pl. Lich. t. 18; Dill. t. 22, fig. 59, c. Exs.: Anzi Ital. Sup. 2, 9, c; Schar. 492 (right-hand specimen); M. & N. (upper specimen); Leight. 38; Mass. 119, 118, a; Mudd 42; Bohl. 21. GeoG. DistriB—Europe.


Scotland:—Invercald! Braemar. Dr. Lindsay.

Wales:—Edderton Wood! Montgomeryshire.

5. R. fastigiata, (Pers.) pale yellowish straw-colour, small, densely cespitose, laciniae subcompressed, dilated and inflated upwards, smooth and somewhat lacunose and nervoso-rugose; cortical layer filamentose; medulla K—; apothecia terminal, peltatosessile, subfastigiata, subtended by the very short deformed divaricate extremities of the laciniae; receptacle plicato-rugosus; spores 8, colourless, ellipsoid-oblong, straight, curved and gibbose, 1-septate; spermatogonia in pale colourless receptacles.

On trees, common.


Fig.:—E. Bot. t. 580 (lower left-hand fig.); Dill. t. 23. f. 62, c; Ach. in Act. Holm. 1797, t. 9. f. 1, b, e; Westr. Faergh. t. 12. f. x. Exs.:—Bohl. 22; Leight. 39; Larbal. 60; Mudd 43; Welw. Lusat. 41; M. & N. 452; Anzi Etr. 5; Anzi Ital. Sup. 64. GeoG. DistriB—Europe, Asia, Africa, North America.


Scotland:—Kinnoul Hill! Perth; Yester House! Haddington. Dr. Lindsay.

Ireland:—Great Island! Cork. Mr. Carroll.

Wales:—Edderton Wood! Montgomeryshire; Bettws-y-coed.

Channel Islands:—Jersey! Sark! &c. Mr. Larbalestier.

Of this lichen Dr. Nylander remarks (l. c.):—"Vix est nisi varietas R. fraxineae thallo magis contracto et subfastigiato-diviso vel lacinis subfastigiatis. Spore magis typice curvulce quam in R. calcarii que certe arcticissime affinit et forsan haec ambae aliaque cohabitanter formas proferant formas intercedentes quamvis a qualluo namibi incerta maeast; typus tamen sepeus nohtis dati sat facile est agnoscedns."

"Spores .002—17 mm. long. .009—7 mm. broad." (Nyl.)

6. R. polymorpha, Ach. pale straw-colour or glaucescent, rigid, small, robust, densely cespitose, sublinear-laciniate, laciniae dilatato-compressed, coarsely longitudinally striato-rugose and sub-lacunose, subopake, globuloso-granuloso-sorediate; cortical layer filamentose; medulla K—; apothecia marginal or subterminal; re-
ceptacle rugoso-unequal or nearly smooth; spores 8, colourless, oblongo-ellipsoid or oblong, nearly straight or straight, 1-septate; spermogonia in pale colourless receptacles.

On maritime inland rocks, frequent, rare in fruit.

**Syn:** R. polymorpha, Ach. L. U. 600. Syn. 295; Nyl. Mon. Ramal. 50; Crombie l. c. 72.

**Fig:** Ach. Act. Holm. 1797, t. 11. f. 3.

**Exs:**—Fries L. S. 144.

**Geog. Distrib.**—Europe, Africa.

"Spores 0.11—15 mm. long, 0.04—5 mm. broad." (Nyl.)

**Forma ligulata,** Ach. laciniae thick, rigid, cartilaginous, either plane, and nearly simple or broader and deformed, and covered with sorediate pustules

On maritime rocks.


**Fig:**—Ach. Act. Holm. 1797, t. 11. f. 3, a, b, e, f, k.

**Exs:**—Mudd 47; Leight. 73.

**Bot. Prov.**—1, 2...5, 6...10...15...26.


**Scotland:**—Coast of Kincardineshire (fruit). Rev. J. M. Crombie.

**Ireland:**—Letterfrack Bay! River Dawros! co. Galway. Mr. Labalestier.

**Wales:**—Llanbedrog! Pen Cow! Forthill! near Fishguard. Pembrokeshire.

**Forma emplecta,** Ach. laciniae attenuate, excessively branched, acuminate and granulate at the apices.

On rocks.


**Fig:**—Ach. Act. Holm. 1797, t. 11. f. 8, c, p, z.

**Geog. Distrib.**—Sweden and W. France.

**Bot. Prov.**—15...31.

**Scotland:**—Morton and Braemar! Rev. J. Crombie.

**Channel Islands:**—The Warren! Noirmont, Jersey. Mr. Labalestier.

**Forma depressa,** Cromb. cespitose, laciniae short, stunted, adnate.

On maritime rocks.

**Syn:**—Crombie in Journ. Bot. n. s. 1. 72.

**Bot. Prov.**—1, 2...15—31.

**England:**—Polperro and Tintagel, Cornwall; between Brighten and Portscdown (fruit). Mr. Forster.

**Scotland:**—Coast of Kincardineshire. Rev. J. M. Crombie.

**Channel Islands:**—Guernsey. Rev. T. Salwey.

7. **R. pollinaria,** Ach. pale straw-colour or whitish, or albigo- glanscescent, densely cespitose, membranaceo-laciniose; lacinia short, dilated and compressed, somewhat shining, sublacunose or lacunoso-corrugate, flaccid, covered with broad white farinoso-sorediate, confluent patches; cortical layer filamentose; medulla K—; apothecia marginal and terminal; receptacle unequal; spores 8, colourless, oblong, straight or gibbous, 1-septate; spermogonia in pale colourless receptacles.

On trees, palings, rocks, &c., rare in fruit.

**Syn:**—R. pollinaria, Ach. Syn. 298; Nyl. Mon. Ramal. 52; Leight. Not. Lich. 35; Crombie l. c. 73.

**Geog. Distrib.**—Europe, Africa.

"Spores 0.10—15 mm. long, 0.04—6 mm. broad." (Nyl.)

OF GREAT BRITAIN.
Forma elation, Ach. laciniae suberect, elongate, plane, sublinear, attenuate and albo-pulverulento-sorediate at the apices.

Forma humilis, Ach. membranaceo-dilated, laciniose, with broad confluent, powdery white soredia.

8. R. evernioides, Nyl. pale straw-colour or whitish, membranaceous, dilated and compressed, flaccid, subopaque, frequently reticulato-rugose or reticulato-scrubicate, or slightly rugulose, or here and there plane, variously laciniate, laciniosediformed with broad white farinoso-sorediate confluent patches or denudations of the cortical layer; cortical layer thin, amorphous; medulla K—; “apo-thecia pallido-testacea vel pallido-glaucescencia; receptaculum subtus rugosum”; spermogonia in pale colourless receptacles.

On trees, palings, &c., rare in fruit.

9. R. scopulorum, (Dicks.) pale straw-colour, rigid, cartilaginous, shining; laciniae elongate, linear, subtereti-compressed, simple, or branched at the apex, attenuate; cortical layer solid, external portion amorphous, internal portion filamentose; medulla K yellow,
then ferruginous-red; apothecia marginal and subterminal; receptacle nearly smooth; spores 8, colourless, oblong, straight, 1-septate; spermogonia in pale colourless receptacles, sometimes nigrant.

On maritime rocks, rare.


IRELAND:—Ardglass, Down. Mr. Lyte.

WALES:—Aberystwith, Mr. Forster. Harlech Castle!

CHANNEL ISLANDS:—Grosnez Common, Jersey! Mr. Larbaletier.

"Spores .012—19 mm. long, .0045—.0065 mm. broad." (Nyl.)

Var. subfarinacea, Nyl. M.S. very similar in general external appearance to R. farinacea, but the soredia and medulla K yellow then ferruginous-red.

On subalpine and maritime rocks, not common.

SYN:—Crombie l. c. 74.

EXS:—Nyl. Pyr. or. 24.

BOT. PROV:—1, 2...5...7...10...15...31.


WALES:—Beddgelert! Towy! Harlech Castle! Moel-y-Golfa!

CHANNEL ISLANDS:—La Coupe, Jersey! Mr. Larbaletier. Scilly Islands. Mr. Curnow.

Var. incrassata, Nyl. thallus thick, rigid, tuberculoso-difformate, shortly laciniate, sparingly divided, opake; external cortical layer amorphous, internally filamentose; medulla K yellow then reddish.

On maritime rocks, rare. 1873.

SYN:—Nyl. Ramal. p. 59. (1870.)

GEOG. DISTRIBUT:—West France and Canaries.

BOT. PROV:—7...31.

WALES:—Harlech Castle!

CHANNEL ISLANDS:—La Moye! Mont Orgueil Castle, Jersey! Mr. Larbaletier (1873).

In general appearance like R. polymorpha, Leight. Exs. 73, but smaller, and distinguished by different structure of the cortical layer and chemical reaction of the medulla.

10. R. cuspidata, (Ach.), pale straw-colour, rigid, cartilaginous, shining; laciniae elongate, linear, compressed, more or less longitudinally striato-nervose, lacunose and sorediato-tuberculate, simple or dichotomously branched; cortical layer solid, external portion amorphous, internal portion filamentose; medulla K—; apothecia marginal and subterminal; receptacle smooth; spores 8, colourless, oblong, straight, 1-septate; spermogonia in pale colourless receptacles.
On maritime rocks, frequent.

Dr. Nylander (l.c.) remarks:—"Forsan non vere specie differat a R. scopulorum, tamen præsertim ob reactionem kalicam deficientem, seorsim hic est exponenda."


FIG.—Ach. Act. Holm. 1797. t. 9. f. 2. b; Dill. t. 17. f. 38. b.

EXS.—Th. M. Fries. 1; Anzi Ital. Sup. 69; Scher. 564; Hepp 837; Leight. 2; Rabb. 864.

GEOG. DISTRIB.—Europe, Asia, Africa, North America.

BOT. PROV.—1...6, 7...10...15.


The specimens from the South Stacks had the laciniae small, subulate, sub-simple, erect, with blackish apices bearing the apothecia.

"Spores .010—18 mm. long, .004—6 mm. broad." (Nyl.)

Var. crassa, Del. thick, rigid, tuberculoso-difformis.

CHANNEL ISLANDS.—Rocks under Vale Castle, Guernsey! Mr. Larbalestier.

11. R. intermedia, Del. very similar generally to R. scopulorum var. subfarinacea, Nyl. but the apices more attenuated and divided, soredia on the edges, cortical layer filamentose; medulla K—, soredia K yellow then red; apothecia pale yellow, terminal, subtended by a longish disarticulate extremity of the lacinia; receptacle smooth; spores 8, colourless, ellipsoid or oblongo-ellipsoid, straight, 1-septate.

On heaths and thorns, rare. 1872.


BOT. PROV.—1...26.

IRELAND.—Killery Bay, co. Galway. Mr. Larbalestier.

CHANNEL ISLANDS.—Newlyn Cliff, Penzance, and Annet Island! Scilly. Mr. Curnow. (1872)

12. R. Curnowii, Cromb. pale straw-colour, rigid, cartilaginous, slender; fruticulose, smooth and shining, (K—C yellow, medulla K—) laciniae elongate, roundish or somewhat compressed, sparingly dichotomously branched in the lower part, more copiously branched in the finely attenuated apices, slightly dilated at the bifurcations, nigricant at the very base; apothecia pale, convex, geniculato-adenate, subtended by a short disarticulate branch; receptacle smooth; spores 8, colourless, ellipsoid, straight, 1-septate; spermogonia externally black.

On maritime rocks, not unfrequent.

SYN.—Nyl. in Flora 1875 p. 441.

BOT. PROV.—1.

ENGLAND.—Near Penzance and the Lizard, near the Land’s End, Cornwall. Mr. Curnow.

Resembling R. cuspidata but more copiously branched. About 8 centimetres high. "Spores .011—15 mm. long, .004—6 mm. broad. Spermatia .003 mm. long, .001 mm. broad." (Nyl.)

13. R. geniculata, Tayl. pallid or pale straw-colour, caespitose, subfastigiata-ramose, subterete or sub-compressed, smooth or obsolescently longitudinally subnervose, often perforated with minute round holes, internally fistulose, branches attenuate; apothecia pallido-testa-
ceous or glauco-whitish, terminal or subterminal; receptacle smooth or rugulose, sessile on a turgid branch, or appendiculate; spores oblong or fusiform-oblong, straight or obsoletely curved.

On old thorn bushes, rare. 1876.


GEOG. DISTRIBUT.—Australia, New Zealand, S. America, Nova Granada, Africa.

BOT. PROV.:—26.

IRELAND:—Killery Bay, co. Galway. Mr. Larbotantier. (1876).

"Spores .009—.015 mm. long, .004—.007 mm. broad." (Nyl.)

TRIBE X. CETRARIEI.

Thallus compressed, rarely terete, variously fruticose, or narrower, or frondose, membranaceous, dilatate or lobate, epithallus somewhat shining, internally filled with a white woolly medulla. Apothecia lecanerine, marginal. Spores 8, small, colourless, simple. Paraphyses indistinct. Spermogonia marginal, in setuliform apiculi, or black papille.


Thallus spadiceous or spadiceo-pallescent, rigescent, erect or ascending, lacinose, rarely fistulose, somewhat shining. Apothecia dull or bright brown. Spermatia cylindrical.

1. C. islandica, (L.) pale or pale chestnut-brown or fuscescent, laciniae broad, variously divided, frequently subcuniculate, margins spinuloso-ciliated, with impressed white soredia on the back; apothecia brown, large, adnate to the upper surface of the apices of the laciniae, receptacle entire or crenulate.

On the ground in sub-alpine places, rare. 1794.

F. 1. platyna, Ach. laciniae platyphyllous, margins spinuloso-ciliated.


Fig. —E. Bot. 138. Nyl. Syn. t. 8. f. 32.


GEOG. DISTRIBUT.—Frigid and Alpine Europe, N. America, Himalaya.

BOT. PROV.:—4...7, 8...10, 11...13, 14, 15...18, 19, 20.

ENGLAND:—Durham. Rev. J. Harriman. Morton Craigis; Belford; Lamberton Moor, Berwick-on-Tweed. Dr. G. Johnston. Flarendales and on Seamer Moor, near Scarborouigh, Yorkshire. Mr. Baker. Terrington; Stockton; Harsley Moor, Yorkshire. Mr. Teesdale. (1794). Ingleborough; Grezareth, Yorkshire. Dr. Windsor. Gateshead, Whickham, and Muggleswick Fells; Teesdale and Weardale, Durham; Cheviot; Hedgehope; Simonside; Wallington Moors, Northumberland. Mr. Winch. King's Lynn! Norfolk. Mr. Plowright. Market Rasen! Lincolnshire. Dr. F. A. Lees.


IRELAND:—Summit of Mangerton. Dr. Taylor, Devil's Ladder, Carrantuel, Mc Gillioody's Reeks. Mr. Hardy.
F. 2. *crispa*, Ach. laciniae *stenophyllous*, intricate, erect or depressed, canaliculate or with margins connivent or interruptedly tubulose, margins spinuloso-ciliated.

**Syn.:** Ach. L. U. 513. (1810).

**Fig.:** Dill. t. 28. f. 112.


**Geog. Distrib.:**—Northern Europe and Cape Horn.

**Bot. Prov.:**—7...9...11...15.


**Scotland:**—Ben Lawers! Ben Mc Dhui; Dr. Lindsay. Top of Ben Nevis! Rev. T. B. Bell.

**Wales:**—Moel Goch, Cwm Cywion!

Mr. Plowright has sent me specimens gathered by himself at North Wootton Common, Norfolk, where he states the lichen is abundant, and that North Wootton Church, which is exactly intermediate between the Common and the Sea, is only 33 feet above the level of the sea.

2. *C. Delisei*, (Schær.) pale or chestnut-brown, densely cespitose, laciniae narrow, elongate, canaliculate, palmaro-multijod, recurved, apices spinulose (K=C+ slightly red); apothecia brown, large, subterminal.

On alpine rocks, very rare. 1869.

**Syn.:** Schær. Enum. 16 (1850). NyL. Scand. 79.

**Fig.:**—Westr. Faerg. t. 16. c.

**Exs.:**—Fellm. 60. Th. M. Fries. 54. Rabh. 919.

**Geog. Distrib.:**—Scandinavia.

**Bot. Prov.:**—15.

**Scotland:**—Summit of Lochmagar in Braemar. Rev. J. M. Crombie.

3. *C. aculeata*, Fr. spadiceous, fistulose, terete or compressed or angular, rigid, erect, ramose, cespitoso-fruticulos, branches divaricate, more or less nigro-spinulose; apothecia spadiceous, small, terminal.

On moors, heaths, rocks, &c., not uncommon.

"Spores .00175 to .002 in. long. by .00075 to .001 in. broad." (Mudd.) "Spores .006—9 mm. long. .0035—.004 mm. broad." (NyL.) "Spores .005—9 mm. long. .003—.004 mm. broad." (T. M. Fr.)

**F. 1. typica**, spadiceous, plano-compressed, sublacunose, naked, divaricate-spinulose at the apices.


**Fig.:**—Ach. Meth. t. 6. f. 2.

**Exs.:**—Mudd 50. Leight. 3. Reich. & Schub. 21.

**Geog. Distrib.:**—North and Central Europe, Arctic America, Antarctic America.

**Bot. Prov.:**—3...5...7...8...10...11...14...15...19...26...30...31.

OF GREAT BRITAIN.

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IRELAND:—Near Belfast. Mr. Templeton. Southern Counties. Dr. Taylor. near Maam! Joyce County. Mr. Larbalestier.


CHANNEL ISLANDS:—Quenvais. Jersey. Mr. Larbalestier.

F. 2. muriaca, Ach. smaller, densely intricato-cespitose, densely ramulose, subterete, or sub-compressed, naked, shortly divaricato-spinulose at the apices.


Fig.—E. Bot. 452.

EXS:—M. & N. 756. Scher. 555. Welw. 8, Mudd 49. Leight. 4.

GEOG. DISTRIB:—Alpine Europe.

BOT. PROV:—1...5...7...10...14...15.


WALES:—Barmouth! Cwm Cywion!

F. 3. acanthella, Ach. like typica, but entirely hispido-spinuloso-denticate.

SYN:—Ach. L. U. 612. (1810).

Fig.—Hoffm. Pl. Lich. t. 5. f. 2.


GEOG. DISTRIB:—Switzerland, Germany, Portugal, Italy.

BOT. PROV:—5...10...15.


Thallus various in colour, nigrescent, fruticulose, generally membranaceo-dilated, lobate or laciniate, nearly subterete. Apothecia marginal or sub-marginal. Spermogonia minutely papillate or tuberculate. Spermatia incrassate at both the obtuse apices, or fusiform-incrassate at one apex, or fusiform-ellipsoid.

A. Spermatia incrassate at both the obtuse apices.

1. P. niveale, (L.) ochroleucous or stramineous, sinuato-laciniate, laciniæ canaliculato-patulous, reticulato-lacunose, dentate at the erect apices (K—C+); apothecia flesh-coloured, margin of receptacle crenato-rugose; spores 8, colourless, oblong, small, simple.

On the ground in alpine places.


GEOG. DISTRIB:—Europe. N. America.
THE LICHEN-FLORA

BOT. PROV.—15.

SCOTLAND.—Highlands, Dr. Rob. Townsend. Cairngorm and Ben Lawers. Sir W. J. Hooker. Bassies; Ben Red; Loch Brandy; Clova; Mr. W. Gardiner. Source of the Dee; Lochnagar; Morchone; Braemar; Dr. W. L. Lindsay. Bella. Lord! Clova. Rev. T. B. Bell. Ben Mc Dhuil. Mr. J. G. Baker.

"Spores .0015 to .002 in. long, by .00075 in. broad." (Mudd.) "Spores .007—9 mm. long, .004—5 mm. broad." (Nyl.) "Spores .006—9 mm. long, .003—5 mm. broad." (T. M. Fr.) Spores .0075 mm. long, .064 mm. broad.

2. P. cucullatum, (Bell.) ochroleucus or stramineous, canalicu-

lato-laciniate, laciniae sinuato-divided, margins connivent, undulate, smooth, crenate at the recurved apices (K—C+); apothecia flesh-coloured, adnate, often dilated, margin of receptacle thin, at length excluded; spores 8, colourless, oblong, simple, small.

On the ground in alpine localities.


GEOG. DISTRIBUTION.—Europe, N. America.

BOT. PROV.—15.


"Spores .0015 to .002 in. long, by .00075 in. broad." (Mudd.) "Spores .010 mm. long, .004 mm. broad." (Nyl.) "Spores .006—9 mm. long, .003—5 mm. broad." (T. M. Fr.) Spores .0075 mm. long, .0035 mm. broad.

3. P. triste, (Web.) pitch-black, browner below, subfasciagio-

fruticuloso, terebrinuso-compressed, rigid, disticho-ramose, branches black, attenuate, (medulla C—); apothecia fuscos-black, subter-

minal, appendiculate, margin dentate flexuose; spores 8, colour-

less, oblong, simple.

On alpine rocks, frequent.


GEOG. DISTRIBUTION.—Alps of Europe.

BOT. PROV.—1...5...7...10, 11...14, 15...18, 19.

ENGLAND.—Summit of Hedgehope, Northumberland. Dr. G. Johnston. Yorkshire! Mr. Dixon. Eglestone and Cronkley Fell, Durham. Rev. J. Harriman. Cheviot; Simonside; Northumberland. Mr. Winsch. Malvern Hills, Worcestershire; Sugar Loaf, Monmouthshire, Mr. Parton. Tors of Dartmoor. Mr. New-

berry.


IRELAND.—Higher Mountains, Kerry. Dr. Taylor.


"Spores .0015 to .00175 in. long, .001 to .00075 in. broad." (Mudd.) "Spores .009—.011 mm. long, .005—6 mm. broad." (Nyl.) "Spores .008—11 mm. long, .004—6 mm. broad." (T. M. Fr.)

4. P. seppincola, (Ehrh.) castaneo-olivaceous or badio-castaneous or pallido-castaneous, lacinia-lobate, small, laciniae plane, pro-

strate or ascending, smooth, or slightly lacunose-rugulose, margin undulato-sinuate or crenate, paler beneath, (K—C —); apothecia badio-fuscescent, receptacle rugulose beneath, margin entire; spores ellipsoid.

On trees and palings, rare.
OF GREAT BRITAIN.


Fig.—Hoffm. Fl. L. t. 14. f. 1. E. Bot. t. 2386. fig. 1. and 2. and lower right hand figure. Hepp Sporen t. 96. f. 843.


GEOG. DISTRIBUTION.—N. Europe, N. Asia, Arctic America.

BOT. PROV. —1...5...7, 8...10, 11...15...18...31.


SCOTLAND.—Deerhill Wood; White Hill; Forfarshire, Mr. W. Gardiner. Kinnordy. Mr. Lyell. Morchon! Braemar; Blaeberry Hill, Perth; Garrynacline. Lewis. Dr. Lindsay. Quoch. Braemar; Killin; Blair Athole, Rev. J. M. Crombie.

WALES.—Cwm Bychan; Cessel Cwm; Drws Arudwy. Rev. T. Salwey.

GIANT'S PEBBLES, Cader Idris. Mr. Ratfs.


"Spores .0175 in. long, by .001 in. broad." (Mudd.) "Spores .008—.010 mm. long, .0065—.0065 mm. broad." (Nyl.) "Spores .006—.10 mm. long, .004—.06 mm. broad." (T. M. Fr.)

Var. ulophylla. Ach. paler and larger than sapincola; laciniate, laciniae variously divided, sub-adpressed, margin undulato-crisped, albo-sorediate, (K—C—); apothecia small.

On trees, palings, &c., frequent, but rare in fruit.


Fig.—E. Bot. 2386. fig. 3. and lower left hand figure.


BOT. PROV. —4, 5...7...10...15.


WALES.—Conway falls! Cwm Bychan!

5. P. Fahlamense, (L.) fuscosus or spadiceo-fuscosus or fusco-nigricant, orbicular, smooth, lobato-laciniate, laciniae appressed, plano-subcanaliculate, margins elevated, apices rotundato-crenate, beneath nigrinant, (K medulla yellow); apothecia fuscosus or fuscorufus, receptacle plicato-rugose, margin granulose; spores 8, colourless, oblong, simple, small; spermatia slender, elongate, straight incrassate at each apex.

On alpine rocks, rare.

Attention to the margins of the thallus and spermatia will always distinguish this from P. commixtum, Nyl.


FIG.—Hoffm. Fl. L. t. 36. f. 2. Hepp Sporen t. 67. f. 586.


GEOG. DISTRIBUTION.—Arctic Europe, N. America, Himalaya.

BOT. PROV. —1...7...10, 11...15.

ENGLAND.—Yorkshire! Mr. Dixon. Teesdale; Weardale: Butsfield; Horsleyhope, Durham; Chievot, Northumberland. Mr. Winch. Hay Tor, Dartmoor. Dr. Holl.


WALES.—Llyn Cae, Cader Idris. Rev. T. Salwey.

"Spores .005—.011 mm. long, .005—.07 mm. broad." (Nyl.) "Spores .005—.011 mm. long, .004—.06 mm. broad." (T. M. Fr.) Spores .008 mm. long, .0055 mm. broad.

6. P. diffusum, (Web.) whitish or albido-cinerascent, stellato- orbicular, appressed, laciniae narrow, applanate, multifid, albo-
sorediate; apothecia spadiceo-fuscous or rufescent, margin crenulate, sorediate; spores 8, colourless, oblong or oblongo-ovoid, simple, straight; thallus K + C —, medulla K yellow.

On posts, palings, &c. not uncommon. 1793.


Fig. — E. Bot. 858. Dickens. Cr. Br. t. 9. f. 6. Hfmm. Pl. t. 65. f. 2. Hepp Sporen t. 98. 859.


GEOG. DISTRIB: — Denmark, Sweden, Finland, Switzerland, Italy, Bavaria, Germany.

BOT. PROV: — 3, 4, 5...8...10...15.


"Spores .0015 in. long, by .00075 in. broad." (Mudd.) "Spores .011—12 mm. long, .003—4 mm. broad." (Nyl.) "Spores .006—9 mm. long, .005—6 mm. broad." (T. M. Fr.)

B. Spermatia ellipsoid.

7. P. commixtum. Nyl. pallide-spadiceous or spadiceo-fuscous; effuse, smooth, irregularly linear-laciniate or divided, laciniae plane ascending and entangled, margins not elevated, apices obliquely truncate and furcate, concolors or paler beneath, (K medulla——); apothecia fuscescent or fusco-rufous, receptacle plicato-rugose, margin granulose; spores 8, colourless, oblong, simple, small; spermatia short, oblongo-ellipsoid or fusiform-ellipsoid.

On alpine rocks.

Attention to the form of the apices of the imbricate laciniae of the thallus, and the spermatia, will at once separate this from P. Fahlunense.


GEOG. DISTRIB: — Central Europe and Scandinavia.

BOT. PROV: — 7...9...15.

ENGLAND: — Lancashire. Mr. Hudson.

SCOTLAND: — Scotch Mountains! Mr. Dickson. Ben More; Ben-na-boord; Ben Lawers; Rev. J. M. Crombie. Loch-na-gar! Braemar. Dr. W. L. Lindsay. Rocks north side of Ben Lawers! Mr. Carroll.

WALES: — North Wales. Mr. Griffith.

"Spores .009—.011 mm. long, .004—5 mm. broad." (Nyl.) Spores .009 mm. long, .005 mm. broad.

C. Spermatia acicular cylindrical, incassate at one apex.

8. P. juniperinum, (L.) citrina-flavescens or pale flavo-virescent or glauco-flavescens, lobato-laciniate, laciniae eroso-crenate, crowded, crisped, smoothish, beneath yellow, rugulose, medulla citrina (K— C+) ; apothecia badio-rufous or badio-fuscous, margin corrugate or crenulato-denticulate; spores 8, colourless, oblongo-ellipsoid, simple.

On the earth and trees, in alpine districts.

Fig.:—Hoffm. Pl. L. t. 7. f. 2. Nyl. Syn. t. 8. f. 34. Hepp Sporen t. 95. f. 840.

"Spores .0015 in. long, by .00075 to .001 in. broad." (Mudd.) "Spores .006—7 mm. long, .004—.0045 mm. broad." (Nyl.) "Spores .006—8 mm. long, .004—6 mm. broad." (T. M. Fr.)

Var. pinastri, (Scop.) like the type, but laciniae lobate, appressed and broader, margins citrino-sorediate; spores subglobose.

On trees.


Scotland:—North of Scotland; Aviemore! Kinnordy. Sir W. J. Hooker.
The specimen from which E. Bot. t. 211 was drawn was a foreign one from Linn. Herb. The few British specimens seem to either much smaller, or when larger, greenish-yellow, margins less regularly citrino-sorediate. A state of Physcia parietina was often confounded with juniperinum by earlier writers and even by some modern lichenists, see Crombie in Journ. Bot. a. s. 1. p. 234.

9. P. glauccm, (L.) ivory-white or glanscent or pallescens, membranaceous, smooth or slightly lacinuso-rugulose, laciniate or lacinia-late, laciniae ascending, margins sinuate or crenate, or lacerate, or sorediate, or minutely dissecto-fimbriate, beneath rugose, fuscosi-nigricans or fusosus or pallescens or entirely albicans, (K+ C = ); apothecia spadiceo-rusces, receptacle rugose beneath, margin thin, presently excluded.

On rocks and trees, common.

Fig.:—E. Bot. 1606.


"Spores .00175 in. long, by .001 in. broad." (Mudd.) "Spores .006—7 mm. long, .0035—.0045 mm. broad." (Nyl.) "Spores .006—9 mm. long, .0035—50 mm. broad." (T. M. Fr.)
f. soreiodosa, margins sorediate, fusco-nigricant and rugose beneath.


f. fallax, (Web.) margins entire or sorediate, entirely albicant beneath.

Fig. — Hffm. Pl. L. t. 47. f. 1—3.

f. coralloidea, (Wallr.) margins minutely lineari-dissecto-fimbriate, pallescent or albicant beneath.

Fig. — E. Bot. 2373. Hffm. Pl. L. t. 46. f. 1—3. Hepp Sporen t. 66. f. 574—Scher. 253.

10. P. lacunosum, Nyl. whitish, membranaceous, reticulato-lacunose, broadly laciniate or lobato-laciniate, lacinia crenato-undulate and incised, rotundate at the apex, beneath fusco-nigricant or fusco-pallescent or entirely whitish, (K+C—); apothecia spadiceus, receptacle rugulous beneath, margin thin entire.

On damp rocks, rare.

Fig. — Ach. Meth. t. 5. f. 3.
Exs. — Tuck. 6. 61.
Geog. Dist. — N. America, Norway.

"Spores .006—8 mm. long, .004—5 mm. broad." (Nyl.)

Series IV. PHYLLODEI.

Thallus foliaceous, depressed, lobate or variously laciniate or stellate, very rarely cæspitoso-intricate, medulla stuppeous. Apothecia either peltiform or lecanorine or lecideine and gyrose. Spores various. Paraphyses distinct or indistinct. Spermatia shortly acicular or slenderly cylindrical, straight, narrower in the middle.

Tribe XI. PELTIGERI.

Thallus frondose, dilatate, cortical layer deficient on the under surface. Apothecia peltiform, rotundate, reniform or oblong, marginal, adnate to the upper or lower surface or scattered on the upper surface of the thallus. Spores 8, colourless and fusiform in the marginal apothecia, fuscos and ellipsoid and bilocular in the scattered apothecia. Paraphyses stout, articulate.

Sub-Tribe I. NEPHROMEI.

Apothecia adnate to the lower surface of the margin of the thallus. Spores 8, colourless or fuscescent, 3-septate.
I. NEPHROMIUM. Nyl.

Thallus membranaceous, fragile, lurid, or glaucous or fuscescent, cortical layer continuous on the lower surface, and nerveless. Apothecia adnate to the lower surface of margin of thallus. Spores 8, colourless or fuscescent, 3-septate. Granula gonima moniliform, dark cærulo-virescent.

1. *N. livigatum*, Ach. lurido-fuscescent, orbicular, rotundato-lobate, margins sinuato-crenate, opake, scarcely shining above, beneath pale glabrous and slightly rugulose (medulla white K—); apothecia fusco-rufous, margin of receptacle crenulato-unequal, back of receptacle minutely depresso-granulate; spores 8, fuscescent, fusiform-oblong, 3-septate.

On trees, rocks, and stones, in shady alpine places.


**Fig.**—Tul. Mem. Lich. t. 9. f. 18—23.

**Exs.**—Maudon 31. Smrift. 70.

**Geog. Distr.**—Throughout the world.

**Bot. Prov.**—1...3. 4...7...12...15...31.


**Wales:**—Dolgellay. Dr. Holl.

**Channel Islands:**—Common on all the Islands. Mr. Larbalestier.

"Spores .004 to .0045 in. long, by .00125 in. broad." (Mudd.)

Var. *parile*, (Ach.) lurido-fuscescent, paler or fusco-nigricant and glabrous beneath, margins crisped and cæsio-sordiate. (medulla white K—).


**Fig.**—E. Bot. 2360. Illus. Musec. t. 28. f. 105. B. & C.


**Geog. Distr.**—Europe, Chili.

**Bot. Prov.**—1...5...7...16...30.


**Scotland:**—Appin. Rev. J. M. Crombie.

**Ireland:**—Near Glenarm, co. Antrim. Dr. Moore.

**Wales:**—Dolgellay. Mr. Rafls. near Dolgelley! Dr. Holl. Drwsynant!

Var. *subtomentellum*, Nyl. under surface of thallus obsoletely sub-tomentellose; back of receptacle rugose or coriaceo-rugulose, or slightly areolato-granulose or areolato-rugulose (medulla white K yellow).

On old ash trees.

**Syn.**—Nyl. Lapp. or. p. 116.


**Geog. Distr.**—E. Lapland, Lombardy, Switzerland.

**Bot. Prov.**—7...15.

**Scotland:**—Head of Loch Awe, Argyleshire. Rev. J. M. Crombie.

**Wales:**—Drwsynant!

2. *N. tomentosum*, Hffm. livid or livido-castaneous or lurido-fuscescent, lobate or laciniato-lobate, glabrous below, tomentose upwards, under surface pale and villose, (medulla white K—);
apothechia testaceo-rufous or rufo-fuscescent, margin protruded, annulari-tomentose, crenulate; back of receptacle villose; spores 8, colourless or fuscescent, fusiformi-oblong, 3-septate.

On trees and rocks, very rare.

**FIG:** — Dill. Musc. t. 28. f. 105. A.
**GEOG. DISTRIBUTION:** — Europe, N. America.
**BOT. PROV.:** — 1...15...20.
**SCOTLAND:** — Invercauld! **Mr. R. Brown.** (1792). Craig Cluny, in Braemar.
**REV. J. M. CROMBIE.**

**ENGLand:** — Ilsington; North Bovey; Manaton; Chagford; Whidden Park; Botor Rock, &c., Devon. Messrs. Jones & Kingston.
**IRELAND:** — Derrycclare Island, co. Galway. **Mr. Larbalastier.**

**Var. rameum,** Schäer. glaucescent, broadly lobate, under surface pale and villose, albido-papillate, pseudo-cyphellate.

On trees.

**EXS:** — Scher. 508. Anzi 87.
**GEOG. DISTRIBUTION:** — Switzerland, Hungary, Italy, Sweden.
**BOT. PROV.:** — 15.
**SCOTLAND:** — Forfarshire! **Mr. Dickson.**

3. **N. lusitanicum,** Schäer. livido-castaneo-fuscescent, rotundato-lobate, margins crenate, not unfrequently minutely crenulate, crisped and undulate, smooth and somewhat shining above, beneath pale, glabrous and somewhat rugulose, (medulla flavescent, K red); apothecia fusco-rufous, margin of receptacle crenato-laciniate incurved, back of receptacle minutely depresso-areolate; spores 8, fuscescent, fusiformi-oblong, 3-septate.

On mossy rocks, trees, and stones, frequent.

**SYN:** — Scher. Enum. (1850). Leight. 1. c.
**FIG:** — E. Bot. t. 305.
**GEOG. DISTRIBUTION:** — Switzerland, Pyrenees, Portugal, Italy, Canaries, Java.
**BOT. PROV.:** — 1...3...5, 6, 7...10, 11, 12...15, 16, 17, 18, 19, 20, 21, 22.
**ENgLAND:** — Baysdale! Oggeray Gill! Cleveland. **Mr. Mudd.** Cumberland! **Mrs. Stanger.** Pentregar! near Oswestry. **Rev. T. Salwey.** Torquay! Devon.
**Dr. Deakin.** near Launceston! Cornwall; Ashburton! near Totness, Devon.
**Dr. Holt.** Bickley! Devon; Liskeard! Cornwall; **Mr. D. Turner.** Shipley Wood, Eglestone, Durham. **Mr. Robertson.** near Hastings, Sussex. **Rev. E. N. Bloomfield.** Sussex coast, Dillenius.

**SCOTLAND:** — Carse of Ardessier, 3 m. east from Fort George! near Cawdor! Reeky Linn! Craig Koynoch! **Mr. W. Gardiner.** Crinan! Argyshire. **Dr. Lindsay.** Falls of Moness, Aberfeldy! **Dr. Holt.** Braemar! **Mr. Crombie.** Appin.
**Rev. J. M. Crombie.** Dunbarton Castle, Sir J. E. Smith.
**IRELAND:** — Shore of Lough Tay; Luggelaw! **Adm. Jones.** Glenarm, co. Antrim. **Prof. Dickie.**

**WALES:** — Garthwin. **Mr. Griffith.** Dolgelley! Barmouth! Drwynant! Glyn! near Capel Curig. Gwydir woods! Battrws-y-coed, Trefriw! Manorwen! near Fishguard, Pembrokeshire, Tremadoc!

**Var. Hibernicum,** Nyl. medulla white, K red; back of receptacle smooth.

On rocks rare.

**EXS:** — Anzi Etr. 8.
**IRELAND:** — Doughrugh Mountain! **Mr. Larbalastier.**
Stratum gonidiale formed of granula gonima, not gonidia. Apothecia marginal on the upper surface of thallus. Spores 8, colourless or slightly fuscescent, fusiform.

II. PELTIGERA. (Hffm.) Ach.

Thallus membranaceo-lobate, fragile, cortical layer not continuous on the under surface and there generally nerv'd and rhizinose. Apothecia marginal on upper surface of thallus. Spores 8, colourless or slightly fuscescent, fusiform, 3-5-7-septate. Stratum gonidiale of granula gonima not gonidia.

A. Apothecia adnate.

1. P. aphthosa, (L.) glauco-virescent or livido-glaucenscent, broadly membranaceous smooth, with pale brown patelliform or verrucose depressed cephalodia, beneath either reticulato-nigriganti-nervo'se, or continuously fusco-nigrigant, with broad whitish margin; apothecia fusco-rufescent, rotundate, adnate to a narrow ascending thalline lobe; spores 8, colourless or fuscescent, fusiform, 3-7-septate.

On shady alpine rocks.


Geog. Distr:--N. Europe, N. Asia, N. America.

Bot. Prov:--5...7, 8...10, 11...14, 15...26...30.


"Spores .009 to .012 in. long, by .00075 in. broad." (Mudd.) "Spores .060—.92 mm. long, .005—.06 mm. broad." (Nyl.)

2. P. canina, (L.) canescent or cinereo-pallescens, opake, more or less longitudinally lacunosso-impressed, adpresso-tomentellos, rotundate-lobate, under surface longitudinally appresso-albo-tomentose with prominent pale anastomosing villoso-tomentose nerves extending to the very margin and clothed with tufts of pale rhizina; apothecia fuscosus or fusco-rufous, adnate, margin near 'ly entire, lack of receptacle uniformly tomentose, almost subfurfuraceous; spores 8, colourless, elongato-fuscescent, 3-5-septate.

On mossy earth, stones, &c. very common.


Fig:--E. Bot. 2399. Dill. t. 27. fig. 102. E. Hepp Sporen t.9 6. f. 575.
f. crispa, (Whlnb.) margins sorediate.

SYN:—Whlnb. Lapp. 446. (1812.) Mudd Man. 83.
EXS:—Leight. 262.

ENGLAND:—Aytont Lanbraugh rigg! Yorkshire. Mr. Mudd.
IRELAND:—Glendalough! Kylemore! Mr. Larbalestier.
WALES:—Near Dolgelley!

3. **P. malacea**, (Ach.) cinereo-glaucensescent or glauco-fuscescent, upper surface smooth but minutely punctato-tomentellose upwards immediately below the apothecia; under surface tomentose, with broad flatened confluent, brown, tomentose spongiose nerves terminating below the paler brown uniformly tomentose margin, densely nigri-canti-spongiose towards the centre and base; apothecia fusco-rufous, margin crenato-incised, connivent or incurved; back of receptacle coarsely furfuraceous; spores 3-5-septate.

On mossy earth, 1873.

FIG:—Sturm. D. Fl. t. 17. Hepp Sporen t. 7. f. 50.

**GEOG. DISTRICT:**—Switzerland, Germany, Sweden, Italy, Bavaria, Hungary, Himalaya, N. America, Karuguen's Land.

**BOT. PROV.**—5, 6, 7..11..16.


WALES:—Manorowen! near Fishguard, Pembrokeshire! Benarth! near Conway; between Corwen and Bala! Craig Breidden!

"Spores .068—74 mm. long. .005—6 mm. broad." (Nyl.)

4. **P. rufescens**, (Hffm.) pale cervine or cinereo-rufescens, rotundato-lolate, smooth, glabrous, under surface floccose or reticulato-tomentose, with permanent dark nigro-fuscos nerves, terminating in appressed flattened confluent pale brown smaller nerves at the margin and bearing scattered tufts of dark rhizinae towards the centre; apothecia fuscos or rufo-fuscos, margin crenulate, back of receptacle verrucoso-furfuraceous.

On mossy earth, &c., not common.

FIG:—E. Bot. 2300. Dill. t. 27. f. 103. Hepp Sporen t. 7. f. 51.

**GEOG. DISTRICT:**—Europe, Asia, N. America, N. Zealand.
5. P. spuria, (Ach.) cinerco-virescens, small, digitato-lobate, lobes ascending, smooth, glabrous in the lower part, adpresso-tomentose upwards towards the apothecia, under surface whitish with thick coarse spongioso-tomentose nerves and interstitial longitudinal whitish lacuna; apothecia fuscous or rufo-fuscous, roundish, margin irregularly crenulate or denticate, back of receptacle densely irregularly spongioso-tomentose; spores 8, aciculare-fusiform, 3-7-septate.

On the earth, rare.

Fig:—E. Bot. 1542.
GEOG. DISTRIEB:—Europe, Australasia.
BOT. PROV:—1, 2, 3, 4, 5...7...11...15...31.
WALES:—Ynysfaig. Rev. T. Salwey.
"Spores .056—75 mm. long. .003—45 mm. broad." (Nyl.)

6. P. polydactyla, Hffin. glauco-pallescens or pallido-fusceoscent, digitato-lobate, lobes ascending, glabrous and shining, smooth or obolutely impressed, beneath with thick coarse spongioso-tomentose fusco-nigrum anastomosing more or less flattened nerves, and interstitial longitudinal whitish lacuna; apothecia fuscous or fusco-rufescens, longitudinal revolute margin irregularly crenulate, back of receptacle sub-verrucoso-tomentose; spores 8, colourless, attenuato-fusiform, 3-7-septate.

On mossy earth, &c., rare.

FIG:—Hffin. Fl. L. 6. 4. f. 1.
GEOG. DISTRIEB:—Europe, Asia Africa, Polynesia, Australasia.
BOT. PROV:—1...5...10, 11, 12...14, 15, 16—(19—30), 31.
SCOTLAND:—Wall at Craighouse near Edinburgh. Dr. Greville. Forfarshire. Mr. W. Gardiner. Long Island; Arran. Prof. Balfour. near Aberdeen; Braemar; Blair Athole; Killin; Lorne. Rev. J. M. Crombie.
IRELAND:—Not unfrequent. Mr. Carroll. Glendalough, Mr. Larbalestier.

Var. hymenina, Ach. glabrous, somewhat shining, under surface nearly without veins, fusco-fibrillosc.

Amongst mosses on the ground, sparingly.

SYN:—Ach. Syn. 238.
EXS:—Hepp 831.
GEOG. DISTR:—Europe.
BOT. PROV:—15.

Var. collina, Ach. lobes crisped, margins sorediate.

On the ground, rare, 1875.

BOT. PROV:—26.
IRELAND:—Killery Bay and Kylemore, Connemara. Mr. Larbalestier.

7. P. scutata, (Dicks.) virescenti-cinereous, spreading, oblongo-lunate, upper surface glabrous below, minutely depresso-granulate upwards, margins undulato-crenate crisped and cæsio-sorediate, under side with pale brown spongioso-tomentose flattened anastomosing nerves and interstitial white lacunæ; apothecia fuscous or fusco-rufescent, adnate, suborbicular, margin irregularly crenulate, back of receptacle spongioso-tomentose; spores 6–8, colourless, acicular or elongato-fusiform, 3-septate.

On mossy earth and trees, rare.

FIG:—E. Bot. 1834.
GEOG. DISTR:—Europe, N. America.
BOT. PROV:—1...5...7...11, 12...15.

B. APOTHECIA HORIZONTAL.

8. P. horizontalis, (L.) pale or pallido-fuscouscent or glaucopallidouscent, rotundato-lunate, glabrous, smooth or slightly impressed, shining, margins sinuato-crenate and slightly undulate; under surface with pale brown and fuscous black coarse flattened anastomosing or confluent nerves and interstitial white lacunæ; apothecia fuscos or fuscous-black, rotundate or elliptical, plane, horizontal; margins irregularly crenulate, often inflexed, back of receptacle verrucoso-tomentose; spores 6–8, colourless, or pale fuscescent, fusiform, 3-septate.

On mossy rocks, trees, and walls, not common.


**Geo. Distri.**—Europe, N. America.


"Spores .005 to .006 in. long, by .001 to .00125 in. broad." (Mudd.) "Spores .030—.42 mm. long, .006—.7 mm. broad." (Nyl.)

Var. muscorum, Scher. smaller in every part.

Amongst mosses on walls, very rare.


**Geo. Distri.**—Europe.


**Scotland**—Glen Lochay. Rev. J. M. Crambie.

**Ireland**—Kylemore, and near Delphi, Connemara. Mr. Labaulester.

9. **P. venosa**, (L.) pale or pallido-cinerea or glauco-cinerea-scent, small, simple, sub-ascending or sub-erect, flabelliformi-lobate, smooth and glabrous, albo-tomentose beneath, with strong black or fuscous-black nerves ramifying from the base; apothecia fuscous-black, rotundate, plane, horizontal, disk rough and granular, margin striato-crenulate; back of receptacle nigro-tomentose; spores 6—8, colourless or pale fuscescent, fusiform, 3—septate.

On the earth, rare.


**Fig.**—E. Bot. 357. Hfzm. Pl. L. t. 6. f. 2. Hepp Sporetn t. f. 172.


**Geo. Distri.**—N. Europe, N. Asia, N. America.


**England**—Whitecliff Rocks, near Ludlow, Shropshire!


**Ireland**—Knockagh Hills, co. Antrim. Mr. D. Moore.

"Spores .005 to .007 in. long, by .001 to .00125 in. broad. t. 1. f. 23." (Mudd.)

"Spores .030—.45 mm. long, .007—.8 mm. broad." (Nyl.)

**Sub-Tribe III. SOLORINEI.**

Thallus membranaceous, opake, stratum gonidiale consisting of granula gonima, not gonidia. Apothecia innate, scattered on the upper surface of thallus. Spores fuscous, bilocular.
III. SOLORINA. Ach.

Thallus fragile, cortical layer not continued over the under surface, which is obsolescely nervous. Apothecia rotundate or oblong, spadiceo-rufescent or fuscous-black, innate, scattered on upper surface of thallus. Spores fuscous, 1-septate. Stratum goni
diale of granula gomina not goniidia, bright green.

1. S. crocea, (L.) coriaceous, cinnamomeo-or rufescent-cineras
cent, (dark-green when moist) orbicular, laciniato-lobate, lobes ro
tundo-obovate, margin undulate, appresso-furfuraceous below, smooth up
wards, under surface deep orange-coloured, appresso-tomentose, sub
palmato-nervose; apothecia fuscous or fusco-rufescent, roundish, ad
nate, plane, subtumid, immarginate; spores 8, pallido-rufescent, fus
iform-ellipsoid, 1-septate.

On the ground in alpine localities, rare.


GEOG. DISTRIB.:—Europe, Asia.

BOT. PROV.:—14, 15., 19.

SCOTLAND.:—Forfarshire. Mr. Don. Edinburgh. Mr. Mackay. top of Ben

Lawers! Dr. Burrell and Dr. Lindsay. on all the Breadalbane Mountains at 3000 ft. as Ben More. Ben Challum, Craig Challachie, back on Craig na Gour, 

Mael Ghyrdy, &c. Mr. A. McKinlay. summits of the Highland Mountains, 

Ben Lodmond, &c. Sir W. Hooker. summits of Basses, White Bent, &c., 

Cloya. Mr. W. Gardiner. Peak of Mamsoul, Invernesshire. Dr. B. White. Ben 

Lomond ; Mortone. Rev. J. M. Crombie.

IRELAND.:—On Brandon, Kerry. Dr. Moore.

“Spores .007 to .008 in. long, by .002 in. broad.” (Mudd.) “Spores .034—

53 mm long, .010—13 mm. broad.” (Nyl.)

2. S. saccata, (L.) membranaceo-papyraceous, pallido-fuscescent (bright green when moist), orbicular, rotundo-lobate, margins broadly and shallowy crenate, smooth below, albo-granulato-pruinose up
wards; under surface paler, appresso-spongiosan-tomentose, rhizinose;
apothecia fuscous or nigro-fuscous, urceolato-appressed; spores 4, rufo-fuscescent, ellipsoid. 1-septate.

On the ground in moist shady alpine localities, not common.


Hepp Sporen t. 19. f. 171.


GEOG. DISTRIB.:—Europe, N. America.

BOT. PROV.:—3, 4, 5..., 7, 8..., 10, 11, 12...15, 16...19...27...30.

ENGLAND.:—N. W. Yorkshire; near Matlock, Derbyshire; Sir J. E. Smith.

Cambridgeshire. Rev. R. Relham. Falcon Clints and White Force, Teesdale, 

Durham! Killdale, Cleveland! Mr. Mudd. Studley Park, Yorkshire, Mr. W. 

Brunton, St. Vincent's Rocks, Bristol! Miss M. Atwood, Ingleborough. Mr. J. 

G. Baker. Weardale! Sir W. C. Trevelyan. Cheddar and St. Vincent's Rocks, 

Messes. Turner and Soverby, Middleton-in-Teesdale, Durham. Mr. Winch. near 

Buxton. Dr. Holl, Via Gellie, Derbyshire. Apes Tor, Staffordshire. Rev. A. 


SCOTLAND.:—Ben Lawers. Mr. H. Macmillan. Highlands of Scotland. Sir W. 

J. Hooker. Inchnadimm! Sir W. C. Trevelyan. Glen Dole, Canlochan; Glen 

Frosen; Reeky Linn, Forfarshire. Mr. W. Gardiner. near Killin. Dr. Holl 

Morrone; Craig Tulloch; Finlarig, Killin! Applin. Rev. J. M. Crombie.
Wales:—Anglesea, Rev. H. Davies, Glyn, near Capel Curig!

Ireland:—On Brandon Hill, Kerry; Ben Bulben, Sligo. Mr. J. T. Mackay.

Cushendall, Antrim. Dr. Moore.

"Spores .008 in. long, by .0035 in. broad. t. 1. f. 24." (Mudd.) "Spores .032—.060 mm. long, .018—.027 mm. broad." (Nyl.) Spores .05 mm. long, .02 mm. broad.

3. S. limbata, (Sommf.) subcoriaceous, fuscous, dark-green and gelatinous when moist, granulato-plicato-squamulose, albo-pruinose; apothecia fuscous or nigro-fuscous, large, urceolate, bordered by a plane expanded cremate albo-furfuraceous granulate margin; spores 4, rufo-fuscous, broadly and obtusely oblong, 1-septate.

On the earth among wet mossy rocks, rare.


Exs:—Anzi Langob. 46. Smrft. 149.

Geog. Distr:—Scandinavia, Europe, N. America.

Bot. Prog:—4...10, 11...15...30.


Scotland:—Ben Lawers, Dr. Hall.

Ireland:—Head of Glenarriff, co. Antrim. Dr. Hall.

"Spores .008 to .009 in. long, by .003 to .0035 in. broad." (Mudd.) "Spores .030—.050 mm. long, .018—.023 mm. broad." (Nyl.) Spores .032—.033 mm. long, .014—.015 mm. broad.

4. S. bispora, Nyl. albo-pruinose, slightly developed, lobes small; almost entirely occupied by the crowded, moderate, deeply urceolate apothecia, or changed into isidiose or granulose thalline limbs; spores 2, rufo-fuscous, oblong, 1-septate; stratum gonimon bright green.

On earth in alpine localities, rare. 1871.

Syn:—Nyl. Syn. 331 (1860.) Stirton in Grevillea, 2. 60.

Fig:—Nyl. l. e. t. 8. f. 42.

Exs:—Arn. 486.

Geog. Distr:—Pyrenees, Tyrol, North Italy.

Bot. Prog:—15.

Scotland:—Ben Lawers. Dr Stirton.

Possibly S. limbata and S. bispora may be states of S. succata. "Spores .065—.088 mm. long, .033—.042 mm. broad." (Nyl.)

Tribe XII. Parmeliie.

Thallus frondoso-dilatate or lobate or lobato-laciniate or stellato laciniate, sometimes somewhat terete, and fruticuloso-imbricate. Apothecia lecanorine or in a cupuliform receptacle. Sterigmata pluri-articulate or with arthrosterigmata.

Sub-Tribe I. Stictei.

Thallus membranaceo-lobate, the under surface rhizinose, and with pulverulent pseudo-cyphellae or true urceolate cyphellae. Apothecia with distinct paraphyses. Spores fusiform, 1—3 rarely pluri-septate.
I. STICTINA. Nyl.

Thallus variously lobed or laciniato-lobate. Rhizinae simple. Stratum gonidiale consisting of granula gonima of a dark blue-green colour.

A. Pseudo-cyphellae white.

1. S. intricata, (Del.) the typical species figured in Delise's Stictae, t. 7. f. 33. has not been observed in Great Britain.

Var. Thouarsii, (Del.) coriaceous, pallido-fuscescent, sinuato-lobate, lobes short and broad, with casious-white soredia scattered over the surface, and especially on the margins, under surface tomentose nigro-fuscescent, paler brown towards circumference; apothecia not found.

On trees and rocks, rare.


Fig.:—Del. St. t. 8. f. 29.

Exs.:—Crombie 33.

Geog. Distrib.:—Africa, Central America, Java.

Bot. Prov.:—1...7...15...12...21...26...30.

England:—Near Hay Tor, Dartmoor. Dr. Hill.


N. Wales:—Arthog, near Dolgelley. Rev. T. Salwey.

B. Pseudo-cyphellae yellow.

2. S. crocata, (L.) lurido-fuscescent, shining, broadly rotundo-lobate, crenate, reticulato-lacunose, reticulations and margins bearing cirtine soredia, under side fusco-nigricant, tomentose; apothecia scattered, blackish, margins cinere, at length excluded; spores 6—8, fuscescent, oblongo-fusiform, 1-septate.

On trees, mosses, &c. very rare.


Fig.:—E. Bot. 2110.

Exs.:—Tuck. 65.


Bot. Prov.:—1...14, 15...19...30.


"Spores .005 to .007 in. long, by .0015 to .00175 in. broad." (Mudd.) "Spores .020—82 mm. long, .008—.010 mm. broad." (Nyl.)

C. Cyphellae urceolate.

3. S. limbata, (Sm.) pale cervino-rufescent, monophyllous, rotundo-lobate, smooth and unequal, margins densely and copiously casio-sorediate, under surface pale brown, tomentose; apothecia not seen.
On mossy shady rocks and trees, rare. 1745.


EXS. — Labr. 15, Scher. 557, Welw. Lusit. 3.

GEOG. DISTR. — Europe.

BOT. PROV. — 1, 2, 3, 5, 6, 7, ... 11, 14, 15 ... 30, 31.


Rev. T. Salwey.

"Spores .005 to .006 in. long, by .00125 to .0015 in. broad." (Mudd.)

4. S. fuliginosa, (Dicks.) cervine or cinereo-fuscescent, monophyllous, scrobiculate, unequal, rotundulo-lobate, covered with darkisidiose efflorescence, under surface pale brown-tomentose; apothecia scattered, rufescent, piloso-ciliate; spores 6-8, colourless, fusiform, 1-3 septate.

On rocks and trees in alpine localities, rare. 1785.


Fig. — E. Bot. 1103. Hepp Sporen t. 41. f. 31.


GEOG. DISTR. — Europe, Africa, America, N. Zealand.

BOT. PROV. — 1...5, 6, 7...12, 13...15, 16...19...26...31.


IRELAND: — Roadside between Kenmare and Killarney. Dr. Taylor, Killarney. Dr. Carrington. Derryclare! Connemara, Mr. Labaulestier.


"Spores .005 to .006 in. long, by .00125 to .00175 in. broad." (Mudd.)

"Spores .027—40 mm. long, .007—8 mm. broad." (Nyl.)

5. S. sylvatica, (L.) cervine or cinereo-fuscescent, scrobiculate, unequal, lacintio-lobate, furfuraceous above; apothecia scattered, margin naked; spores fusiform, 1-septate.
On mossy rocks, &c.


FtG:—E. Bot. 2298.


RABB. 910. Leight. 109.

GEOG. DISTRIB:—Europe, N. America.

BOT. PROV.:—1...5. 6, 7...11...15, 16...19...26.


IRELAND:—Blackwater Bridge, co. Kerry. Dr. Taylor. Lough Inagh; Connemara. Mr. Larrabender.


“Spores. 025—27 mm. long. 008,—010 mm. broad.” (Nyl.)

6. S. Dufourei, (Del.) glaucous or glauco-fuscecent, smooth, margins of laciniae minutely dissecto-fimbriate, under surface pallescent, slightly tomentose or nearly naked; apothecia not seen.

On mossy rocks and trees, rare.


FIG:—Del. St. t. 6. f. 22.

EXS:—Leight. 173. Welw. Lusit. 5.

GEOG. DISTRIB:—Europe, Canaries, Madeira.

BOT. PROV.:—1...16...19.

ENGLAND:—Rock Walk, Itham near Torquay. Dr. Deken. near South Brent, Devon. Dr. Holt. Cricketor Rocks, near Menheniot Station, Cornwall. Mr. Curnow.


D. Ecyphellate, bullate.

7. S. scrobiculata, (Scop.) glauco-flavescent, reticulato-scrobiculata, sorediate; under surface tomentose fuscecent albido-bullate; apothecia scattered, margin thick entire inflexed; spores 8, colourless, fusiform, 3-7 septate.

On trees, rare. 1794.


GEOG. DISTRIB:—Europe, Asia, North America.

BOT. PROV.:—1, 2...5...7, 8...10, 11, 12...15...19...31.


SCOTLAND.—Ben Nevis! *Dr. Lindsay. Pentland Hills. Mr. M'Naughtan, Clova; Reeky Linn; Lundie Craigs; sands of Barrie. Mr. W. Gardiner. Large, Fife-shire. Mr. Hovie.


"Spores .010 to .015 in. long .00175 in. broad." (Mudd.) "Spores .050—.08 mm. long, .006—.07 mm broad." 

II. STICTA. (Ach. pr. p.)

Thallus variously lobed or laciniato-lobate. Rhizine simple. Stratum gonidiale consists of true gonidia of a yellow-green colour. A Ecyphellate, bullato-reticulato-tomentose beneath.

1. S. pulmonaria. Ach. pallido-cervine, reticulato-foveolate, laciniato-lobate, sinuate, truncate, under surface reticulato-tomentose, bullate; apothecia marginal, margin rugulose, crenulate; spores colourless, oblongo-fusiform, 1-3-septate.

On trees.


GEOG. DISTRIB.—Europe, Africa, Asia, America, Australasia.

BOT. PROV.—1, 2, 3, 4, 5, .7, 8, .10, 11, 12.—15...19...31.


IRELAND.—Wood near Killarney, common. *Dr Taylor.

Channel Islands:—Guernsey. Rev. T. Salwey. La Coupe, Boulay Bay, Jersey. Mr. Larbalestier.

"Spores .005 in. long, by .0015 to .00175 in. broad." (Mudd.) "Spores .018—30 mm. long, .005—9 mm. broad." (Nyl.)

B. Cyphellate.

2. S. damaceornis, (Sw.) var. macrophylla, (Hook.) pale fusco-rufescent, smooth, laciniate, lobes broadly dilated, sinuate, retusotruncate, under surface dark brown tomentose; apothecia marginal or scattered, margin entire or obsoletely crenulate; spores colourless, fusiform, 1-3-septate.

On shady rocks, very rare.


Fig. H. Bot. Suppl. 2697. Hepp Sporen t. 99. f. 869.

Exs.:—Hepp 639.


Bot. Prov.:—19.


"Spores .005 to .006 in. long, by .0015 in. broad." (Mudd.)

C. Pseudo-cyphellate, citrine.

3. S. aurata, Ach. red, lobate, sinuato-incised, crenato-undulate, citrino-pulverulent; under side fusco-nigriricate, russet to margins, tomentose; apothecia subpodicellate, margin inflexed; spores fuscescent, fusiform, 3-septate.

On trees and rocks, rare.


Fig. E. Bot. 2359. Hepp Sporen t. 41. f. 372.


Larb. 16. Leight. 261.


Bot. Prov.:—1, 2...31.


III. Ricasolia, (D.N.)

Thallus lobate or laciniate, affixed by fasciculate rhizine. Cyphellae none. Stratum gonidiale consists of small yellow-green gonidia. Spermogonia in mastoid prominences.

1. R. ampullissima, (Scop.) pallido-glaucescent, coriaceous, orbicular, laciniato-lobate, sinuato-lobulate, rugulose, glomuliferous, under surface pale brown and tomentose, rhizinae fuscescent; apothecia rufous, receptacle granulato-furfuraceous, margin inflexed; spores elongato-fusiform, 1-3-septate. (medulla K—C—).

On trees, not common.


Fig. E. Bot. 293. Mich. Gen. t. 46. Dill. t. 26. f. 91. Hepp Sporen t. 68. f. 594.

OF GREAT BRITAIN.

GEORG DISTR:—Europe, Algeria, N. America, Asia.
BOT. PROV:—1, 5, 6, 7...11, 12, 14, 15, 16...19...30, 31.


"Spores .009 to .012 in. long,.00125 to .0015 in. broad." (Mudd) "Spores .057—.06 mm. long,.006—.07 mm. broad." (Nyl.)
The glomeres are identical with Leptogium bolacinum, Nyl. see Flora 1876. p. 578.

2. R. laetevirens, (Lightf.) pale brown, membranaceous, rugulose, crowdedly lobate, rotundato-crenate and undulate, under surface pale, and tormentose, rhizinae pale; apothecia rufous, receptacle granulato-rugulose, inflexed; spores colourless or pallido-fuscoscent, fusi-form, 1-3-septate; (medulla K—C—).

On trees and rocks, not common.


GEORG DISTR:—Europe, Africa, N. America.

BOT. PROV:—1, 2,...7, 8...10...12...14, 15...19...22...26...30, 31.

ENGLAND:—Derbyshire and Westmoreland. Sir J. E. Smith. Baysdale, Cleve-


WALES:—Near Oswestry, but in Denbighshire! and Barmouth! Corgygodol. Rev. T. Salwey. near Beaumaris. Rev. A. Bloom. Gwydir Woods! Bettws-
y-coed, Dolgelley. J. Harriman. near Oswestry, near. Mr. Larbalestier.

"Spores .007 to .009 in. long, by .00125 to .0015 in. broad." (Mudd) "Spores .026—.46 mm. long,.009—.012 mm. broad." (Nyl.)
THE LICEN-FLORA.

SUB-TRIBE II. IMBRICARIEI.

Thallus laciniate or lacinato-lobate. Apothecia with ellipsoid, rarely oblong, simple, colourless spores. Paraphyses indistinct. Spermogonia innate. Spermatacia acicular, fusiformi-incrassulate at either apex, or long cylindrical and arcuate. (Nyl. Syn. t. 8. f. 48.)

IV. PARMELIA. Ach. Nyl.

Thallus variously lobato-divided or laciniate, expanded, somewhat shining, medulla stumpy. Apothecia scattered. Spores 8, ellipsoid, simple, small. Sterigmata 2-5-articulated. Spermatacia acicular, fusiformi-incrassulate at the acute apices. (Nyl. Syn. t. 8 f. 47. e.)

A. medulla of thallus K—C—.

1. P. copeata, (L.) flavescent or substramineous, dilated, lobato-incipised, rugose, under surface black, paler at the margin, nigrorhizinose; apothecia badio-rufescent, margin crenulate pulverulent; spores 8, colourless, ellipsoid, simple; thallus K f + C + medulla K—C—.

On rocks and trees, common. 1696.


Geog. Distribs.—Europe, Africa, Asia, America, Australasia.

Bot. Proc.—1, 2, 3, 4, 5, 6, 7, 8...10, 11, 12...14...19...31.


Ireland:—Castlebernard Park, Bandon ! Mr. E. Fisher. Dunkerron Mountains; Tralee. Dr. Taylor. near Cork. Mr. Carroll.


"Spores .00375 to .004 in. long, by .00125 in. broad. t. 2. f. 30." (Mudd.)

"Spores .017—20 mm. long, .007—.010 mm. broad." (Nyl.) "Spores .017—20 mm. long, .007—10 mm. broad." (T. M. Fr.)

2. P. olivacea, (L.) olivaceo-fuscous, orbicular or sub-orbicular, smooth, or minutely corrugate, or sometimes varnished, lacinato-lobate, lobes appressed, plane, crenate, sub-opake, under surface concolorous; apothecia badious or badio-rufescent, margin entire; spores 8, colourless, elliptical, simple; medulla K—C—.

On trees, palings, &c. 1690.
OF GREAT BRITAIN.

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Fig.:—E. Bot. 2180.

Exs.:—Felin. 81. Reich. and Schub. 89.

Geog. Distribs.:—Europe, Africa, America, Asia, Australasia.

Bot. Prov.:—1...3. 4. 5...7...11...14. 15... (19...30). 31.


Scotland:—Craigcrook, Colinton and Swanston Woods. Mr. Maughan. Braid Hermitage. Dr. Greville. Reeky Linn; Airlie; Camperdown; Hare Craigs; Clova. Mr. W. Gardiner.

Ireland:—Common. Dr. Taylor and Mr. Carroll.

Wales:—Gwydir woods! Bettws-y-coed.

Channel Islands:—Guernsey. Rev. T. Salwey, common on all the islands.

"Spores .002 in. long, by .00125 in. broad." (Mudd.) "Spores .011—19 mm. long, .007—.010 mm. broad." (Nyl.) "Spores .010—18 mm. long, .007—10 mm. broad." (T. M. Fr.)

Var. exasperata, (Ach.) thallus and receptacle minutely papillato-exasperate; medulla white K—C—.

On trees.


Fig.:—Vaill. Paris. t. 20. f. 8.


Geog. Distribs.:—Europe.

Bot. Prov.:—2...5...7...10...15. 16...19...26.


Scotland:—Loch Awe. Rev. J. M. Crombie. Fort Augustus, Caledonian Canal, Dr. Lindsay.

Ireland:—Glenear, co. Kerry; Glena; Base of Mangerton, Killarney. Mr. Crouch. Killarney Bay! Connemara. Mr. Laverbiester.

Wales:—Delgale. Dr. Holl.

"Spores .009—.013 mm. long, .007—.010 mm. broad." (Nyl.)

Var. prolixa, Ach. dark olivaceous, sub-ombilicate or effuse, laciniate, lacinie narrow, variously divided, multiform, plane, crenato-incised, under surface nigricant, fibrillose; medulla white K—C—.

On rocks, not unfrequent.


Fig.:—Hepp Spores t. 82. f. 715.


Geog. Distribs.:—Europe, Algeria, Asia, Australasia.

Bot. Prov.:—1...6. 7...15...19...23...26.

England:—Torquay, Ilham! Dr. Deakin. Whitesand Bay, Cornwall; Wembury, S. Devon. Dr. Holl.


Ireland:—Howth. Dr. Moore. Mizen Head, Mr. J. Wright. Kilkee, Mr. Carroll, south of Ireland. Miss Hutchins. Cleghan! Connemara, Mr. Laverbiester.

Wales:—Barmouth! Fort Hill! near Fishguard, Pembrokeshire.

"Spores .009—.011 mm. long, .005—.006 mm. broad." (Nyl.) "Spores .009—12 mm. long, .005—.006 mm. broad." (T. M. Fr.)

Var. dendritica, (Pers.) castaneo-fuscous, or badio-nigricant, stello-ombilicate, appressed, lacinie narrow, imbricated, variously divided, multiform, subteretely convex, flexuose, incurved, under surface nigricant.
On rocks, not unfrequent.

**Syn.**—Persoon in Acta Soc. Wetterav. 2. p. 16.

**Exs.**—Leight. 365.


**Wales.**—Moely-Golfa! Montgomeryshire.

3. *P. stygia,* (L.) castaneo-fuscous or pitch-black, somewhat shining, orbicular, firm, laciniae sublineae, multifid, plane or convex, imbricate, divided, under-surface black or spadiceous towards the margins, rhizinae few; medulla white *K—C*—; apothecia fuscous, *margin granulato-crenate*; spores 8, colourless, elliptical, simple.

On alpine rocks. 1793.


**Fig.**—E. Bot. 2048. Hfsm. En. t. 14. f. 2. Hepp Sporen t. 67. f. 587.


**Geog. Distribs.**—Europe, N. America.

**Bot. Prov.**—7...11...15...26.

**England.**—Butsfield Moore, Durham. *Mr. Winch.*

**Scotland.**—Highlands of Scotland. *Mr. Dickson.* (1793). Ben Nevis. (4406 ft.) Ben Mac Donald, Braemar. (4296 ft.) *Dr. Lindsay.* Caintochan, Clova; *Mr. R. Jacob.* Ben More, Breadalbane; Lochnagar, Braemar, *Rev. J. M. Crombie.*

**Ireland.**—(f. minor.) Mayo. *Dr. Moore.*


"Spores .0015 in. long. by .00075 to .001 in. broad." (Mudd.) "Spores .008—.010 mm. long. .006—.007 mm. broad." (Nyl.) "Spores .008—.010 mm. long. .005—.007 mm. broad." (T. M. Fr.)

4. *P. physodes,* (L.) whitish, substellate, laciniae multifid, plane, glabrous, smooth, imbricate, under surface naked, rugose, fuscous-black, *apices inflated* and badio-pallescent; K yellow *C* yellow, medulla white *K—C*—; apothecia spadiceous or badio-rufescens, *margin entire*; spores 8, colourless, oblong, simple, small.

On trees, rocks, &c, common. 1724.


**Fig.**—E. Bot. 129. Hepp Sporen t. 67. f. 584.


**Geog. Distribs.**—Throughout the world.

**Bot. Prov.**—1...3, 4, 5...7, 8...10, 11...14, 15, 16...19, 20...30, 31.


**Ireland.**—Near Belfast (fruit). *Mr. Templeton.* Powerscourt Water Fall. *Mr. G. S. Gough.* Glenbower, Killegan, *Mr. Carroll.*

OF GREAT BRITAIN.

Channel Islands:—Guernsey. Rev. T. Salwey. Jersey and Sark. Mr. Laura
balestier.
"Spores .0015 to .002 in. long, .00075 to .001 in. broad." (Mudd.) "Spores
.006—8 mm. long, .005—6 mm. broad." (Nyl.) "Spores .006—8 mm. long,
.005—6 mm. broad." (T. M. Fr.)

Var. vittata, Ach, lacinia of thallus narrow and linear, denigrate
at the margins.

On trees, not common.

Exs:—Fellm. 76. Scher. 367.
Geog. DistriB:—Switzerland, Italy, Scandinavia.
Bot. Prov:—7...15.
Scotland:—Highlands, frequently. Dr. Holl.
Wales:—Dolgelley. Dr. Holl.

Var. recurva, Leight. like the type, but apices of laciniae recurved
and albo-sordiata.

On trees and rocks, common.

fig:—E. Bot. 126, upper fig. 1. 3.
Exs:—Nyl. 113. Mudd 70. Reich. and Schub. 65.
Geog. DistriB:—Europe.
Bot. Prov:—3...7...10...12...15.
England:—Hay Park, Herefordshire (fruit)! Rev. T. Salwey. High Cliff
and Loundsdale! Cleveland. Mr. Mudd. Keswick, Cumberland (fruit) Mrs.
Stanger. Nesscliffe Hill! Wrekin Hill! Long Mynd! Stiperstones! Shrop-
shire.
Scotland:—Loch-na-Gat stream, Ben Lawers (fruit)! Mr. A. McKinlay.
North Wales:—Barmouth!

Var. labrosa, Ach. apices of laciniae sub-cylindrical, turgescent,
tuberculoso-albo-sordiata.

On trees, &c., common.

fig:—Hffm. Enum. t. 15, f. 2, E. Bot. 126, fig. 5.
856. Rabh. 793.
Geog. DistriB:—Europe.
Bot. Prov:—5...7...(13—18).
England:—Malvern Hills, Worcestershire. Sir J. E. Smith. Pentre-noon,
Monmouth. Dr. Holl. near Cirencester. Mr. W. Joshua. Wrekin Hill, Shrop-
shire!
Wales:—Gwydir Woods! Betws-y-coed (fruit).

Var. platyphylla, Ach. orbicular, laciniae smooth, glabrous,
broader, turgid and undulate, and spermogoniferous towards the
centre, appressed, rounded and crenate at the circumference.

On rocks, not common.

Exs:—Scher. 366. M. & N. 159.
Geog. DistriB:—Europe.
Bot. Prov:—5...7...10, 11...15...20.
England:—Snailsworth! Mr. J. G. Baker. Yorkshire! Mr. G. Dickson.
Waskerley Bourn and Walsingham Park, Durham. Mr. Winch.
Scotland:—Blueberry Hill, Perth! Dr. Lindsay.
Ireland:—Near Cork! Mr. J. Carroll.
North Wales:—Pentrecaer near Oswestry! Rev. T. Salwey. Llyn
Geirionydd! Ow!

Var. encausta, (Sm.) albido-cinerascent, nearly fuscouscent, nar-
rowly laciniate, unequal, laciniae multifid, convex, or terete, imbricato-
decumbent or depressed, under surface nigricant, opake; apothecia badio-rufous, margin crenulate; medulla white K—C—.

On alpine rocks, rare. 1791.


Fig.:—Trans. Linn. Soc. 1. t. 4. f. 6. Hffm. Pl. L. t. 32. f. 3. Hepp Sporen t. 7. f. 52.


GEOG. DISTR.:—Europe.

BOT. PROP.:—15.

SCOTLAND:—Caithness; Ben Lawyers; Ben More; Morrone. Rev. J. M. Crombie.

“Spores .007—.010 mm. long, .005—.008 mm. broad.” (Nyl.) “Spores .007—.010 mm. long, .005—.007 mm. broad.” (T. M. Fr.)

Var. obscuro-carate, Ach. fusco-nigricant but fusco-olivaceous at the circumference, shining, rugoso-plicate, lacinia broad, subinflated, nigro-fusceous at the margins.

On old pales in maritime districts. 1875.

SYN.:—Ach. Syn. 218.

EXS.:—Hepp 585. Anzi Langob. 237 B.

GEOG. DISTR.:—Arctic America, Switzerland, Italy.

BOT. PROP.:—3—17.


5. P. alpica, Th. Fr. nigro-olivaceous, crustaceo-cartilaginous, orbicular or expanded, sub-opake, lacinia convex, rugoso-plicate, imbricate and complicate, narrow, toruloso-intricate, apices incurved, under surface very black, sparsely fibrillose; medulla white K—C—; apothecia nigricant, concave, margin entire; spores 8, colourless, ellipsoid or sub-globose, simple.

On alpine rocks.


Fig.:—E. Bot. t. 2049.

GEOG. DISTR.:—Scandinavia.

BOT. PROP.:—15.


“Spores .007—.12 mm. long; .005—.09 mm. broad.” (T. M. Fr.)

6. P. ambigua, (Wulf.) stramineous, stellato-orbicular, appressed, lacinia narrow, planulate, multifid, flavo-sorediate, under surface fusceous-black; apothecia rufo-badious or badio-fuscaceous, margin sub-entire; spores 8, colourless, oblong or ovoide-oblong, curved, simple; thallus K—C+, medulla white K—C—.

On fir trees, posts, &c. 1808.


Fig.:—E. E. Suppl. 2766. (the yellow figures) Hffm. Pl. L. t. 40. f. 2. 3. 4. t. 42. f. 2. 3. Hepp Sporen t. 98. f. 858.


GEOG. DISTR.:—Europe, N. America.

BOT. PROP.:—5—7. 8. 9. 10.15.


"Spores .006—.11 mm. long, .0025—.0035 mm. broad." (Nyl.)

7. P. cetrarioides, Del. glauco-albescens, subcoriaceous, orbicular, lobes rotundate, margin rotundo-crenate, elevated, crisped; medulla K—C—; apothecia badio-rufous, margin entire; spores 8, colourless, ellipsoid, simple.

On trees and stones, frequent. 1869.


EXS:—Arn. 582. Hepp. 578.

GEOG. DISTRIB:—Europe.

BOT. PROV:—2...5...7...13...15...31.


SCOTLAND:—Loch Lomond! Dr. Stirton. New Galloway! Mr. W. Andrew.

WALES:—Dolgelley! Barmouth! Dr. Holl. (1869). Capel Curig! Drwsyntant!

CHANNEL ISLANDS:—Near Rozel, Jersey! Mr. Larbalestier.

8. P. hyperopta, (Ach.) albidino-cinerous, membraneaceous, closely adherent, laciniate-lobate, central lobes somewhat convex, rugoseplicate; soredia roundish, elevated, albo-pulverulent; lobes of the circumference linear, plane, naked; medulla K—C—; apothecia scattered, brown and shining, margin crenulate; spores 8, colourless, linear-oblong, simple, curved, lunulate or falcate, minute.

On pine trees, rare. 1808.


FIG:—Nyl. Scand. t. 1. f. 1. E. B. Suppl. 2796. (white figures).

EXS:—Anzi Langob. 51. Fellm. 85.

GEOG. DISTRIB:—Sweden, Austria, Italy, France, East Lapland.

BOT. PROV:—15.


Well distinguished from P. æsivites, with which it has been heretofore confused, by the round separated soredia, and the curved spores, and different reaction, the entire central portion of the thallus in P. æsivites being sorediate.

"Spores .011—.12 mm. long, .003—.04 mm. broad." (Nyl.)

9. P. reddenda, Stirt., precisely similar externally both in colour and albo-soredioid points to P. Borreri, Turn. but the medulla K—C—; under surface black, spadiceous at the circumference, rugulose; rhizinae black, nigrificant, or even sometimes pallid.

On rocks and trees, probably not uncommon but overlooked, sterile. 1871.

SYN:—Stirt. in Scottish Naturalist, July, 1878. p. 298.

BOT. PROV:—7...13.

SCOTLAND:—Near New Galloway! Mr. J. M. Andrew.

WALES:—Glyn, near Capel Curig! (1871).

B. medulla of thallus K yellow C—.

10. P. perlata, (L.) albo-glaucescent or whitish, dilated, lobate, lobes rotundate, subimbricate, often albo-sorediate on the margins, under surface fuscos-black or black, and pale towards margins; K + C +, medulla K yellow C—; apothecia badio-rufous, margin entire; spores 8, colourless, ellipsoid, simple,
On trees (rare in fruit.) 1741.


Fig:—E. Bot. 341.


GEOG. DISTRIBUTION:—Throughout the World.


SCOTLAND:—Kinnoul Hill, Perth; Cærlaveroch Road, Dumfries; Quiraing, Skye. Dr. Lindsay, S. W. of Scotland. Rev. J. M. Crombie.


"Spores .0025 to .003 in. long, by .007—.010 mm. broad." (Mudd.) "Spores .011—.17 mm. long .007—.010 mm. broad." (Nyl.)

VAR. ciliata, DC. thallus nearly naked beneath, and nigro-ciliate at the margins, (medulla K yellow C.)

On trees and rocks. 1812.


Fig:—E. Bot. 2423.


BOT. PROV:—1, 2...7...16...19...26...31.

ENGLAND:—Sussex. Mr. Borrer. Bolt Head and Dartmoor. S. Deven. Dr. Holt.

SCOTLAND:—Crinan Canal, Argyleshire! Dr. Lindsay.


Channel Islands:—E. coast of Jersey! and Guernsey. Mr. Larbalestier.

Forma dissectula, Nyl. margins of thallus minutely multifid-dissected Killery. Bay. Mr. Larbalestier. 1876.

11. P. pertusa, (Schrank.) whitish, orbicular, plano-appressed, glabrous, laciniae narrow, multifid, sinuate, convex, somewhat shining, minutely perforated, apices dilated, crenato incised, sometimes sordidate, under surface black and rugose; apothecia rufo-fuscescent, margin entire, inflexed; spores colourless, 2—4, broadly elliptical, simple, large. (medulla white K yellow C.)

On rocks and trees, rare in fruit. 1800.


Fig:—E. Bot. 1248. Hepp Sporen t. 97. f. 857.


GEOG. DISTRIBUTION:—Europe, Asia, America, Australasia.

ENGLAND:—1...7...16...19...26...30...31.


CHANNEL ISLANDS:—Bonne Nuit, Jersey! Mr. Larbalestier. “Spores .0045—.0060 mm. long, .022—.025 mm. broad.” (Nyl.) (T. M. Fr.)

C. medulla of thallus white, tinged red by C alone.

12. P. olivetorum, (Ach.) externally similar to the sorediate states of P. perlata, but distinguished by chemical reaction of the white medulla, which is tinged red by C alone.

On rocks, rare.


Fig:—Dill. t. 20. f. 39. B. Hepp Sporen t. 86. f. 578.


GEOG. DISTRIBUTION:—Europe. N. America.

BOT. PROV. :—2.

ENGLAND:—Danny, Sussex, in herb. Hooker, determined by Dr. Nylander. “Spores .014—.018 mm. long, .007—.012 mm. long.” (Nyl.)

13. P. tiliaecea, (Ach.) glaesuscent, sub-orbicular, lacinio-lobate, lacinia rotundata, smooth, margins sinuato-crenate; apothecia badio-rufescents, chiefly in the centre of the thallus, receptacle smooth, margins nearly entire; spores 8, colourless, oblong, simple; medulla white C red.

On trees &c. 1791.


Fig:—E. Bot. 700. Hepp Sporen t. 97. f. 355.


GEOG. DISTRIBUTION:—Europe, Asia, Africa. N. America. Australasia.

BOT. PROV:—1, 2, 3, 5, 13, 31.


WALES:—Anglesey and Carnarvonshire. Rev Hugh Davies. Aberwynant, near Dolgelley! Dr. Holl. Gwydir Woods; Bettws-y-coed.


“Spores .009 to .020 mm. long, by .001 in. broad.” (Mudd.) “Spores .007—.011 mm. long, .005—.007 mm. broad.” (Nyl.) “Spores .007—.011 mm. long, .005—.007 mm. broad.” (T. M. Fr.)

VAR. rugosa., Leight. orbicular, centre of thallus and base of rotundate lacinia singularly transversely wrinkled; medulla white C red.

On trees.

Fig:—Hepp Sporen t. 97. f. 355.

EXS:—Scher. 358. Zw. 53. Hepp 885.

GEOG. DISTRIBUTION:—Europe.

BOT. PROV.:—2, 3, 19.

ENGLAND:—Near Esher Bridge! Mr. Borrer. Chart Park, Dorking! Mr. Jenner.

IRELAND:—Banks of Blackwater river, co. Kerry. Dr. Taylor,
Var. sordacea, (Ach.) orbicular, sinuato-lobate, lobes short, rotund, undulate, margin inciso-crenate, centre of the thallus isidiiferous and pulverulent; medulla white C red.

On trees, palings, &c. 1809.

Fig:—E. Bot. 2065.
Leight. 87th. Scher. 859.

GEOG. DISTRI:—Europe, S. America, Ceylon, Africa, Mauritius.
BOT. PROV:—1, 2, 5, 6, 7...13...19...20...26...31.


SCOTLAND:—Caerlaverack, Dumfries! Dr. Lindsay.


CHANNEL ISLANDS:—L'Etacq, Jersey! Guernsey. Mr. Larbalestier.

Var. sublivigata, Nyl. pinnatifido-divaricate, laciniae appressed, linear, narrow, distinct, sinuato-incised, apices truncato-furcate, very atrorhizinose beneath; medulla white C red.

On trees, &c.

EXS:—Spruce Amaz. 156.
GEOG. DISTRI:—Europe, Central America.
BOT. PROV:—1, 2...19.
ENGLAND:—Bournemouth! Rev. A. Bloxam. near Exeter! Prof. Dickie.
IRELAND:—Dunkerron! Dr. Taylor.

Var. concentrica, Leight. sphærico-conglomerate, growing in involved concentric layers; medulla white C red.

On exposed downs, rare.

SYN:—Leight. EXS. 232.
Fig:—Gard. Chron. 1856. p. 84 and 172.
EXS:—Leight. 232.
GEOG. DISTRI:—Europe.
ENGLAND:—Melbury Hill near Shaftesbury, Dorsetshire! Sir W. C. Trevelyan.

Dr. Hall in litt. says, "from Bolt Head I have a variety which approaches your concentrica but is isidiiferous."

14. P. Borreri, (Turn.) cinereo-glaucescent, becoming pale brown when dry, appressed, imbricate, rugulose, albo-punctate or albo-sorediate, lobes broad and rotundate, under surface fuscous or pallescent; apothecia badio-rufous, margin elevated, inflexed; spores 8, colourless, elliptical, simple; medulla white C red.

On trees and rocks. 1807.

Fig:—E. Bot. 1780, Linn. Tr. 9. t. 13. f. 2. Mudd Man. t. 2. f. 29.
GEOG. DISTRI:—Europe, Africa, Asia, America.
BOT. PROV:—1, 2, 3, 4, 5, 6, 7, 8...19...20...22...26...31.

ENGLAND:—Sussex. Mr. Borrer. (1807.) Norwich and Coltishall. Mr. D. Turner. Twycross, Leicestershire! and near Braunston! Rev. A. Bloxam. Pen-


WALES:—Pembrokeshire! Lane between Glanmawddach and Bodowen near Barmouth. Rev. T. Salwey, Glyn! Capel Curig!


"Spores .003 to .004 in. long, by .0015 to .002 in. broad." (Mudd.) "Spores .015—19 mm. long, .009—11 mm. broad." (Nyl.) Spores .017—.019 mm. long, .011—.012 mm. broad.

15. P. fuliginosa, (Dub.) badio-umbrine, orbicular, locinitato-lobate, lobes appressed, plane, crenate, fuliginoso-furfuraceous or isidiode; apothecia brown, margin thick crenulate; medulla C red.

On rocks frequent, and on trees less frequent.

GROS. DISTR.:—Europe.
BOT. PROV.:—4...5...7...12...15...20...26.


SCOTLAND:—Birnam Hill, Dunkeld! Dr. Lindsay. Park near Aberdeen; Kincardineshire Coast, Castleton, Braeinar! Mr. Croall. Forfarshire! Mr. Drummond.

IRELAND:—Near Cork! Mr. Carroll. Dawsros River! and near Leonale! co. Galway. Mr. Larbalestier.

WALES:—Between Corwen and Bala! Gwydir Woods! Betwys-y-coed; Trefriw! (cortirole in fruit.) Capel Artlog!

Forma olivacea. Leight. olivacea-virescent, like P. olivacea, (L) but coraloideo-isidiiferous, and with different reaction (medulla white C red),

On trees, very frequent, but sterile, rare on rocks.

SYN:—P. Borreri, f. olivacea, Leight. L. Fl. 2d. ed. p. 479.
GROS. DISTR.:—Switzerland, France.

BOT. PROV.:—5, 6.

ENGLAND:—Throughout Shropshire!

WALES:—Betwys-y-coed! Glyn! near Capel Curig and throughout Montgomeryshire! Denhigshire! and Carnarvonshire!

Spores .016 mm. long, .011 mm. broad.

D. medulla of thallus K yellow then red.

16. P. perforata, Wulf. whitish or glaucous-white, lobate or lobato-sinate or sinuato-divided, smooth, minutely reticulado-rinulose, margin often albo-sorediate, under surface fuscous-black or black; apothecia badio-rufescent or fusco-rufous, often medio-perforate, margin entire; spores 8, colourless, elliptical, simple; medulla white K yellow then red.

On rocks and trees. 1836.


Fig:—Dill. Musc. t. 20. f. 44.

THE LICHEN-FLORA

Geog. Distrib:—Europe, Australasia, Ceylon, Mauritius, Jamaica.
Bot. Prov:—1...7...16...19...31.
Britain. Mr. Curnow.
Ireland:—Near Dunkerron! Dr. Taylor.
Wales:—Dolgelley! Mr. J. Raff.
Channel Islands:—Near Fort Essex, Alderney! Mr. Larbalestier. Guernsey.
Rev. T. Salwey.

"Spores .011—18 mm. long, .007—.011 mm. broad." (Nyl.) Spores .016
mm. long, .010 mm. broad.

Fomes ciliata, Nyl. margins of thallus fimbriate with black
cilyce.

On rocks, rare.

Syn:—Nyl. Syn. 375.
Geog. Distrib:—New Zealand, Australasia.
Bot. Prov:—26...31.
Ireland:—Road to Recess! near Kylere. Mr. Larbalestier.
Channel Islands:—Jersey! Mr. Larbalestier.

17. P. conspersa, (Ehrh.) pale, ochroleucus, orbicular, laciniato-
divided, lacinie appressed, contiguous or imbricate, margins sin-
uato-incised or crenate, undulate, under surface fuscous-black or
fuscous, nigro-fibrillose; apothecia spadiceous or fuscous, mar-
gin thin, infiltrated; spores 8, colourless, ellipsoid, simple; thallus
K f+ C+, medulla K yellow then red.

On rocks, &c., not uncommon. 1741.

Fig:—E. Bot. 2097. Hoffm. Pl. Lich. t. 16. f. 2.
Geog. Distrib:—Throughout the World.
Bot. Prov:—1...5...7, 8...10, 11...13...15., 31.
England:—Oswestry, Shropshire! Rev. T. Salwey. Battersby Bank, Cleve-
lend! Mr. Alfred Charnwood Forest, Leicestershire. Rev. A. Bloxam. near
Dunford, Devonshire. Mr. E. Parfitt. Wensleydale. Mr. J. W. Watson. Tees-
Tyne near Warden Mill, Northumberland. Mr. Wrench. Dartmoor! North
Bovey and Ilaston; near Clifford bridge on Drewsteignton road; Botter rock;
near Church Stretton! Wrekin! Comdon!
Scotland:—Bield and Moffat. Sir J. E. Smith. Moffat, Dumfriesshire!
Blaeberry Hill, Perth; Garrynahnhe, Lewis; Dr. Lindsay.
Ireland:—On siliceous rocks, not uncommon. Mr. Carroll.
Wales:—Dolgelley; Llanberis. Dilleniun. (1741.) Conway Mountain! Nant
Francon! Betws-y-coed! between Towny and Craig Aderyn!
Channel Islands:—Jersey and Sark! and other Islands. Mr. Larbalestier.
"Spores .00175 in. long, .001 in. broad." (Mudd.) "Spores .008—12 mm.
long, .005—8 mm. broad." (Nyl.) "Spores .001—12 mm. long, .006—7 mm.
broad." (T. M. Fr.)

f. stenophylla, (Ach.) lacinie of thallus narrower, much more
divided and imbricate.

Geog. Distrib:—Europe.
Bot. Prov:—1...5, 6, 7, 8...13...18.
Leicestershire! Rev. A. Bloxam. Dunford, Devon. Mr. Parfitt. Wrekin, Shrop-
shire!
Wales:—Fort Hill! near Fishguard, Pembrokeshire, Moel-y-Golfa!
f. isidiata. Anzi. centre of thallus densely isidiose.

SYN:—Anzi Cat. p. 28. (1860.)

GEOG. DISTRIBUT:—Europe, New Zealand, Cuba.

BOT. PROV:—5...7...12...13...28.

ENGLAND:—Keswick, Cumberland! Mrs Stanger, Wrekin, Shropshire!

SCOTLAND:—Caerlaverock Wood, Dumfries! Dr. Lindsey.

IRELAND:—Dawros River! co. Galway. Mr. Larbalestier.

WALES:—Barmouth! Llyn Geirionydd!

f. Mougeotii, Schar. laciniae of the thallus very narrow multiform, somewhat convex, closely adnate, sulphurсо-sorediate, dark and sub-dissipat in the centre, paler and yellower in the radiate circumstance.


Fig:—E. Bot. t. 1375.


GEOG. DISTRIBUT:—Europe, America.

BOT. PROV:—7, 8...10...12...15...19, 20...26.


WALES:—Wall between Bodowen and Glen Mawddach in lane above turnpike road near Barmouth. Rev. T. Salwey. Bettws-y-coed! Holyhead!

18. P. sinuosa, (Sm.) flavescent, divaricato-lobate, laciniae narrow, sinuato-pinnatifid, sinuses circular, apices dilated, cloven, often sorediate, under surface nigro-fibrillose; apothecia fuscose, margin entire; spores 8, colourless, elliptico-oblong, simple; medulla white K yellow then red.

On rocks, walls, &c. 1784.


Fig:—E. Bot. 2050.

GEOG. DISTRIBUT:—Throughout the world.

BOT. PROV:—1...7...13...15, 16...19, 20...31.

ENGLAND:—Bournemouth, Devon. Rev. A. Buxom. Rossthwaise, Borrowdale. Cumberland; Mr. Robertson.


CHANNEL ISLANDS:—Common in Jersey and Guernsey. Mr. Larbalestier.

"Spores .014—17 mm. long. .008—9 mm. broad." (Nyl.)

19. P. acetabulum, (Neck.) glauco-olivaceous or lurido-olivaceous, coriaceous-membranaceous, sub-opake, orbicular, unequal or rugulose, lobate, lobes rounded, flexuose or imbricate, under surface castanoe-fuscose or nigricant; apothecia bario-rufous, receptacle corrugate, margin rugoso-crenulato and sorediate; spores 8, colourless, oblong, simple; medulla white K yellow then red.

On trees. 1799.
THE LICHEN-FLORA


FIG.:—E. Bot. 1652. Hepp Sporen t. 98 f. 865.


GEOG. DISTRIBUTION:—Europe, Africa, N. America.

Bot. PROV.:—2, 3, 4, 5...8...10.


"Spores .00275 to .003 in. long, by .001 to .0015 broad." (Mudd.) "Spores .012—16 mm. long, .003—.010 mm. broad." (Nyl. & T. M. Fr.)

20. P. saxatilis, (L.) cinerascens or albido-cinerascens, membranaceous, orbiculari-expanded, laciniose, reticulato-rugulose, isidioso-sacraus, laciniae sinuato-multifid or sinuato-incised or lobate, apices retuse, black and fibrillose beneath; apothecia spadiceo-badious, or fuscous, margin entire, or crenulate; spores 8, colourless, elliptical, simple; medulla K yellow then red.

On rocks, trees, &c. common. 1724.

All forms of saxatilis are readily distinguished by the reticulato-rugulose thallus.


GEOG. DISTRIBUTION:—Europe, Asia, Africa, N. America.

Bot. PROV.:—1, 3, 4, 5, 6, 7...10, 11...13, 14, 15, 16...18, 19...31.


IRELAND:—Killarney. Dr. Carrington. trees and rocks. common. Mr. Carroll.


CHANNEL ISLANDS:—Gnarreny. Rev. T. Salway. common on all the Islands, Mr. Larbalestier.

"Spores .0035 in. long, by .002 to .00225 in. broad." (Mudd.) "Spores .015—19 mm. long, .003—12 mm. broad." (Nyl.) "Spores .014—19 mm. long, .009—12 mm. broad." (T. M. Fr.)

f. glomulifera, Cromb. thallus bearing blackish glomerules, similar to those of Ricasolia amplusima.

On alpine boulders. 1872.


SCOTLAND:—Morrone, Braemar, Rev. J. M. Crombie. (1872.)

Var. sulcata, Tayl. whitish or albido-glancecent, reticulato-sordidate, soredia whitish, margined by the ruptured thallus, sulciform, never isidioferous; medulla K yellow then red.

On trees and walls. 1836.
OF GREAT BRITAIN.


Fig:—Mich. Ord. 22. t. 49. C.D.

Exs:—A. E. II. S. 104. b. Leight. 203. left hand spec.

Geog. Distrib.:—Europe.


Scotland:—Top of Ben Lawers. Dr. Lindsay.

Ireland:—Co. Kerry. Dr. Taylor. (1836.)

Channel Islands:—Guernsey. Rev. T. Salwey.

forma hirsuta. Crefb. densely black, rhizineo-fibrillose beneath.

On old firs.


Var. furfuracea, (Schekt.) thallus densely isidiose; medulla K yellow then red.

On rocks, stones and trees.

SYN:—P. hirsutus, Tayl. belongs to this form. Schecer. Enum. 45. Mudd Man. 95.


Geog. Distrib.:—Europe.

Bot. Prov.:—1. 3. 5. 6. 7. 10, 11 12. 15. 19. 26.


Scotland:—Birnam Hill, Dunkeld. Dr. Lindsay.


Var. omphalodes, (L.) fuscous or nigricant, shining, smoother, reticulate-rugulose; medulla K yellow then red.

On alpine rocks. 1724.


Fig:—E. Bot. 604.


Geog. Distrib.:—Europe, Asia.

Bot. Prov.:—1. 3. 5. 6. 7. 8. 10. 12. 15. 16. 18. 22. 31.


Ireland:—Lough Bray, co. Wiclow. Dr. Taylor.


Channel Islands:—Bouport Bay, Jersey, and all the other Islands. Mr. Larbalestir. Guernsey. Rev. T. Salwey.
Var. panniformis, Ach. cinerascст, narrowly lacinia-to-dissected, imbricato-crustaceous; medulla K yellow then red.

On rocks.


Fig: — Westr. Farg. t. 7. f. 6.


GEог. DISTRIBUT: — Europe.

Bot. PROV: — 5...7... (13...18.)

England: — Stiperstones Hill, Shropshire!


WALES: — Llyn Geltronydd! Trefriw!

f. subconcentrica, Cromb. sphaerico-conglomerate.

On alpine boulders. 1872.


E. medulla K — C red. (C alone.—)

21. P. laevigata, (Sm.) albo-glaucescent or whitish, narrowly lacinia-to-lobate, lacinica divaricate, sinuato-multifid or sinuato-incised, often subimbricate and tuberculato-sorediate at the apices, laxly affixed, under surface black and atro-fibrilloso-rhinizone; apothecia bado-rufous or fuscecent, margin entire or obsolete, crenate or sorediate; spores 6—8, colourless, elliptical, simple; medulla white K — C red.

On rocks, walls, and trees. 1808.


Fig: — E. Bot. 1852. Hepp Sporen t. 67. f. 581.


GEог. DISTRIBUT: — Europe.

Bot. PROV: — 1, 2...6, 7...15...17...19, 20...26...31.


Scotland: — Ballachoulish! Rossshire! Mr. Borrer. Glencroe! Dr. Macmil-lan.


"Spores .0025 to .003 in long, by .001 in. broad. (Mudd.) "Spores .017—28 mm. long, .010—14 mm. broad." (Nyl.)

Var. rugosa, Tayl. white, very uneven, lobes broadly linear, imbricated, margins sinuato-crenate, rugose at the base on upper surface, sometimes sorediate, margin of apothecia rugose; medulla white K — C red.

On rocks, rare. 1836.

Syn: — Tayl. in. Mack. Fl. Hib. 2. 145. (1836.)

Exs: — Leight. 357. in part. Zw. 181.

Geог. DISTRIBUT: — Europe.

Bot. PROV: — 1...7...15...19...31.

SCOTLAND:—Ballancehull! Mr. Borrer. 
IRELAND:—Dunkerron! Dr. Taylor.
WALES:—Dolbadarn, Caernarvonshire! road-side between Tyn-y-groes and 
Dol-y-mellyn Bridge, Merionethshire! Mr. Borrer. Ty Gwyn near Dolgelley! 
Rev. T. Salwey. Aberdovey! Dolgelley!

Var. revoluta, (Flk.) sinuato-lobate, lobes cucullato-revolute and 
tuberculoso-sorediate at the apices and often at the margins; medulla 
white K—C red.

On trees.

Exs:—Scher. 612. Leight. 357. Nyl. 112. Mudd 69. Zw. 151. bis B. Larb. 64. 
GEOG. DISTRIB:—Europe.
Bot. Prov:—1, 2...5...7...15...19...26...31.
Oswestry! and Ludlow, Shropshire! Rev. T. Salwey.
SCOTLAND:—Glencree! Dr. Macmillan.
IRELAND:—Blackwater Bridge, Kerry. Dr. Taylor. Kerry. Dr. Moore near 
Letterfrack! Mr. Labastei.
Bloxam. Moel-y-gest!
CHANNEL ISLANDS:—Rozel! Gorey, Jersey! Mr. Labastei.
“Spores .011—14 mm. long; .007—8 mm. broad.” (Nyl.)

Var. subsinuosa, (Leight.) linariae narrow, sinuato-pinnatifid, 
apices attenuate, sub-truncate, cloven, under surface atro-fibrilloso; 
medulla white K—C red.

On trees and rocks. 1871.
Bot. Prov:—7...26.
IRELAND:—Near Ballinahanich! Mr. Labastei.
WALES:—Cwm Cwyion! (1871).

22. P. Delisei, (Dub.) Nyl. pale olive, lobes interwoven, eleva-
ted, narrow; medulla K—C reddish.

On rocks. 1872.

Exs:—Nyl. Pyr. Or. 1. 54.
GEOG. DISTRIB:—Europe.
Bot. Prov:—1.
ENGLAND:—Kynnal Cliff, near Penzance. In this locality isidiiferous and 
panniform conditions also occur. Mr. Ournow.

23. P. incurva, (Pers.) ochroleucus or flavido-cinerascent, 
sub-opake, orbicular, stellata-laciniose, appressed, laciniae narrow, 
multijjd, somewhat convex, crowded, apices incurved and imbricate, 
soredia albo-flavescent, verrucosu-tuberculose, under surface concor-
cous, rhizine nigricant; apothecia spadiceo-fuscous or dark rufes-
cent, small, margin sub-entire; medulla K—C faint red.

On rocks, rare. 1793.

Fig:—Dicks. Cr. Br. t. 9. f. 7.
Exs:—Tuck. 76. Fr. 259. Reich. and Schub. 88. Stenh. 123.
GEOG. DISTRIB:—Europe, N. America.
Bot. Prov:—8...11...15...19...23...30.
ENGLAND:—Beamish Moor and Eglestone Fell, Durham; Hedgehope and 
Chevriot, Northumberland. Mr. Winch. Charnwood Forest, Leicestershire.
Rev. A. Bloxam.
SCOTLAND:—Braemar; Grampians. Rev. J. M. Crombie.

"Spores .009—.013 mm. long, .005—.012 mm. broad." (Nyl.) "Spores .008— .012 mm. long, .005—.006 mm. broad." (T. M. Fr.)

24. P. xanthomygeta, (Nyl.) similar to P. laevigata, but medulla yellow, K—C red.

On rocks. 1876.

SYN:—Nyl. in Flora 1874 p. 306.
IRELAND:—Road to Recess near Kylemore. Mr. Larbalestier. (1876).

E. medulla of thallus yellow, K yellowish-brown.

25. P. endochlora, (Leight.) like laevigata, whitish, very uneven, laciniae sinuato-lobate, retuse, tuberculoso-nigranti-sorediate; medulla yellow, K yellowish-brown; apothecia rufous-brown, receptacle verrucose, reticulato-lacunose, margin verrucose incurved; spores as in laevigata.

On rocks.

GEOG. DISTRIBUT:—Europe.
BOT. PROV:—Ireland.

Much resembling P. tiliacea var. rugosa, Tayl. It may be P. aurulenta, Tuck. Suppl. 1. 424 but I have seen no authentic specimen.

SUB-TRIBE. III. PHYSCIEI.

Thallus laciniate, variously divided, generally stellato-orbicular. Apothecia orange or yellow or nigranti, lecanorine. Paraphyses distinct. Spores colourless or fuscous, bilocular or 1-septate. Sterigmata pluri-articulate. Spermata oblongo-cylindrical, incrasate at the apices.

V. PHYSCIA, Nyl.

Characters as above.

— A. Thallus flavescent (K purple.)

1. P. flavicans, (Sw.) yellow or orange-yellow, caspitose, sub-terete, slender, entangled, much branched, branches attenuate, furcellate at the apices; apothecia orange or rufous, margin thin, sub-entire; spores 8, colourless, elliptico-oblong, polari-bilocular.

On trees, rocks, &c. 1724.

GEOG. DISTRIBUT:—W. Europe, Asia, Africa, America, Australasia.
BOT. PROV:—1, 2, 6, 7...10...18, 19, 20...31.
SCOTLAND:—Craig of Ailsa. Rev. J. Lightfoot.


CHANNEL ISLANDS:—Rozel; L'Etacq; St. Lawrence! La Moye, Jersey! Island of Sark! Jerbourg, Guernsey; Brechou. Mr. Larbalester.

"Spores .0025 in. long, by .001 to .00125 broad. t. 2. f. 33." (Mudd.) "Spores .012—18 mm. long, .007—.011 mm. broad." (Nyl.)

2. P. chrysophthalmus, (L.) yellow or flavo-albicant or flavo-cinerascens, rigescens, narrowly laciniate, laciniae ascending, divaricate-multifid, apices fibrilloso-ramulose or spinose, whitish beneath; apothecia orange, margin fibrilloso-ciliate, sometimes naked; spores 8, colourless, elliptico-oblong, polari-bilocular.

On trees. 1801.


GEOG. DISTRI:—Europe, Africa, America, Polynesia, Australasia.

BOT. PROV:—16...19. 20...30. 31.


SCOTLAND:—Ben Brecht, Argyleshire. Mr. Paterson.


CHANNEL ISLANDS:—Guernsey; St. Brelade's, Jersey! and Sark! Mr. Larbalester. orchard at Sark. Rev. T. Saltrey.

The forma Dickieana (Linda, Mem. Sperm. 254.) seems only a paler coloured state with entire margin to the apothecia. It has occurred at Cave Hill, Belfast, and Newcastle, co. Down. Dr. Dickie. and Noirmont, Jersey. Mr. Larbalester.

"Spores .003 to .0035 in. long, by .00125 in. broad. t. 2. f. 34." (Mudd.)

"Spores .011—17 mm. long, .006—.010 mm. broad." (Nyl.)

3. P. parietina, (L.) yellow, sub-orbicular, membranaceous, rotundulo-laboto-incipse, lobes sub-imbricate, appressed, plane or sub-concave, smooth, margins crenate, thickened and upturned, under surface paler or whitish; apothecia concolorous or waxy-orange-coloured, margin entire; spores 8, colourless, oblong, polari-bilocular.

On trees, pales, rocks, &c. common. 1690.


GEOG. DISTRI:—Europe, Africa, America, N. America.

BOT. PROV:—1...3. 4, 5, 6, 7, 8...10. 11...15. 16. 18. (19—30.) 26...31.


IRELAND:—On trees, rocks, &c., common. Mr. Carroll. River Dawros, co. Galway. Mr. Larbalestier.


“Spores, .0025 in. long, by .001 to .00125 in. broad.” (Mudd.) “Spores, .010—16 mm. long, .007—.9 mm. broad.” (Nyl.) “Spores, .012—16 mm. long, .007—9 mm. broad.” (T. M. Fr.)

Var. aureola, (Ach.) more intense yellow or orange, rotundulo-lacinate, sinuate-incised, crenate, thickened and upturned at the margins, under a lens very minutely granulate on the surface, margin of apothecia crenulate.

On rocks and stones.


GEOG. DISTRIBUT:—Europe.

BOT. PROV.:—1. 5...11. 15.


Var. ectanea, (Ach.) yellowish-orange, multifido-laciniate, lacinia narrow, imbricated, sub-convex, sub-lacinose, thickened at the margins, slightly granulated on the surface; margin of apothecia crenulate.

On rocks.


GEOG. DISTRIBUT:—Europe, Africa, N. America, Chili, Australasia.

BOT. PROV.:—6. 7.

ENGLAND:—Crumbles, Eastbourne. Mr. Roper.

WALES:—Tenby! Mr. Lees. Borth! Y Fegle fawr! near Barmouth. Manor-beer! Holyhead!

Var. laciniosa, (Duf.) orange-coloured, stenophyllous, lacero-or pinnatifido-dissected, stellato-appressed, more or less ascending.

On trees, rocks, &c.

SYN:—Fr. L. E. Ref. 78. Mudd Man. 113.


Leight. 11.

GEOG. DISTRIBUT:—Europe.

BOT. PROV.:—3. 5...11...14.


Var. lychnea, (Ach.) orange-coloured, pulvinate, crowded, rotundulo-squamulose, ascendenti-imbricate, margins granuloso-pulverulent or lacero-dissected; margin of apothecia entire, pulverulent.

On trees and old railings.


FIG:—Hepp Sporen t. 99. f. 871.


Rabh. 885.

GEOG. DISTRIBUT:—Europe.

BOT. PROV.:—1. 3. 5...7...15...19...29...30.


Ireland:—North of Ireland; and Castlebernard Park, Bandon. Adm. Jones.

Wales:—Llyn Geirionydd! Criccieth Castle!

Var. polycarpa, (Ehrh.) greenish-yellow, granulato-conglomerate, margins granulato-crenate; apothecia numerous, crowded, margin turgid, entire.

On trees, palings, and rocks. 1807.


Fig.:—E. Bot. 1795. Hepp Sporen t. 7. f. 54.


Geog. Distr.:—Europe, N. America.

Bot. Prov.:—1...3. 4. 5...10. 11...13.

England:—Near Yarmouth. Mr. Turner. (1807.) Stokesley! Redcar! Cleve-


Budleigh Salterton, Devon. Dr. Dickie. Midland Counties; Christ Church.


Forma tumida, (Wedd.) verrucoso-bullata.

On walls, rocks and trees. 1871.


Geog. Distr.:—France.

Bot. Prov.:—3...5.

England:—Tetworth! Oxfordshire. Mr. Larbalestier. Llanymyneh Hill!

Shropshire. (1871.)

Forma cinerascens, Leight. thallus and margins of apothecia cinereo-albicans.

On elms and palings. 1878.

Bot. Prov.:—3.

England:—Wheatfield Park! Oxford. Mr. Larbalestier. (1878.)

B. Thallus cinerascent.

§ medulla K—C—.

4. P. intricata, (Desf.) cinereous or cinerascent, capspitose, nar-

rowly tereti-compressed, laciniate, densely puberulo-villoses, laciniae

divisicato-ramose, entangled, obsoletely canaliculate beneath; apo-

thecia lateral, sessile, fuscos-black, plane, margin entire downy;

spores 8, colourless, elliptico-oblong, 1-septate.

On trees and rocks, rare. 1804.


Fig.:—E. Bot. 1715. Nyl. Syn. t. 8. f. 50.


Geog. Distr.:—W. Europe, Africa.

Bot. Prov.:—1...2.

England:—Cliffs near Hastings, Sussex! Bracklesham in Selsey Island;

Mr. Borrer. (1804.) Bolt Head, Devon. Rev. J. M. Crombie.

"Spores .0045 to .005 in. long, by .0025 to .003 in. broad." (Mudd.) "Spores

.018—26 mm. long, .011—15 mm. broad." (Nyl.)

5. P. ciliaris, (L.) albido-cinerascent or cinerascenti-fuscescent,

lineari-laciniate, laciniae sub-ascending, multifid, imbricato-intricate,

tomentose, canaliculate, whitish beneath, margins fibrilloso-ciliato;
apothecia pedicellate, fuscous-black, cæsio-pruinose, rarely naked, margin sub-entire, inflexed; spores 8, fuscous, oblong, 1-septate; (medulla K—C—).

On trees and rocks. 1785.


GEOG. DISTRIB:—Europe, Africa, N. America.

BOT. PROV:—1. 2. 3. 4. 5...8...14. 15...21...31.


SCOTLAND:—Balthayock! Perth. Dr. Lindsay. Baldovran; Mainis; Auldbar; Foulis. Mr. Gardiner. Castle of Melgund; between Forfar and Kirrimuir. Mr. Croll. Auchindenny and Rosslyn Woods; Dalkeith; about Kirkliston. Dr. Creville.

IRELAND:—Oakpark, near Carlow. Dr. Moore.


"Spores .007 to .0075 in. long, by .0035 in. broad." (Mudd.) "Spores .036—50 mm. long, .018—24 in. broad." (Nyl.) "Spores .030—50 mm. long, .018—24 mm. broad." (T. M. Fr.)

Forma actinota, (Ach.) margin of apothecia proliferous, laciniola sub-fimbriate.

On trees. 1724.


FIG:—E. Bot. 1352.


GEOG. DISTRIB:—Europe.

BOT. PROV:—4...10. 11...15.

ENGLAND:—Bedfordshire. Rev. C. Abbot. near Ayton. Cleveland! Mr. Mudd.

Yorkshire! Mr. Dixon. Northumberland and Durham. Mr. Winch.

SCOTLAND:—Old Castle of Melgund, Forfarshire. Dr. Lindsay.

Forma verrucosa, (Ach.) laciniæ broader, verrucoso-papillate, sper-mogoniferous.

On trees.


EXS:—Bohl. 38. Anzi Langob. 258. A.

GEOG. DISTRIB:—Europe.

BOT. PROV:—3...5...7...10...15.

ENGLAND:—Llanforda near Oswestry! Rev. T. Salye; near Datchet! Miss Atwood, near Thirsk! Mr. Baker. between South Littleton and Badsey, Worchester; Mr. Purton.

SCOTLAND:—Balthayock, Perth. Dr. Lindsay.

Forma saxicola, (Nyl.) dark-cervine or fuscescent, appressed, margins and extremities of the narrow lacinia with long brownish-black ciliea.

On maritime rocks.


GEOG. DISTRIB:—Europe, Canaries.

BOT. PROV:—1...7. 8...10...15...19...31.

ENGLAND:—Near Langbraugh, Cleveland. Mr. Mudd, near Buxton. Dr. Holl. Devon. Mr. Parfitt.


IRELAND:—Sybil Head, co. Kerry. Mr. Carroll.

WALES:—Holyhead Mountain!

CHANNEL ISLANDS:—Quervais, Jersey. Mr. Larrabalstier.
6. *P. pulverulenta*, (Schreb.) pallido-cinerascant or pale cinereo-rufescent or pale olivaceo-cervine, opaque, suborbiculato-stellate, appressed, firm, laciniae plane, multifid, minutely albo-granulosopruinose towards the obtuse crenato-incised apices, under surface nigricanti-fibrillosae; apothecia fuscous, cesio-pruinose, margin tundid, entire, pruinose; spores 8, fuscous, oblong, 1-septate; (medulla K—C—).

On trees, common.


**Fig.** —Hffm. Pl. L. t. 8. f. 2. Hepp Sporem t. 99. f. 874.


**Bot. Prov.** —1, 2, 3...7...10, 11...14, 15...(19—30)...31.


**Scotland.**—Common on trees Sir W. J. Hooker. Forfarshire. Mr. W. Gardiner. Braid Hermitage; Blackford House; Swanston-Wood near Edinburgh. Mr. Greville.

**Ireland.** —On trees, common. Mr. Carroll.

**Wales.** —Betwys-y-coed churchyard!

**Channel Islands.** —Guernsey. Rev. T. Salway. common on all the Islands. Mr. Labaldestier.

"Spores .006 to .007 in. long, by .003 to .0035 in. broad." (Mudd.) "Spores .020—36 mm. long, .012—20 mm. broad." (Nyl.) "Spores .020—36 mm. long, .010—12 mm. broad." (T. M. Fr.)

**f. pityrea,** (Ach.) thallus thinner, sub-cinerascant, sub-effuse, *lacinia* shortish, sorediate at the margins, margin of apothecia crenulate or sordiato-lacerate; (medulla K—C—).

On trees and walls. 1783.


**Fig.** —E. Bot. 2064.


**Geog. Distri.** —Europe.

**Bot. Prov.** —1...3, 4, 5...10...13...15.


Mr. Mudd.

**Scotland.** —Glasgow. Dr. Souler. Marden's Den. Forfarshire. Mr. Croll.

"Spores .024—28 mm. long, .015—18 mm. broad." (Nyl.)

**f. angustata,** (Hffm.) smaller, *pallido-cinerio-rufescent, lacinia* narrower, linear, dichotomous.

On moss. 1861.


**Fig.** —Hffm. Enum. t. 11. f. 2.

**Exs.** —Anzi Langob. 54.

**Geog. Distrib.** —Europe.

**Bot. Prov.** —5...10.

f. muscigena, (Whlb.) darker, cervino-fuscescent, generally albo-cassio-pruinose, laciniae shorter, more distinct, ascending.

On moss. 1861.


GEOG. DISTRIB.—Europe.

BOT. PROV.—15.


"Spores 0.24—30 mm. long, 0.11—15 mm. broad," (Nyl.)

f. venusta, (Ach.) cervine, pruinose, margin of apothecia crowned with laciniae or horizontal thalline lobulae.

On trees. 1724.


Fig.—Ach. Meth. t. 8. f. 5. E. Bt. 2058.


GEOG. DISTRIB.—Europe.

BOT. PROV.—1...3, 4, 5...7...10...11...15...19.

ENGLAND.—Yorkshire! Mr. G. Dixon, near Ayton! Cleveland. Mr. Mudd.


Haughmond Hill! Eadsdon, near Shrewsbury!


IRELAND.—Blarney! and near Cork. Mr. Carroll.

WALES.—Bettws-y-coed churchyard!

All the various forms or states of P. pulvurulenta are readily recognized by the thallus generally or the spores of the laciniae being clothed with minute albo-granulose pruina and the chemical reaction of medulla K—C—.

"Spores 0.36—36 mm. long, 0.12—20 mm. broad." (Nyl.)

7. P. obscura, (Ehrh.) olivaceo-virescent or fuscescent, sub-orbiculari-stellate, appressed, laciniae narrow, inciso-lobate, plane, smooth, margins often sordiate, under surface nigro-fibrilloso-ciliare; apothecia nigro-fuscesce, naked, margin pale entire; spores 8, fuscesce, elliptico-oblong, 1-septate; spatellaria very minute, oblong; (medulla white K—C—).

On trees, &c. 1808.


Fig.—E, Bot. 1942. Hepp Sporens t. 68, f. 596.


GEOG. DISTRIB.—Europe, Asia, Africa, Australasia.

BOT. PROV.—1, 2, 3, 4, 5...7, 8...10, 11...14...16...19...30...31.


IRELAND.—Common on rocks and trees. Mr. Carroll.

WALES.—Edderton! Montgomeryshire.

CHANNEL ISLANDS.—Guernsey. Rev. T. Salvey. common on all the Islands.

Mr. Larbalestier.

"Spores .004 to .005 in. long, .00175 in. broad." (Mudd.) "Spores .018—25 mm. long, .009—.011 mm. broad." (Nyl.) "Spores .015—25 mm. long, .009—12 mm. broad." (T. M. Fr.)
Var. chlorantha, (Ach.) glaucous-green or cinereous, lacinia broader and more approximate, apothecia very numerous.

On trees &c.


GEOG. DISTRIBUT:—Europe.

BOT. PROV:—5...10.

ENGLAND:—Ayon ! Cleveland. Mr. Mudd. Llanforda ! Shropshire.

f. lophota, (Ach.) glauco-fuscescent, orbicular, lacinia multifid, linear, very narrow, margins atro-ciliate.

On maritime rocks, rare. 1877.

SYN:—Ach. Meth. 199 (1803).

BOT. PROV:—7.

WALES:—Great Orme’s Head ! (1877.)

Var. virella, (Ach.) glauco-virescent or cinereous, stellate, lacinia abbreviated, lacinia-lobate, obtuse, sorediate. K.—C. —.

On trees, &c. 1807.


FIG:—E. Bot. 1696. (2 upper fig.)


GEOG. DISTRIBUT:—Europe.

BOT. PROV:—1, 2, 3...5. 6...26.


IRELAND:—Lord Sligo’s Demesne, Westport, co. Mayo. Mr. Larbalestier.

WALES:—South Wales. Dr. Holt.

Var. ulothrix, (Ach.) base of receptacle of apothecia nigro-fibrillos.

On trees, &c. 1807.


FIG:—E. Bot. 1696. (lower fig.)


GEOG. DISTRIBUT:—Europe.

BOT. PROV:—2, 3...5...15...19...26...30, 31.


SCOTLAND:—Glen Fendor, Blair Athole, Rev. J. M. Crombie.

IRELAND:—Near Belfast. Mr. Templeton. Dunkerron. Dr. Taylor. Road to Recess. Mr. Larbalestier.


8. P. adglutinata, (Flk.) olivaceo-virescent, dark, orbicular, imbricato-stellate, lacinia narrow, closely appressed, multifid, surrounding the leprose sorediate centre; (medulla K.—C.—); spermatia long acicular.

On trees, walls, &c. 1810.

SYN:—Flk. in Moug. St. Vog. 543. (1818).

FIG:—Hepp Sporen t. 7. f. 55. E. Bot. t. 2158.


GEOG. DISTRIBUT:—Europe, Cuba.

BOT. PROV:—1, 2...4...19...26...30...31.


CHANNEL ISLANDS:—St. Ouen’s, Noirmont, Jersey. Mr. Larbalestier.
"f. sorediata, (Nyl.) albido-glaucouscent, closely appressed, laciniae broader, dilated at the extremities, margins and centre sorediata.
On walls and trees, uncommon. 1875.

IRELAND:—Base of Letter Hill! near Letterfrack, co. Galway. Mr. Larbalestier. (1875.)

9. P. retrogressa, (Strtm.) like P. stellaris, medulla K—and spores somewhat smaller .003—.018 mm. long, .007—.009 mm. broad.
On trees. 1875.

SCOTLAND:—Near Altnaharra, co. Sutherland. Dr. Stirton. (1875.)

§§ thallus and medulla K+C+

10. P. leucomela, (L.) whitish or albido-glaucouscent, subcaspitose, lineari-laciniate, laciniae lax, diffuse, sub-ascending, margin nigro-fibrilloso-ciliate, under surface subcanalicate or plane, albo-granulose; apothecia cæsio-pruinose, margin radiato-coronate; spores 8, fuscous, elongato-oblong, 1-septate; (thallus and medulla Ky Cy.)
Amongst grass, &c. 1813.

Fig:—E. Bot. 2548. Hepp Sporen t. 66. f. 573.
Larb. 69.

GEOG. DISTRIB:—Europe, Asia, Africa, America, Australasia,
Bot. Prov.:—1...16...31.
IRELAND:—Ballycotton! near Cork and on Cape Clear Island. Mr. Carroll.
CHANNEL ISLANDS:—Jerbourg and S.W. point of Bocquaine Bay. Mr. Lukis.
Grosez Castle, Quenivals, Jersey! Bruchere. Mr. Larbalestier.
"Spores .035—.060 mm. long, .018—.025 mm. broad." (Nyl.)

11. P. speciosa, (Wulf.) white or albo-cinerascents, stellato-laciniate, laciniae narrow, multifid, plane, sub-imbricate, somewhat ascending at the apices, under surface plane albo-flocculose, rhizine and marginal ciliæ whitish; apothecia fuscous, margin sub-entire or crenulate, incurved; spores 8, fuscous, oblong, 1-septate; (medulla K yellow C yellow).
On trees and rocks. 1809.

Mudd Man. 107.
Fig:—E. Bot. 1979.
Langob. 56.

GEOG. DISTRIB:—Europe, Asia, Africa, America, Polynesia, Australasia,
Bot. Prov.:—1...15, 16...19...30, 31.
ENGLAND:—Foldescco, Cornwall. Mr. Borrer. Bolt Head, S. Devon. Dr. Holt.
Mr. Larbalestier.
"Spores .004 to .0045 in. long, by .00175 to .002 in. broad." (Mudd.) "Spores .025—.036 mm. long, .012—.017 mm. broad." (Nyl. & T. M. Fr.)"
Var. hypoleuca, (Ach.) under surface of thallus white, rhizina and marginal cilia black.

On rocks. 1875.


Fig.:—Fig. Ess. Suppl. t. 38. f. 2.

Exs.:—Wright 89. Spruce 162. 153.

Geog. Distribs.—North and Central America, Cape of Good Hope, Island of Bourbon, East Indies, Java, Cuba, Ceylon, Mauritius.

Bot. Prov.:—15...26.

Scotland.—Glencoe. Dr. Macmillan. (1875.)

Ireland.—Dawro's River. Mr. Larbalestier.

12. P. erosæ, (Borr.) greyish or glaucous-white, crowded, imbri- cate, rotundo-abbreviato-laciniate, minutely-albo-granulate, margins of laciniae minutely jagged or crenulate, frequently ascending and granulate; apothecia fuscous-black, margin sub-entire; spores 8, fuscous, oblong, 1-septate; (thallus Ky Cy).

On trees, walls, &c. 1837. rare.

The surface of the thallus is minutely albo-granulate not subcortically albo-maculate as in P. stellariis and its varieties.


Fig.:—E. Bot. Suppl. 2807.


Geog. Distribs.—Europe.

Bot. Prov.:—1, 2, 5...10...15, 16...19...31.


Scotland.—Connel Ferry, Argyshire. Mr. Borrer. Will's Braes; Auldbar. Mr. Gardiner.

Ireland.—Dargle. Dr. Taylor.

Wales.—Llanaber! near Barmouth. Rev. T. Salwey. Aberdovey!

Channel Islands.—Quennvais; St. Ouen's Bay! Jersey! Mr. Larbalestier. Guernsey. Rev. T. Salwey.

13. P. astroidea, (Clem.) greyish-white, orbicular, thin, closely appressed, almost entirely granulose or leprose, lacinii-figurate at the circumference; apothecia fuscous-black, naked or pruinose; spores 8, fuscous, elliptico-oblong, 1-septate, cells nucleolate; (medulla Ky Cy).

On trees, rare. 1807.


Fig.:—E. Bot. 1779. Linn. Trans. t. 13. f. 1. Hepp Sporen t. 69. f. 601.


Geog. Distribs.—Europe, America.

Bot. Prov.:—1, 2, 3, 4...7, 8...10...19...24...31.


Ireland.—Tervoe near Limerick! and Dinis, Killarney. Mr. Carroll. Dunkerton; Blackwater Bridge, Kerry. Dr. Taylor.

Wales.—Barmouth! Rev. T. Salwey.

Channel Islands.—Jersey. Mr. Larbalestier.

"Spores .0045 in. long, by .0015 to .002 in. broad." (Mudd.) "Spores .017—26 mm. long, .008—.011 mm. broad." (Nyl.)

Var. elegans, (Nyl.) albo-glaucescent, margins of laciniae delicately isidiioso-fimbriate.

Ireland.—South side of Kylemore Lake, Galway. Mr. Larbalestier. (1876.)
14. *P. tribacoides* (Nyl.) nearly similar to *P. tribacia*, (Ach.) Nyl but the white soredia arranged as those of *P. casia*, and the thalline and medulline reaction with K+; apothecia insufficiently developed.

On young trees. 1874.

SYN:—Nyl. in Flora 1874, p. 307.

**Geog. Distribs:**—Western France.

**Bot. Prov:**—2.


15. *P. stellaris*, (L.) white or albo-glaucescent, orbicular, stellari-appressed, laciniae multifid, contiguous, subcortically albo-maculate, under surface whitish with concolorous or, fuscous or nigricant fibrillae; apothecia fuscous-black or black, naked or cesso-pruinose, margin entire or obsolescently crenulate; spores 8, fuscous, oblong, 1-septate; cells nucleolate.

All the varieties or forms of *P. stellaris* may be recognized by the sub-cortically albo-maculate thallus.

On trees. 1724.


**Fig.**—Reich. and Schub. 86. Hfm. En. t. 13. f. 1. 2. Tul. Mem. t. 1. f. 8—16.


**Bot. Prov:**—1...3, 4, 5, 6, 7...10...11...14...15...19...31.


**Scotland:**—Glen Nevis. Dr. Lindsay. Forfarshire. Mr. Gardiner. Swanston Wood, near Edinburgh. Dr. Greville.

**Ireland:**—Great Island. Cork! Mr. Carroll. Wales:—Barmouth! Aberystwith! Miss Atwood. Llanbedrog! Edderton! Forden, Montgomeryshire. near Tremadoc! "Spores .004 in. long, by .00175 to .002 in. broad." (Mudd.) "Spores .016—23 mm. long, .008—.011 mm. broad." (Nyl.) "Spores .016—24 mm. long, .008—11 mm. broad." (T. M. Fr.)

Var. leptalea, (Ach.) narrowly laciniate, laciniae appressed, sub-cortically albo-maculate, margins albo- or fuscensenti-fibrilloso-ciliate.

On trees and stones.


**Fig.**—Jacq. Coll. 4. t. 6. f. c.


**Geog. Distribs:**—Europe.

**Bot. Prov:**—3...5...7...10...11...19...30.


**Scotland:**—Grampians, common. Rev. J. M. Crombie.

**Ireland:**—On trees and stones. frequent. Mr. Carroll.

**Wales:**—Edderton! Montgomeryshire.
Var. tenella, (Scop.) narrowly lacinate, subcortically albo-maculate, effuse, crowded, ascending, tubuloso-inflated or fornicate at the apices, margins albo-fibrilloso-ciliate.

On trees and stones. 1724.


GEOG. DISTRIBUTION:—Europe.

BOT. PROV.:—1, 2, 3, 4, 5, 6, 7, 8...10, 11...14...19, 20...26...31.


Var. caesia, (Hffm.) whitish or albo-glaucescent, or albo-caesious, stellato-orbicular, multifido-lacinate, laciniae narrow, convex, contiguous, subcortically albo-maculate, aspersed with caesious or albo-caesious pulvinate soredia.

On trees, &c. 1793.


GEOG. DISTRIBUTION:—Europe, N. America.

BOT. PROV.:—1...3, 4, 5...7...11...14, 15, 16...19...30...31.


IRELAND:—On rocks frequent. Mr. Carroll.

WALES:—Aberdovey! Rev. A. Bloxam. between Towyn and Craig Aderyn! Barmouth!


Var. sub-obscura, (Nyl.) cinerascen, similar to caesia, but without soredia.

LOCALITIES:—On granite rocks, La Moye! Jersey. Leanane! Galway. Mr. Larvaletrier. (1876.)

Var. fimbriatula, (Strum.) Similar to P. tenella, but with longer narrower laciniae and generally albo-sorediate extremities, fibrilloso-ciliate on the margin, the cilia long and most frequently digitato-divided at their extremities.

On rocks. 1875.


SCOTLAND:—Ben Lawers. Dr. Stirton. (1875.)

Exs.:—*Arm. 533. Lojka 1519.*

Geog. distrib.:—Transylvania.

Bot. prov.:—10.

England:—Yorkshire. Mr. Mudd.

C. *thallus fuscens, K—C—.*

17. *P. aquila* (Ach.) *castaneo-fuscescens, opake, sub-orbicular, appressed, narrowly laciniate, laciniae linear-multipartite, plane or sub-convex, stellate, imbricato-congested, under surface pale, nigricanti-fibrillose; apothecia adnate, fuscos-black, margin sub-entire or crenulate; spores 8, fuscos, oblong, 1-septate; medulla K—C—.*

On maritime rocks chiefly. 1741.


Exs.:—E. Bot. 983. Hepp Sper. t. 69. f. 602.


Geog. distrib.:—Europe, Asia, N. America.

Bot. prov.:—1... 5. 6. 7... 14, 15... 18... 26... 30, 31.


“Spores .067 in long. by .0085 in. broad.” (Mudd). “Spores .032—44 mm. long, .015—26 mm. broad.” (Nyl) “Spores .030—44 mm. long, .018—25 mm. broad.” (T. M. Fr.)

Tribe XIII. Gyrophorei.

Characters the same as those of the only genus *Umbilicaria.*

I. *Umbilicaria, Hoffm.*

Thallus membranaceous, monoplyllous, unamblicily affixed. *Apothecia simply lecideine or patellaroid, complicato-compound
or gyrose. Paraphyses distinct. Sterigmata articulate. Spermatia slender, shortly cylindrical, obtuse at both apices.

1. *U. pustulata*, (Hoffm.) *thallus thin*, torn and lobed, papillosely and naked on both sides; upper side pale olive-green, blistered and sprinkled with fibrous glomeruli; under side brownish, deeply foveolate; spores one or two, very large, oblong, pale, wrinkled or reticulated on the surface; medulla K—C red.

On rocks and stones in mountainous districts, not uncommon. 1741.


**Fig.** — *Hffm. Pl. I. t. 28. f. 1. 2. E. Bot. 1283. Leight. Brit. Umbill. Fig. 1. Hepp Sporen t. 14. f. 118.


**Bot. Prov.** — 1...5, 6, 7, 8, 9, 10...12...16...19...22...31.


**Channel Islands.** — Gorey and La Moye, Jersey; Mr. Labasteier. near Petit Bo, Guernsey. Mr. Lukis.

Consult Flora 1879 p. 308. "Spores .007 to .01 in. long, by .005 to .007 in. broad, t. 2. f. 35." (Mudd.) *Spores*. .028—70 mm. long, .018—38 mm. broad. (Nyl.) *spores*. .040—70 mm. long, .018—34 mm. broad. (T. M. Fr.) *spores*. .057 mm. long, .018 mm. broad.

2. *U. polyphylla*, (L.) *dark greenish-copper colour, thin, unequally lobed, naked and smooth on both surfaces, under surface black; apothecia slightly complicate; spores 8, colourless, ellipsoidal, simple; medulla K—C faint red.

On mountainous rocks, not uncommon. 1741.


**Fig.** — *E. Bot. 1282. Hffm. t. 59. f. 2. Leight. Br. Umbill. f. 2.

**Geog. Distri.** — Europe, Asia, America.

**Bot. Prov.** — 1...5...7, 8, 9, 10, 11, 12...14, 15...17...19.

**Forma monophylla.** T. & B. *thallus of a single peltate leaf.*


**Fig.** — Hepp Sporen t. 83. f. 717.


“Spores .003 to .0035 in. long. by .001 to .0015 in. broad. t. 2. f. 26.” (Mudd.)

“Spores .013—18 mm. long. .007—8 mm. broad.” (Nyl.) “Spores .012—18 mm. long. .005—8 mm. broad.” (T. M. Fr.)

Forma congestata, (T. & B.) thallus small, clustered, much curled, edges erect or reflexed.


Bot. Prov.—5—7...10...12.


Wales:—Cwm Tryfena! Pass of Llanberis! Arran Mowddwy! Cwm Bochlwyd! Glyder Yach!

The states monophylla and congestata grow together in some abundance on the Wrekin and adjoining hills, and may be seen passing into each other by every degree of gradation.

Forma sulcata, (T. & B.) upper surface of thallus marked with superficial cracks.


Scotland:—On Ben Ferg! by Loch Erricht, Invernessshire. Mr. Borrer. Cloya! Mr. G. Lawson.

“Thallus somewhat thicker than in f. monophylla, simple or more or less compound; upper surface marked with a few superficial undulating indented lines, the edges of which occasionally separate so as to leave a smooth black interstice, under surface as in monophylla but more commonly blotched with the paler colour of the upper side.”—Lich. Brit.

This state seems apparently a transition to hyperborea.

Forma lacera, (Leight.) thallus very deeply divided, divisions lacer-lobate.


Exs:—Hepp 718.


Wales:—Bettwys-y-coed!

The mode of division of the margins of this state is different from that of the preceding ones, and assimilates to that observable in anthraeina.

3. U. flocculosa, (Wulf.) greenish copper-colour, simple or clustered or squamigerous, thin, unequally lobed, edges sometimes ragged and erose, upper surface dotted and rough with sooty granulations, under surface black naked pitted; apothecia slightly complicate; spores 8, colourless, oblongo-ellipsoid, simple; medulla, K—C red.
On mountainous rocks, not uncommon. 1785.


Geog. Distrib.:—Europe.

Bot. Prov.:—1...5...8...10, 11...14, 15, 16.


"Spores .015—27 mm. long, .007—9 mm. broad." (Nyl.) "Spores .015—21 mm. long, .007—8 mm. broad." (T. M. Fr.)

4. U. hyperborea, (Ach.) dark greenish-brown, thin, jagged, and somewhat lobed, slightly perforated, naked on both sides, upper surface rugosx-pustulate, under surface blackish-brown, nearly smooth, slightly lacunose; apothecia complicate; spores 8, colourless, ellipsoid, simple; medulla K—C red.

On alpine rocks, very rare. 1790.


Geog. Distrib.:—Europe, America.

Bot. Prov.:—9...15...19.

England:—Clougha, Lancashire. Mr. Jacob.


Ireland:—Brandon Mountains, Kerry. Dr. Moore.

Mr. Borrer sought for the plant in vain in the particular station specified by Mr. Brodie.

"Spores .003 in. long, by .0015 in. broad." (Mudd.) "Spores .013—16 mm. long, .007—8 mm. broad." (Nyl.) "Spores .010—16 mm. long, .005—8 mm. broad." (T. M. Fr.) Spores .009 mm. long, .0045 mm. broad.

5. U. arctica, (Ach.) dark greenish-brown, thickish, slightly lobed, crenate, naked, upper surface granulato-corrugate, under surface pellucident, minutely depresso-granulate; apothecia complicate; spores 8, colourless, ellipsoid, simple; medulla K—C red.

On alpine rocks, very rare. 1798.


Geog. Distrib.:—Europe, N. America.

Bot. Prov.:—1...11...15.


6. U. erosa, (Web.) greenish-brown, thickish, splitting when old into two or three lamina, jagged and somewhat lobed, perforated, upper surface naked, divided by flexuose anastomosing black
indented lines, with convex areolae, under side paler, coarsely papillose, separately perforated, laciniate-fibrilllose; apothecia complicate; spores 8, colourless, ellipsoid, simple; medulla K—C red.

On alpine rocks, frequent. 1741.


"Speros .003 in. long, by .0015 in. broad." (Mudd) "Speros .011—12 mm. long, .007 mm. broad." (Nyl.)

7. U. polyrhiza, (L) greenish-copper colour, smooth, thin, unequally lobed and crenate, under surface black, papilloso-granulate, reticulated, fibrilloso-pannose; apothecia gyro-complicate; spores 8, colourless, elliptico-oblong, simple; medulla K—C red.

On alpine rocks, frequent.


IRELAND.—Toullagee, co. Wicklow. Dr. Taylor.

WALES.—Llyn Lidyaw, Snowdon; Llyn Cwm y Ffynnon las; Cwm Brwynog towards Ardud near Llanberis. Dillenes. Carnedd Llewelyn; Moel Slabod; Mr. Griffith. Cwm Bychan, Barmouth! Rev. T. Salwey. Cwm Ffynnon Iloer! Cwm Ffynnon Llugwy!

"Speros .0035 in. long, by .001 to .0015 in. broad." (Mudd.) "Speros .008—.011 mm. long, .0045 mm. broad." (Nyl.) "Speros .008—11 mm. long, .004—5 mm. broad." (T. M. Fr.)
Var. luxurians, Ach. polyphyllous, complicate, deeply incised & incimate.

On alpine rocks.


Scotland:—Highlands. Rev. J. M. Crombie.

8. U. grisea, (Sw.) ashy-grey or mouse-coloured, thin, somewhat lobed, crenate, minutely areolato-papillate, under surface blackish, naked, minutely granulato-areolate or scabrid, granules pale as if rubbed; apothecia gyrose; spores 8, colourless, ellipsoid, simple; medulla K—C red.

On maritime rocks, very rare. 1866.


Geog. Distr.:—Europe.

Channel Islands:—Beauport! East Coast of Jersey! Mr. Larbalestier.

"Spores .003 to .0035 in. long, by .001—.015 mm. broad." (Mudd.) "Spores .014—.18 mm. long .006—.010 mm. broad." (Nyl.)

9. U. proboscidea, (L) cinereo-nigrescent, thin, crenate, slightly lobed, pale pruinose, grey in the centre where it is marked with elevated, reticulated veins, the other portion rugose, under surface smooth, cinereo-pallascents; apothecia gyroso-plicate; spores 8, colourless, ellipsoid, simple; medulla K—C red.

On alpine rocks, frequent. 1741.


Fig.:—E. Bot. 2484. Leight. Br. Umbil. fig. 15.
EXS.:—Scher. 148. Anzi It. S. 77. Fr. 128. Tuck. 49.

Geog. Distr.:—Europe, Asia, America.
Bot. Prov.:—1. 5...11...15...19...22.


Lochnagar! Hills east of Glen Callater! Ben Nevis! Dr. Lindsey.

Ireland:—Brandon, co. Kerry. Miss Hutchings.

Wales:—Rocks. Sir J. E. Smith. Cwm Tryfan!

"Spores .0035 to .004 in. long, by .015 to .00175 in. broad." (Mudd.) "Spores .012—.18 mm. long .006—.008 mm. broad." (Nyl.) "Spores .011—.18 mm. long .005—.007 mm. broad." (T. M. Fr.)

forms fimbriata, (T. & B.) thallus edged with a few black branched tooth-like fibres; medulla K—C red.

On alpine rocks.

EXS.:—M. & N. 249.

England:—Swinhope Fell! Durham. Mr. Mudd.

Scotland:—Highlands; Mr. Borrer. between Glen Callater and Lochnagar! Mr. Tatham.

Loch Phadrick! Mr. Gardiner. Inchnadamff! Sir W. C. Trevillyan.
Ireland:—Glenmalure! co. Wicklow. Mr. Carroll.

Similar in substance, color, and every other respect except in having the edges of the thallus here and there toothed and fringed with a few scattered black branching fibres. There are also occasionally a few fibres sprinkled over the underside.

forma corrugata, (Hoffm.) thallus thin, rough with elevated reticulations; medulla K—C red.

On alpine rocks.


Fig.:—Hoffm. Pl. L. t. 43. f. 4. 7.

Scottland:—Highlands! Mr. Borrer.

Similar in all respects, except in its upper surface having extremely prominent reticulations, rising to nearly a line in height, and looking like a series of erect curled squamae.

forma mesenteriformis, (Wulf.) thallus thickish, upper surface rough with elevated reticulations and somewhat papillose; medulla K—C red.

On alpine rocks.


Fig.:—Jacc. Misc. t. 9. f. 5.

Exs.:—Scher. 147.

Scottland:—Highlands! Mr. Borrer.

Upper surface of the thallus singularly rugose, almost papillose. The reticulations nearly as prominent as in f. corrugata, and sometimes growing out into leaves: substance considerably thicker than in the other state.

10. U. cylindrica, (L.) dull greenish-brown, or cinerascen, thickish, unequally lobed, margins nigro-fibrilloso-ciliate, upper surface rugulose, under surface pallescent, more or less fibrillose; apothecia concentrico-gyrose, podicellate; spores 8, colourless, elliptical, simple; medulla K—C.

On alpine rocks, frequent.


Fig.:—E. Bot. 523. (two upper fig.) Hoffm. Pl. L. t. 44. f. 1—6. Leight. Br.-Umbil. fig. 16. 17. 18.


Geog. Distribr.: Europe, America, N. Holland.

Bot. Prov.:—1...7,..10. 11. 12,..15. 16...18. 19...25. 26.


Ireland:—Connavalla. Dr. Whitey Stakes. Mangerton. Dr. Taylor. on mountain rocks, frequent. Mr. Carroll. summit of Doughrugh! co. Galway. Mr. Larbalestier.


"Spores.003 in. long, by.0015 in. broad." (Mudm.) "Spores.010—14 mm. long, .006—.008 mm. broad." (Nyl.) "Spores.012—16 mm. long, .007—.008 mm. broad." (T. M. Fr.)
forma denticulata, (Ach.) margins of thallus coarsely fringed and toothed; medulla K—C—.

On alpine rocks.


Fig.:—E. Bot. 522. (two lower fig.) Dill. t. 29. f. 116. B.

Exs:—Scher. 144.

Scotland:—Loch Phadrick! Ben-na-Bourd! Mr. Gardiner. Cléve! Mr. Lawson.

Ireland:—Galtymore! co. Tipperary. Mr. Carroll.

Wales:—Arran Mowddwy! Mr. Borrer.

In all respects similar, except that the marginal fibres are coarser and larger, and more evidently a prolongation of the thallus.

forma exasperata; (T. & B.) margins of thallus almost naked; medulla K—C—.

On alpine rocks.


Fig.:—Hflm. PL L. t. 44. f. 7.

Exs:—Scher. 145.

England:—Falcon Clints! Westmoreland Mountains! Mr. Borrer.

Scotland:—Highlands. Messrs. Turner & Borrer.

Wales:—Summit of Glyders! Mr. Borrer.

forma exasperata, (T. & B.) thallus polyphyllous, ragged, upper surface rugose, margins undulate and crisped, medulla K—C—.

On alpine rocks.


England:—Durham. Mr. Robson.

Scotland:—Cléve! Mr. G. Lawson.

Remarkably curled and undulated, and divided into numerous small irregular lacunae; upper surface remarkably rough.

Series V. PLACODEI.

Thallus crustaceous, squamose, radiate, granulose, powdery or evanescent. Apothecia lecanorine or lecideine, or biatorine or lirelliform.

Tribe XIV. LECANO'REI.

Thallus various. Apothecia lecanorine or sub-lecanorine or pseudo-biatorine.

Sub-tribe I. PSOROMEI.


I. PSOROMA, Fr. pr. p. Nyl.


I. P. hypnorum, (Vahl.) flavido-fuscescent or brownish-yellow, squamuloso-granulate, squamulæ crenate or sub-granulose; apo-
thecia rufous or fuscescent, moderately large, margin elevated granuloso-crenate; spores 8, colourless, ellipsoid, apices rather acute, sub-crenulate.

On mosses or earth, not common. 1793.


Fig.—E. Bot. 740. Hfnn. Pl. L. t. 63 f. 4—7. 70 E E

Exs.—Scher. 546. Tuck. 20. Fr. 162. 359. Anzi Langob. 64. and 65. Larbal. 70. E E

Geo. Distrib.—Europe, America. 70 E

Bot. Prov.—2, 3, 4, 5., 11, 12, 13, 14, 15 .. 30, 31. 10 E

England.—Ludlow, Shropshire. Dr. Babington. Yorksh. Mr. Turner. 10 E


Eglestone, Durham. Rev. J. Harriman. near Brighten, Sussex. Mr. Hemmings. Hay Crag Wood; Eglestone and Middleton; Teesdale Forest, Durham; Gunnerston Crags near Barwesford; Shewing Shields; Cheviot, Northumberland. Mr. Winch. Shoreham, Sussex. Mr. Larbalestier. Malvern. Dr. Holt. Cowley Bridge road, Exeter. Mr. Parfitt. 10 E

Scotland.—Rosslyn Wood. Mr. Maughan. Pentland Hills. Dr. Greville. 10 E


Ireland.—Near Belfast. Mr. Templeton. near Killarney. Dr. Taylor. near Carnlough, Co. Antrim. Adm. Jones. 10 E

Channel Islands.—Grosnez, Jersey; Eperquerie, Sark. Mr. Larbalestier. 10 E

“Spores .004 to .006 in long, by .00175 to .002 in. broadband.” (Mudd.) “Spores .016—.21 mm. long, .008—.011 mm. broadband.” (Nyl.)

SUB-TRIBE II. PANNARIEI.

Thallus laciniate-radiate or squamulose or granulose, cellulose, with granula gonima. Apothecia lecanorine or biatorine. Spores 8, colourless, ellipsoid, simple or 1-septate. Sterigmata plur articulate.

II. PANNARIA. Del.

Characters as above.

A. Spores simple.

1. P. rubiginosa, (Thunb.) livido-glaucescent or pale, laciniate, laciniae pressed, nearly plane, inciso-lobulate and crenate, upper surface very minutely areolato-granulate, edges somewhat thickened, silverly-whitish and upturned, under surface tomentose, ceruleo fuscescent; apothecia rufous, margin crenulate; spores 8, colourless, ellipsoid, apices rather acute, simple.

On mossy rocks and trees. 1801.


Fig.—E. Bot. 983. Hepp Spore t. 69 f. 606. 10 E


Geo. Distrib.—Europe. America. 10 E

Bot. Prov.—1, 2, 5, 7—10, 11, 12, 13, 15 .. 30—31. 10 E


IRELAND:—Killarney. Dr. Carrington. frequent in the mountainous districts. 
Mr. Carroll. Glendalough! Derryclare Island! Connemara. Mr. Larbalestier.
WALES:—Barmouth! Valley above Halfway House; and above Borthwnog, 
Rev. T. Salwey.
CHANNEL ISLANDS:—Jerbourg, Guernsey. Mr. Larbalestier.
"Spores .0035 to .004 in. long, by .0015 to .002 in. broad." (Mudd.) "Spores .017—25 mm. long, .007-.010 mm. broad." (Nyl.)

Var. carruleo-badia, (Schleich.) centre of thallus and margins casio-pulverulento-sorediace.
On trees.

Fig:—Mass. Rle. fig. 219. Hepp Sporen t. 69 f. 607.
Geog. Distrib:—Europe.
Bot. Prov:—5...7...12...15...19—26—30...31.


IRELAND:—On rocks not unfrequent. Mr. Carroll. Derryclare Island! co. Galway, Mr. Larbalestier.
WALES:—Valley above Halfway House; and above Borthwnog near Barmouth, Rev. T. Salwey, Dolgelley! Glyn, near Capel Curig! Drwsynant! Capel Arthog! Llyn Gwerman!
CHANNEL ISLANDS:—Jerbourg, Guernsey! Rozel, Jersey. Mr. Larbalestier.

3. P. leucolepis, (Whlndb.) albo or livido-cinerascent, squamulose, squamulae imbricate verrucoso-arcololate in the centre, those towards the circumference appressed, radiato-lobate, dilated, sub-crenate, slightly longitudinally striated, apothecia black, plane, margin tumid, crenulate, spores 8, colourless, ellipsoid, simple.
On micaceous rocks, rare. 1811.

Fig:—E. Bot. 2283.
Exs:—Leight. 267. Anzi Langob. 27.
Geog. Distrib:—Europe.
Bot. Prov:—15...26.

IRELAND:—Dawros river! co. Galway. Mr. Larbalestier.
"Spores .003 to .004 in. long, by .00125 in. broad." (Mudd.) "Spores .015—.017 mm. long, .009—.010 mm. broad." (Nyl.)

4. P. pezizoides, (Web.) brown, cervine or cinereo-fuscescent, granulato-squamulose, densely imbricate, squamulae small crenate; apothecia testaceo-rufous or rufo-fuscescent, margin crenulate; spores 8, colourless, ellipsoid, simple.
On the earth amongst moss and on rocks, frequent.

Fig:—E. Bot. Suppl. 2801.
Geog. Distrib:—Europe.
Bot. Prov:—2, 3, 7...10...12...15...19...26...31.

Scottland:—Kenmore; Ben Lawers. Dr. Holt. abundant in the Grampians. Rev. J. M. Crombie.

Ireland:—Bantry, Miss Hutchinson. Cromaglan. Dr. Carrington. Lough Inagh, Connemara (on decayed holly). Mr. Larbalestier. (1875.)

Wales:—Cwm Bychan near Barmouth! Rev. T. Salwey, Tygwyn, Dolgelley. Dr. Holt. Cwm Cywion!

Channel Islands:—Guernsey. Rev. T. Salwey.

"Spores .005 to .006 in. long, by .002 to .00235 in. broad." (Mudd). "Spores .016—.027 mm. long, .007—.010 mm. broad." (Nyl.) Spores .023—.0235 mm. long, .011 mm. broad.

Var. coronata, (Ach.) ceruleo-cinerascens, minutely granuloso-subpulverulent; apothecia small, reddish-brown, margin granulose.

On the earth in mossy shady places, frequent. 1796.


Fig:—E. Bot. 1246.


Geog. Distrib:—Europa.

Bot. Prov:—.1...5...7...11. 12, 13, 14, 15...19...31.


Ireland:—Killarney. Dr. Carrington. frequent in subalpine situations. Mr. Carroll.

Wales:—Bangor. Mr. Turner. Barmouth! Gwydir!


"Spores .004 in. long, by .0015 in. broad." (Mudd.) Spores .019—.020 mm. long, .003—.009 mm. broad.

5. P. microphylla, (Sw.) cervine or livido-cinerascens, squamuloso-crustaceous; areolato-diffract, squamulae minute, crenate, closely imbricate, whitish at the edges, under surface nigricant; apothecia fuscos or rufescent; convex, pale within, margin ultimately obliterated; spores 8, colourless, ellipsoidal, simple.

On trees and rocks, very rare. 1799.


Fig:—E. Bot. 1247. Hepp Sporens. t. 69. f. 608.


Geog. Distri:—Europe, Asia, Africa, N. America.

Bot. Prov:—1...4...19...26...31.

England:—Cromwell; Yarmouth. Mr. Turner.

Ireland:—Killarney. Dr. Moore. Dawros river! co. Galway. Mr. Larbalestier.

Channel Islands:—Jerbourg, Guernsey; Rozel Tower, Jersey; L'Eperquerie, Sark! Mr. Larbalestier.

"Spores .003 to .0035 in. long, by .001 to .0015 in. broad." (Mudd.) "Spores .010—.017 mm. long, .005—.01 mm. broad." (Nyl.) Spores .015—.016 mm. long, .007—.009 mm. broad.

6. P. triptophylla, (Ach.) fusco-cinerascens, squamulose, orbicular or irregular; squamulae membranaceous, lacinato-lobate, crenate, appressed or microlepideo-granulose or coralloideo-squamulose, compact, areolato-diffract, hypothallus cæruleo-nigricant; apothecia fuscos or rufus-fuscescent, hypothecium fusco-nigricant, margin pale, persistent; spores 8, colourless, ellipsoidal, simple; gelatina hymenea blue with iodine.
On trees, rare. 1799.


FIG:—E. Bot. 2128. Schrad. t. 1. f. 4. Hepp Sporen t. 69 f. 610. 


GEOG. DISTRIB:—Europe, N. America. 

BOT. PROV:—1, 2,... 7,... 15, 16, 17,... 19,... 30. 


Spores .003 to .004 in. long, by .00125 to .0015 in. broad.” (Mudd.) “Spores .012—19 mm. long, .006—8 mm. broad.” (Nyl.) Spores .017—.020 mm. long, .007—.008 mm. broad. 

forma nigricans, (Leight.) thallus intensely black; apothecia rufo-fuscous, margin pale persistent; spores 8, colourless, ellipsoid, simple. 

On ash trees, rare. 1876. 

BOT. PROV:—7. 

WALES:—Llyn Gwernan! (1876.) 

Spores .0235 mm long, .0095 mm. broad. 

7. P. lasiella, (Stirt.) dark or nigricanti-virescent, microlepideto-squamulose or minutely coralloideo-granulose, thickish; hypothallus black, thick, spongioso-context, with radicles; apothecia black, lecideine or sometimes darkly rufous, round or flexuose, innato-sessile, plane, acutely margined; spores colourless, ellipsoid or fusiformi-ellipsoid, simple, episporae somewhat crenulate; paraphyses distinct, articulate, the black apices conglutinate; hypothecium fuscoscent or in a thickish section fuscosus or fuscos-black. 

On Hepaticae (Frullaniae), rare. 1877. 

SYN:—Stirton in Scottish Naturalist 4. 164. (1877.) 

BOT. PROV:—17. 

SCOTLAND:—Near Garve. Dr. Stirton. (1877.) 

“Spores .014—.018 mm. long, .007—.009 mm. broad. Gelatina hymeniae blue, then vinous-red or vinous-fulvaceous. Intermediate between P. triplophylla and P. nigra, but nearer the former.” (Stirt.) 

8. P. nebulosa, (Hffm.) cinereous or darkly casio-cineraescent, granulato-crustose, granules thin, imbricato-congested, crenate, forming a thin crust; apothecia biatorine, rufous or rufo-fuscous, small, plane or slightly convex and crowned with the thallus; spores 8, colourless, ellipsoid or oblong, simple. 

On the earth, very rare. 1869. 


EXS:—Nyl. 114. 

GEOG. DISTRIB:—Europe. 

BOT. PROV:—15,... 31. 


CHANNEL ISLANDS:—Trinity and Quenvais, Jersey. Mr. Larbalestier. 

“Spores .015—24 mm. long, .006—9 mm. broad.” (Nyl.) 

f. coronata, (Flk.) apothecia lecanoroid, crowned with a granulose thalline margin, spores ellipsoid. 

On the earth, rare. 1876.
SYN :—Nyl. Scand. 125.
EXS :—Flk. D. L. 151.
GEOG. DISTRIB :—Europe.
BOT. PROV :—26.
IRELAND :—South side Killery Bay! Lettermore! Galway. Mr. Larbalestier.
(1786.)
Spores .027. mm. long, .011 mm. broad.

9. P. plumbea, (Lightf.) livido-cinerascent, submonophyllous, orbicular, adnate, frequently granulosorugose in the centre, radiato-incised, lacinia longitudinally radiato-plicato-rugose or striated, concentrically arculo-rugulose towards the margins, which are broadly expanded and crenate, hypothallus dark, plumbeo-carulescent, tomentoso-filamentose; apothecia reddish-brown, plane, margin paler, entire; spores 8, colourless, ellipsoid, simple.

On trees, rare. 1777.

GEOG. DISTRIB :—Europe, N. Africa.
BOT. PROV :—1, 2, 6, 7, 11, 12, 13, 15—19, 20...31.
IRELAND :—Killarney; Gouganebarra; Cork; &c. Mr. Carroll. Mucross; Killarney. Dr. Carrington. Derryclare Island! co. Galway. Mr. Larbalestier.
Gwydir Woods! Bettws-y-coed!
CHANNEL ISLANDS :—Guernsey. Rev. T. Salwey. Alderney; La Coupe, Jersey; Créichon! Mr. Larbalestier.
"Spores .003 to .004 in. long, by .001 to .00125 in. broad." (Mudd.) "Spores .014—.22 mm. long, .007—.09 mm. broad. (Nyl.)

f. myriocarpa, (Del.) centre of thallus granulosorugose or microphylline.

On trees, frequent.

SYN :—Nyl. Scand. 128.
BOT. PROV :—7—31.
WALES :—Beaumaris! Rev. A. Bloxam.
CHANNEL ISLANDS :—Jersey. Mr. Larbalestier.

B. Spores 1-septate.

10. P. nigra, (Huds.) dark cinereo-migrinant or fuscous-black or black, minutely and densely coralloideo-granulosocrustaceous, diffraeto-areolate, bounded by an expanded distinct bluish-black byssoid hypothallus; apothecia black, plane or slightly convex, margin entire, concolorous, hypothecium nigro-fuscous; spores 8, colourless, ellipsoid, 1-septate, cells nucleolate.

On calcareous rocks. 1778.

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Fig:—E. Bot. 1161. Nyl. Scand. fig. 2. b.


Bot. Prov:—1...2...5...7...8...10...11...15...26...28...30...31.


Scotland:—Ben Lawers. Dr. Holt. Crombie. En. 43. mentions a var. trisperata; Nyl. sporis 3-septatii, as occurring in Appin.

Ireland:—Armagh. Adm. Jones. near Belfast. Mr. Templeton. common on limestone rocks. Mr. Carroll. Glamorgan! Mr. Larbalestier.

Wales:—Denbighshire. Mr. Griffith. Egwyseg rocks!

Channel Islands:—Common on all the Islands. Mr. Larbalestier.

"Spores .011—16 mm. long. .005—7 mm. broad." (Nyl.) Spores .0125 — .0155 mm. long. .08—.06 mm. broad.

11. P. cheilos. (Nyl.) greyish or olive-brown, squamulose, squamulae corticis pinnatae, minute, rounded and turiged, dilated, inciso-lobate, crenate, crowded, imbricate, crustaceous, diffracto-areolate, hypothallus fusco-nigrum; apothecia subinnato-sessiles, fusciscescent, plano-convex, margin thin, entire or crenate; spores 8, colourless, elliptico-oblong or ovate, 1-septate.

On moist shady maritime rocks, rare. 1860.


Geog. Distrib:—Europe.

Bot. Prov:—19...24...29.

Ireland:—Stroove Head, Donegal. Prof. Dickie. Blackwater Bridge; Kilkee, Clare; Western Blasquet Island, Kerry! Mr. Carroll.

"Spores .004 to .005 in long. by .00125 to .00225 in. broad." (Mudd.)

12. P. carnosus. (Dicks.) livido-fuscescent or cervino-fuscescent, squamulosae-lobate, lobes variously divided or crenate-incised, margins thickenum grano-crenate, imbricate or adscendentii-congested, whitish beneath; apothecia fuscus or fusco-refescens, margin paler; spores 8, colourless, oblongo-fusiform or ellipsoids, 1-septate.

On mosses in sub-alpine localities. 1790.


Fig:—Dicks Br. 2. t. 6. f. 7. E. Bot. 1684.

Exs:—Fries 44. Anzi Langob. 86. 87. Scheur. 482.

Geog. Distrib:—Europe.

Bot. Prov:—1...5...7...11...12...15...16...19...23...26.


Scotland:—Highlands. Mr. Dickson. abundantly in a ravine at foot of Ben More, Perthshire; Loch Awe in Argyle; Glen Eyn; Ben Lawers! Rev. J. M. Crombie.


"Spores .005 to .007 in. long, by .0015 to .00175 in. broad. ii. 2. f. 39."
(Mudd.) "Spores .016—.031 mm. long, .005—.008 mm. broad." (Nyl.) Spores .024 mm. long, .006 mm. broad.

Var. determinata, (Nyl.) microphylline, sub-effuse, margin of apothecia reddish-yellow; spores pale, fuscescent, 1-septate.

On moist earth. 1860.

SYN:—Nyl. Lich. Scand. 128. (1861.)

GeoG. Distrib:—Scandinavia.

Bot. Prov:—29. 23...30.


C. Spores 3-septate.

13. P. psotina; (Ach.) Similar to P. nigra; apothecia internally whitish; hypothecium somewhat fuscescent; spores 8, colourless, ellipsoid, 3-septate, septa slender.

On calcareous stones. 1872.


GeoG. Distrib:—Scandinavia.

Bot. Prov:—2. 11.


Sub-tribe III. AMPHILOMEI.

Thallus monophyllo-lobate, submembranaceous, soft, pulverulent, containing granula goniata. Apothecia suttelliform, thalldally margined.

III. AMPHILOMA, (Fr. pr. p.) Nyl.

Characters as above.

1. A. lanuginosum, (Ach.) whitish or albo-fuscescent, adnate, lobato-dilated, lobes subimbricate, margins rotundato-crenate, granuloso-pulverulent, hypothallus tomentose, cæulescenti-nigricant; apothecia unknown.

On shaded mossy rocks, frequent. 1790.


GeoG. Distrib:—Europe, N. Zealand.

Bot. Prov:—5...7. 8...10. 11. 12. 15...19...30...31.


Ireland:—On moist mossy rocks not uncommon. Mr. Carroll.

Wales:—Dolgelley! Treffriw!

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SUB-TRIBE IV. SQUAMARIEI.

Thallus radioso-laciniate or cartilagino-squamose, often radiate.

IV. SQUAMARIA. DC.

Characters as above.

1. S. crassa, (Huds.) pale yellow or, whitish-green, squamoso-imbricate, squamæ cartilaginosæ, imbricated, lobato-crenate, more or less depressed, under surface brown; apothecia testaceo-rufous, plane, margin entire; spores 8, colourless, ellipsoid, simple.

On earth in limestone regions, frequent. 1741.


GEOG. DISTRIB.—Europe, Africa, Australasia.

BOT. PROV.:—1, 2, 5, 6, 10, 11, 14, 23, 27, 31.


CHANNEL ISLANDS:—Quenvais, Jersey; Coast of Herm! Mr. Larbalestier. Guernsey. Rev. T. Salwéy.

"Spores .0025 to .003 in. long, by .001 in. broad." (Mudd.) "Spores .011—14 mm. long, .005—6 mm. broad." (Nyl. & T. M. Fr.)

2. S. lentigera, (Web.) pale yellowish or greenish-white, orbicular, appressed, areolato-squamose in the centre, radiato-lobate at the circumference, rotundato-undulato-crenate, margin thickened, upturned, albo-pulverulent, under surface white; apothecia pallido-testaceous, margin entire; spores 8, colourless, ellipsoid, simple.

On chalky earth, rare. 1785.


GEORG. DISTRIB.—Europe, Africa.

BOT. PROV.:—2, 4, 5, 16.


SCOTLAND:—Ben Brecht, Argyleshire. Mr. Paterson.

"Spores .0025 to .003 in. long, by .001 in. broad, t 2, f. 40." (Mudd.) "Spores .002 mm. long, .005 mm. broad." (Nyl.) "Spores .011—12 mm. long, .005 mm. broad." (T. M. Fr.)
3. S. chrysolaeca, (Sm.) ochroleucus or whitish-strawcolour, lobato- 
squamos, squamine firm, imbricate, various in the circumference, 
lobate plane, crenate or crenato-incised, under surface pale, towards 
the circumference broadly-nigricant, peltato-affixed; apothecia reddish-
flesh-colour, moderate, generally crowded; spores 8, colourless, 
elipsoid, simple.

On alpine rocks, rare. 1874.

Fig.:—Hepp Sporen t. 20. f. 176. Linn. Trans. l. c. t. 4. f. 2.
Geo. Distr.:—France, Pyrenees, Norway, Lapland, Sweden, Italy, E. 
Indies.
Bot. Prov.:—16.
Scotland:—Ben Brecht, Argyleshire. Mr. Paterson. (1874.)
“Spores .009—.011 mm. long, .005—6 mm. broad.” (Nyl. & T. M. Fr.)

4. S. cartilaginea, (Westr.) cinereo-virens or albido-stramine-
ous, opake, cartilaginous, imbricate, multijudo-laciniae, laciniae 
linear, sinuato-flexuose, crenate, under surface whitish; apothecia 
carneo-testaceae, or fulvo-testaceae, plane, irregularly lobate, 
margin pale, persistent, inflexed, entire; spores 8, colourless, ellip-
soid, simple.

On maritime rocks, rare. 1800.

132. Mudd Man. 128.
Fig:—E. Bot. Suppl. 2802. Hepp Sporen t. 8. f. 59.
Exs.:—Zw. 188. Hepp 59. M. & N. 1056.
Geo. Distr.:—Europe.
England:—Yorkshire. Mr. Alexander. (1800).
Wales:—On rocks on the shore near outlet of Llyn Bodlyn, above Barmouth !
Ree. T. Salway.
“Spores .002 to .004 in. long, by .001 to .00125 in. broad.” (Mudd.) “Spores 
.011—.016 mm. long, .005—6 mm. broad.” (Nyl. & T. M. Fr.)

5. S. saxicola, (Poll.) ochroleucus or pallido-sulphureo-virens, 
cartilaginous, orbicular, appressed, areolato-imbricato-crustaceae at 
the centre, radiato-lobate towards the circumference, lobes contiguos, 
plane or suplicate, smooth, crenate; apothecia pallido-testaceae, 
or testaceo-rufescens, plane, margin entire or crenulate; spores 8, 
colourless, ellipsoid, simple.

On rocks, not unfrequent. 1785.

Man. 129.
Fries 163. Nyl. Fyr. or. 29. Reich. & Schub. 10. Leight. 145.
Geo. Distr.:—Throughout the world.
Bot. Prov.:—3. 4. 5. 7. 8...10. 11...15...(19—26—30)...31.
Cleveland. Mr. Mudd. Gunnerton Crags near Barnsford; near Warden Mill; 
Carham and Wark by the Tweed, Northumberland; near Urpeth; Cawsey 
Mr. Varene. Bedfordsire. Ree. C. Abbot. Tyweross Church, Leicestersire. 
Haughmond Hill! Caer Caradoc! Shropshire.
Scotland:—Clava; Reaky Linn; near Brechin; Balucholly; Broughty 
Castle; Hare Craigs; Ninewells; Paddock Stane near Invergowrie. Mr. 
Gardiner.
IRELAND:—On rocks, not unfrequent. Mr. Carroll, near Belfast. Mr. Templeton, Kerry. Dr. Taylor. Lough Inagh. Mr. Larbalestier.

WALES:—Llyn Geirionydd! Dolgelly! Diganwy! near Conway.


"Spores .0025 in. long, by .001 in. broad." (Mudd.) "Spores .010—16 mm. long, .006—7 mm. broad." (Nyl.) "Spores .009—15 mm. long, .005—7 mm. broad." (T. M. Fr.)

Var. diffracta, (Ach.) areolato-diffract, areolae contiguous, angular, nigro-marginate.

On rocks.


GEOG. DISTRIB:—Europe.

BOT. PROV:—5...7...19...15.


SCOTLAND:—Monument Hill, Perth! Abernethy! Ben Lawers! Dr. Lindsay.


WALES:—Criccieth Castle!

Var. versicolor, (Pers.) albo-flavescent, more or less albo-suffused, the upper surface of laciniae towards the circumference minutely albo-depresso-granulate, margin of apothecia entire, often albo-pulverulent.

On rocks and moss. 1856.


FIG:—Hepp Sporen t. 102. f. 899.


GEOG. DISTRIB:—Europe.

BOT. PROV:—2...5, 6, 7...15.

ENGLAND:—On roof tiles, Basingstoke! Hants! Mr. Rob. Southey Hill. (1856.)

SCOTLAND:—Craig Tulloch. Rev. J. M. Crombie.


Var. albo-marginata, (Nyl.) margins white.

On decayed mosses on walls.


Forma dispersa, (Leight.) albo-pulverulent, in scattered, distant, round, tumid, convex, minute masses, in which the minute apothecia are crowded and imbedded.

On calcareous rocks, rare. 1874.

WALES:—Great Orme's Head! (1874).

6. S. gelida, (L.) dirty creamy-white, smooth, crustaceous, closely adnate, orbiculari-radiose, plane, areolato-diffract in the centre, radiato-laciniate at the circumference, truncato-crenate, with central carneo-cinerascent depresso-verrucaroid radioso-rimose cephalodia; apothecia pale reddish, margin tumid entire; spores 8, colourless, ellipsoid, simple.

On alpine rocks, frequent. 1782.


FIG:—E. Bot. 692. Hepp Sporen t. 89. f. 773.


GEOG. DISTRIB:—Norway, W. Finland, W. France, N Zealand.

BOT. PROV:—1...5...7...11, 12...15...17, 18, 19...26...30.
THE LICHEN-FLORA


"Spores .003 in. long, by .0015 in. broad." (Mudd.) "Spores .014—18 mm. long, .006—8 mm. long." (Nyl. & T. M. Fr.)

f. dispersa, (Cromb.) thallus diffus, scattered.


SUBTRIBE V. PLACODEI.

Thallus radiate or laciniato-radiate. Apothecia lecanorine or sub-biatorine. Spores 8, colourless, ellipsoid, polari-bilocular, rarely simple or 1-septate. Paraphyses distinct. Sterigmata articulate. Spermatia slender, shortly cylindrical.

V. PLACODIUM, DC. Nyl.

Characters as above.

A. Thallus flavescens.

1. P. murorum, (Hffm.) bright yellow, orbiculari-radiate, adnate, rimoso-areolate or rimoso-squamulose and whitish in the centre, placato-laciniata at the circumference, lacinia narrow, convex, incurved and subcuneate at the apices, very minutely granulato-scabrous on the upper surface; apothecia dusky orange-coloured, disk minutely granulate, margin entire; spores 8, colourless, ellipsoid, polari-bilocular, K red or purple.

On walls, rocks, &c. frequent.


FV:—Hffm. En. t. 9. f. 2. Pl. L. t. 17. f. 3. Hepp Sopen t. 22. f. 196.


ANZ:—Throughout the world.

BOT. PROV:—1, 2, 3, 4, 5, 6, 10, 11...(19—30)...31.


SCOTLAND:—Forfar. Mr. Croall. frequent in lowlands and maritime districts.

Rev. J. M. Crombie.

IRELAND:—Walls and rocks, common. Mr. Carroll.

WALES: Caswell Bay! Mumbles.
Channel Islands:—Guernsey. Rev. T. Salwey, common on all the Islands, Mr. Larbalestier.

"Spores .002 to .00125 in long, by .00125 to .0015 in. broad." (Mudd.) "Spores .011—14 mm. long, .007—8 mm. broad." (Nyl.) "Spores .011—16 mm. long, .004—7 mm. broad." (T. M. Fr.)

**Forma lobulatum**, (Smrft) vitellinuous, sub-effuso-areolate, almost obliterated, sub-effigurate or crenato-lobulate; apothecia numerous and crowded. **K** red or purple.

On rocks.


**Fig.**—Hepp Sporen t. 9. f. 71.


**Geog. Distrib.**—Europe, Asia, Africa, America.

**Bot. Prov.**—L. 6, 7, ... 10...15...19...26...30...31.

**England.**—Aytonton! Yorkshire, Mr. Mudd. Torquay, Dr. Holl. N. Devon, Mr. Parritt.

**Scotland**—Kincardine. Rev. J. M. Crombie.


**Channel Islands**—Coast of Guernsey, Jersey, Sark, Herm, Jethou! Mr. Larbalestier.

"Spores .0025 in. long, by .001 in. broad." (Mudd.) Spores .012—.0135 mm. long, .005—6 mm. broad.

**Forma dissidens**, Nyl. laciniae of thallus much more separated and freer, very minutely granulato-sabrous on the upper surface. Spores .009—16 mm. long, .009—16 mm. broad.

On argillaceous-schistose rocks.

**Syn.**—Nyl. in Flora 1875. p. 289.

**England**—Near Cirencester! Mr. Joshua.

2. *P. cirrhochrómum*, (Ach.) aurantiaco-vitellinuous, orbicular, centri-fugo-laciniate, laciniae very narrow, linear, parallel, convex, incurred and entire, subincised or sublobulate at the apices which are slightly albo-pruinose or granulato-sabrous, efflorescent in the centre into, golden soredia; apothecia very rare, minute, scattered, plane, orange-coloured; margin elevated, nearly entire; spores 8, colourless, oihlong, polari-bilocular, minute.

On limestone rocks, rare. 1871.


**Geog. Distrib.**—Switzerland, Germany, Italy.

**Bot. Prov.**—L. 1...12.


"Spores .013—18 mm. long, .005—6 mm. broad." (T. M. Fr.)

3. *P. decipiens*, (Arn.) pale dirty vitellinuous-yellow, opaque, thin, crustaceous, orbiculari-radiate, adnate, plícato-laciniate at the circumference, laciniae narrow, convex, incurred and sub-crenate at the apices, verrucoso-areolate in the centre, conspicuously granuloso-sabrous, almost leprose, on the upper surface of the thallus and on the thalline margin of the apothecia; apothecia concolorous, sunk, plane, waxy; spores 8, colourless, ellipsoid, polari-bilocular.

M
On calcareous rocks, rare. 1871.

**Syn.:**—Arnold in Flora 1866. p. 530.

**Exs.**—Arn. 392. a. and b.

**Geog. Distr.**—Europe.

**Bot. Prov.**—2, 3, 4, 5...7.


**Wales:**—Rhydyllyn Castle!

4. *P. miniatum,* (Hffm.) miniatio-fulvescent, radiate at the circumference, minutely punctellato-impressed; apothecia still deeper coloured.

On rocks, &c. 1794.


**Fig.**—Hffm. Pl. 1. t. 60. f. 1. Hepp Sporen t. 22. f. 195. & 906.


**Geog. Distr.**—Throughout the World.

**Bot. Prov.**—5...8...11...18, 19...31.


**Scotland:**—Sir J. E. Smith. (1794.) Steamas, Orkney. Dr Lindsay.

**Ireland:**—Blackwater Hill; Dunkerron. Dr. Taylor.

**Channel Islands:**—Guernsey. Rev. T. Salwey.

**Forma obliterations** (Pers.) miniatio-fulvescent, sub-effuso-areolate, almost obliterated, sub-effigurate or crenato-lobulate; apothecia crowded, concolorous, margin entire.

On rocks, frequent.


**Exs.:**—Leight. 253. Anzi Langob. 29. 274.

**Geog. Distr.**—Throughout the World.

**Bot. Prov.**—6, 7.

**Wales:**—Barmouth! North Cliff! Tenby.

"Spores .010—12 mm. long, .0045—.055 mm. broad." (Nyl.)

5. *P. callopusium,* (Ach.) bright yellow, orbiculari-radiate, adnate, rimoso-areolate and whitish in the centre, lobato-laciniate at the circumference, laciniae broad, thin, membranous, contiguous, very closely appressed, plane, dilated and inciso-crenate at the apices, smooth on the upper surface; apothecia bright orange, disk smooth, waxy, margin bright yellow, thickish, flexuose or sub-crenulate; spores 8, colourless, lemon-shaped, polari-bilocular; K red or purple.

On rocks, walls, &c., frequent.


**Fig.**—Hepp Sporen t. 103. f. 907. E. Bot. 2157. upper fig.


**Geog. Distr.:**—Europe.

**Bot. Prov.**—1,...3, 6, 7,...10...14, 15...30.


OF GREAT BRITAIN.

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IRELAND:—Co. Down. Dr. Maingay.
WALES:—Southern Down, Glamorgan. Dr. Holl. Eglwyseg rocks! Great Orme's Head! Giltar Point! Tenby.

"Spores .0025 to .0025 in. long, by .0015 in. broad, t. 2. f. 42." (Mudd.)
"Spores .008–13 mm. long, .006–10 mm. broad." (T. M. Fr.)

Var. plicatum, Wedd. laciniae of thallus narrow, convex, incurved and sub-crenate at the apices, precisely like those of P. miurorum, but smooth and waxy on the upper surface; spores lemon-shaped; K red or purple.

On rocks, &c., frequent.


FIG:—Hepp Sporen t. 22. f. 197.


GEOG. DISTRI—Europe.

Bot. Prov.:—3, 5, 6, 7, 10, 15, 26.


IRELAND:—Dawros river! co. Galway. Mr. Larbalestier.

WALES:—Eglwyseg rocks! Gimlet rock! Pwllheli. Fishguard! St. David's! Pembroke-shire. Great Orme's Head!

Var. sympogaea, (Ach.) dark orange-coloured, orbicular, sub-imbricate, folicaceous and lobate, plane in the circumferenc; apothecia minute, concolorous.

On calcareous rocks. 1876.


IRELAND:—Rain at Cleghan, Galway. Mr. Larbalestier (1876.)


On rocks, walls, mortar, &c., frequent. 1807.


FIG:—E. Bot. 1798. Hepp Sporen t. 9. f. 72.


GEOG. DISTRI—Europe, America.

Bot. Prov.:—1...3, 4, 5, 7...10...19...30...31.


SCOTLAND:—Frequent in the lowland districts. Rev. J. M. Crombie.

IRELAND:—On mortar, common. Mr. Carroll.

WALES:—Barmouth!

CHANNEL ISLANDS:—Jersey; Guernsey; Sark; Mr. Larbalestier.

"Spores .003 in. long, by .0015 in. broad." (Mudd.) "Spores .010–15 mm. long, .005–.008 mm. broad." (Nyl.)

7. P. elegans, (Link.) dark orange-red, suborbiculari-stellate, laciniae distinct, linear, narrow, multijed, upper surface glabrous; apothecia dark orange-red, plane, margin entire; spores 8, colourless, ellipsoid, polari-bilocular.

On exposed rocks and stones, rare.


FIG:—Hepp Sporen t. 22. f. 196. E. Bot. 2181. (right hand fig. only). Flora 1875. t. 5. f. 6.
B. Thallus cinerascent.

9. *P. candidans*, (Dicks.) *glaucous* or albo-cinerascent, tartaraceous, orbiculare-squamose, adnate, subareolate and plane in the centre, radiato-plicato-lobate, rotundoidilated and crenate at the apices, smooth or pulverulent; apothecia appressed, brownish-black, more or less pruinose, thalloidal margin persistent; spores 8, colourless, ellipsoid, 1-septate. (K—C—).

On limestone rocks, frequent. 1793.

**Syn:** — Dickson Br. Crypt. 3. 15. (1793.) Nyl. Prodr. 72. Mudd Man. 133. 

**Fig:** — E. Bot. 1778. Dicks. Crypt. 3. t. 9. f. 5. Hepp Sporen t. 104. f. 914. 
**Anzi Etr. 12. Rabh. 748.**

**Geog. Distrib.:** — Europe. 
**Bot. Prov.** — 1, 2, 5...7, 8...10, 11...15. 

**Scotland:** — Near Shean Ferry. Messrs. Turner and Hooker. 
**Wales:** — Great Orme's Head! Eglwyseg Rocks!

and inciso-crenate at the apices; apothecia brownish-black, sessile, cassio-pruinose, thick margin eventually nearly obliterated; spores 8, colourless, ellipsoid, 1-septate. (K—C—).

On limestone rocks, rare. 1875.

SYN:—Mass. Mem. 47. 1855.
FIG:—Mass. Mem. t. 8. f. 46.

11. *P. chalybaeum*, (Duf.) plumbeo-albicant or cinereo-albe scent, adnate, smooth, *diffracto-areolate*, obsolely lineari-radiate at the circumference, hypothallus blackish, slightly extended beyond the thallus; apothecia *innate* or immersed, black, plane, more or less pruinose, *thalline margin* entire, depressed; spores 8, colourless, elliptico-oblong, polari-bilocular.

On limestone rocks, rare. 1861.

FIG:—Hepp Sporen t. 22. f. 204.

ENGLAND:—Near Renhill, Yorkshire. Mr. Baker. Babbiecomb, Devonshire
ADM. JONES. YATTON, Somerset. Mr. Joshua. Llanymynech Hill! Shropshire.
Wales:—Eglwysog Rocks! near Llangollen, Glyn! near Capel Curig.

"Spores .0100 mm. long, .00336 mm. broad." (Mass.)

12. *P. variabile*, (Pers.) fusco-cinerous, adnate, *diffracto-areolate*, hypothallus nigrant, predominant; apothecia prominent, black, plane, more or less pruinose, *thalline margin* thin, white, *sub-crenulate*; spores 8, colourless, elliptico-oblong, polari-bilocular.

On rocks, rare.

FIG:—Hepp Sporen t. 9. f. 74.

ENGLAND:—Buxton, Derbyshire! Dr. HOLL. Grove Lane, Cirencester. Mr. W. Joshua. Bath! Mr. C. E. Broome. Llanymynech Hill! Shropshire.


IRLAND:—Dawros River! co. Galway. Mr. Larbalestier.
"Spores .015—.017 mm. long, .007—.010 mm. broad." (Nyl.) Spores .015—.017 mm. long, .007—.009 mm. broad.

13. *P. Agardhiannum*, (Ach.) fumoso-cinerous, thin, effuse, contiguous, smoothish, almost evanescent; apothecia *fuscous-black*, subillnate, convex, thallodal margin, thin, white, entire; paraphyses distinct; spores 8, colourless, broadly oblong, polari-bilocular with longitudinal tube.

On limestone rocks and walls, frequent. 1871.

FIG:—Hepp Sporen t. 46. f. 407.
THE LICHEN-FLORA

Geog. Distrib. — Europe.
Wales: — Gilfart Point! Tenby.

Sub-Tribe VI. Eulecanorei.

Thallus crustaceous, granulose, rarely radiate, smooth or leprose. Apothecia lecanorine, rarely biatorine. Paraphyses distinct. Spores simple, rarely septate, colourless, rarely fuscous. Spermata varying in form in different species, e.g. cylindrical or acicular, straight or arcuate, or oblongo-ellipsoid.

VI. Lecanora. (Ach.) Nyl.

Characters as above. These either 8-spored or polysporous.

A. Spores numerous.

1. L. crenata, Nyl. bright full yellow, sub-orbicular, effuse, crenate or granulose-squamulose in the centre, laciniate-radiate at the circumference, laciniate sublinear, very narrow, connex, incised, crenate and incurred at the apices (K—C—); apothecia darker yellow, plane, thalline margin elevated, crenulate; spores numerous, colourless, oblong or subellipsoid, bilocular.

On maritime rocks. 1866.


Exs.: — Th. M. Fries 58.

Geog. Distrib.: — Scandinavia, Norway, Greenland.


Wales: — Aberdovey! Rev. A. Bloxam. These Welsh specimens were sterile and not well developed, but the appearance of the laciniae of the thallus accorded well with Fries Exs. 58! The asci especially the apices become blue with iodine.

Spores .010—16 mm. long, .004—.005 mm. broad." (T. M. Fr.) "Spores .009—.015 mm. long, .004—.007 mm. broad." (Nyl.) Spores .012—.015 mm. long, .004—.0055 mm. broad. Hydrate of Potash just tinged the thallus a pale reddish brown.

2. L. vitellina, (Ach.) pale greenish-yellow, granulose, effuso, granules minute, crenate or sublobulate, or conglomerate (K—); apothecia tawny-yellow, plane, thalline margin entire or crenulate; spores numerous, colourless, oblong, simple or sub-polar-bilocular or obsolescent 1-septate.

On rocks, walls, old pales, &c. frequent. 1777.


Geog. Distrib.: — Europe, N. America, Abyssinia.

Bot. Prov.: — 1, 2, 3, 4. 5...7...11...15...18...26...30...31.

WALES:—Aberdovey!
CHANNEL ISLANDS:—Common on all the Islands. Mr. Larvalestier.
"Spores .00275 to .003 in long, by .001 in. broad." (Mudd.) "Spores .008—15 mm. long, .004—6 mm. broad." (Nyl.) "Spores .008—14 mm. long, .004—6 mm. broad." (T. M. Fr.)
Var. coruscans, (Ach.) darker yellow, granuloso-conglomerate, areolato-diffract, (K—); apothecia imbedded, rufe-fuscous, plane, thalline margin granulato-crenulate.
On rocks and palings, frequent.
Fig:—Hffm. Pl. L. t. 27. f. 2.
EXS:—Bohl. 78.
GEOG. DISTRIB:—Europe.
BOT. PROV:—5...10...15...25.
ENGLAND:—Ayton! Cleveland. Mr. Mudd. Middle! Shropshire.
IRELAND:—Bally-na-kill! Galway. Mr. Larvalestier.
Var. aurella, (Ach.) yellow, granulato-dispersed or evanescent, (K—); apothecia minute, bright orange, plane, scattered, thalline margin entire.
On rocks, frequent.
Fig:—Hffm. Pl. L. t. 50. f. 2. c. Hepp Sporen t. 9. f. 70.
GEOG. DISTRIB:—Europe.
BOT. PROV:—5...7...15.
ENGLAND:—Middle! Shropshire.
WALES:—Conway! and Diganwy!
Var. epizantha, (Nyl.) leprose, pulverulent, pale yellow; apothecia appressed or sub-immersed, plane, concolorous, margin thick, entire, often pulverulent.
On turf walls. 1870.
GEOG. DISTRIB:—Europe.
BOT. PROV:—15.
3. L. candelaria, (Ach.) greenish-yellow, sub-orbiculari-stellate, minutely laciniate, laciniae multifid, subimbricate, crowded, margins curled, crisped, more or less minutely granulose (K—C—); apothecia fulvescent, margin entire or granulose; spores numerous, colourless, ellipsoid, simple.
On old trees, pales, walls, rocks, &c., not common. 1782.
Fig:—E. Bot. 1794, Nyl. Scand. t. 1. f. 2.
GEOG. DISTRIB:—Europe, Arctic America.
BOT. PROV:—1...3...4...5...10...11...14...15...19...26...31.
IRELAND:—Near Cork. Mr. Carroll. Miderlin! near Kylemore, Mr. Larbalestier.


“Spores .002 in. long, by .001 in. broad.” (Mudd.) “Spores .006—.014 mm. long, .004—.006 mm. broad.” (Nyl.) and (T. M. Fr.)

Var. granulosa, (Leight.) laciniae very minute, crenate, margins ascending, minutely and abundantly granulose, often crowded into an areolato-diffracro-granulose crust, (K—).

On old trees, frequent.

EXS:—Zw. 322. Wright 79. Leight. 12.

BIOG. DISTRIE:—Europe.

BOT. Prov.:—5.

ENGLAND:—Old Elms, Berwick! near Shrewsbury.

4. L. glauocarpa, (Whlnb.) pallescenti-livid, or lurido-rufescent, squamulose, squamula dispersed or imbricate, crenate, margins upturned and white, (K—C—); apothecia large, fusco-rufescent, plano-convex, casio-pruinose or naked, margin elevated, entire and flexuose; spores numerous, colourless, oblong, simple.

On calcareous alpine rocks, not common.


Fig.:—Whlnb. l. c. t. 4. f. 4. Hepp Sporen t. 42. f. 377.


BIOG. DISTRIE:—Sweden, Bavaria, Austria, Italy, Pyrenees, Switzerland, Lombardy, Hungary, Mackenzie River.

BOT. Prov.:—6...5. 10...15.

ENGLAND:—Lancashire. Mr. Jacob. Cleveland. Mr. Mudd. Craig-y-Rhiw near Oswestry!

SCOTLAND:—Breadalbane; Braemar; Ben Lawers; Morrone; Craig Guie. Rev. J. M. Cribbie.

“Spores .0075 in. long, by .00025 in. broad.” (Mudd.) “Spores .003—6 mm. long., .0015—.0025 mm. broad.” (Nyl.) “Spores .004—5 mm. long, .0015—.0020 mm. broad.” (T. M. Fr.)

forma pruinosa, (Sm.) crustaceous (K—C—); apothecia of moderate size, scattered, appressed, plane, reddish-black or black, white within, casio-pruinose or naked, margin thin, entire, more or less undulate; spores numerous, colourless, ellipsoid, simple.

On mortar, limestone rocks, &c. frequent. 1811.


Fig.:—E. Bot. 2244. Hepp Sporen t. 17. f. 143.


BIOG. DISTRIE:—Hungary, Italy, Switzerland.

BOT. Prov.:—2...3...5. 6...7...10...11...15...19.


IRELAND:—Monkstown and Dunkathal near Cork. Mr. Carroll.


Forma eucarpa, (Nyl.) evanescent; apothecia reddish when moist,
blackish dry, very large, aggregate, internally rufescent; hypothecium thin, black; spores numerous, colourless, oblongo-ellipsoidal, simple, most minute.

On rocks, rare. 1867.


**Geo. Distr.:**—Pyrenees.

**Bot. Prov.:**—5...31.

**England:**— Wenlock! Shropshire.

**Channel Islands:**— Cove, Guernsey; north coast of Jersey. Mr. Larbalestier. (1867).

"Spores .0045 mm. long. .002 mm. broad." (Nyl.)

"Var. depauuperata, (Kphlb.) on calcareous boulders on Craig Tulloch, Blair Athole. Under this var. I include f. conspersa, (Fr.) Th. Fr. Scand. p. 212. and f. conferta, Crombie Ms. both very sparingly in above locality; also f. cinereo-pruinoso, Anzi, which occurs on Craig Guie, Braemar." Crombie in Journ. Bot. n. s. 2. 134.

5. **L. squamulosa,** (Schrad.) cervine or badio-paliscaent, or badio-fuscescent, squamulose, squamules adnate, angular, and sublobate, (K—C—); apothecia at first immersed and small, then emersed and plane, rufo-fuscescent or nigro-fuscescent, thalline margin depressed; spores numerous, minute, colourless, oblong, simple.

On rocks, frequent. 1801.


**Fig:**—E. Bot. 2011. Hepp Sporen t. S. f. 56.


**Geo. Distr.:**— Bavaria, Hungary, Germany, Switzerland, Italy, Austria, France.

**Bot. Prov.:**—1...5, 6...11...15...26...31.


**Ireland:**—Near Blynyde! Kylemore Mountain! co. Galway. Mr. Larbalestier.


**Channel Islands:**— Guernsey. Rev. T. Salvey.

"Spores .00075 in. long. by .00025 in. broad. t. 3. f. 53." (Mudd.) "Spores .008—011 mm. long. .004—6 mm. broad." (Nyl.)

forma smaragdula, (Whnb.) thalline squamula plano-convex, dispersed, pallescent (K—C—); apothecia minute, punctiform.

On rocks, not uncommon. 1800.


**Fig:**—E. Bot. 1612. Leight. Ang. Lich. t. 4. f. 3.


**Geo. Distr.:**—Austria, Norway, Switzerland, Italy, E. Lapland.

**Bot. Prov.:**—1...3...6, 7...10, 11...18...31.


**Scotland:**—Garrynahine, Lewis. Dr. Lindsay.

**CHANNEL ISLANDS:**—La Moie, Jersey. *Mr. Larbaletier.*

Spores .003—.005 mm. long; .002 mm. broad.

forma *sinopica,* (Whlnb.) ferruginous-red, areolato-squamulose; appressed (K—C—); apothecia minute, punctiform, black.

On rocks in alpine places, not frequent. 1807.


**GEOG. DISTRIB.**—Switzerland, Italy, Norway.

Bot. Prov.:—7...12...15...31.

**ENGLAND:**—Mungrisedale! Cumberland. *Mrs. Stanger.*


**CHANNEL ISLANDS:**—Guernsey, *Mr. Larbaletier.*

"Spores .005—.004 mm. long; .002 mm. broad.

forma *privigina,* (Ach.) thallus nearly evanescent, nigro-piceous or dark brown (K—C—); apothecia scattered, blackish, margin black, elevated, flexuose.

On sandstone rocks, not frequent. 1810.


Fig.—E. *Bot.* 2152! (two right hand fig.).


**GEOG. DISTRIB.**—Italy, Germany, Switzerland.

Bot. Prov.:—1, 2...7...10, 11...31.


**WALES:**—Castell Diganwy! *CHANNEL ISLANDS:*—L’etacq, Jersey. *Mr. Larbaletier.*

forma *Heppii,* (Nag.) greyish-white, leprose, thin, effuse; apothecia very minute, immersed, brown, margin smooth, angular or flexuose.

On rocks.


Fig.—*Hepp Sporen* t. 8, f. 57.


**GEOG. DISTRIB.**—Europe.

Bot. Prov.:—2, 3...10.


"Spores .001 in. long, by .00025 in. broad." (Mudd) "Spores .004—.0045 mm. long, .0015—.002 mm. broad." (T. M. Fr.)

forma *simplex,* (Dav.) nearly ecrustaceous (K—C—) apothecia small, black, variously corrugate or plicate; margin irregularly crenate; spores most minute.

On rocks, not uncommon. 1794.


Fig.—*Linn. Trans.* 2, t. 28, f. 2, *E. Bot.* 2152, two left hand fig.


**GEOG. DISTRIB.**—Italy, Hungary, Germany.

Bot. Prov.:—1...5, 6, 7...15...31.

SCOTLAND :- Craig Tulloch, Craig Giue; Kincardine. Rev. J. M. Croomie.
IRELAND :- Near Dunkerron. Dr. Taylor.
CHANNEL ISLANDS:- La Mové, Jersey. Mr. Larbalestier.
"Spores .0005 to .00075 in. long, by .0025 to .0005 in. broad." (Mudd.)

6. L. discreta, (Ach.) dark fuscous or dark-rufescens, opake, verrucoso-areolate, areolae somewhat turged, contiguous or distinct, subrugulose (K—C—); apothecia concolorous, minute, one in each of the thalline verruca, epithecium minute obtusely impressed or somewhat convex in the centre, thalline margin obtuse; spores numerous, colourless, ellipsoid, simple.

On mountain rocks, rare. 1870.

EXS :- Nyl. Pyr. Or. 36.
GEOG. DISTRIB.:- Europe, Finland.
BOT. PROV.:- 7...13.
WALES :- Y Fegle fawr! near Barmouth. Castell Diganwy!
Spores .0035-.0045 mm. long,.0020 mm. broad.

7. L. fuscata, Schrad. reddish-brown, tartareous, areolato-squamosulose, areola angular, smooth and unpolished or rugged (K—C red); apothecia immersed, concaee, dark brown, margin entire, slightly raised; spores numerous, minute, oblongo-ellipsoid, simple.

On rocks and walls, frequent. 1830.

EXS.:- Mudd 131. Rahb. 872.
GEOG. DISTRIB.:- Europe.
BOT. PROV.:- 1...4, 5...7...10, 11...15...19...31.
Shropshire.
IRELAND :- Cappaghmore near Dunkerron! Dr. Taylor.
WALES :- Barmouth! Rev. T. Salway. Trefriw! Lllyn Geiriogydd!
CHANNEL ISLANDS:- L’étaque; La Moie, Jersey, Mr Larbalestier.
"Spores .003—4 mm. long,.001—.0015 mm. broad." (Nyl.) Spores 005—7 mm. long,.0015—.002 mm. broad.

8. L. Sambuci, (Pers.) whitish or cineravent, very thin, effuse, granulose or sub-leprose or almost evanescent (K—); apothecia fuscous or fusco-rufescens, minute, plane, thalline margin white, crenulate; spores 12, 16 or 32, rarely 8, colourless, ellipsoid, simple.

On trees, rare.

ENNUM. 53.
EXS.:- Arn. 300.
GEOG. DISTRIB.:- Mid Europe, Sweden.
BOT. PROV.:- 25.
"Spores .008—.012 mm. long, .005—7 mm. broad" (Nyl.) Spores .009—12 mm. long, .006—7 mm. broad. (P. M. Fr.)

9. L. hypophae, (Nyl.) cineroscent or cinereo-virecent, thin, granulato-unequal; apothecia nigricient or sanguineo-black, lecideine, somewhat plane, marginate, proper margin black, sub-crenulate or unequal or undulate, then convex and immarginate; spores numerous, colourless, oblong, simple; paraphyses moderate or thickish, articulate, apices thicker, electrino-fuscacent; hypothecium colourless, fuscous-black beneath, and with glomerulose gonidia; gelatina hymenea at first blue then vinose or fulvous red with iodine.

On granite rocks, very rare. 1869.


GEOG. DISTRIBUTION:—Europe.

BOT. PROV.:—15.


Allied to privigna, Ach. but distinguished chiefly by its greyish-green granulato-thallus, and crenulate or undulate margin of the apothecia. Crombie.

"Spores .006—6 mm. long, .0015 mm. broad." (Nyl.)

10. L. peliscypha, (Whlnb.) fusco-castaneous, cartilaginous, glebulous, glebule at first distinct, bearing apothecia in their centre, at length formed into decumbent appressed imbricated squamae (K—C—); apothecia atrofuscous, sub-immersed, sub-marginate; spores numerous, minute.

On maritime and subalpine rocks, frequent. 1871.


Crombie in Journ. Bot. n. s. 2. 134.

GEOG. DISTRIBUTION:—Scandinavia.

BOT. PROV.:—15.


B. Spores 8, simple.

* Thallus K yellow then red.

11. L. cinera, (L.) cinereous or albido-cinereous, rimoso-areolate or areolato-diffract or verrucoso-areolate, areola plane or convex; hypothallus nigricient; apothecia black, naked, immersed or sessile, concave or plane, thalline margin entire; hypothecium colourless; spores 8, colourless, ellipsoid, simple; paraphyses gelatinoso-conglutinate; gelatina hymenea I blue then fulvescent; spermatia acicular, straight; medulla I—; thallus K yellow then red.

On granitic and hard rocks, frequent.


forma rimoso-areolata, Leight. cinereous or albido-cinerascens, rimoso-areolate, areola flat or plane, apothecia more or less immersed.


GEOG. DISTRIBUTION:—Switzerland, Pyrenees, Italy, Hungary.

BOT. PROV.:—7...31.

WALES:—Pen-maen-mawr! Cader Idris! Llyn Cae! Grib Goch! Snowdon, CHANNEL ISLANDS:—Beauport! Jersey. Mr. Larbalestier.
forma *diffracto-areolata*, Leight. albido-cinerascent, coarsely *diffracto-areolate*, areole more or less irregularly convex; apothecia sub sessile, concave, margin prominent.

Exs:—Scher. 620.

Geo. Distribs:—Switzerland, Hungary, Sweden, Italy.


Ireland:—Dawros Bridge! co. Galway. Mr. Larbealestier.

forma *verrucoso-areolata*, Leight. albido or sublutescent cinereous, *verrucoso-areolate*, areole small, convex, verrucose; apothecia sessile, margin prominent.

Exs:—Zw. 4. Rabh. 921. Richardson. 124.

Geo. Distribs:—Arctic America, Hungary, Norway, Sweden, Switzerland, Germany, Lapland.


Channel Islands:—Noirmont! Jersey. Mr. Larbealestier.

forma *lepidota*, Leight. cinereo-fuscescent, squamoso-areolate, squamæ convex or rugose; apothecia innate, margined.


Bot. Prov.:—7...31.

Wales:—Barmouth! Pwlhelli! Moel-y-gest!

Channel Islands:—Beauport! Jersey. Mr. Larbealestier.

12. *L. Myrtii*, (Fr.) cinerascent or lutescent, tartareous, rimoso-areolate, contiguous, areole smooth or verruculoso-rugose, hypothallus black (thallus K yellow then red, medulla I blue); apothecia somewhat plane, black, naked, or slightly pruinose; hypothecium colourless; spores 8, colourless, ellipsoidal, or globosellipsoidal, simple; paraphyses cohærent; gelatina hymenea blue with iodine; spermatia subcylindrical.

On sub-alpine rocks.


Exs:—Fellm. 121.

Geo. Distribs:—Lapland, Sweden.

Wales:—Barmouth! Rev. T. Salwey.

13. *L. proposita*, (Nyl.) white, thin, nearly smooth, areolato-rimose, sub-fimbriated and darkly limited at the circumference (K yellow then cinabarine-reddish); apothecia blackish, opake, glanco-suffused or subdenudate, moderate, thalline margin rugulose or suberenate; spores 8, colourless, ellipsoidal, simple; paraphyses slender; epithecium yellowish; gelatina hymenea and especially the theca bluish with iodine.

On maritime basaltic rocks, rare. 1872.

Syn:—Nyl. in Flora 1873. p. 29. Crombie in Grevillea l. 141.


Channel Islands:—Jersey. Mr. Larbealestier. (1872.)

Not unlike some state of *L. subfuscus var. atypae*, but distinct by the smaller spores, chemical reaction and other characters. Spores .009—14 mm. long, .005—6 mm. broad.

14. *L. oculata*, (Dicks.) white or albo-cinerascent, *dactylinopapillate*, glabrous; apothecia at first innate in the apices of the papillæ, ultimately expanded, sub-concave, black, thalline margin thick, *inflexed*, entire; spores 8, colourless, ellipsoid, simple; thallus K ferruginous-red.
On mosses in alpine localities, rare. 1790.


FIG:—Dicks. Crypt. t. 6. f. 3. E. Bot. 1833.

EXS:—Th. M. Fr. 34. Rabh. 77. Fellm. 116.

GEOG. DISTRIB:—Norway, E. Lapland.

BOT. PROV:—3...15.


"Spores .009 to .012 in. long, by .007 to .008 in. broad." (Mudd.) "Spores .023—30 mm. long, .011—14 mm. broad." (Nyl.) "Spores .018—30 mm. long, .011—14 mm. broad." (T. M. Fr.)

** Thallus K yellow C red.

15. L. sarcopis, (Whlnb.) flavido-cinerascent, granulose, thin, sub-effuse; apothecia small, numerous, carneo-rufous or sub-rufous, plane or sub-convex, thalline margin crenulate; spores 8, colourless, ellipsoid, simple; thallus K yellow C red.

On trees and palings, not common.


EXS:—Arn. 648.

GEOG. DISTRIB:—Russia, Austria, Hungary, Germany, Lapland, Switzerland. Bot. PROV:—1...3...10...31.


CHANNEL ISLANDS:—Beauport Bay, Jersey. Mr. Larbalestier.

"Spores .008—012 mm. long, .006—8 mm. broad." (Nyl.) "Spores .008—15 mm. long, .004—7 mm. broad." (T. M. Fr.) Spores .010 mm. long, .006 mm. broad.

L. sarcopis * homopis, (Nyl.) differs from the type by the gelatina hymenec becoming blue and then vinous-red with iodine.

On old pales. 1872.


EXS:—Fries L. S. 46 (6de Nyl.)

BOT. PROV:—3.


16. L. piniperda, (Kbr.) glaucous-white, effuse, verruculoso-leprose, sometimes obsolete, hypothallus persistent, subarachnoid, white; apothecia minute, crowded, variously coloured; spores 8, colourless, minute, oblongo-ellipsoid, simple.

On decaying larch rails, rare. 1872.

SYN:—Korber Parerga 81. (1865.) Crombie in Journ. Bot. n. s. 2. 133.

FIG:—Hepp Sporen t. 9. f. 69.

EXS:—Hepp 385 & 69. Arn. 665.

GEOG. DISTRIB:—Germany.

BOT. PROV:—15.


Var. ochrostoma, (Korb.) apothecia subiariotine, yellow, luteo-rufous, sub-ferruginose, naked and immarginate.

On pine trees, rare. 1876.

SYN:—Korb. Par. 81.

GEOG. DISTRIB:—Germany.

BOT. PROV:—26.

IRELAND:—Lord Leitrim's Demesne! Joyce county. Mr. Larbalestier. (1876).
17. *L. tartarea*, (L.) white or albo-cinerascents, tartareous, granulato-conglomerate, rimulose; apothecia large, scattered, disk plane, rugulose, pallido-testaceous, thalline margin thick, indented and flexuose; spores 8, colourless, elliptico-oblung, simple, large; thallus and apothecia *K* yellow *C* red.

On rocks, not uncommon. 1794.


**Mudd.** Man. 156.

**FIG.**—E. Bot. 156.


**Bohl.** 10. Leighton. 82. Steinh. 128.

**GEOG. DISTRIBUTION**—Europe, Africa, America.

**BOT. PROV.**—1...5...7...10, 11...15...18...19(—30)...31.

**ENGLAND.**—Cliff-rigg! High Cliffs! Cleveland. *Mr. Mudd*. Clee Hill!


**Yorkshire.** *Mr. Teesdale*. (1794.) Northumberland and Durham. *Mr. Winch."


**SCOTLAND.**—Garrynahine, Lewis; Hills south of Ballater! Aberdeenshire; Abernethy! Perthshire; Birnam Hill! Dunkeld. *Dr. Lindsay."

**IRELAND.**—Frequent. *Mr. Carroll."

**WALES.**—Nannau; Snowdon; Cader Idris. *Mr. Holmes. Barmouth! Conway Mountain! Glyder Vach! Capel Curig! Cwm Cywion!"**

**CHANNEL ISLANDS.**—Common on all the Islands. *Mr. Larbalestier."

"Spores .009 to .012 in. long, by .005 in broad, t. 2. f. 51." (Mudd.) "Spores .040—.072 mm. long, .027—.40 mm broad." (Nyl.) "Spores .030—.70 mm. long, .018—.32 mm. broad." (T. M. Fr.)"

**forma grandinosa**, Ach. verrucoso-granulate, verruca sub-globose, glabrous.

**On trees, not common.** 1810.


**GEOG. DISTRIBUTION**—Europe.

**BOT. PROV.**—7...10, 11...15.

**ENGLAND.**—Teesdale. Rev. J. Harriman. Hobhole near Castleton, Cleveland! *Mr. Mudd."

**SCOTLAND.**—Inverary! *Mr. Piggott."

**WALES.**—Glyn! near Capel Curig. Bettws-y-coed!

Spores .06 mm. long, .028 mm. broad.

**forma leprosa**, Nyl. thallus with numerous large globose soredia.

**On mosses, not uncommon.** 1876.

**SYN.**—Nyl. Lapp. Or. 135. (1866).

**GEOG. DISTRIBUTION**—Europe.

**BOT. PROV.**—7...26.

**IRELAND.**—Killarney Bay! *Mr. Larbalestier. (1876."

**WALES.**—Elyn Gwerman! near Dolgelley.

**forma frigida**, Ach. thallus thin, papillose, ramiuloso-spinulose.

**On mosses, not common.**


**FIG.**—E. Bot. 1579.


**GEOG. DISTRIBUTION**—Europe, N. America.

**BOT. PROV.**—2...11...15.

**ENGLAND.**—Northumberland and Durham. *Mr. Winch."

**SCOTLAND.**—Hills above Blair in Athol! *Mr. Don*. Lofty Hills. *Mr. Dickson."

**Grampians. Rev. J. M. Crombie."

**WALES.**—Cwm Cywion! Conway falls! Capel Curig!
forma gonatodes, Ach. subramulose, branches divaricate, tortuous, gibbose, lobata-verrucose, deformed.

On mosses, rare. 1871.

EXS:—Fellm. 115.

GEOG. DISTRIBUTION:—Europe.

BOT. PROV:—7.

WALES:—Cwm Tryfaen! (1871.) Cwm Cywion!

18. L. discolorella, Nyl. "Somewhat similar to L. leucophea Flk., but thallus whitish, thin, areolate-rimosose (K yellow C red) and spores .012—16 mm. long, .006—7 mm. broad. Epithecm in a thin section rufescent. Spermata arcuate, .020 mm. long, .0005 mm. broad."

On rocks, rare. 1876.

SYN:—Nyl in Flora 1877. p. 459.

BOT. PROV:—1.

ENGLAND:—Near Penzance, Cornwall. Mr. Curnow. (1876).

** Thallus K yellow C yellow.**

19. L. Upsaliensis, (L.) albo-glaucescent, thin, membranaceous, smooth; apothecia numerous, at first gibbos-verrucose, disk at length dilated, plane, pallido-lutescent, coarsely granulate, margin thick, tumid, elevated, incurved, smooth; spores 8, colourless, ellipsoid, simple, large; thallus and disk of apothecia K y. C y.

On mosses, &c., rare. 1782.


GEOG. DISTRIBUTION:—Europe.

BOT. PROV:—1...4...15.


20. L. varia, (Ehrh,) greenish-yellow or straw-coloured, granulose or granulato-unequal, sub-determinate, thin; apothecia concolorous or flavo-pallescent or livido-virescent, thalline margin entire or sub-entire; spores 8, colourless, ellipsoid, simple; thallus K yellow C yellow.

On trees, palings, &c., common. 1801.


GEOG. DISTRIBUTION:—Europe, Africa, N. America, N. Zealand.

BOT. PROV:—2, 3, 4, 5...7...10, 11...19—30...31.


SCOTLAND:—Common, Rev. J. M. Crombie.

IRELAND:—Frequent. Mr. Carroll.

WALES:—Barmouth!

CHANNEL ISLANDS:—Common on all the Islands. Mr. Larbalestier.
"Spores .002 to .0025 in. long, by .001 in. broad." (Mudd). "Spores .010—14 mm. long, .005—8 mm. broad." (Nylander) "Spores .009—11 mm. long, .005—6 mm. broad." (T. M. Fr.)

21. **L. varia** *leptacina*, (Smrft.) straw-coloured, thin, granulato-squamulose, granules smooth, crenate; apothecia plane, olivaceous or nigricant, obsolesly irrorato-pruinose, thalline margin persistent, thickish. (K f y C y)

Amongst mosses on boulders in alpine places, rare. 1871.


**Exs.:** Smrft. 145.

**Geo. Distrib.:** Scandinavia.

**Bot. Prov.:** 15.

**Scotland:**—Summits of Ben Lawers! and Ben-naboord. Rev. J. M. Crombie. (1871.)

"Spores .010—12 mm. long, .0045—60 mm. broad." (T. M. Fr.)

22. **L. subinatria**, (Nylander) externally intermediate between **L. sepincola** and **L. intricata**, but best distinguished by the minute spores and very slender paraphyses. It is often crustaceous with biatorine apothecia varying in color from pallido-lutescent, olivaceous or olivaceous-black, at length convex, entirely concolorous, (younger apothecia plane with lutescent margin).

On wood and bark. 1872.


**Fig.:**—Hepp Sporen t. 21. f. 192.

**Exs.:**—Fellm. 133. Hepp 192.

**Geo. Distrib.:**—East Lapland,

**Bot. Prov.:**—15.

**Scotland:**—(f. obscurior, Nylander) Killin & Blair Athole. Rev. J. M. Crombie. (1872.)

"Spores .007—.010 mm. long, .0030—.0035 mm. broad." (Nylander)

23. **L. atra**, (Huds.) whitish or albido-cinerascent, granulose, or granulato-unequal; apothecia black, internally nigricant, thalline margin entire, flexuose or sub-crenulat e; spores 8, colourless, ellipsoid, simplic; section of apothecium K black, thallus K yellow C yellow.

On rocks and trees, frequent. 1762.


**Fig.:**—E. Bot. 949. Hepp Sporen t. 20. f. 182. and t. 70. f. 613.


**Geo. Distrib.:**—Europe generally, Italy, Switzerland, Hungary, E. Lapland, Sweden, Tyrol Alps, Algeria.

**Bot. Prov.:**—I. 2. 3. 4. 5. 10. 11...15...18...(19—30)...31.


**Scotland:**—Kinneri Hill! Birnam Hill, Callernish and Garynahine, Lewis; Stennis, Orkney. Dr. Lindsay, Isle of May, Firth of Forth. Mr. Sadler.

**Ireland:**—Common. Mr. Carroll, Kylemore Castle! Mr. Larderaster.

**Wales:**—Between Corwen and Bala! Borth! Llyn Cwlyd! Glyn! near Capel Curig; Eglwyseg rocks! Craigforada! Moel-y-Golfa! Goodwick Bay! near Fishguard, Castel Dinas Bran! Tenby! Crib Coch!
CHANNEL ISLANDS:—Jersey! and all the other Islands. Mr. Larbalestier.

Attention to the internal nigricant colour of the apothecium and its chemical reaction with K will prevent confusion with L. subfuscus var. colicocarpa which it externally resembles, but in which the internal colour of the apothecium is pale and has chemical reaction K reddish, and also with L. argopholis in which the thallus has a yellowish tinge, and is squamulose-granulose and the apothecia are fusco-nigrescent.

How far L. argopholis is really distinct from L. subfuscus may be questioned.

"Spores .003 to .004 in. long, by .00175 in. broad." (Mudd.) "Spores .010—.015 mm. long, .006—.010 mm. breed." (Nyl.) "Spores .010—.014 mm. long, .006—.008 mm. breed. Spermatia very long, slender, straightish." (T. M. Fr.)

Var. subbysssoidea, (Strtn.) nigro-cinereous or almost black, granulose, effigurate, hypothallus white, subbysssoide.

On rocks, rare. 1875.

BOT. PROV:—15.
SCOTLAND:—Near Blair Athole. Dr. Stirton. (1875.)

24. L. leucophora, (Flk.) pallido-cinereous, tartareous, disperso-verrucoso-areolate, areole tumid, hypothallus black; apothecia compressed or sub-innate, livido-fuscos, plane, frequently congregated, margin thin, fuscosecent, ultimately excluded; hypothecium pale; spores 8, colourless, ellipsoid, simple; thallus K faint yellow, C faint yellow.

On sub-alpine rocks, not common. 1866.

EXS:—Crombie 68.
GEOG. DISTRIBUT:—Europe.
BOT. PROV:—5...7...15.
ENGLAND:—Spout Valley! Long Mynd, Shropshire.
SCOTLAND:—Kincardine, Ben Lawers. Rev. J. M. Crombie.
IRELAND:—Near Kylemore and Doughraugh Mountain! co. Galway. Mr. Larbalestier.

WALES:—Llyn Aran! Myntyd-y-Gader! and generally and abundantly on north ensignment! and also in Llyn-y-Cae! on the south side of Cader Idris! (1866). Crib Goch! Snowdon! Pass of Llanberis! Aran Mowddwy! Cwm Cywlyd! Nant Gwynant!...

Spores .014—.015 mm. long, .008 mm. broad.

Var. conglobata, (Flot.) apothecia convex, diformed and tuberculatum, margin oliferated.

On quartzose boulders in alpine places. 1872.

GEOG. DISTRIBUT:—Europe.
BOT. PROV:—15.
SCOTLAND:—Summits of Ben-y-gloe and Cairn Gowar, Blair Athole very sparingly. Rev. J. M. Crombie. (1872.)

25. L. leucophoriza, (Nyl.) similar to L. leucophora, with biatorine apothecia and scarcely any gonidia present within the perithecium, but the gelatina hymenea not blueish with I or only the thece thus coloured; thallus K f. yellowish.

On micaceo-schistose boulders.

SYN:—Nyl. in Flora 1874. p. 308.
BOT. PROV:—15.
SCOTLAND:—Morrone, Braemar and Hill of Ardo near Aberdeen. Rev. J. M. Crombie. (1874.)

"Spores .010—.015 mm. long, .008—.010 mm. breed." (Nyl.)
26. *L. nigro-glomerata*, Leight. *albido-flavescens*, *sub-areolate*, squamulose, squamules very small, confluent around the glomerations of apothecia, otherwise dispersed, adnate-appressed, plano-convex or depressed, smooth and shining, crenulate, (K yellow C yellow); hypothallus black, appearing only on the margins of the squamules; apothecia black, large, numerous conglomerate, deformed by close proximity, shining, convex, internally colourless, margin thickish, slightly paler, prominent, flexuose; *hypothecium colourless*, with only a small dusky-blackish lateral excipulum, which is often continuous under the colourless hypothecium as a thin dusky line; paraphyses crowded, distinct; spores 8, colourless, ellipsoid, simple, moderate.

On alpine quartzose rocks, rare. 1870.

**Geog. Distribe:**—Europe.
**Bot. Prov:**—15.
**Scotland:**—Ben-y-Gloce, summit of Cairn Gowar. Rev. *J. M. Crombie.* (1870.)

Approaching *L. rusticula*, Nyl. in general habit and appearance, but that it is a much more minute lichen, with a granular thallus and fuscosus hypothecium. Externally with a general resemblance to *L. dilutensis*, Nyl., but distinct by the character of the squamulose thallus, the colourless hypothecium, the larger spores, and the apothecia being internally colourless. *Gelatina hymenae I* bluish then dirty lutescent. Spores .0115—.013 mm. long, .006—.007 mm. broad.

27. *L. cincticata*, (Pers.) cinerascent or cinerarious-white, orbicular, adnate, verrucoso-areolate-disfract in the centre, radiosio-laciniate at the circumference, *laciniae narrow*, plano-convex, contiguous, incised and crenate at the apices, upper surface minutely albo-depresso-granulate; apothecia innate, sub-urceolate or plane, fuscosus-black, margin entire; spores 8, colourless, ellipsoid, simple; thallus K yellow C yellow.

On limestone rocks, rare. 1783.


**GEOGRAPHICAL DISTRIBUTION:**—Europe, Asia, Africa.
**Bot. Prov:**—4. 5...8...11. 12...15...31.


**Scotland:**—Uachtin. Mr. Hopkinson. Clava. Mr. Don.

**Channel Islands:**—Guernsey. Rev. T. Sluway.

"spores .0025 to .003 in. long, .00125 in. broad. Spermastia short, cylindrical, straight." (Mudd.) "Spores .011—15 mm. long, .0065—.0085 mm. broad. Paraphyses thick, generally distinctly articulate." (Nyl.) "Spores .011—15 mm. long, .006—8 broad." (T. M. Fr.)

28. *L. frustulosa*, (Dicks.) *albido-flavescens*, thick, tartareous, verrucoso-areolate or disperso-glebulose, glebula sub-radiato-lobate, smooth; apothecia numerous, sessile, fuscosus-black, plane or sub-convex, thalline margin thick, entire or sub-crenate; spores 8, colourless, oblongo-ellipsoid, simple; thallus K yellow C yellow.

On alpine rocks, rare. 1793.
THE LICHEN-FLORA


Fig.:—E. Bot. 2273.

Exs.:—Leight. 293.

Geog. Distrib.:—Norway, Sweden, Silesia.

Bot. Prov.:—7...15.

Scotland:—Breadalbane! Mr. Borrer. Yorkshire. Mr. Dickson. Ben Lawers!

Rev. H. Macquiliian.

Wales:—Arthur’s Table, Anglesea. Rev. A. Biozam.

"Spores .0025 in. long. by .001 in. broad. Spermatia cylindrical, elegantly curved or flexuose." (Mudd.) "Spores .010—12 mm. long. .005 mm. broad." (Nyl. & T. M. Fr.)

29. L. argopholii, (Whlmb.) whitish or albido-stramineous, verrucoso-granulose, firm, granules imbricate, rotundato-lobate; apothecia fusco-migr'escent, thalline margin entire or crenate; spores 8, colourless, oblongo-ellipsoid, simple; thallus K yellow C yellow.

On alpine rocks, rare.


Fig.:—Hepp Sporen t. 20, f. 178.

Exs.:—Fellm. 131.

Geog. Distrib.:—E. Lapland, Norway, E. Finland, Italy, Switzerland.

Bot. Prov.:—6, 7...14. 15...26.


Ireland:—Letter Hill! Dawros Bridge! co. Galway. Mr. Larbalestier.

Wales:—Llyn-y-Cae! Cader Idris; Moel-y-Golfa! Montgomeryshire. Glyn! near Capel Curig; Owain Cywion! Trefriw! Fort Hill! Fishguard.

"Spores .011—18 mm. long. .007—9 mm. broad." (Nyl.) "Spores .011—18 mm. long. .005—9 mm. broad." (T. M. Fr.)

30. L. poly tropa, (Ehrh.) pallido-sulphureous, tartaceous, granulato-areolate, diffract, often diffuse and sub-evanescent; apothecia pale-yellowish-flesh-coloured, plane or convex, innato-sessile, margin concolorous, thickish, flexuose, eventually obliterated; spores 8, colourless, ellipsoid, simple; thallus K pale yellow C deeper yellow.

On alpine rocks, &c, frequent. 1782.


Fig.:—E. Bot. 1294. two lower fig. Hoffm. Pl. Lich. t. 58. f. 2. Hepp Sporen t. 8. f. 67.


Geog. Distrib.:—Sweden, Germany, Switzerland, Italy, Hungary, Norway.

Bot. Prov.:—1, 2...5. 6...10. 11...13...15...18. 19...26...31.


Bridge! Ashtonion Common! Sussex. Mr. Borrer. Torquay! Dr. Deakin.

Nesscliffe Hill! Shropshire.

Scotland:—Mountains of Breadalbane. Rev. M. Stuart. (1782.) Moors of Dumfriesshire. Mr. Burgess. Garrynahine, Lewis; Stennis, Orkney, Dr. Lindsay.


Wales:—Fort Hill! near Fishguard, Pembroke shire.


"Spores .0025 to .008 in. long. by .001 in. broad. Spermatia cylindrical, elegantly curved or flexuose." (Mudd.) "Spores .010—13 mm. long. .004—8 mm. broad." (T. M. Fr.) Spores .012...135 mm. long. .006 mm. broad.

forma conglobata, (Smrfr.) thallus granulato-rugulose, rimose, greenish-yellow; apothecia very numerous, crowded yet distinct, flavido-ochraceous, convex, deformed and tuberculate, margin obliterate.
On alpine rocks, frequent.

**EXS:** — Mudd 129.

**GEOG. DISTRIBUTION:** — Lapland, Switzerland.

**B. PROV.** — 5...7...10...15.


**SCOTLAND:** — Gramplan. Rev. J. M. Crombie.

**WALES:** — Barmouth! Rev. T. Salwey. Llyn Geirionydd!

*forma alpigena,* (Ach.) pallido-lutescent, tartaceous, rimoso-areolate, smooth; apothecia concolorous, large, appressed, plane, thalline margin paler, elevated, persistent, flexuose.

On alpine rocks, frequent. 1861.

**Fig:** — Hepp Sporen t. 103. f. 903.

**GEOG. DISTRIBUTION:** — Switzerland, Italy.

**B. PROV.** — 10...15.

**ENGLAND:** — Baysdale Moor, Cleveland. Mr. Mudd.


*forma illusoria,* Ach. thallus evanescent; apothecia dispersed, large, plano-convex, pale yellow, margin almost obliterated.

On alpine rocks, rare.

**EXS:** — Scher. 323.
**B. PROV.** — 7...15...26.

**GEOG. DISTRIBUTION:** — Switzerland, Norway.

**SCOTLAND:** — Mountains frequent. Rev J. M. Crombie.

**IRELAND:** — Doughaghy Mountain! (west side) co. Galway. Mr. Larbalestier.

**WALES:** — Y Wyddfa, Snowdon! Mr. Baker.

31. *L. intricata,* (Schrad.) sulphureo-virescent, squamoso-areolate, diffreact, opake, areola minutely rugose, subcrenulate; apothecia adnate, plano-convex, nigro-fuscous, thalline margin pale, entire, generally obliterated; spores 8, colourless, ellipsoid, simple; thallus K faint yellow C bright yellow.

On alpine rocks, frequent.

**EXS:** — Leight. 153. Arr. 56. Mudd 119.

**GEOG. DISTRIBUTION:** — Herecynia, Silesia, Lapland, Westphalia, Bavaria.

**B. PROV.** — 1...5...7...10...15...19...26.

**ENGLAND:** — Ayton Moor! Kildale Moor! Battersby! Cleveland. Mr. Mudd.

**IRISH A.** — Babbicombe, Devon. Mr. Purfitt. Bodbury Ring! near Church Stretton.

**SCOTLAND:** — Breadalbane and Portlethen, Kincardineshire. Rev. J. M. Crombie.


**WALES:** — Sychnant! near Conway! Barmouth! Cwm Bochlywd! Cwm Cywion! Llyn Clywyd! Llyn Geirionydd! "Spores 010—13 mm. long, .005—7 mm. broad." (Nyl.)

32. *L. phaeops,* Nyl. whitish-cream-coloured or dirty-whitish-brown, tartaceous, thin, determinate, continuous, smooth, rimulose (medulla I—, thallus K yellow C yellow); hypothallus white; apothecia fuscous, small, scattered, innate, plane, immarginate, internally fuscescent; hypothecium darkly rufescent; spores 8, colourless, narrowly ellipsoid, simple; paraphyses indistinct, epiphytic colourless; gelatina hymenea I intense persistent blue.
On wet alpine rocks, not common. 1844.


**EXS.** — Arn. 403.

**GEOG. DISTR.** — Europe.

**BOT. PROV.** — 7...15...19...26.

**SCOTLAND** — Ben Cruachan; Ben Lawers. Rev. J. M. Crombie.


**WALES** — Plynlimmon. Rev. T. Salwey. (1844.) Llyn Aran! Llyn-y-Cae! Cade Idris; Crib Coch! Snowden; Capel Curig! Cwm Idwal! Cwm Bochlwyd! Cwm Tryfan! Cwm Cywion! Glyder Vach! Llyn Cwlyd! Aran Mowdwy!

Mr. Crombie in lilt. mentions a form major in which the thallus is thicker and the apothecia larger (twice as large.)

"Spores.009—015 mm. long. 004 mm. broad." (Nyl.) "Spores.012—17 mm. long. 005—6 mm. broad." (T. M. Fr.) Spores .014—015 mm. long, .005—006 mm. broad.

33. *L. chlorotera*, Nyl. *white*, subtartareous, subdeterminate, areola-diffuse, *areola* subrugid, minutely verrucoso-granulate (K yellow C yellow); *apothecia* pallido-testaceous, large, scattered, sessile, plane or plano-convex, smooth, slightly pruinose, thalline margin flexuoso, thickish, somewhat pulverulent; *spores* 8, colourless, *rotundato* or *elliptico-oblong*; simple, paraphyses distinct, thick.

**On trees. 1876,**

**SYN.** — Nyl. in Flora 1872, p. 550. & 1875, p. 15.

**GEOG. DISTR.** — Central Europe.

**BOT. PROV.** — 26.

**IRELAND** — Doughruagh Mountain! and Ballinahinch! near Letterfrack! Connemara. Mr. Larbalestier. (1876.)

A most beautiful species, resembling a good deal in external appearance *L. tartaera*, (L.) but with different reaction and with spores with 2 nucleoli like those of *L. subfuscata*. Spores .013—015 mm. long. .008 mm. broad.

****Thallus K yellow C orange.****

34. *L. sulphurea*, (Hoffin.) sulphureo-virescent, thickish, tartar-eous, *rimoso-areolate*, smooth; *apothecia* livido-nigricant, biatorine, *convex*, deformed, subpruinise, margin obliterated; *spores* 8, colourless, ellipsoidal, simple; thallus K yellow C orange yellow.

On sub-alpine rocks, walls, tiling, &c., frequent.


**EXS.** — Zw. 3. Schar. 324. Hepp 189. Arn. 188. Mudd 121. Bohl. 117.

**GEOG. DISTR.** — Sweden, Germany, Switzerland, Scandinavia.

**BOT. PROV.** — 2, 3, 4, 5...7...10...15...18,19...23, 24...30, 31.


**SCOTLAND** — Kincardine. Rev. J. M. Crombie. Garrynahine, Lewis; Stennis, Orkney. Dr. Lindsay.


**WALES** — Diganwy! near Conway. Bettws y-coed!

**CHANNEL ISLANDS** — Jersey; Guernsey, Mr. Larbalestier.
"Spores .003 in. long, by .001 in. broad." (Mudd.) "Spores .010—16 mm. long, .005—6 mm. broad." (Nyl.) "Spores .010—15 mm. long, .005—6 mm. broad. Spermatia acicular, aruncate." (T. M. Fr.) Spores .015 mm. long, .0045 mm. broad.

35. L. symmicta, (Ach.) flavo-albicans, thin; apothecia pale or pale-testaceous or pale-yellow, biatorine; spores 8, colourless, elong-oblong, simple.

On trees and palings, frequent.


GEOG. DISTRIB:—Scandinavia, New Zealand, Arctic America, Algeria, Sweden, Switzerland, Hungary.

Bot. Prov:—2, 3, 7, 8, 9, 10, 31.


WALES:—Tremadoc.

CHANNEL ISLANDS:—Beauparl! St. John's, Jersey. Mr. Larbalestier.

"Spores .003 to .0035 in. long, by .00075 in. broad." (Mudd.) "Spores .010—13 mm. long, .004—5 mm. broad." (T. M. Fr.) Spores .013—.014 mm. long, .005—.0055 mm. broad.

Var. aditena, (Ach.) yellow, leprose; apothecia black, lecideine, convex, small, whitish within; spores oblong, simple.

On trees, not common.


Fig.:—Hepp Sporen t. 3, f. 65.


GEOG. DISTRIB:—Sweden, Switzerland, Italy.

Bot. Prov:—1, 3, 19.

ENGLAND.—Exminster Marshes, Devon. Mr. Parfitt. Kelvedon, Essex. Mr. Varene.

IRELAND:—Glanmire and Great Island, Cork. Mr. Carroll.

Var. sepincola, (Ach.) yellow, granulose or granuloso-unequal; apothecia dark-rufescent or black, more or less immersed, convex, biatorino-lecideine; spores oblong, simple or slightly 1-septate.

On old palings &c. frequent.


Fig.:—Hepp Sporen t. 21, f. 192.


GEOG. DISTRIB:—Sweden, 8. Lapland, Germany, Switzerland, Italy, Lombardy.

Bot. Prov:—1, 5, 10.


36. L. orosthea, (Ach.) flavicanti-sulphureous, thin, areolatorimulose, unequal, subpulverulent; apothecia subconcolorous, flavido-carneous, convex, or tuberculoso-deformed, subpruinose; spores 8, colourless, ellipsoid or oblong, simple; thallus K yellow C orange yellow.

On sub-alpine rocks.


GEOG. DISTRIB:—Switzerland, Germany, Sweden, Scandinavia, Italy.

Bot. Prov:—1, 5, 7, 15, 26.

ENGLAND.—Bolt Head, S. Devon. Dr. Holl. Long Mynd! near Church Stretton, Shropshire.
IRELAND:—River Dawros! co. Galway. Mr. Larbalestier.

"Spores .003 in. long, by .00075 in. broad." (Mudd.) "Spores .009—.016 mm. long, .006—.007 mm. broad." (Nyl.) Spores .011 mm. long, .004 mm. broad.

37. L. expallens, Ach. pallido-sulphureous, tartareous, granulate, diffusis, often pulverulent, or furfuraceous; apothecia pallido-carneous, innate, plano-convex, deformed, thalline margin concolorous, thin, sub-entire, eventually obliterated; apothecia 5, colourless, ellipsoid, simple; thallus K yellow C reddish orange.

On old trees and palings, not common.


GEOP. DISTRIB.—France.

BOT. PROV.:—1, 2, 3, 5, 6, 7.


38. L. chlorophloeus, Nyl. flavido-glaucescent, verrucoso-granulate, (K yellow C orange red); hypothallus very thin, black; apothecia fusco-rufescent or testaceo-rufescent, moderate, somewhat convex, margin thickish, crenate; spores 8, colourless, ellipsoid, simple.

On rocks, rare, 1873.

SYN.—Nyl. in Flora 1873. p. 290.

GEOP. DISTRIB.—France.

BOT. PROV.:—26...31.

IRELAND:—River Dawros, Galway. Mr. Larbalestier.

CHANNEL ISLANDS:—Vale Castle! Guernsey. Mr. Larbalestier. (1873.)

"Spores .009—.011 mm. long, .006—.008 mm. broad. Paraphyses indistinct. Gelatina hymenae 1 blue then luteescent, thece fulvescent." (Nyl.) Spores .010—.011 mm. long, .004—.005 mm. broad.

39. L. lutescens, (D.C.) albido-flavescens, finito granulato-pulverulent; apothecia pale or carneo-pallid, thalline margin pulverulent; spores 8, colourless, oblong, simple.

On old palings and trees, not common. 1790.


Fig.:—E. Bot. 1549.

EXS.:—Leight. 378.

GEOP. DISTRIB.—Scandinavia, France, Switzerland.

BOT. PROV.:—2, 4, 5, 8, 9, 10, 15, 19, 20, 23, 31.


IRELAND:—Derryquin. Dr. Taylor. Glenarm. Dr. Moore.

CHANNEL ISLANDS:—Beauport, Jersey! Mr. Larbalestier.

40. L. fugiens, Nyl. pale-whitish-yellow, granulate, granules minute, scattered and diffuse, scarcely concolorose, (K yellow C orange yellow); apothecia very minute, scattered, sessile, pale-yellowish-green, thalline margin prominent, whitish-yellow, entire, sometimes crenulate or flexuose; hypothecium colourless; sub-hymeneal gonidia numerous and very large; spores 8, colourless, lineari-oblong, simple.
On rocks, rare. 1873.

SYN: — Nyl. in Flora (1873.) p. 289. 

BOT. PROV.: — 26...31.


CHANNEL ISLANDS: — On hard dry rocks under the shade of ivy near Archipondel Tower, Jersey! Mr. Larbalestier. (1873.)

"Spores .009—.013 mm. long, .005—6 mm. broad." (Nyl.) Extremely minute, and easily overlooked. Much resembling externally some state of L. varia or polytropa. Spores .010—.011 mm. long, .005—.006 mm. broad.

***** Thallus K yellow C—.

41. L. subfusca, (L.) whitish or cinerascant, more or less determinate, thin, smooth, rimulose, granulate, verrucose, rugose or diffract, hypothallus white; apothecia fusco or fusco-pallentescent or nearly black, often pruinose, plano-convex, margin persistent, entire or crenulate; spores 8, colourless, ellipsoid, simple; thallus K yellow C—.

Forma allophana, Ach. whitish or albido-cinerascant, determinate or sub-determinate, thin, unequal, rugose, or granulato-currugate; apothecia plane or convex, rufo-fuscous, sub-rubricoso-fuscous, fuscous-black or black, thalline margin at first entire, then crenate and flexuose; paraphyses slender, not distinct.

On trees.


FIG: — E. Bot. 219. Hepp Sporen t. 20. f. 188.


GEOG. DISTRIB: — Throughout the world.

BOT. PROV: — 1, 2, 3, 4, 5 7...10, 11...15...17...(19—30)...31.


CHANNEL ISLANDS: — Common on all the Islands. Mr. Larbalestier.


"Spores .0025 to .003 in long. by .00125 in. broad." (Mudd.) "Spores .013—.022 mm long, .008—.012 mm. broad." (Nyl.)

Forma Parisiensis, Nyl. cinereous, rugose or rugoso-granulate or sub-verrucose, determinate, hypothallus not visible; apothecia black or fuscous-black or rarely fuscous, naked, sometimes slightly cassio-pruinose, moderate, nearly plane, thalline margin rugose or sub-crenate; spores 8, ellipsoid; paraphyses distinctly articulate, slightly incrassate and broadly fusco-scent at the apices; gelatina hymenae blue with iodine.

On trees, rare.


EXS: — Rabb. 802.

GEOG. DISTRIB: — Europe.

BOT. PROV: — 2, 3.


"Spores .010—.018 mm. long, .006—.008 mm. broad." (Nyl.)
Forma *rugosa*, (Pers.) whitish, thickish, determinate, often limited, *granulato-rugose*; apothecia pale or fuscescent, plane, *margin elevated, thick, rugose or rugoso-crenate*; *paraphyses crowded.*

On trees.


**EXS:** Anzi Ven. 38. Anzi It. S. 188. 189. Mudd 112.

**GEOG. DISTRIBUT:** Europe.

**BOT. PROV:** — 5...10...15... (19—30.)

**ENGLAND:** — Oswestry! Rev. T. Salwey, Cliffirig! Cleveland. Mr. Mudd. Aymestrey! Herefordshire.

**SCOTLAND:**— Balthayock Woods! Perth. Dr. Lindsay.

**IRELAND:**— Common. Mr. Carroll.

"*Spores* .007—010 mm. long. 007—010 mm. broad." (Nyl.)

Forma *argentata*, Ach. whitish, thin, *sublveigate* or slightly *rugoso-unequal* (on rocks *granuloso* or *areolato-verrucoso*); apothecia plane or convex, fuscous or fusco-pallescens, *margin entire*; *paraphyses free.*

On trees and rocks. 1793.


**FIG:**— Hepp Sporen t. S. f. 63. E. Bot. 450.


**GEOG. DISTRIBUT:** Europe.

**BOT. PROV:** — 3...5, 6...10...15...19...26...30.


**SCOTLAND:** — On rocks. Mr. Dickson. (1793.)

**IRELAND:** — Ardglass co. Down. Dr. Mainay. near Cork Harbour. Mr. Carroll. Kylemore Mountains! and near Ballinaheen. Mr. Larbatestier.

**WALES:** — Capel Curig! Fishguard Harbour! Pembrokeshire.

"*Spores* .011—16 mm. long. 007—010 mm. broad." (Nyl.)

Forma *intumescent*, (Rebent.) whitish, *sublveitate, very thin, smooth*, at length *rimoso-areolate*; apothecia convex, fuscous or nigro-fuscous, sometimes *livido-pruinose, margin thick, snow-white, inflexed, sometimes crenulate*; paraphyses crowded, thick.

On trees.

**SYN:**— Rebent. Fl. Neomarch 301. (1804.) Stiznb. l. c.

**FIG:**— Hepp Sporen t. 70 f. 614.


**GEOG. DISTRIBUT:** Europe.

**BOT. PROV:** — 5.

**ENGLAND:** — Stannor Hill! Herefordshire. (1864.)

Forma *collocarpa*, Ach. whitish, *sublveitate or limitate, thin, unequal* or *granulato-rugose* (on rocks thicker, verrucoso-diffract); apothecia small when young, concave, *fuscous-black* or nearly *black, margin entire* or *sub-entire*; paraphyses free, slender.

On trees and rocks.


**GEOG. DISTRIBUT:** Europe.

**BOT. PROV:** — 2, 3...6, 7...10...15...23...31.
OF GREAT BRITAIN.

E N G L A N D :—Yorkshire, common. Mr. Mudd. Topsham, Exeter, Mr. Parfitt.
SCOTLAND:—Blaeberry Hill! Perth. Dr. Lindsay.
IRELAND:—Lambay Island. Mr. Carroll.
"Spores .012—18 mm. long. .008—70 mm. broad." (Nyl.) Spores .017 mm. long. .009 mm. broad.

Forma gangalea, Ach. albo-cinerascent, determinate, radiate, thick, glabrous, rimose or rimoso-areolate; apothecia frequent, sessile, at first concave then convex, black, margin entire or sub-crenulate; paraphyses sub-conglutinate.

On rocks.

EXS:—Mandon 55.
GEOG. DISTR.:—Europe.
BOT. PROV.:—6...7...10...31.
WALES:—Pestinlog Road near Dolgelly! Penmaenmawr!
CHANNEL ISLANDS:—Bordeaux Harbour, Guernsey. Mrs. Collings.
Spores .014—.015 mm. long. .007 mm. broad.

Forma atrynia, Ach. granulate or verrucosus-areolate, sometimes nigricanti-limitate; apothecia moderate, plane, rarely convex, fuscosus or fusco-pallescent or corneo-fuscosus, margin subcrenate, rarely entire; paraphyses thick, subconglutinate.

On rocks and posts.

EXS:—Fellm. 126. Rabh. 831.
GEOG. DISTR.:—Europe.
BOT. PROV.:—1...3...15...19...31.
ENGLAND:—Devon. Mr. Parfitt. Messing, Essex. Mr. Varenne.
IRELAND:—Dinas, Killarney. Mr. Carroll.
CHANNEL ISLANDS:—Beauport, Jersey! Mr. Larbalestier.
"Spores .011—18 mm. long. .006—9 mm. broad." (Nyl.)

Forma melacarpa, Nyl. whitish, smooth, thin, limitate; apothecia black, plane, prominent, margin white entire.

On micaceous stone walls, rare. 1870.

EXS:—Anzi Langob. 105
BOT. PROV.:—15.
SCOTLAND:—High up on Craig Tulloch. Rev. J. M. Crambe. (1870.)

Forma epibrya, Ach. whitish, granulosus or verruculosus-cinerascent; apothecia fuscosus or fusce-rufescent, plane, margin entire, often flexuose; paraphyses subconglutinate.

On mosses, &c.

FIG:—Hepp Spore t. f. 185.
GEOG. DISTR.:—Europe.
BOT. PROV.:—10...30...31.
THE LICHEN-FLORA

ENGLAND:—Guisbro' Moor, Cleveland. Mr. Mudd.
IRELAND:—Belfast. Prof. Dickie.
CHANNEL ISLANDS:—Quenval, Jersey. Mr. Larbaslester.

"Spores .014—.18 mm. long, .008—.011 mm. broad." (Nyl.)

Forma chilarona, Ach. whitish or cinerascent, determinate, thin, sublævigate or subrugoso; apothecia plane, or somewhat convex, margin sub-entire or crenulate; paraphyses slender, sub-conglutinate.

On trees and rocks.

Stinzlb. t. c.


GEOG. DISTRIBUTION:—Europe.

BOT. PROV.:—2. 3...5...10...23.


Forma spodophæoides, Nyl. in Flora 1872.

On micaceous stone walls, rare. 1870.

BOT. PROV.:—15.

SCOTLAND:—Base of Craig Tulloch. Rev. J. M. Crombie. (1872.)

42. L. leucophyma, Leight. greyish-pink, verrucoso-squamos, squammules scattered and distinct, plano-convex, or hemisphaerico-tuberculose, minutely inanato-granulate, (K y C—); apothecia sessile, nigro-fuscos, convex, thalline margin entire, tumid; spores 8, colourless, elliptico-oblong, simple; paraphyses filiform, branched above and jointed; hymenia gelatina carulescent with iodine.

On micaceous schistose alpine rocks, very rare. 1864.

GEOG. DISTRIBUTION:—Europe.

BOT. PROV.:—15.

SCOTLAND:—Over Loch-na-Cat, Ben Lawers! Messrs. Jones & Carroll. (1864.)

Of this fine lichen only one fertile specimen has been found. The curious isidicidio-tuberculose thallus has often a pinkish tinge.

43. L. terna, Nyl. cinereo-virescent, thin, unequal or sub-granulato-unequal, indeterminate, rimulose, (K yellow C—); apothecia pale, minute, plane, margin paler, nearly white; spores 8, colourless, oblong or sub-bacillar, simple (or obsoletely and spuriously 1-septate); paraphyses few, rather thick, apex incrassate, or clavate; epithecium and hypothecium colourless; gelatina hymenea blue with iodine.

On wet maritime granitic rocks, rare. 1868.


GEOG. DISTRIBUTION:—Europe.

BOT. PROV.:—15...31.


CHANNEL ISLANDS:—Bouley Bay! La Moye! Jersey. Mr. Larbaslester.

"Spores .008—.010 mm. long, .0015—.0025 mm. broad," (Nyl.) "Spores .0115 mm. long, .002—.0035 mm. broad," Spermatia oblong. Allied to, though distinct from, L. globulosa. Trk.

Forma explanatula, Nyl. granules of thallus depressed or flattened and more or less dispersed,
On damp walls, very rare. 1877.

BOT.Prov.:—26.
IRELAND:—Letterbeg! Connemara. Mr. Larbalestier. (1877).

44. L. gangaleoides, Nyl. albido-cinereous, verrucoso-areolate, (K deep yellow C—); apothecia black, moderate, crowded, plane, sessile, thalline margin white, entire.

On rocks, rare. 1876.

SYN:—Nyl. in Flora 1872. p. 358. and 1873. p. 69.
EXS:—Maudon 55.
BOT. Prov.:—26.
IRELAND:—Letter Hill! Galway. Mr. Larbalestier. (1876).

******* Thallus K—C—.

45. L. epanora, Ach. greenish-yellow, squamuloso-glebulo, glebula small, contiguous and conglomerate or dispersed, sub-radial-lobate, smooth or citrino-sorediate; apothecia luteo-fulvous, plane, thalline margin thick, flexuose or sub-crenate; spores 8, colourless, ellipsoid, simple; thallus K—C—.

On rocks, rare. 1836.


FIG:—Hepp Sporen t. 89. f. 775.


BOT. Prov.:—7...15...19.
IRELAND:—Dunkerron. Dr. Taylor. (1836).
Wales:—Barmouth! Rev. T. Salway. near Portmadoc!


"Spores .008—.011 mm. long. .005—7 mm. broad." (Nyl.) "Spores .009—.012 mm. long. .005—7 mm. broad." (T. M. Fr.)

46. L. medians, Nyl. vitellinuous-yellow or citrine, opaque, picato-radiate at the circumference, lacinia narrow, convex, incurved and subcrenate at the apices, minutely granuloso-seabrous on the upper surface, in the centre broadly albido-cinerascent, or with scattered citrine granules, and minutely granulo or leproso-granulose, (K—); apothecia dirty-flavescent or flavo-fuscescent, plane, thalline margin. citrine, entire or crenulate; spores 8, colourless, oblongo-ellipsoid, simple.

On calcereous rocks, rare. 1871.

EXS:—Arn. 222. Rabff. 796.

GEOG. DISTRIBUT:—France.

BOT. Prov.:—5.
ENGLAND:—Llanymynech Hill! Shropshire. (1871).

"Spores .011—17 mm. long. .0045—.0065 mm. broad." (Nyl.)

47. L. galactina, (Ach.) whitish, rugulose, appressed, sub-pulverulent, lobato-crenate in the circumference; apothecia crowded towards the centre, livido-cerneo-fuscescent, more or less albo-pruinose, margin elevated, persistent, eventually crenulate and flexuose; spores 8, colourless, ellipsoid, simple; thallus K—C—.

On plastered walls, rocks, &c. frequent.


FIG:—Hepp Sporen t. 20. f. 180.
THE LICHEN-FLORA


GEOG. DISTRIBUTION: Sweden, Germany, Helvetia, France.

BOTANICAL HABITAT:—2, 3, 5, 6, 8, 10, 15, 19-30.


IRELAND.—Common. Mr. Carroll.

WALES.—Fishguard Harbour! Pembrokeshire.

"Spores, 0.003 in. long, by 0.0015 in. broad. Spermastria cylindrical, elegantly curved or flexuose." (Mudd.) "Spores, 0.009—0.010 mm long, 0.005—6 mm. broad." (Nyl.)

**Forma dispersa**, (Pers.) sub-crustaceous; apothecia dispersed: livido-pallescence or subcarneous or nigrescent, pruinose, margin white, crenulate; thallus K—C—.

On rock-ridge, frequent.


FIG.—Hepp Sporent t. 8. f. 61.


GEOG. DISTRIBUTION: Northern Europe, France, Germany, Switzerland.

BOTANICAL HABITAT:—1, 5, 6, 10, 26, 31.

ENGLAND.—Battersby Bank and Carlton Bank, Cleveland. Mr. Mudd.

Chance's Pitch, Malvern. Dr. Holl. Starcross, Devon. Mr. Parfitt. Grove Lane, near Chirnside. Mr. W. Joshua.

IRELAND.—Killery Bay and Lettermore, Connemara. Mr. Larbalestier.

CHANNEL ISLANDS.—Rozel, Jersey. Mr. Larbalestier.


CHANNEL ISLANDS.—Rozel, Jersey. Mr. Larbalestier.

Spores, 0.009—0.011 mm long, 0.005—6 mm. broad.

**Forma livida**, (Ach.) whitish, rimoso-areolate, glabrous, areolae crenulate at the margins; apothecia minute, crowded, immersed, disk plane, livido-carneous, thalline margin entire.

On rocks, rare.


GEOG. DISTRIBUTION:—Europe.

BOTANICAL HABITAT:—Europe.


**Forma verrucosa**, Leight. thallus in white dispersed, convex, verrucose masses, in which the apothecia are imbedded.

BOTANICAL HABITAT:—Europe.

WALES.—Bracelet Bay! Mumbles, near Swansea.

48. *L. subluta*, Nyl. whitish, thin, minutely granulate, indeterminate (K—C—); apothecia pale yellow or buteo-sUBLIVID, crowded, disfirmed by mutual pressure, thalline margin subcrenate; spores 8, colourless, ellipsoid; paraphyses not very distinct; gelatina hymenea I blue then vinous-red.

On dry calcareous rocks, rare. 1876.

SYN.—Nyl. in Flora 1876. p. 232.

BOTANICAL HABITAT:—Europe.

IRELAND.—Near Kylemore, Galway. Mr. Larbalestier. (1876.)

A distinct species of the stirsps of *L. galactina*. Spores, 0.010—12 mm long, .005—6 mm. broad.

Var. perspersa, Nyl. thallus deficient; apothecia distantly disfirmed.

On calcareous rocks, very rare. 1876.
49. *L. umbrina* (Ehrh.) thallus nearly obliterated, hypothallus olivaceo-fuscous, diffuse; apothecia fuscous or fusco-nigrant, small, excreta-suffused, thalline margin white sub-crenulate; spores 8, colourless, ellipsoid, simple; paraphyses articulate; thallus K—C.

On rocks, old wood, &c.


**GEOG. DISTRIB.**—Sweden, Germany, France, Italy, Lombardy, Hungary, Bavaria.

**Bot. Prov.**—5...7...15, 16...24...30, 31.

**EngLAND**.—Llanymyneh Hill! Shropshire.


**Wales**.—Between Llangollen and Corwen! Eglwyseg Rocks!

**Channel Islands**.—La Moye! Jersey. Mr. Lavailestier.

“Spores.009—.012 mm. long, .005—.006 mm. broad.” (Nyl.) Spores .013 mm. long, .006 mm. broad.

**forma crenulata**, (Dicks.) cincereous, very thin, nearly evanescent; apothecia minute, dispersed, plane, fuscous-grey, margin white, persistent, crenulate; spores 8, colourless, ellipsoid, simple; thallus K—C.

On limestone rocks, &c., not uncommon. 1793.


**Fr**.—Hepp 65. Nyl. 125.

**GEOG. DISTRIB.**—Sweden, Finland, Switzerland, France.

**Bot. Prov.**—2...5, 6, 7...10, 11...19—30.

**EngLAND**.—Yorkshire. Mr. Dickson. (1793.) Eglestone, Durham. Rev. J. Harriman. Castle Eden; Fulwell; Boldon; and Cleadow; Middleton Beck; and Barnard Castle. Durham; Carham and Wark, Northumberland. Mr. Winch. Shingles, Eastbourne. Mr. Roper. High Rock! near Bridgnorth, Shropshire.

**Scotland**.—Frequent. Rev. J. M. Crombie.

**Ireland**.—Not uncommon. Mr. Carroll.

**Wales**.—Eglwyseg Rocks! Giltar Point! Tenby.

**forma prosechoides**, Nyl. dirty-yellowish-white, tartarous, thin, sub-determinate, rimoso-areolate, areolae flat or slightly tumid and smooth; apothecia scattered, sessile, plane, brownish-black; thalline margin entire; thallus K—C.

On maritime rocks, rare. 1856.

SYN.—Nyl. in Crombie En. 51. (1870.)

EXS.—Crombie 67.

**GEOG. DISTRIB.**—Europe.

**Bot. Prov.**—6, 7...15.

**Scotland**.—Kincardine. Rev. J. M. Crombie.


Spores .012 mm. long. .006 mm. broad.

**forma zosteræ**, Ach. glaucous, effuse, very thin, almost evanescent; apothecia minute, scattered or aggregate, plane, rufescenct,
thalline margin thin, white, pulverulent; spores much smaller; paraphyses very delicate and slender.

On dry grass, &c. in maritime places. 1873.

Bot. Prov. = 51.
CHANNEL ISLANDS: =—La Moye! Jersey. Mr. Larbalestier. (1873)
"Spores .011—.14 mm. long. .006—.7 mm. broad." (Nyl.)

50. L. Hageni, (Ach.) albo-cinerascent, thin, indeterminate, nearly evanescent; apothecia small, crowded, plane, at length tumid, paler or darker brown, more or less pruinose; margin white, persistent, crenulate; spores 8, colourless, ellipsoid, simple; thallus K—C—

On trees and old wood.

Fig. =—Hepp Sporen t. 8. f. 64.
Geog. Distrib. =—Italy, Westphalia, Germany, Helvetia, Hungary, Prussia.
Bot. Prov. = 8—10. 11...15. 24...31.
IRELAND: =—Near Limerick. Mr. Carroll.
CHANNEL ISLANDS: =—St. Clement's Bay! and near St. Aubins! Jersey. Mr. Larbalestier.
Mr. Crombie finds a state designated by Dr. Nylander in litt. sub-distans on maritime granitic rocks at Nigg, Portlethen, Kincardineshire; and also var. conferta, Dub. (Bot. Gall. 684) Woodside near Aberdeen. "thallus thin, greenish or evanescent, paraphyses scarcely discrete."

form: calcigena, Nyl. cinerascent, thickish, crustaceous, areolato-diffract; apothecia livid, subpruinose, margin white, entire.

On rocks, very rare. 1876.

IRELAND: =—Lettermore, Galway. Mr. Larbalestier. (1876).

51. L. calcarea, (Linn.) white or cretaceous or farinose, contiguous, or rimoso-areolate, effigurate at the circumference, hypothyllus pale; apothecia immersed, plane, casio-pruinose; spores 2, 3, 5, 6, rarely 8, colourless, ellipsoid, simple; hypothecium colourless; paraphyses gelatinoso-concrete; medulla I, —thallus K—C—; gelatina hymenea at first pale blue then dirty yellow with I; spermatia acicular straight.

On calcareous rocks, frequent.

form: concreta, Schær. white or cretaceous, rimoso-areolate or contiguous; apothecia immersed.

Fig. =—Ach. Meth. t. 4. f. 1. Hepp Sporen t. 71. f. 627.
Geog. Distrib. =—Germany, Switzerland, Italy, Pyrenees, France, Hungary.
Bot. Prov. = 5...7...10...15...20...26.
Mr. Larbalestier.
WALES: =—Great Orme's Head! Eglwyseg Rocks! Cader Idris! Beaumaris! Spores .029—.031 mm. long. .015—.020 mm. broad.
form*contorta*, Hoffm. white or cinerascen), areole disperse, centrally elevated, depressed at the edges; apothecia immersed.

On calcareous rocks, frequent.


**Fig:**—Hoffm. Pl. Lich. t. 22. f. 3.


**GEOG. DISTRI**:

---Italy, Scandinavia.

**BOT. PROV:**:

---5...7...10...26.

**ENGLAND:**


**IRELAND:**

---Twelve Pins! Doughraagh! Connemara. Mr. Lava&baster. 

**WALES**:

---Great Orme's Head!

forma *Hoffmannii*, (Ach.) glaucescent, areole sub-contiguous, apothecia larger and more elevated.

On granite and other hard rocks, frequent.


**Fig:**—Hoffm. Pl. L. t. 22. f. 1. 2. 3. Hoffm. En. t. 6, f. 3. Mass. Ric. f. 97. E. Bot. t. 1940.


**GEOG. DISTRI**:

---Switzerland, Italy, Pyrenees, Sweden, Hungary.

**BOT. PROV:**:

---3, 4, 5...7...10...26.

**ENGLAND**:


**IRELAND**:

---Top of Kylemore Mountains! co. Galway. Mr. Lava&baster.

**WALES**:

---Bryn Maedwyn! Llanyblodwel! Rocks!

forma *ochracea*, (Schar.) cinereo-ochraceous, areolato-diffract; apothecia immersed.

On slaty rocks, rare. 1877.

**SYN:**---Schar. Spic. 72.

**EXS:**---Schar. 123. Anzi Langob. 69.

**GEOG. DISTRI**:

---Switzerland, Italy, Hungary.

**BOT. PROV:**:

---7.

**WALES**:

---Moel-y-gast! near Tremadoc (1877).

52. *L. lactea*, (Mass.) milk-white, tartaro-farinose, contiguous, effuse; apothecia palido-testaceous, at length fuscescent, most minute, at first immersed, then sessile and sub-concave; spores 8, colourless, elliptical or elliptico-oblong, simple.

On walls, rare.


**GEOG. DISTRI**:

---Italy.

**BOT. PROV:**:

---5.

**ENGLAND**:

---Near Cirencester. Mr. Joshua

"Spores .009.—.0122 mm. long, .00244.—.00366 mm. broad." (Mass.)

53. *L. gibbosa*, (Ach.) cinereous or virentis-fuscous, angulari-areolato-verrucose, fertile ones elevated in the centre; hypothallus pale; apothecia areolate, immersed, urceolate, or emersed, concave or plane, naked, thalline margin slightly crenulate; spores 8, colourless, ellipsoid, simple, large; hypothecium colourless; paraphyses gelatinoso-concrete; gelatina hymenea at first slightly blue then vinoso-fulvescent with I; medulla I—; thallus K— C—; spermatia acicular, straight.

On granitic and hard rocks, frequent.
forma vulgaris, (Th. Fr.) dirty-whitish or cinereous, thick, tar-
tareous, areolato- verrucose; apothecia more or less emersed, concave or
or plane, ocellate.

276.

Fig.:—Hepp Sporen t. 71. f. 624.

Exs.:—Zw. 60. Hepp 624. Scher. 125.

Geog. Districts:—Norway, Hungary, Switzerland, Pyrenees, Italy, Germany.

Bot. Prov.:—5, ... 26.

Stanner Hill! Herefordshire.

Ireland:—River Dawros! co. Galway. Mr. Larbalestier.

Wales:—Between Llangollen and Corwen! Aber! Carnarvonshire. Bar- 
mouth! Criceieth Castle rock!

"Spores .021—30 mm. long, .014—18 mm. broad." (T. M. Fr.)

Spores .024 mm. long, .017 mm. broad.

forma porinoidea, Flot. dark-virescenti-fuscous, opake, smooth, 
areolato- verrucose, areole very convex, subhemispherical; apothecia 
immersed, thalline margin coarctate, sometimes crenulate, often 
paler.

Syn.:—Flot. L. Siles. 128. (1849.) Körb. Syst. 163.

Fig.:—E. Bot. t. 1732.

Exs.:—Mudd 135. Leight. 175.

Geog. Districts:—Europe.

Bot. Prov.:—2, ... 7, ... 10.

England:—Cliffirigg, Yorkshire! Mr. Mudd. South Downs, Sussex. Mr. 
Borrer. Haughmond Hill! Lyth Hill! Caer Caradoc! Long Mynd! Abdon 
Burf!

Wales:—Craig Breiddin! Montgomeryshire. Aber! Carnarvonshire.

forma squamata, Flot. dark-virescenti-fuscous, opake, smooth, 
areolato- verrucose, closely appressed, radiato-efigurate at the circum-
ference; areola convex or subhemispherical; apothecia immersed, 
thalline margin coarctate, often crenulate.


Exs.:—Leight. 175. (in some copies.)

Bot. Prov.:—5.

England:—Caer Caradoc!

Probably only a state of f. porinoidea in which the circumference is 
developed.

forma depressa, Ach. casio-cinerascent, areolate, areola small, de-
pressed, plane; apothecia immersed, areolato-impressed, sub-leci-
dine.

On alpine rocks, rare. 1870.


Geog. Districts:—Sweden, Lapland, Norway.

Bot. Prov.:—15 ... 19.


Ireland:—Dunkerron. Dr Taylor.

54. L casio-cinerea, Nyl. albido-cinereous, casio-cinereous, thickish, 
areolato-verrucoso-diffract (medulla I—thallus K dirty-fuseescent); 
apothecia immersed in the areola, concave, surrounded with a white 
thalline margin, at length emerged and more or less prominent; 
spores 8, colourless, oblong, simple.

On mountain rocks, not common. 1876.

Exs.:—Anzi Langob, 323.
of great Britain.

Bot. Prov:—7...26.
Ireland:—Borders of Lake east side of Doughraugh Mountain, Connemara. Mr. Larbalester (1876.)
Wales:—Moel-y-gest!

forma obscursura, Fr. olivaceo-cinerascent. (med. I—thallus K dirty fuscecent.)

On rocks, frequent. 1854.

Syn:—Nyl. in Flora 1872. p. 364.
Krb. 246. Leight. 204.
Geog. DistriB:—Europe.
Bot. Prov:—5...10.

55. L. pelobotrya, (Whlnb.) whitish or livid-grey, very thick, tartareous, continuous, rimose, smooth, unequally raised up into large plano-convex masses or pulvinuli, (medulla I—; thallus K—C—) on which are the apothecia which are at first minute and immersed, then superficial, sub-urceolate, sub-immerso-sessile, solitary or congregate, blackish-brown, thalline margin very thick, somewhat polished, flexuose; hypothecium dark-brown; paraphyses crowded, distinct, slender; spores 4-8, colourless, ellipsoid or oblongo-ellipsoid, simple; gelatina hymenea I blue.

On alpine micaceo-schistose rocks, very rare. 1869.

Geog. DistriB:—Finmark, Norway.
Bot. Prov:—5.
Scotland:—Ben Lawers! Messrs. Jones & Crombie.
Th. Fries L. Scand. 279, ranks this in the Aspicilia section of Lecanora on account of the thick thalline margin of the apothecia being filled with gonidia. He states also that scabrous rufescent cephalodia are mingled with the areoles of the thallus as in Lecidea panarola, which this lichen resembles in habit.
“Spores .023—35 mm. long, .012—18 mm. broad.” (Nyl.) “Spores .024—35 mm. long, .012—16 mm. broad.” (T. M. Fr.)

56. L. flavidus, Hepp. pallido-ochraceous or cinerascent, subprose, effuse, very thin, rimoso-areolate; apothecia excessively minute, numerous, innate, black, concave or plane, thalline margin thin entire; hypothecium colourless; paraphyses gelatinoso-concrete, ceruleous towards the apices; spores 8, colourless, ellipsoid, simple; gelatina hymenea I of an intense persistent blue, spores and contents of asci fulvescent; (medulla I—, thallus K—C—.)

On moist mountain rocks, not common.

Fig:—Hepp Sporen t. 71. f. 630.
Geog. DistriB:—Scandinavia, Germany.
Bot. Prov:—5...10.
“Spores .012—18 mm. long, .007—11 mm. broad.” (T. M. Fr.) Spores .017 mm. long, .009 mm. broad.

57. L. lacustris, With. pale or testaceous or ochraceous, thin,
subdeterminate, plane, smooth, slightly rimoso-areolate; apothecia minute, pallido-refuscent, areolato-innate; hypothecium colourless; spores 8, colourless, ellipsoid, simple; paraphyses conglutinate; gelatina hymenae I blue, then dark vinous-red or fulvescent;

(medulla I—, thallus K—C—)

On moist rocks over which water has flowed, not common.

1796.


FIG.—With. L. c. t. 31. fig. 4. Ach. Prod. f. in tit. Hepp Sporen t. 71. f. 626.


GEORG. DISTRIBUT.—Germany, Sweden, Switzerland, France.

BOT. PROV.—7...15...(19—30).


IRELAND.—Not rare. Mr. Carroll. Ballynakill! Galway; Mullaghglass! near Tully! Mr. Larbalestier.


“Spores .014—.018 mm. long, .007—8 mm. broad.” (Nyl) “Spores .013—018 mm. long, .008—8 mm. broad.” (T. M. Fr.) Spores .013—015 mm. long, .007 mm. broad.

forma punctata, (Dicks.) greyish-white, thin, rimulose, nigro-limitate; apothecia minue, numerous, subsessile, black, plane, ciesio-pruinose, thalline margin white, entire.

On rocks and walls, rare. 1793.


FIG.—E. Bot. 450.

GEORG. DISTRIBUT.—Europe.

BOT. PROV.—2...5...15...29, 30.


SCOTLAND.—On rocks. Mr. Dickson. (1799.)


58. L. Dicksonii, (Ach.) ochraceo-ferruginosus, thin, smooth, opake, rimose or areolato-rimose, nigro-determinate; apothecia small, innate, concave, with thick black proper margin, nigricant within; hypothecium fuscous-black; spores 8, colourless, ellipsoid, simple; (thallus K—C—).

On rocks, frequent. 1781.

SYN.—Ach. Prodr. 76. (1793.) Nyl. Scand. 155. L. Oederi, Sm. L. melano-

phaca, Fr.


GEORG. DISTRIBUT.—Sweden, E. Lapland, Germany, Norway, Tyrol Alps, Italy, Switzerland.

BOT. PROV.—5...7...10, 11...14, 15...19...26.


IRELAND.—Croghan, Killarney. Mr. Carroll. Mountains of Delphi! Conmemara. Mr. Larbalestier.


“Spores .011—.14 mm. long, .006—8 mm. broad.” (Nyl.) Spores .013 mm. long, .006 mm. broad.
59. *L. cinerea-rufescens*, (Ach.) *darkly-cinereous, whiter towards the circumference, areolato-areolata, rimose, hypothallus nigricant; apothecia immersed, at first concave, eventually discoid, dark-rufous, thalline margin entire; spores 8, colourless, ellipsoid, simple; (thallus K—C—, medulla I blue.)

On sub-alpine rocks and walls, rare.


**Fig.**:—Mass. Ric. fig. 62.


**Geog. Distri**:—Lapland.

**Bot. Prov.**:—6, 7...15.

**Scotland**:—Grazplana. Rev. J. M. Crombie.


"Spores .016—24 mm. long, .009—.010 mm. broad." (Nyl.) "Spores .012—24 mm. long, .007—.010 mm. broad." (T. M. Fr.)

forma diambata, Ach. ochrey-red, rimoso-areolate, sub-determin-ate; apothecia immersed, plane or slightly concave, black, thal-line margin flexuose, elevated.

On alpine rocks, rare. 1870.


**Exs.**:—Anzi Langob. 74.

**Geog. Distri**:—Norway, Russia, E. Pyrenees, Lombardy.

**Bot. Prov.**:—15.

**Scotland**:—Breadalbana. Rev. J. M. Crombie.

60. *L. subcinerea*, Nyl. cinereous, thick, subverrucos-areolate, rimoso-diffract, (K—C—); apothecia fuscesc-black, innate, plane, surrounded by a not very prominent thalline margin, internally colourless; spores 8, colourless, subglobose or ellipsoid, simple; paraphyses indistinct; epithecium fuscescent; gelatina hymenae I slightly blue then vinous-red.

On Gneissic rocks, rare.

**Syn.**:—Nyl. in Flora 1869. p. 82.

**Bot. Prov.**:—10.

**England**:—Holwick Scar, Yorkshire. Mr. Harriman in herb. Somerby.

Allied to *L. cinerea-rufescens*. Spores 0.009—0.014 mm. long, 0.007—9 mm. broad.

61. *L. epulotica*, (Ach.) *pale or pallido-ochraceous or whitish, thin, rimulose* or sub-continuous; apothecia urceolate or innate, moderate, carneous or carneo-rufescens, margin thickish, concolorous, circumcised from the thallus; spores 8, colourless, elliptico-oblung, simple; (thallus K—C—.)

On calcaresous rocks, not common.


**Exs.**:—Arn. 41. 164. Zw. 281. Anzi Langob. 77.

**Geog. Distri**:—Switzerland, Hungary, Lombardy, Germany.

**Bot. Prov.**:—1, 2...7...11...15...26.


**Scotland**:—Ben Lawers. Dr. Hol. Trossachs; Killin; Ben Lawers; Craig T. Rock; The Kohl. Rev. J. M. Crombie.

**Ireland**:—Kylymore! co. Galway. Mr. Lorbalestier.

**Wales**:—Llyn Gwernan, Dolgelley. Dr. Hol. Nant Gwynant! Snowdon.

"Spores .018—20 mm. long, .010—11 mm. broad." (Nyl.) "Apothecies rosei"—not to be confounded with *L. lacustris*, With. Spores .0165 mm. long, .011 mm. broad.
62. *L. Prevostii*, (Fr.) white, cinerascen or fleshy-white, contiguous, often crustaceous; apothecia minute, immersed in foveoli, subrotund or variously difform, concave, roseo-incarnate at length obscure, proper margin convinient, distinct from the thalline margin; hypothecium colourless; paraphyses gelatinoso-concrete; spores 8, colourless, ellipsoidal, simple; gelatina hymenea 1 blue then subvinious. (K.—C—).

On calcareous rocks, not common.


**Fig:**—Leight. Ang. Lich. t. 15 f. 1.


**GEOG. DISTRIB:**—Sweden, Germany, Italy, Switzerland, France.

**BOT. PROV:**—8...15.

**ENGLAND:**—Cheddar! *Mr. Borner.*


The minute gonidia, as well as other characters, separate this from *L. eputatica* which has enormous concomitante gonidia, four times larger, and which with *L. ceyrophana*, Korb. rhodopis, Suffr. odora, Ach. suaveolens, Ach. and others. Th. Fries Scand. p. 273 includes in a distinct genus *Ionaspis*, Th. Fr. Spores .012—.013 mm. long, .008 mm. broad. “Spores .014—22 mm. long, .009—11 mm. broad.” (T. M. Fr.)

63. *L. badia*, Ach. olivaceo-fuscous or badeo-fuscescent or fusco-cinerascen, shining, granulato-areolate; apothecia appressed, numerous, often crowded, badeo-fuscescent or fuscous-black, shining, thalline margin entire or crenulate; spores 8, colourless, fusiform-ellipsoidal, simple; (thallus K.—C—).

On mountain rocks, frequent.


**Fig:**—Hepp Sporen t. 20. f. 181.


**GEOG. DISTRIB:**—Europe, generally.

**BOT. PROV:**—1...5...7, 8...10, 11...15...18...26...30, 31.


**SCOTLAND:**—Garrynashe, Lewis. *Dr. Lindsay*. Ben Lawers; Coast of Kin- cardine; Cairn Turk, Braemar, Rev. J. M. Crombie.


**WALES:**—Snowdon, Llanberis ascent! Barmouth! Cader Idris! Cwm Bochlyw! Cwm Cywion! Llwy Cwlyd! Llwy Gehrionydd! Craig Aderyn! *Channel Islands:*—Jersey; Guernsey. *Mr. Larkbeatlest.*

“Spores .00225 in, long, by .0005 in, broad, t. 2 f. 50.” (Mudd.) “Spores .009—.013 mm. long, .004—.0 mm. broad.” (Nyl.) “Spores .016—.16 mm. long, .004—.0 mm broad. Spermatia acicular, straight.” (T. M. Fr.)

form cinerascen, Nyl. paler, cinerascen.

On mountain rocks, frequent.

**SYN:**—Nyl. Scand. 170. (1861.)

**EXS:**—Anzi Etr. 18.

**GEOG. DISTRIB:**—Norway.

**BOT. PROV:**—7...15.

**SCOTLAND:**—Kinardine, Rev. J. M. Crombie.

**WALES:**—Cader Idris! Crib Coch! Snowdon; Aran Mowddwy!

Var. *atriseda*, Fr. brunneo-fuscous, granulato-areolate, granules
more or less dispersed, tumid and convex; hypothallus thin, black; apothecia pallido-fuscescent, innato-sessile in the granules, thalline margin thickish; spores ellipsoid, simple; (thallus K—C—.)

On mountain rocks, not common. 1869.


BOT. PROV:—7.

WALE:—Dolgelly ! Dr. Holt.

"Spores .006—13 mm. long, .006—7 mm. broad." (Nyl.) "Spores .006—13 mm. long, .006—7 mm. broad. Spermatia aeculear, arcuato-curve." (T. M. Fr.)

forma picea, Dicks. pitch-black; apothecia black.

On alpine rocks, rare. 1801.

SYN:—Dicks. Crypt. 4. 12. (1801.)

ENG:—Top of Roseberry ! Cleveland, Mr. Mudd. Abdon Burf ! Shropshire.


64. L. australa, Nyl. cervine or cervine-badious, unequal, rimose, thin; apothecia badious-brown, somewhat large, thalline margin badious, somewhat shining, flexuose, often subcrenate and proliferous; spores 8, colourless, ellipsoid; paraphyses moderate, articulated; gelatina hymenea I scarcely tinged but thece bluish.

On weathered quartzose stones in gravelly places, very rare. 1874.

SYN:—Nyl. in Flora 1874. p. 309.

ENG:—Top of Roseberry ! Cleveland, Mr. Mudd. Abdon Burf ! Shropshire.

SCOTLAND:—Near summit of Ben Cruachan, Argyleshire. Rev. J. M. Crombie. (1874.)

"Spores .009 mm. long, .007 mm. broad. Spermatia .004—5 mm. long, not .001 mm. broad." (Nyl.)

65. L. rhypariza, Nyl. pale or lurido-cinerascent, granulose or granulo-squamulose, squamule sublobulato-concrescent or sub-dispersed; apothecia fuscos, plane; spores 8, colourless, oblong or cylindraceo-oblong, simple, .021—27 mm. long, .006—7 mm. broad.

Forma curvescens, Mudd. fuscos-black, minutely granulo-squamulose; apothecia elevato-sessile, margin paler, smooth, inflexed; spores 6-8, obtusely fusiform, curved, simple; (thallus K—C—.)

On alpine mosses and rocks, rare. 1858.


ENG:—Top of Roseberry ! Cleveland, Mr. Mudd. Abdon Burf ! Shropshire.

SCOTLAND:—Summit of Ben Lawers ! Ann. Jones. (1858.)

"Spores .008 to .01 in. long, by .001 in. broad, t. 2. f. 38." (Mudd.)
66. *L. poliophæa*, (Whlnb.) cinerascent or cinereo-fuscescent, granulato-papillate, diffract, or papillato-verrucose, fibrillose-bysinæ and albido-radiate at the circumference; apothecia dark-reddish-brown, plane, thalline margin crenulate; spores 8, colourless, ellipsoid, simple.

On maritime rocks, rare. 1821.


FIG:—E. Bot. Suppl. 2662. f. 3. Wahl. l. c. t. 27. f. 3.

EXS:—Crombie 62.

GEOG. DISTRIB:—Norway, Finmark, Ireland.

BOT. PROV:—1...11...15...30...31.

ENGLAND:—Bamburgh and Staples Islands, Northumberland. Mr. Robertson. (1821.) Tol Peden Penwith, Cornwall! Mr. Borrer.


CHANNEL ISLANDS:—Near Le Fret, Noirmont, Jersey! Mr. Larbæstier.

“Spores .007— .013 mm. long. .035—.006 mm. broad.” (Nyl.) “Spores .008— .013 mm. long. .004—6 mm. broad.” (T. M. Fr.)

67. *L. verrucosa*, Ach. white, glaucescent, verrucose, smooth or slightly pulvulert; apothecia at first immersed in the thallodal verrucæ, (externally like a Pertusaria,) ultimately urceolate, rather large, black, slightly pruinose, thalline margin thick, entire, inflexed; proper margin more or less conspicuous, nigricant; hypothecium slightly fuscescent; paraphyses gelatinoséeconcrete; gelatina hymenea I blue then vinous-red; spores 8, colourless, ellipsoid, simple, large; (medulla I—, thallus K— C—).

On mosses in alpine localities, rare. 1861.


FIG:—Hepp Sporen t. 71. f. 193.


GEOG. DISTRIB:—E. Finmark, Bavaria, Switzerland, Italy, Hungary, Sweden, Norway, Mackenzie River, and White Mountain, North America.

BOT. PROV:—15.


“Spores .008 to .01 in. long. by .005 to .007 in. broad. t. 3. f. 56.” (Mudd.) “Spores .030—49 mm. long. .020—30 mm. broad.” (Nyl.) “Spores .030—43 mm. long. .016—32 mm. broad.” (T. M. Fr.)

68. *L. symmiciæ*, Nyl. Similar to *L. symmicta* but distinguished from *L. symmicta* (K—C orange) by different re-action K—C—.

On trees and old pales, rare. 1872.


FIG:—Hepp Sporen t. 9. f. 68.

EXS:—Hepp 68.

69. *L. torquata*, (Fr.) pale-mouse-colour, smooth, tartaceous, rimoso-diffract, areole plane, nigricanti-limitate; apothecia fuscescent, black, sessile, margin pale, persistent, entire or flexuose; spores 8, colourless, linearii-oblong, simple.

On rocks, rare 1865.

SYN:—Parmelia, Fr. S. V. O. 284 (1825.) Lecanora, Nyl. Prodr. 92.
70. L. fuscescens, (Smrft.) whitish or cinereous, slightly granulose; hypothallus thin, fusco-nigrescent; apothecia fuscos, moderate, plane, margined, internally whitish; spores 8, colourless, globular or subglobular, simple; paraphyses distinct; gelatina hymenae I intensely blue.

On birch.


71. L. mammillifera, Strtn. darkly-cinereous or fusco-cinereous, minutely areolato-diffract, areolæ plane, (K—C—); apothecia black or fuscos-black, small, prominent, convex, internally pallido-cinerascens, margin obtuse, at length depressed; spores 8, colourless, ellipsoid, simple; paraphyses few, distinct, somewhat thick, apices crasso-clavate, conglutinate, fuscous; hypothecium colourless; gelatina hymenae I caerulescent then fulvescent, especially the theca.

On rocks, rare. 1875.


72. L. melanaspis, (Ach.) cinereo-glaucescent, suborbicular, adnate, areolate, verrucoso-rugose in the centre, radiato-laciniate in the circumference, lacinæ convex, linear, multifid (K—C—); apothecia adpressed, fuscos-black or rufusfuscous, margin entire; spores 8, colourless, ellipsoid, simple.

On alpine rocks, rare. 1874.


73. L. parella, (L.) whitish or albidocinerascens, granulato-rugose or verrucoso-granulate or rimoso diffract; apothecia numerous, crowded, angulo-difformed, disk plane, dusky-testaceous, coarsely albo-granulate, often verrucose; margin thick, often radiato-crenulate; spores 6-8, colourless, ellipsoid, simple, large; (thallus K yellow C yellow, the disk of apothecia alone becoming red.)
On rocks, frequent.


**Fig:** — *E. Bot*. 727. *Hepp Sporen*. t. 71. f. 622.


**Geog. Distr.:** — Europe.

**Bot. Prov.:** — 1, 2...4, 5, 6, 7...10, 11...15...18... (19—30.) 31.


**Ireland:** — *Common. Mr. Carroll*. River Dawros! co. Galway. *Mr. Larbalietier*.

**Wales:** — Aberdovey! *Rev. A. Bloxam*. BarmOUTH! Diganwye near Conway! Dewsnant! Trefriw! TOWNY! Fishguard! Beaumaris! Criccieth! aber! 

**Channel Islands:** — Jersey! and all the other Islands. *Mr. Larbalietier*.

"Spores .012 to .014 in. long, by .005 to .007 in. broad." (Mudd.) "Spores .048—.088 mm. long, .025—.46 mm. broad." (Nyl. & T. M. Fr.)

forma pallescens, (L.) white, disk of apothecia albo-pruinose, margin thick, entire, smooth.

On rocks and trees, frequent.


**Geog. Distr.:** — Europe.

**Bot. Prov.:** — 1, 2...4, 5, 6, 7...10, 11...15...25...31.


**Ireland:** — Killaloe and Mucruis. *Mr. Carroll*.

**Wales:** — Betweeen Bala and Dolgelly! Glyn! near Capel Curig. Llanbedr!

**Channel Islands:** — St. Lawrence, Jersey! and all the other Islands. *Mr. Larbalietier*.

forma tumidula, (Pers.) whitish, disk of apothecia carneo-testaceous, coarsely albo-granulate, margin thick, entire or crenate, smooth.

On trees, not common. 1861.


**Fig:** — *Hepp Sporen*. t. 21. f. 188.


**Geog. Distr.:** — Europe.

**Bot. Prov.:** — 1, 2...4, 5, 6, 7...10, 11, 12...15.


**Scotland:** — Braemar. *Rev. J. M. Crombie*.

**Wales:** — Trefriw! (on sycamore) Llanbedr churchyard! Llanyblodwel!
formæ *Turneri*, (Sm.) *albo-sorediate*; margin of apothecia thick, entire, *albo-pulverulent* or sorediöse.

On trees, not common. 1801.

**Fig.**—E. Bot. 357.
**EXS.**—Mudd 127. Leight. 287.
**GEOG. DISTRIB.**—Europe.
**BOT. PROV.**—1, 2, 3...10, 11...15...19...25.
**SCOTLAND.**—Castleton of Braemar. Rev. J. M. Crombie.

74. *L. poriformis*, Nyl. *cinereous* or pallido-cinereous, firm, thin, *rimoso-diffract*; apothecia 1-3-4, innate in convex verrucae, (externally like a Pertusaria) disk pale, punctiformi-contracted; spores 6-8, colourless, ellipsoid, simple; (K yellow C the verrucae and disk brownish-red.)

On micaceous-chistose mountain-rocks, rare. 1865.

**SYN.**—Nyl. in *Flora* 1865. p. 353. Crombie En. 56.
**EXS.**—Crombie 74.
**GEOG. DISTRIB.**—Europe.
**BOT. PROV.**—15.
**SCOTLAND.**—Ben Lawers! *Adm. Jones* (1865.) Portlethen! Kincardine, Craig Tulloch. Rev. J. M. Crombie. "Spores .070—.80 mm. long, .034—50 mm. broad." (Nyl.)

75. *L. rupestris*, (Scop.) *whitish* or dark-cinereous, thin and effuse, or tartaceous, *furfuraceous*, rimuloso-areolate; *apothecia dull-orange*, immersed, plane and margined, or emersed, convex, immarginate; spores 8, colourless, ellipsoideo-oblong, simple; (apothecia K red.)

On calcareous rocks, common.

formæ *incrustans*, (DC.) *white*, thin, effuse; *apothecia small*, immersed, plane, margined.

**SYN.**—Da Candolle Fl. Fr. 2. 361. (1805.) Scher. En. 146.
**Fig.**—Hepp Sporen t. 31. f. 274.
**GEOG. DISTRIB.**—Europe, N. Zealand.
**BOT. PROV.**—1...5...10.
**ENGLAND.**—Yorkshire! Mr. G. Dixon. Chudleigh Rocks; Ansteys Cove, Torquay, Mr. Parfit. Whitcliffe Rocks! Ludlow.

formæ *calva*, (Dicks.) *white*, thin, effuse; *apothecia large*, emersed, convex, immarginate.

On calcareous rocks, frequent. 1790.

**Fig.**—E. Bot. 948. Dicks. Cr. t. 6. f. 4. Hepp Sporen t. 16. f. 134.
**GEOG. DISTRIB.**—Europe.
**BOT. PROV.**—3...5...7...13...19...26.
**ENGLAND.**—Craig-y-Rhiv, Oswestry! Rev. T. Salway, Shotover Hill, Oxford. Mr. Basler. Oversley Green Bridge; Coughton Court, Warwickshire. Mr. Purton. Whitcliffe Rocks! Ludlow! Llanymynech Hill! Downton Castle woods! Shropshire,
THE LICHEN-FLORA

SCOTLAND:—Highlands. Mr. Dickson. (1790.)
IRELAND:—Cork! Mr. Carroll, Ballynakill! Galway. Mr. Larbalestier.
WALES:—Great Orme's Head! Eglwyseg rocks!

forma rufescens, (Hffm.) nigricanti-cinereous, tartaceous, furfuraceous, rimuloso-areolate; apothecia large, convex, immarginate.

On calcareous rocks.


GEORG DISTRIB:—Europe.
BIT. PROV:—3...5...10...26.
IRELAND:—Old bridge near Kylemore! Galway. Mr. Larbalestier.

forma viridi-flavescens, (Wulf.) albido-cinereous, tartaceous, rimuloso-areolate; apothecia large or small, yellowish or orange, sub-innate or emersed, immarginate.


FIG:—Jacq. Coll. 3. t. 2. f. l. Hepp Sporen t. 31. f. 275.
EBS:—Leight. 119.

GEORG DISTRIB:—Europe.
BIT. PROV:—5...10...13.
ENGLAND:—Yorkshire. Mr. Mudd. Shoreham, Folkestone, Kent. Mr. Holmes. Whitecliff rocks near Ludlow!
IRELAND:—Whitepoint, Cork. Mr. Carroll.

******* Disk of apothecium C yellow.

76. L. glaucoma, (Hffm.) whitish or glaucous-white, rimuloso-areolate; apothecia tivid or livido-nigricant, innate or sub sessile, plane or convex, cæsio-pruinose, thalline margin thin or tumid, entire, flexuose, or obliterated; spores 8, colourless, ellipsoid, simple; disk of apothecium C yellow, thallus K yellow.

On rocks, frequent.


FIG:—E. Bot. 2156.

A. C. M. & N. 547. Leight. 53.

GEORG DISTRIB:—Pyrenees! Switzerland! Italy! S. W. Germany! Silesia! Voges! Tyrol Alps!
BIT. PROV:—1...5. 6...10. 11...13...19...30...31.


IRELAND:—Not rare. Mr. Carroll.


CHANNEL ISLANDS:—Common on all the Islands, Mr. Larbalestier.

"Spores .003 in. long, by .00125 in. broad." (Mudd.)

"Spores .010—13 mm. long, .006—7 mm. broad." (Nyl.)

"Spores .011—14 mm. long, .006—7 mm. broad." (T. M. Fr.)

Forma carulata, (Flot.) apothecia caruleo-nigricant, cæsio-pruinose, plano-convex, thalline margin obliterated, proper margin thin, black, flexuose.

On rocks.
OF GREAT BRITAIN.


Fig.:—Hoffm. Fl. Lich. t. 53. f. 5.

Exs.:—Zw. 73. 74. Arn. 212. Anzi Langob. 67.

Geog. Distrib.:—Alps! Switzerland! Madeira! Norway! Lombardy! Arctic America!

Bot. Prov.:—15.

Scotland:—Highlands! Mr. Borrer.

Forma cinereo-pruinosa, apothecia hemispherical, disk convex, carneous, granulate, cinereo-pruinose, margin obliterated.

On rocks.

Fig.:—Hepp Sporen t. 8. f. 60. and t. 103. f. 904.

Exs.:—Hepp 60. 904.

Geog. Distrib.:—Sweden! Italy! Germany!

Bot. Prov.:—10...23.

England:—Lanbranghri! Cleveland, Mr. Mudd.

Ireland:—Near Kinseale, Mr. Carroll.

Forma Swartzii, (Ach.) diffuse, verrucoso-granulato-areolate, "ambitus radioso-fimbriato"; apothecia aggregato-conglomerate, deformed, cinereo-glaucus, pruinose, margin thick, subtumid, undulate.

On alpine rocks, rare. 1801.


Fig.:—Ach. N. Act. Sc. Stockh. 15. t. 6. f. 3.

Exs.:—Arn. 249. Reich. & Schub. 74.

Geog. Distrib.:—Hungary! Bavaria!

Bot. Prov.:—15.


Forma complanata, Leight. thallus and apothecia smoothed down to one uniform plane, apothecia innate, nigricant.

On slaty rocks, rare. 1875.

Bot. Prov.:—6. 7.

Wales:—Pont Dysynni! near Towyn (1875.) between Fishguard and Llanachar! Pembrokeshire.

77. L. angulosa, (Ach.) cinerascent, membraneous, smooth, at length unequal or rugoso-sub-rimose; apothecia crowded in the centre, subangulose, plane or slightly convex, pale-rufous or pale, slightly cætic-pruinose, margin sub-entire or sub-crenulate; paraphyses slender, sub-distinct.

On trees.


Fig.:—Hepp Sporen t. 89. f. 780.


Geog. Distrib.:—Europe.

Bot. Prov.:—3...5...10...24.


*********** Disk of apothecium C.—

78. L. sub-carnea, (Ach.) yellowish-white, tartarceous, granulato-areolato-rimose, sub-radiate at the circumference; apothecia carneous, plane or convex, smooth, pruinose, frequently conglom-
erato-deformed, margin thick, subtumid, undulate, in age thinner and subobliterate; spores 8, colourless, ellipsoid, simple; (disk of apothecium —) thallus K yellow then orange red.)

On alpine rocks, rare.


Fig.:—Ach. N. Act. Stockh. 15. t. 6. f. 4. Hepp Sporen t. 103. f. 905.


Geog. Distrib.:—Fontaineblean! Ardennes! Lozere! France! Germany!

Heidelburg! Algeria! Lapland! Bogota! N. Granada, Italy!

Bot. Prov.:—2...7...15...26...31.


Ireland:—Dawros Bridge! co. Galway. Mr. Larrabestier.

Wales:—Barmouth! Craig Dhu! near Crichieth.

Channel Islands:—Near Boulay Bay, Jersey! Mr. Larrabestier.

79. *L. albell* (Pers.) white, silvery, determinate, thin, membranaceous, smooth; apothecia scattered, concave or plane, pale or flesh-coloured, casto-pruinose or naked, margin entire; paraphyses thick, free; (thallus K yellow.)

On trees, not common.


Fig.:—E. Bot. 2154. Hepp Sporen t. 21. f. 187.


Geog. Distrib.:—Sweden, Germany, France, Helvetia, America, California, Isle Bourbon, Vosges, Hungary, Arctic America.

Bot. Prov.:—1...2...3...5...10...15...31.


Channel Islands:—St. Ouen’s Bay, Jersey. Mr. Larrabestier.

“Gelatina hymenae I blue then nearly colourless or sometimes lutescent and the thece vinoso-fulvescent, their splices persistent blue. Spores .009—.011 mm. long, .005—.08 mm. broad.” (Nyl.)

80. *L. peralbella*, Nyl. Similar to *L. albell*, but differs in the gelatina hymenae becoming I vinous-red.

On trees, thorns, &c., rare.

Syn.:—Nyl in Flora 1872. p. 365.

Fig.:—E. Bot. 1631. ex herb. Sowerby in Brit. Mus.

Exs.:—Scher. 315.

Geog. Distrib.:—Europe.


England:—New Forest, Hants, Miss Biddulph.

Scotland:—Mr. Turner.

Ireland:—Killery Bay, Galway. Mr. Larrabestier.

C. Spores polari-bilocular.

81. *L. aurantiaca*, (Lightf.) flavescent or pale-lemon-colour, granulate, rugose or unequal, rimose; apothecia orange-coloured, biatorine, thalline margin obtuse, pale-yellow, undulate; spores S, colourless, ellipsoid, polari-bilocular; (thallus and apothecia K crimson.)

var. salicina, (Schrad.)

On ash trees. 1782.
OF GREAT BRITAIN.

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GEOG. DISTRIBUT :—Europe, Africa, America, Australasia.

Bot. Prov :—1, 2, 3, 4, 5...8...11...14.[19—30].31.

England:—Kent. Mr. Sowerby. Sussex, Mr. Borrer. Haddoace.

Suffolk, Mr. Turner. Cocken; Castle Eden and Dalton Downs. Gisborne, Harmsley; Teesdale, Durham; near Hexham and Chollerford, Northumberland.


Scotland:—Edinburgh. Sir. J. E. Smith. (1782.)

IRELAND :—Frequent. Mr. Carroll.

CHANNEL ISLANDS :—Jersey; Guernsey. Mr. Larbalester.

"Spores .0025 to .003 in. long, by .001 to .0015 in. broad." (Mudd.) "Spores .012—.015 mm. long, .007—.010 mm. broad." (Nyl.) "Spores .013—.015 mm. long, .007—.010 mm. broad." (T. M. Fr.) Spores .016—.019 mm. long, .009—.010 mm. broad.

Var. erythrella, Ach. yellowish, thin, areolato-diffract, or rugose and rimose; apothecia dark-orange, margin thin, obliterated; (thallus and apothecia K crimson.)

On rocks and earth, frequent.


Zw. 94.

GEOG. DISTRIBUT:—Europe, America.

Bot. Prov :—1...5. 6...10...15...18...19...26.


Scotland:—Glen Oreby about Loch Tay and elsewhere in the Highlands.

Mesers. Hooker & Borrer. Garrynahine, Lewis; Stenmis, Orkney. Dr. Lindsay.

IRELAND :—Blackrock! near Cork. Mr. Carroll. S. side Kylemore lake!

Glenacorbal! Galway. Mr. Larbalester.

WAZES :—Dishofton Glen! Glamorganshire.

Spores .014—.015 mm. long, .006—.009 mm. broad.

Var. inalpina, Ach. pale-yellowish or greenish, very thin, minutely areolato-rimose, unequal, furfuraceous; apothecia orange, margin paler, flavescent; (K crimson.)

On rocks, not unfrequent.


EXS :—Mudd 101.

GEOG. DISTRIBUT:—Europe.

Bot. Prov :—3...5...7...8...10...15...16...19.

England:—Lanbrangh Rigg! Darlington; Yarm; Easby! Cleveland. Mr. Mudd. Kelvedon; Messing, Essex. Mr. Varennne. Bredon Hill; Leicestershire; Middle! Llanymsnech Hill! Shropshire.

Scotland:—Western parts. Rev. J. M. Cromptie.

IRELAND :—Whitepoint! Cork. Mr. Carroll.

WALES :—Harlech Castle!

Var. rubescens, (Schaer.) yellow or greyish-brown, leproso-tartaceous, thin, rimoso-diffract, often evanescent; apothecia small, dark-orange-red, margin concolorous; (K crimson.)

On rocks, rare.


FIG :—Hepp Sporen t. 72. f. 636.

THE LICHEN-FLORA

GEOG. DISTRIB. :— Europe.
Bot. Prov. :— 7...10...19.
England :— Kildale! Cleveland. Mr. Mudd.
Ireland :— Dunkerron. Dr. Taylor.
Wales :— Near Llangollen!
Spores .021 mm. long, .007—.009 mm. broad.

82. L. ochracea, (Schær.) pale-ochre-yellow, thin, continuous or obliquely limosus-areolate; apothecia croceo-fulvous or orange, plane, margin entire, paler; spores 8, colourless, polari-bilocular; (thallus and apothecia K crimson.)

On limestone rocks, not common.


GEOG. DISTRIB. :— Europe.
Bot. Prov. :— 1...3...6...8...10...19...24...28.
Wales :— Glyn-yr-Allt Point! Tenby.
“Spores .002 to .0025 in. long, by .00125 to .0015 in. broad.” (Mudd.) Spores .014—.0195 mm. long, .006—.008 mm. broad.

83. L. ferruginea, (Huds.) albo-cinerascent or plumbeo-cinerascent, or caesious, thin, smoothish, contiguous or furfuraceous, or crustaceous, granuloso or verruculoso-areolate, or evanescent; apothecia ferruginous-red, biatorine, plane, proper margin flexuose or undulate, paler; spores 8, colourless, ellipsoid, polari-bilocular.

On trees and rocks, not uncommon. 1778.

forma corticola, albo-cinerascent, smoothish, contiguous or furfuraceous.


Fig :— E. Bot. 1560. (in part) Hffn. Pl. L. t. 12. f. 1.

GEOG. DISTRIB. :— Europe, Asia, Africa, America.
Bot. Prov. :— 1...2...3...4...5...10...13...16...31.

Scotland :— Ayrshire. Mrs. Dobie.
Ireland :— Glenarm Park! Blarney. Mr. Carroll. Kylemore lake! Mr. Larchestier.
Channel Islands :— Jersey; Guernsey; Sark. Mr. Larchestier.
Spores .014—.015 mm. long. .008 mm. broad.

forma saxicola, plumbeo-cinerascent, or caesious, thickish, crustaceous, granuloso or verruculoso-areolate.

Syn :— Nyl. Scand. 143.
Fig :— E. Bot. 1560. (in part).

GEOG. DISTRIB. :— Europe.
Bot. Prov. :— 2...5, 6, 7...10...13...18... (13—26—30).
OF GREAT BRITAIN.

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SCOTLAND:—Glasgow. Mr. Galt. Stennis. Orkney. Dr. Lindsay.

IRELAND:—Common on rocks! Mr. Carroll. River Dawros ! co. Galway; Miderlin near Kylemore : Mr. Larbalestier.

WALES:—Aberdovey. Rev. A. Bloxam. between Bala and Dolgelley ! St. David's ! Pembrokeshire.

forma festiva, (Ach.) thallus evanescent, apothecia numeros.
On rocks.

SYN:—Ach. Syn. 44. (1817.) Nyl. Scand. 143.

Fig:—Hepp Sporen t. 22 f. 201.


Geog. Distrib:—Europe.

Bot. Prov:—:—. 5, 6, 7...12...15...19...26...30, 31.


IRELAND:—Larne, co. Antrim. Dr. Moore. Miderlin near Kylemore and Lettermore ! Mr. Larbalestier.


CHANNEL ISLANDS:—Jersey ; Guernsey; Sark. Mr Larbalestier.

Mr. Crombie finds on maritime rocks in Kincardineshire a var. concilians, Nyl. Scan. 143. Leight. 1148. "thallo cinerascens, granuloso-areolato, apothecia ferrugineo-fuscis vel fusco-nigris, lecanorinis vel demum biaurinis." And also at Cove, Kincardineshire, and coast of Isle of Man north of Douglas! Mr. Martindale. another var. fuscoatra, (Zw. 96.) in which the apotheciae have a distinct thalline margin. Mr. Carroll has also observed another state or variety polymena, Ach. (Nyl. Scand. 143) "apotheciae fuscescentibus" at the upper Lake, Killarney.

forma scotoplaea, Nyl. umbrino-nigricant, smooth, thin, continuous, rimoso-difract, apothecia ochraceo-ferruginos, biatoroid.

Spores .009—.0011 mm. long, .005—6 mm. broad.

On rocks, rare. 1876.

SYN:—Nyl. in Flora 1876. p. 232.

Geog. Distrib:—France.


IRELAND:—Kylemore, Connemara. Mr. Larbalestier. (1876.)

84. L. Turneriana, Ach. nigro-fuscos, thickish, areolato-rimose or diffract, areola verrucose, rugose and unequal; apothecia flavo-rufescens, plane or subconvex, margin thick, entire, persistent, of a paler-yellow; spores 8, colourless, ellipsoid, polari-bilocular.

On rocks, not common. 1876.

SYN:—Leicidea, Ach. L. U. p. 296 (1810.) Syn. 49.

Bot. Prov:—: 6...26.

IRELAND:—Killery Bay ! Dawros river ! Connemara. Mr. Larbalestier. (1876.)

WALES:—St. David's ! Pembrokeshire.

85. L. cerina, (Ehrh.) cinereous, thin, unequal or granulate, hypothallus nigricanti-cerrulescent; apothecia pale-waxy-yellow, lecanorine, plane, thalline margin distinct, entire, thin; spores 8, colourless, ellipsoid, polari-bilocular, with longitudinal channel; (K erasmus.)

On trees, &c., frequent. 1793.


Fig:—E. Bot. 627. Hfsm. Pl. L. t. 33. f. 1. b. Hepp Sporen t. 22 f. 203.


Bot. Prov:—1, 2, 3, 4, 5...10, 11...(19-30)...31.


Ireland:—Common. Mr. Carroll.

Channel Islands:—Common on all the larger Islands. Mr. Larválester.

“Spores .0025 in. long, by .00125 in. broad.” (Mudd.) “Spores .012—18 mm. long, .006—9 mm. broad.” (Nyl.) Spores “.012—18 mm. long, .006—10 mm. broad.” (T. M. Fr.) Spores .0145 mm. long, .007—.008 mm. broad.

Var. cyanolepra, (DC) cinereo-cerulescent, hypothallus predo-

minating over the thin thallus.

On smooth-barked trees. 1861.

Syn:—De Candolle Fl. Franc. 2. 560. (1805.) Nyl. Scand. 144.

Fig:—Hfm. Pl. t. 4, 33. f. 1. a.


Geog. Distrib:—E. Lapland, France, Italy, Switzerland, Lombardy, Scandinavia.

Bot. Prov:—5.


Var. chlorina, Fw. verdigris-green, granulato-areolate, compact; thallus and hypothallus intermingled.

On rocks, rare. 1861.

Syn:—Flotow Fl. Siles. 126. (1849.) Mudd Man. 136.

Exs:—Anzi Langob. 33. Korh. 128.

Geog. Distrib:—Germany, Silesia.


England:—On rocks near Newton, Cleveland. Mr. Mudd. (1861.)

Ireland:—Corig, Lough Corrib! Galway. Mr. Larvélester.

Var. stilllicidiorum, (Hornem.) albo-cinerascens, effuse, thin, granulate or leprous; apothecia paler or darker, waxy-yellow, margin pallido-cinerascens.

On mosses, not common. 1799.


Fig:—E. Bot. 1373.


Geog. Distrib:—Europe.

Bot. Prov:—1...3...7...8...11...15.


moor, Devon. Mr. Parfit. Goldhanger, Essex. Mr. Varene.


Wales:—Dolgelley. Dr. Holl.

“Spores .016—.0165 mm. long, .008—.009 mm. broad.

Var. fusca, Mass. fuscosus; apothecia luteo-fuscosus, thalline margin cinereous.

On trees and pales, rare. 1874.

Syn:—Mass. Sched. 130.


Geog. Distrib:—Italy.

Bot. Prov:—6, 7...10.

England:—Bilsdale! Yorkshire! Mr Mudd.

Wales:—Towyn! (1874.) Aberdovey!

“Spores .0122 mm. long, .0061 mm. broad.” (Mass.)
forma cyanopodia, Nyl. darkly-cinereous, sometimes caesio-ærulaemen, subleprose or depresso-granulate and rimoso-diffract; apothecia pale-yellow-orange, subconcave with an elevated caesio-ærulaemen margin, at length biatorine.

On wet stones, rare. 1877.


BOT. PROV.—26.

IRELAND.—Between Lough Feagh and Lough Muck! Mr. Larbalestier. (1877.)

86. L. pyrascena, (Ach.) whitish or obsolete and evanescent; apothecia red-orange, small, biatorine, pale, margined, at length convex, (K crimson); spores 8, colourless, ellipsoidal, I-septate or polari-bilocular with longitudinal tube.

On trees and walls.


FIG.—E. Bot. 2245. Hepp Sporen t. 58. f. 500.


GEOG. DISTRIBUT.—Europe.

BOT. PROV.—1...5...7, 8...10, 11...13, 14...26.


IRELAND.—Westport! co. Mayo. Mr. Larbalestier.

WALES.—Llyn Aran, Cadir Idris!

"Spores .002 in. long, by .001 in. broad." (Mudd.) "Spores .011—16 mm. long, .005—8 mm. broad." (Nyl.) "Spores .011—15 mm. long, .006—8 mm. broad." (T. M. Fr.)

Var. ulmicola, (DC.) apothecia orange-yellow, margin paler-yellow.

On trees, beech, not common. 1805.


GEOG. DISTRIBUT.—Europe.

BOT. PROV.—1, 2, 3, 4, 5...10...24.


Spores .012—.014 mm. long, .0065—.007 mm. broad.

Var. holocarpa, (Ehrh.) greyish-black, thin, entire or scattered and furfuraceous, granulate; apothecia crowded, angular, waxy-yellow-orange, sub-concave or plane, margined entire, paler.

On flints and palings, not frequent.


FIG.—E. Bot. 2009. Hepp Sporen t. 9. f. 73.


GEOG. DISTRIBUT.—Europe.

BOT. PROV.—1, 2, 3, 4, 5...10.


Var. pyrithroma, (Ach.) brownish-grey, continuous, rugulose; apothecia minute, sub-immersed, concave, pale-greenish-dun colour with a bright-yellow pruina, margin very tumid, inflexed, bright yellow.

On siliceous slate.


Bot. Prov. — 11...19...26.


Ireland — Dunkerron and elsewhere in co. Kerry. Dr. Taylor. near Lough Inagh and Cleghan, Connemara. Mr. Larbalestier.

87. L. hæmatites, Chaub. cinereous, contiguous, verruculose, sublimitate; hypothallus cærolescent; apothecia diskly-ferruginous-red, plane, sessile, margined; spores 8, colourless, ellipsoid, polari-bilocular.

On trees, rare.


Geog. Distr. — Europe.


England — Alderminster! Worcestershire. Mr. Lees.

88. L. arenaria, (Pers.) albo-cinerascent, thin, granulato-pulverulent at the centre, rotundato-lorate, and crenate at the circumference; apothecia sessile, plane, dark-tawny-red, margin pale-orange-red, thalline margin white, crenate, undulate; spores 8, colourless, ellipiptico-oblong, polari-bilocular.

On rocks and walls, not frequent. 1783.


Fig. — E. Bot. 1040. Hffm. Fl. L. t. 58. f. 1. Hepp Sporen t. 22. fig. 199.


Bot. Prov. — 2, 3, 4, 5, 6, 7.

Geog. Distr. — Europe.


Wales — Conway! Fishguard Harbour! Pembroke-shire.

"Spores .003 to .004 in. long. by .001 to .0015 in. broad." (Mudd.) Spores .015 mm. long. .009...010 mm. broad.

89. L. Lallavei, (Clem.) white, tartaraceous, smooth, rimose-areolate, sub-lorate at the circumference; apothecia sub-immersed, plane, intensely-red, scarcely margined; spores 8, colourless, ellipiptico-oblong, polari-bilocular.

On calcareous rocks, rare.


Fig. — Mudd l. c. t. 2. f. 44.


Geog. Distr. — Europe.

IRELAND:—Lower Glanmire road, Cork. Mr. Carroll.

“Spores .003 to .0035 in. long, by .0015 to .002 in. broad.” (Mudd.) Spores .015—.017 mm. long, .0085—.009.

90. L. epizantha, Ach. greenish-yellow or greenish-grey, effuse, thin, granulose (K—C—); apothecia crowded, pale-tawny-orange, plane or sub-convex; thalline margin sub-crenulate; spores 8, colourless, oblong, polari-bilocular.

On rocks, pales, posts, and trees, not common. 1861.


Exs.:—Arnold 298. 491. Rabb. 798.

Geog. Distribs:—Europe, Bavaria.

Bot. Prov.:—2...5...19...31.


Ireland:—Rocks and Walls near Cork. Mr. Carroll.

Channel Islands:—Vale Castle, Jersey! Mr. Larbalestier.

“Spores .003 to .0035 in. long; by .001 in. broad.” (Mudd.)

91. L. phlogina, (Ach.) citrine, effuse, granulose, granules dispersed, globular, leprose, (K—); apothecia yellow-orange, waxy, somewhat convex, biatorine; spores 8, colourless, elliptico-oblong, polari-bilocular.

On trees, rare. 1870.


Exs.:—Hepp Sporent t. 44. f. 395.

Bot. Prov.:—2. 9mm.


“Spores .011—15 mm. long, .006—9 mm. broad.” (Nyl.)

92. L. diphyodes, Nyl. mouse-coloured or cinerascent, thin, rimoso-diffract, determinate; apothecia fusco-nigricant, somewhat plane, prominent, imosed on the stratum gonidicum, zeorine (i.e., with a more or less visible double margin, proper and thalline entire) internally whitish; spores 8, colourless, placodine, but without any axial tube; paraphyses moderate; epithecium fuscescent, (K violet-purple); spermatia oblong, affixed to shortish arthroposterigmata.

On granitic maritime rocks, very rare. 1872.


Exs.:—Arm. 616.

Geog. Distribs:—France.

Bot. Prov.:—15.

Scotland:—Near Portlethen, coast of Kincardineshire, Rev. J. M. Crombie, (1872.)

“Spores .012—18 mm. long, .006—8 mm. broad.” (Nyl.)

93. L. refellens Nyl. cinerascent, thin, continuous, unequal, everywhere clothed with minute virescent soredia (K—C—); apothecia pallido-rufescent, plane, thalline margin thin subpulverulent or at length evanescent; spores 8, colourless, ellipsoid, polari-bilocular, with longitudinal tube; epithecium lutescent; paraphyses thickish; gelatina hymenea I intensely blue, especially the theca.

On poplar; very rare. 1876.

Syn.:—Nyl. in Flora 1877. p. 458.


IRELAND:—Near Kylemore and Cleghan, Galway. Mr. Larbalestier, (1876.)

“A peculiar species, externally like Leucanora Sambuci. Apothecia sub-
blatorine, epithecium untinged with K which is the best characteristic. Spores .009—.011 mm. long, .005—7 mm. broad.” (Nyl.) Spores .0115 mm. long, .007 mm. broad.

D. Spores 1-septate.

94. L. isidioides, (Borr.) greenish-grey or whitish, squamaceous, stellate, squamula cylindrical, slightly compressed, isidioid, decumbent or ascending, simple or divided, here and there constricted; apothecia dull-purple or brownish-black, margin tumid, crenulate, often laciniate; spores 8, fuscescent, oblong, 1 -septate.

On trees, very rare. 1835.

SYN:—Borrer in E. Bot. Suppl. 2908, (1837.) Mudd Man. 106.
Fig:—E. Bot. Suppl. 2908.
Geog. Distr:—Europe.
Bot. Prov:—7.
WALES:—Cwm Bychan 2 m. above Llanbedr near Barmouth; Crafnant! Rhasadr Mawddach. Rev. T. Salwey.

“Spores .005 to .006 in. long, by .0025 to .003 in. broad. (Mudd.)

95. L. sophodes, (Ach.) grey or cinereous-fuscescent, granulate or granulato-areolate, thin, sub-determinate, (K yellow C yellow) hypothallus nigricant; apothecia fuscous-black, plane, small, often crowded and angulose, thalline margin entire; spores 8, fuscous, ellipsoid, 1-septate.

On trees and rocks, not uncommon.

Fig:—E. Bot. 1791. Hepp Sporen t. 9. f. 77.
Anzi Langob. 304. Stenh. 132.
Geog. Distr:—Europe.
Bot. Prov:—2, 3, 4, 5...11...15...(19—30).
IRELAND:—On rocks and trees, common. Mr. Carroll.

“Spores .011—22 mm. long, .007—.011 mm. broad.” (Nyl.) “Spores .012—20 mm. long, .006—8 mm. broad.” (T. M. Fr.)

forma exigua, (Ach.) whitish or pallido-cinerascent, thin, unequal or sub-granulose, sub-effuse; apothecia crowded, black, small, thalline margin crenulate.

On trees and railings.

Fig:—E. Bot. 1849.
Geog. Distr:—Europe.
Bot. Prov:—1, 2, 3, 4, 5...11...15...20...31.
SCOTLAND:—Coast of Kincardine. Rev. J. M. Crombie.
IRELAND:—Blarney near Cork. Mr. Carroll.
CHANNEL ISLANDS:—Jersey; Guernsey. Mr. Labbalester.

“Spores .011—18 mm. long, .006—8 mm. broad.” (Nyl.) “Spores .014—20 mm. long, .006—.011 mm. broad.” (T. M. Fr.)
**forma lecideoides**, Nyl. *ecrustaceous, albido-cinerascent, macular; apothecia lecideine, black, margin brown or obliterated.*

On trees and palings.

**SYN:** Nyl. Scand. 149.

**Fig:** Hepp Sporen t. 10. f. 79. and 80.


**GEOG. DISTRIB:** Scandinavia, Italy, Germany, Hungary, Lombardy, Vosges.

**BOT. PROV:** 5...10.


**forma levigata,** Ach. *cinereo-fuscescent, smooth, with minut, dispersed verrucae; apothecia scattered, nearly plane, at length papillate.*

On rocks, very rare. 1877.


**GEOG. DISTRIB:** Sweden.

**BOT. PROV:** 5...15...26.

**ENGLAND:** Wapley Hill! Herefordshire.

**SCOTLAND:** Craig Guie, Braemar. Rev. J. M. Crombie.

**IRELAND:** Lettermore, Galway. Mr. Larbalestier. (1877.)

**forma metabolica,** Ach. whitish or albido-cinerascent, disperso-areolate, sometimes granulate; apothecia black, plane or convex, thalline margin sub-entire.

On trees and stone walls.


**GEOG. DISTRIB:** France, Lombardy, Hungary, Germany, Sweden.

**BOT. PROV:** 2...5, 6, 7...10...26.

**ENGLAND:** Newton! Yorkshire. Mr. Mudd. Shanklin, Isle of Wight. Dr. Holl. Llanforada! Shropshire.

**IRELAND:** Letter Hill! co. Galway; Kylemore Lake! Mr. Larbalestier.

**WALES:** Festiniog Road near Dolgelley; Goodwick Bay! near Fishguard, Pembroke. Rhuddlan Castle!

**forma roboris,** (Duf.) *whitish, continuous, effuse, more or less granulose; apothecia large, black, plane or sub-immersed, thalline margin lobulato-crenate.*

On trees, yew, &c.

**SYN:** Nyl. Prod. 93. (1857.) Scand. 149.

**EXS:** Maudon 38.

**GEOG. DISTRIB:** France, Madeira.

**BOT. PROV:** 1, 2...5...7...31.


**WALES:** Llanrhychwyn churchyard! near Trefriw.

**CHANNEL ISLANDS:** St. John’s, Jersey. Mr. Larbalestier.

**forma malangica,** (Norm.) *dark viridi-olivaceous or nigrigant, rimuloso-diffract, effuse, furfuraceous.*

On trees, rare. 1871.

**SYN:** Norm. Spec. loc. 103. (1868.) T. M. Fr. Scand. 200.

**GEOG. DISTRIB:** Norway.

**BOT. PROV:** 5.

**ENGLAND:** Haughamond Hill! Pontesford Hill! Shropshire. (1871.)

"Spores .010—18 mm. long, .006—8 mm. broad." (T. M. Fr.)
96. *L. milvina*, (Whlb.) umbrino-fuscous or fuscous-black, thickish, granulato-areolate or areolate-diffract, verrucoso-unequal, effuse, (K y C red); apothecia black, plane, crowded, margin depressed, entire; spores 8, fuscous, broadly oblong, 1-septate.

On maritime rocks, rare. 1830.


Fig.:—E. Bot. Suppl. 2662. f. 1.

GeoG. Distri.:—Sweden, Finland, Lapland.

Bot. Prov.:—I. 19...26...31.

England:—Near Penzance. *Mr. Curnow.* near Sennen, Cornwall. *Mr. Borrer.* (1830.)


Channel Islands:—Vale Castle, Guernsey. *Mr. Labbatester.

"Spores. 0035 to .004 in. long, by .00125 to .00175 in. broad. Spermatia short, cylindrical, straight." (Mudd.) "Spores .015—.023 mm. long, .007—.010 mm. broad." (Nyl.) "Spores .014—.020 mm. long, .007—.12 mm. broad." (T. M. Fr.) Spores .030 mm. long, .017 broad.

97. *L. atrocinerea*, (Dicks.) atro-cinerascent, granulato-or verrucoso-areolate, smooth, hypothallus black; apothecia at first innate then sessile, plane, black, thalline margin sub-entire, eventually obliterated; spores 8, fuscous, oblong, 1-septate, cells nucleolate; (thallus K yellow C red.)

On rocks. 1793.


Fig.:—Dicks. l. c. t. 9. f. 2. E. Bot. 2096. Hepp Sporent t. 73. f. 646.


GeoG. Distri.:—Europe.

Bot. Prov.:—1...5, 6, 7...10...15...19, 20...30, 31.


Scotland:—Near Aberdeen. Prof. Dickie.


Wales:—Stormy Down, Glamorgan. *Dr. Hall.* Diganwy! near Conway. Fort Hill! near Fishguard, Pembroke, Cricketh Castle Hill! Moel-y-gest!

Channel Islands:—Ninmont Hill! Beaufort Bay; La Coupe! Jersey. *Mr. Labbatester.

"Spores .004 in. long, by .00175 to .00225 in. broad. t. 2. f. 49." (Mudd.)

98. *L. coniopta*, Nyl. dark-greyish-brown, indeterminate, moderate, unequal, rimoso-diffract, areolate plane; (thallus and white medulla K—C red), apothecia black, innate, at first slightly margined, at length somewhat convex and immarginate, white within; hypothecium colourless; spores 8, brownish-black, ellipsoid, 1-septate, slightly constricted; epithecium brown; paraphyses moderate, subarticulated, distinct but very compact; gelatina hymenea bluish with iodine.

On gneissic maritime rocks. 1872.

Syn.:—Nyl. in Flora 1873 p. 19.

Bot. Prov.:—1.15...31.

England:—Rosemodie Cliff near Penzance. *Mr. Curnow.*

Scotland:—Portlethen! coast of Kincardinshire. Rev. J. M. Crombic, (1872.)
CHAMPION ISLANDS:—Near Fort Essex, Alderney! Le Moye, Jersey! Mr. Larbalestier.

“Not unlike Lecidea coniops in external appearance, but a true Lecanora. Spermogonia black, punctate, with arthrosterigmata and slightly bacillar spermatia. “Spores .015—.20 mm. long, .008—.10 mm. broad.” (Nyl.) Nearly allied to L. atrocinerea, Dicks., but differing in the flat plane asole of the differently coloured thallus. Spores .021 mm. long, .013 mm. broad.

99. L. nivalis, (Körb.) whitish or albido-cinerascens, very thin or slightly granulate; apothecia crowded, ochraceous or aurantiaco-ochraceous, biatorine, plane, small, proper margin somewhat darker, thalline margin obsolete; spores 8, cylindraceo-oblone, or cylindrical, simple or faintly 1-septate; apothecia K dark crimson.

On decaying moss among alpine rocks, rare. 1864.

Externally like L. fulvolutea, Nyl.


GEOG. DISTRIB:—Eastern Lapland, Greenland.

BOT. PROV:—135.


Externally like L. fulvolutea, Nyl. “Spores .005 to .006 in. long, by .001 in. broad.” (Mudd.) “Spores .028—.38 mm. long, .005—.7 mm. broad.” (Nyl.) “Spores .024—.38 mm. broad.” (T. M. Fr.)

100. L. Hutchinsiae, Nyl. pallido-cinerascens or flavido-cinerascens, thin, rimose or rimuloso-diffract (K—C—); apothecia rufo-testaceae, convex, biatorine; spores 8, colourless, fusiform, 1-septate; paraphyses thick, somewhat articulate; hypothecum colourless; gelatina hymenea ceruloscent with iod.

On maritime schistose rocks, rare.

SYN:—Nylander in Flora 1867. p. 326.

GEOG. DISTRIB:—Europe.

BOT. PROV:—1..6...19...26...31.

ENGLAND:—Penzance. Mr. Curnow.

IRELAND:—South of Ireland. Miss Hutchins. Kivyle! co. Galway; Dawros.

Salrock! Mr. Larbalestier.

WALES:—Goodwick Bay! Pembrokeshire.

CHANNEL ISLANDS:—La Moye, Jersey! Mr. Larbalestier.

“Spores .010—.12 mm. long, .0025—.0035 mm. broad. Spermatia arcuata.” (Nyl.) Spores .013—.014 mm. long, .003—.004 mm. broad.

forma bellissima, Leight. apothecia pallido-rosaceos, slightly pruinose.

On ruined walls, very rare. 1877.

BOT. PROV:—25.

IRELAND:—Ruin at Cleghan! near Kylemore. Mr. Larbalestier. (1877.)

101. L. holophora, (Mnt.) cervino-castaneous or fusceous, cartilagineo-membraneous, squamulose, squamulae concave, plicato-unulate, rotundato-incised, ascending, flexuose, pale beneath; apothecia erumpent, appressed, fusceous-black, plane, thalline margin naked, very entire; spores 8, colourless, oblongo-fusiform, 1-septate.

In the fissures of maritime rocks, rare.


EXS:—Leight. 380.

GEOG. DISTRIB:—Canaries.

BOT. PROV:—1..5...19...20...24...30...31.
ENGLAND:—Bradstone Churchyard Wall, S. Devon. Dr. Hall, Start Point, Devon. Bray Hill, St. Minver, Cornwall. Mr. Holmes. Pulborough. Mr. Davies. on red sandstone, St. James, near Bridgnorth, Myton Bach! Stiperstones, Shropshire.


CHANNEL ISLANDS:—St. Martin's Point, Guernsey. Mr. Larbalestier.

Spores .011—.014 mm. long, .004 mm. broad.

Var. glaucopsora, Nyl. squamuloso-crenate, or granulato-squamulose, or sub leprose; apothecia livido-fuscos, thalline margin sub-entire; spores 8, colourless, fusiform, 1-septate; (thallus K very faint yellow.)

Damp sides of old turf pits, rare. 1867.

SYN:—Nylander in Flora 1868, p. 164.

EXS:—Larb. 79.

GEOG. DISTRIBUTION:—Europe.

BOT. PROV:—31.

CHANNEL ISLANDS:—Sark; Grounez Common! Saint's Bay; Jersey; Alderney. Mr. Larbalestier.

"Spores .012—18 mm. long, .003—4 mm. broad." (Nyl.)

102. L. leucospeirea, Nyl. white, opake, squamulose, squamulae sub-crenate, thin, adnate, dispersed, often granuliform; apothecia fuscos, sub-opake, plane, thalline margin white, entire; spores 8, colourless, oblong or ovoideo-oblong, 1-septate.

On sandy earth, rare. 1868.


GEOG. DISTRIBUTION:—Europe.

BOT. PROV:—31.

CHANNEL ISLANDS:—La Moye; Boulay Bay; Jersey. Mr. Larbalestier.

Allied to L. holophaea and its var. glaucopsora. "Spores .011—13 mm. long, .0035 mm. broad." (Nyl.)

103. L. erysibe, (Ach.) olivaceo-cinereous or virescenti-olivaceos, or darkly cinereous, leproso-granulose, thin, diffract; apothecia fusco-rufous or livido-testaceous, innate, plane or convex, thalline margin rather indistinct; spores 8, colourless, linear-oblong, 1-septate.

On rocks, walls, &c. not common. 1861.


FIG:—Hepp Sporen t. 9. f. 75.


GEOG. DISTRIBUTION:—Sweden, Italy, Germany, Switzerland.

BOT. PROV:—1, 2, 3, .5, 6...10...15...19, 20...23...26...31.


SCOTLAND:—Coast of Kincardine; Craig Guile. Rev. J. M. Crombie.


WALES:—Goodwick Bay! Pembrokeshire.

CHANNEL ISLANDS:—Jerbourg, Guernsey; Noirmont! Jersey. Mr. Larbalestier.

"Spores .002 to .00275 in. long, by .00075 to .001 in. broad, t. 2. f. 47." (Mudd.) "Spores .010—.14 mm. long, .001—5 mm. broad. Gelatina hymenae I blue." (Nyl.) Spores .010—.011 mm. long, .004 mm. broad.
forma sincerior, Nyl. cinerascenti-pallid or subochraceo-whitish, subgranulate, areolato-rimose; apothecia pallido-fuscescent, lecanorine.

On maritime rocks, very rare. 1876.

SYN:—Nyl. in Flora 1876, p. 577.

Fig:—Nyl. in Flora 1876, p. 577.

Geog. Distrib:—Eastern Fyrenees.

Bot. Prov:—6...26...31.

Ireland:—Lettermore, Galway, Mr. Larbalestier.

Wales:—Goodwick Bay! Pembrokeshire.

Channel Islands:—Guernsey and La Coupe, Jersey, Mr. Larbalestier.

104. L. aipopsila, (Whlnb.) fuscos or fusco-cinereous, sub-ramoso-papillato-granulate or tuberculose, continuous or radiato-sulcate or crenulate towards the circumference; apothecia on the papilla, fuscos or fuscous-black or nigricant, plane or sub-convex, thalline margin entire, eventually excluded; spores 8, colourless, ellipsoid, 1-septate.

On maritime rocks, rare. 1808.


FIG:—E. Bot. Suppl. 2663. f. 2. Wahl. Fl. Lapp. t. 27. f. 2.

EXS:—Th. M. Fries 59.

Georg. Distri:—Finmark, E. Lapland.

Bot. Prov:—1...11...15...18...20.

England:—Bambrough and Staples Island co. Northumberland. (1831.) Mr. Robertson, Holy Island, Northumberland. Mr. Winch. Tolpednapenwith! near the Land's End: Penzance; near Mousehole Cave, Penzance! Mr. Curnow.


Ireland:—Kinsale, Mr. Carroll.

"Spores .009—.012 mm. long, .005 mm. broad. Gelatina hymenea I intense blue then dark-violet." (Nyl.)

forma maritima, (Smnrft.) grey or griseo-nigricant, thin, granulato-rugose, shortly radiose or sub-crenate at the circumference.

On maritime rocks, rare.


EXS:—Fellm. 122.

Georg. Distri:—E. Lapland, Norway.

Bot. Prov:—31.

Channel Islands:—Jerbourg, Guernsey. Mr. Larbalestier.

105. L. helicopis, (Whlnb.) albido-cinereous, thin, unequal, rimuloso-areolate, albo-limitate; apothecia livido-fuscescent or fuscos, plane, sub-convex, thalline margin entire, ultimately excluded; spores 8, colourless, ellipsoid, simple or obsolescantly 1-septate; (thallus K faint yellow, but not disk of apothecium.)

On maritime rocks, rare.


Georg. Distri:—Lapland, Finmark, Alaand.

Bot. Prov:—6...30.


Wales:—Goodwick Bay! Pembrokeshire.

The chemical reaction shows affinity with subfusca and not with glaucoma.

"Spores .009—.015 mm. long, .005—.006 mm. broad." (Nyl. & T. M. Fr.)

Spores .012 mm. long, .006 mm. broad. Paraphyses distinct.

106. L. albariella, Nyl. dirty-cream-whitish, tartaraceous, thin, areolato-diffrazz, areolee plane, smoothish; apothecia fuscos or
fusco-brown, small; spores 8, colourless, ovoid, 1-septate; paraphyses distinct; gelatina hymenea caruleo-scente, then violaceo-ruscident with iodine solution.

On maritime chalky rocks, rare. 1864.

SYN:—Nylander in Flora 1873, p. 290.

107. L. spodophoeiza, Nyl. greyish, moderate, granuloso-verrucose, thinly white-fimbriated at the extreme circumference, (K—C—); apothecia radio-reddish, somewhat plane, with subentire or equally prominent thalline margin; epithecidium faintly brownish; spores 8, colourless, oblong or fusiform-oblong, simple, or often subsproriously 1-septate.

On maritime rocks, rare. 1878.

SYN:—Nylander in Flora 1873, p. 290.

108. L. Ralfsii, Salw. MS. olive-green, cartilagineo-tartaceous, smooth, sub-colliculoso-areolate, sub-determinate; apothecia palae-brown or reddish-brown, minute, numerous, scattered, innatesse, plane, margin very thin, smooth, eventually evanescent; hypothecium thin, pale-brown; spores 8, colourless, elliptical-oblong or ovate, 1-septate; paraphyses lax, slender.

On maritime rocks, rare. 1860.

SYN:—Biatorina Muddii (Salw.), Mudd. 178. Lecanora acteae, Nyl. in Flora 1873, p. 290.

109. Lecanora subexigua, Nyl. similar to L. exigua, but the thallus pale-greenish, sub-smooth, unequal, rimose; spores 8, 0.012—15 mm. long, 0.006—7 mm. broad.

On maritime rocks, rare. 1874.

SYN:—Nylander in Flora 1874, p. 308.

110. L. Bischoffii, (Hepp) albido-cinerascet or fuscescent, lepros-verinose, thin, effuse, indeterminate, (K—C—); apothecia nigro-fuscos, sessile, plane or slightly convex, margin thin, cinerascet or fuscescent; hypothecium colourless; paraphyses
distinct, apices colourless; spores 8, fuscous, broadly-oblung, large, with a broad darker central transverse band or septum.

On calcareous rocks, probably not unfrequent. 1875.

**Syn.** — Hepp Eks. 81. (1853.) Korb. Par. p 75.
**Fig.** — Hepp Sporen t. 10. fig. 81.
**Geog. Distribs.** — Switzerland, Italy, Germany, Sweden.

**England:** — Yatton Somersethire. Mr. Joshua, (1875.)
**Scotland:** — Craig Tulloch, Blair Athole. Rev. J. M. Crombie.

Spores: 0.22—0.24 mm. long. 0.016—0.017 mm. broad. Gelatina hymena 1 dirty-blue. Well distinguished by the broad septum of the spores.

**Var. immersa,** (Krbr.) apothecia immersed in the rock, plane, margin fuscescent, involute.

On limestone rocks & walls. 1875.

**Syn.** — Korb. Par. p. 75. (1865.)
**Geog. Distribs.** — Germany, Italy.
**Bot. Prov.** — 1

**England:** — Yatton and Weston-super-Mare. Mr. Joshua. (1875.) There is an ochraceous state of this variety (see Mull. Arg. in Flora 1867, p. 435.) which may be probably found on our limestone rocks.

111. **L. baemoma**, Nyl. albido-lutescent, opake, thin, unequal (K yellow); apothecia pallido-rufescent, scattered, thalline margin white, thickish, subangulo-disforme; spores 8, colourless, oblong, 1-septate, cells nucleolate; paraphyses slender, distinct, apices pale; gelatina hymena 1 blue then vino-so-fulvescent or vinous-red.

On micaceo-chistose rocks by the sea. 1876.


**Ireland:** — Letterfrack! Lettermore! Connemara. Mr. Larbalestier.

"Spores .012—18 mm. long. .004—6 mm. broad, similar to those of Verrucaria epidermidis." (Nyl.) Spores .014 mm. long. .004—5 mm. broad.

112. **L. glauocarnea**, Nyl. glauco-virescent, rugulose or altogether subleprose, rimoso-diffract, determinate (K yellow); apothecia pallido-carneous or lurid, biatorine, margin obtuse, somewhat paler and at length evanscent; spores 8, colourless, oblong, 1-septate.

On shady micaceo-chistose rocks, rare. 1877.


**Ireland:** — Near Glendalough! and near Lough Muek! Galway. Mr. Larbalestier. (1877.)

"Probably a subspecies of L. baemoma, Nyl. which is rather a Biafora than a Leucanore." (Nyl.) Spores .011—.0135 mm. long. .005 mm. broad.

113. **L. spadomela**, Nyl. cinereo-fuscous, thin, opake, subleprose, rimoso-diffract; apothecia nigricant. plane, thalline margin nearly entire; paraphyses distinct, sometimes branched at the apex, apices clavate, fuscous; spores 8, colourless, ellipsoid or oblong, 1-septate.

On sandstone rocks, very rare. 1876.

**Syn.** — Nyl. in Flora 1876. p. 572.

**Ireland:** — Killery Bay! near Glencorbol! Connemara. Mr. Larbalestier. (1876.)
"Externally resembling L. sopodes. Spores .011—.16 mm. long, .006—.7 mm. broad. Gelatina hymenae I blue then violet." (Nyl.) Spores .014 mm. long, .007 mm. broad.

114. L. confragosa, Ach. whitish or albido-cinerascent, granulose or verrucoso-areolate, scattered or contiguous, (K y C y); apothecia fusco-nigricant or black, sessile, margin white, entire; spores 8, fuscos, oblong, 1-septate.

On rocks, frequent.

EXS:—Lolka 2635. Rabh. 872.

E. Spores 3-septate.

115. L. pyreniospora, Nyl. grey or cinereo-fuscescent, granulose, thin, sub-effuse; apothecia fuscos-black or black, opake, thalline margin rugulose or obsoletely crenulate; spores 8, fuscos, ellipsoid, 4-celled, cells nucleolate, (spurious) 1—3-septate.

On old wood, turfy earth, and grass, rare.

SYN:—Nyl. in Olfers. V. Ak. Forh. 1860. p. 257. note; Scand. 151.

FIG:—Nyl. Scand. t. 1. f. 6.
EXS:—Larbal. 78.

E. Spores 3-septate.

116. L. diplinthia, Nyl. pallido-cinerascent, or pale-whitish, thin, unequal or sub-granulose, indeterminate; apothecia fuscos, small, plane, thalline margin entire, internally pallescent; spores fuscos, ellipsoid, large, 4-locular, the two apical cells simple, the central cells either simple or with 2 or 3 transverse cellules; para-physes scarcely distinct.

On the earth, very rare. 1868.

SYN:—Nyl. Nov. Gran. p. 31. (1863.)

E. Spores 3-septate.

117. L. rubra, (Hoffm.) white or glaucous-white, thin, effuse; apothecia rosy or fleshy-red, sub-pruinose, concave, numerous, moderate, thalline margin rugoso-crenulate; spores 8, colourless, oblong or oblongo-ellipsoid, 3 septate.

On trees and mossy walls, rare.


E. Spores 3-septate.
GEOG. DISTRIBUTION: Switzerland, France, Voges, Sweden, Bavaria, Prussia, Hungary, Germany, Italy.

BOT. PROV.:—1...5...10...15...16...20.


IRELAND:—Fermoy. Mr. Carroll.

"Spores 0.03 to 0.035 in. long, by 0.0125 to 0.015 in. broad. t. 3. f. 58." (Mudd.) "Spores 0.016—23 mm. long, 0.005—8 mm. broad." (Nyl.) Spores 0.018—0.019 mm. long, 0.007—0.009 mm. broad.

118. L. elatina, Ach. whitish or lutescent, leprous, granulato-pulverulent, thin, effuse; apothecia testaceo-fuscescent, sessile, plane or convex, cæsio-pruinise or naked, thalline margin thin, entire, eventually obliterated; spores 8, colourless, acicular or fusiform, 3-septate, curved or flexuose; (thallus K yellow C—.)

On pine trees and holly, rare. 1869.


FIG.:—Sturm Deutsch. T. t. 20. Hepp Sporen t. 104. f. 911.


GEOG. DISTRIBUTION:—Austria, Norway, Switzerland, Silesia, Germany.

BOT. PROV.:—19.

IRELAND:—On aged Holly in Wood near Derrycountry, Killarney. (Sep. 1869.) Mr. Carroll.

"Spores 0.035—0.060 mm. long, 0.006—7 mm. broad." (Nyl.)

119. L. atherocarpa, Dub. albido-cinerous, rimoso-diffract, unequal, granulose; apothecia densely aggregate, deformed, fuscous-black, cæsio-pruinose, thalline margin entire; spores 8-16, colourless, elliptico-oblong, obtuse at the apices, 3-septate; (thallus K—C—.)

On trees.


EXS.:—Nyl. 59.

GEOG. DISTRIBUTION:—Scandinavia, France.

BOT. PROV.:—2, 3...5.


"Spores 0.012—17 mm. long, 0.003—6 mm. broad. Gelatina hymenea I intense blue then vinous or violet." (Nyl.) Spores 0.0155 mm. long, 0.004 mm. broad.

form carrulescens, Mudd. leaden-grey, granuloso-verrucose, rugulose, rimoso-arcoleate; apothecia pale-brown, plane, densely carrulo-pruinose, thalline margin thick, undulate, angulose; spores 8.

On walls, &c., rare. 1861.

SYN.:—Mudd Man. 140. (1861.) Crombie En. 53.

FIG.:—Hepp Sporen t. 72. f. 638.


GEOG. DISTRIBUTION:—Germany, Hungary, Italy, Switzerland, Bavaria.

BOT. PROV.:—10.

ENGLAND:—Marsk Cleveland. Mr. Mudd. (1861.)

"Spores 0.004 to 0.005 in. long, by 0.001 to 0.00125 in. broad t. 2. f. 46." (Mudd.)

Var. fuscella, (Schæer.) albido-cinerous, very thin, effuse, nearly evanescent; apothecia minute, crowded, fuscescent, tumid, or biatorine, slightly pruinose, thalline margin entire, eventually nearly obliterated; spores 8—12, colourless, linear-arblong, 3-septate.

On trees, frequent.
1HE apothecia tetrasticha. Pwllheli prosecha, F. L. spores 76. apothecia Galway. (thallus L. spores Mr. subimmersed, 45.) and —Fiance, apothecia Kylemore Mr. colourless, paraphyses L. 641. --4 scattered, apothecia smooth, 31x423 thin, fracto-subrimose Lyndhurst. --4

spores Mudd .0115—.015 mm. long, .005 mm. broad.

Var. metabolisma, (Ach.) albido-cinerascent, thin, unequal, diffracto-sub-rimose; apothecia minute, black, plane, thalline margin thin, white, eventually fuscescent and concolorous with the disk.

On trees.


BOT. PROV :—2, 3.


"Spores .003 to .0033 in. long, by .001 in. broad. t. 2. f. 45." (Mudd.) Spores .015—.015 mm. long, .005 mm. broad.

120. L. prosecha, Ach. pale-straw-colour, thin, contiguous, smooth, minutely rimulose, sublobate in the circumference (K—C—); apothecia nigro-fuscous, adnate or subimmersed, minute, plane, scattered, thalline margin thin, pale, entire; paraphyses indistinct; spores 8, colourless, linear-ellipsoid, 1-2-3-septate.

On maritime rocks, rare. 1874.


BOT. PROV :—7...26.

IRELAND :—Rynvyle! Kylemore Mountains! Galway, Mr. Larbalestier. WALES :—Gimlet Rock! Pwllheli.

Spores .020—.021 mm. long, .006 mm. broad.

121. L. tetrasticha. Nyl. vitellinus, deplanate, thin, areolato-rimose; apothecia ochraceo-aurantiaceous, biatorine, plane, marginate or at length sub-immarginate, (K red); spores 8, colourless, oblongo-ellipsoid, 4-locular or 3-septate.

On limestone rocks, rare.

SYN :—Nyl. in Flora 1874. p. 307. GEOG. DISTRIB :—Italy.

EXS :—Anzi Lich. var. 252. ("B. rupestris var. rufescens.")

BOT. PROV :—15.

SCOTLAND :—Island of Lismore, Argyleshire. Rev. J. M. Crombie. (1875.) Somewhat similar to Lecanora aurantiaca var. erythrella, (Ach.) "Belongs to the stirs of Lecanora Brebissonii, (Fée.) Varies with a flavo-albicant thallus. Spores .014—18 mm. long, .006—8 mm. broad." (Nyl.) Spores .015 mm. long, .008 mm. broad.

F. Spores multisepitate.

122. L. hæmatomma, (Ehrh.) sulphureous or albido-flavescent, pulverulent, tartaro-farinose, effuse; apothecia scarlet, innate or sub-sessile, moderate, thalline margin thick, flexuose, pulverulent; spores 8, colourless, acicular or fusiform, 3-7-septate, curved or flexuose; (thallus K yellow C yellow).

On rocks, not frequent. 1785.


Fig :—E. Bot. 223. 486. Hepp Sporen t. 73. f. 641.
OF GREAT BRITAIN.


GEOG. DISTIB: —France, Norway, Germany, Apennines, Italy, Scandinavia, Sweden.

BOT. PHYG.—1, 2, 3, 4, 5, 6, 7...10, 11...14, 15...19...30, 31.


CHANNEL ISLANDS:—L'etacq, Jersey! Jerbourg, Guernsey. Mr. Larbalestier. "Spores.000 to .013 in. long, by .00075 in. broad." (Mudd.) "Spores.035—.060 mm. long, .006—.011 mm. broad." (Nyl.) "Spores.028—.060 mm. long, .006—.011 mm. broad." (T. M. Fr.)

123. L. ventosa, (L.) sulphureo-virescent or flavescent, or sometimes whitish or fusco-virescent, tartaceous, verrucoso or plicaturose, sub-arceolato-diffract, determinate, firm; apothecia red, plano-convex, large, thalline margin thin, entire, often obliterated; spores 8, colourless, aciculare or fusiform, 5-7-septate, curved or flexuoso; (thallus K yellow C yellow.)

On lofty granitic and schistose mountain rocks, not common.

1741.


FIG:—E. Bot. 966. Hepp Sporens t. 73. f. 643. t. 73. f. 644.


GEOG. DISTIB:—Hungary, Italy, Austria, Norway, Tyrol Alps, Pyrenees, Sweden, Switzerland.

BOT. PHYG.—1...5...7—10, 11, 12...15...18...23...29...31.


CHANNEL ISLANDS:—Jersey. Mr. Larbalestier. "Spores.0075 to .013 in. long, by .00075 to .001 in. broad. t. 2.f. 52." (Mudd.) "Spores.040—.055 mm. long, .004—.005 mm. broad." (Nyl.) "Spores.040—.055 mm. long, .003—.005 mm. broad." (T. M. Fr.)

forma lepadolema, (Ach.) cinerascens, subvirescent.

On mountain rocks, not common.
THE LICHEN-FLORA

SYN:—Ach. Meth. 166. (1803.) Univ. 399.

FIG.:—Dill. t. 18. f. 14.

GEOG. DISTRIBUT:—Scandinavia.

BOT. PROV.:—5, 6.

ENGLAND:—Corndon Hill! Shropshire.

WALES:—Cader Idris!

VII. DIRINA, Fr. Nyl.

Apothecia tuberculoso-lecanorine, hypothecium thick and black beneath. Spores fusiform, 3-septate. Spermatia slender, arcuate.

1. D. repanda, (Fr.) white, tartareo-farinose, thick, continuous or rimulose, tuberculoso-unequal, sub-lobate in the circumference (C red); apothecia at first closed, eventually expanded and dilated, tuberculoso-elevated, plano-depressed, black, casi- or albo-pruinose, rarely naked, margin thick, obtuse, cartilaginous, more or less inflexed and flexuose; spores 8, colourless, fusiform, 3-septate.

On maritime rocks, rare. 1867.


EXS:—Scher. 574. Anzi Venet. 41. Rabh. 788.

GEOG. DISTRIBUT:—France, Pyrenees, Austria, Sardinia, Algeria, Corsica.

BOT. PROV.:—7...31.

CHANNEL ISLANDS:—La Coupe! Jersey. Mr. Larbalestier.

WALES:—Great Orme's Head! Mr. Holmes.

SUB-TRIBE VII. PERTUSARIEI.

Characters as in Pertusaria, below.

VIII. PERTUSARIA. DC.

Thallus crustaceous, continuous, verrucoso-unequal or smooth. Apothecia enclosed in thalline verruca, endocarpoid or lecanoroid, or variolaroid. Spores 1, 2, 3, 4, 5, 6-8, colourless, ellipsoid, simple, large, the external paries thick. Spermatia acicular.

A. Thallus K yellow, then orange-red.

1. P. multipunctata, (Turn.) cinereous, tartareous, verrucosorugose, thin, with a fibrous border; apothecia 1-2 in hemispherical verruca; ostiola albo-sorediate; spores 1 (rarely 2), colourless, elliptico-oblong, or elliptico-oblong, simple.

On trees, beech, birch. 1808.


VARIOARIA, Turn. and Borr! L. B. 73. Mudd Man. 274.

FIG.:—Linn. Trans. 9. t. 10. f. 1. E. Bot. 2961. Hepp Sporen t. 76. f. 672. 673.

EXS:—Mudd 262. Hepp 672. 673. Zw. 288.

GEOG. DISTRIBUT:—Sweden, Italy, France, Bavaria, Germany, Philippine Islands, S. Africa.

BOT. PROV.:—2, 3...5, 6, 7, 8...10, 11...19.

IRELAND:—Killarney. Sir T. Gage.

WALES:—Cardiganshire! Mr. Knight. Nannau; Pistyll-y-cain. Mr. Holmes. Conway falls!

Spores .106—.140 mm. long, .028—.068 mm. broad." (Nyl.) "Spores .060—.210 mm. long, .026—.58 mm. broad." (T. M. Fr.)

2. P. concreta, Nyl. white or whitish, continuous, thickish, rimose, unequal (K yellow then orange-red); apothecia immersed, endocarpoïd, colourless; ostiolum dark, punctiform; spores 2, colourless, oblong, simple, very large; gelatina hymenea I,—but these intensely blue.

On micaceo-schistose rocks, rare. 1876.


IRELAND:—By the sea, Letterfrack, Salrock! near Kylemore, Connemara. Mr. Larbalestier. (1876.)

WALES:—Yr Efll! Mr. Holmes. Dolgelley!

An American species forming the typical state of P. Westringii, (Ach.) Spores .115—.250 mm. long, .052—.080 mm. broad. (Nyl.) Spores .140 mm. long, .07 mm. broad.

3. P. Westringii, (Ach.) greyish or creamy-white, tartaceous, thickish, rimoso-areolate, areola plane; verrucae scattered, flat, contorted and disformed; ostiolum brownish-black, flat, irregular, thalline margin abraded; spores 2, colourless, elliptical, simple; (thallus K yellow, then orange-red.)

On rocks, old walls, &c. 1861.


Fig:—Westring Færgb. t. 4.

EXS:—Mudd 260. M. & N. 1066. Maes. 86.

Gegg. Distrib:—Italy, Vouges, Sweden, France, Switzerland, E. Falkland. Bot. Prov:—2, 7...10, 11...15...23...31.

ENGLAND:—Ayon Moor! Airyholme Bridge, Cleveland. Mr. Mudd. Arendale! Thornthwaite; near Keswick; Teesdale Forest. Rev. J. Harriman. Tunbridge Wells! Mr. Jenner.

SCOTLAND:—Craig Tulloch. Rev. J. M. Crombie.

IRELAND:—Lough Bray near Dublin. Mr. Turner.


CHANNEL ISLANDS:—Noirmont Bay, Jersey, Mr. Larbalestier.

The chemical reaction and general aspect show that Isidium Westringii, Ach. is identical and therefore the original name is restored.

4. P. glomerata, (Schleich.) yellowish-cream-colour, effuse, verrucoso-conglomerate, verrucae globulose, smooth; apothecia 1: ostiolum dark-brown, punctiform, depressed or sub-papillate; spores 4, colourless, ellipsoid, simple; (thallus K yellow, then orange-red.)

On mosses in alpine localities, rare. 1864.


Fig:—Hepp Sporen t. 77. f. 681. Leight. Ang. Lich. t. 11. f. 2.

EXS:—Hepp 681. Schar. 120. Arn. 132. Anzi Langob. 227.


"Spores .021 to .025 in. long, by .007 to .009 in. broad." (Mudd.) "Spores .072—.125 mm. long, .026—.44 mm. broad." (Nyl. & T. M. Fr.) Spores .085 mm. long, .040 mm. broad.
5. *P. ceuthocarpo*, (Sm.) brownish-cream-colour, tartareous, areolato-dissacr, areole convex, undulato-rugose; verruca sub-globose, conglomerate; ostiola minute, punctiform, depressed, sub-papillate, brownish-black; spores 2, colourless, ellipsoid, simple; *(thallus K deep yellow, then orange-red.)*

On rocks, not common. 1804.


**Fig.**—E. *Bot.* 2372. Leight. *Ang. Lich.* t. 9, f. 4. & t. 10. f. 1. *E. Bot.* 2243.

**Exs.**—Leight. 284. 341. 342.

**Geog. Distribr.**—Europe.

**Bot. Prov.**—6, 6, 7...11...19...23...26...31.


**Channel Islands:**—St. Brelade’s. *Jersey. Mr. Larbalester.***

"Spores .029 to .035 in. long. by .011 to .015 in. broad." (*Mudd.*) Spores .170 mm. long. .065 mm. broad.

6. *P. urceolaria*, Nyl. albido-cinerous or very pale-yellow, thickish, crustaceous, rugose or isidiaceous, rimoso-dissaccr, (K yellow then orange-red); apostodia scattered, rugoso-diffuscr, innate in depressed thalline areoles; ostiola disciform, plane, black, margin prominent and thick; spores 1 (rarely 2) very large, ellipsoid, nigrescent *(K violet)*; paraphyses thick, much branched.

On rocks and stone walls, very rare. 1873.


**Geog. Distribr.**—Eastern Pyrenees.

**Bot. Prov.**—31.

**Channel Islands:**—Old wall on the coast, La Moye, Jersey! *Mr. Larbalester.** (1873.)

The epispor in this species has a very peculiar granulato-papillate appearance and is easily detached from the enclosed spore or nucleus. In one ascus I saw 2 spores. *Spores .30 mm. long. .51 mm. broad.* "Spores .150—.215 mm. long. .065—.090 mm. broad." (*Nyl.*)

7. *P. dealbata*, (Ach.) whitish or albido-cinerascnt, tartareous, granulose or papillato-unequal, rimoso-dissaccr; apostodia in globose pulverulent scattered or aggregated verrucos; ostiola sub-disciform, pale-brown, thalline margin irregularly lacerate; spores 2, colourless, ellipsoid, simple; *(thallus K yellow, then orange-red.)*

On rocks and trees, frequent.


**Fig.**—E. *Bot.* 1541. 1511.


**Geog. Distribr.**—France, Switzerland, Germany, Italy.

**Bot. Prov.**—1, 2, 3, 4, *.5...7...9.10.11.12...14.15...19...26.

**England:**—Kildale Moor! Ayton Moor! Bandale, Cleveland. *Mr. Mudd.*


Wales:—Moel Siabod. Snowdon. Mr. Holmes. Cwm Bochlwyd! Crib Coch! Snowdon; Aran Moeddy!

"Spores .024 to .031 in. long, by .011 to .013 in. broad." (Mudd.) "Spores .080—.150 mm. long, .050—.083 mm. broad." (Turn.) "Spores .087—.150 mm. long, .046—.082 mm. broad." (T. M. Fr.)

8. P. redueta, Strtn. cinerascent or cineleo-fuscicent, thin, rimuloso-areolate, (K yellow then intense red); apothecia sessile, inclosed in monacarpous thalline verruca, fuscous or rufo-fuscos; lecanorine, casio-pruinose; spores 1, colourless or somewhat fuscicent when old, oblong; paraphyses crowded, distinct, somewhat anastomosing.

On trees, rare. 1874.


Scotland:—Ben Breoch, Argyleshire. Mr. Paterson. (1874.)

"Closely allied to P. multipunctata. (Turr.) younger spores with broadish epispore, mature ones with coarsely granular contents. Spores .09—.014 mm. long, .03—.04 mm. broad. Gelatina hymenae I blue especially the thece." (Strtn.)

B. Thallus K yellow, C yellow.

9. P. communis, DC. albido-cinerascent, membranacea-cartilaginous, smoothish or rugose, verrucoso-areolate, verruca sub-globo-so-deformed; apothecia 1 or more; ostiola minute, punctiform, depressed, nigricant; spores 2 (sometimes 1 or 3), colourless, ellipsoid, simple.

On trees, common.


Fig:—E. Bot. 677. Leight. Ang. Lich. t. 9. f. 3.


Geog. Distrib:—Europe generally. Madeira.

Bot. Pov:—1, 2, 3, 5, 7, 9, 10, 11, 15, 19, 39, 31.


Wales:—Glyn! near Capel Curig! Bettws-y-coed! Trefriw! Edderton! near Forden.

Channel Islands:—Jersey, Guernsey, Sark. Mr. Lorbestier.
THE LICHEN-FLORA

"Spores .039 to .045 in. long, by .017 to .018 in. broad." (Mudd.) "Spores .130—.160 mm. long, .048—.050 mm. broad." (Nyl.) "Spores .130—.205 mm. long, .042—.065 mm. broad." (T. M. Fr.) Spores .170 mm. long, .060—.080 mm. broad.

forma rupestris, DC. verrucæ aggregato-deformed, verrucoso-areolate.

On rocks, common.


FIG:—Hepp Sporen t. 76. f. 670.


GEOG. DISTRIB:—Switzerland, Italy, Germany, France, Madeira.

BOT. PROV:—5...7...10...15...19...31.

ENGLAND:—Ingleby Greenhow; Ayton! Cleveland. Mr. Mudd. Bristol, Miss Attwood.

SCOTLAND:—Birnam ! Dr Lindsay.

IRELAND:—Glamnam, Dr. Moore.

WALES:—Barmouth !

CHANNEL ISLANDS:—St. Brelade's, Jersey. Mr. Larbalestier.

"Spores .039 to .049 in. long, by .012 to .017 in. broad." (Mudd.)

10. P. dactylina, (Ach.) white, thin, unequal, papillato-dacty-loid, stipitate; apothecia in the apices of the papillæ; spores 1, colourless, ellipsoid, simple.

On moss in alpine districts, rare. 1870.


FIG:—Ach. Meth. t. 3. f. 6.

EXS:—Fellm. 144.

GEOG. DISTRIB:—E. Lapland, Norway.

BOT. PROV:—7...15.

SCOTLAND:—Morrone; Cairn Ture, in Glen Dee and Glen Caddafi, Braemar. Messrs. Brown & Crombie.

WALES:—Owm Cwyrion !

Nyl. Lapp. Or. 141, says this species has no reaction with K. but Fellm. 144 ! and also a specimen from Norway give decided reaction K yellow C yellow.

"Spores .125—.220 mm. long, .065—.85 mm. broad." (T. M. Fr.)

C. Thallus K yellow, C reddish-orange.

11. P. bryontha, (Ach.) white or whitish, thin, effuse, sub-granulato-unequal; apothecia dark-livid, liver-colour or fusce-cent, opake, lecanoroid, thalline margin ultimately depressed and excluded; spores 1, colourless, ellipsoid, simple.

On moss in alpine places, rare.


GEOG. DISTRIB:—Norway; E. Lapland, Germany.

BOT. PROV:—15.

SCOTLAND:—Cairngorm and Bennaboord, Braemar. Rev. J. M. Crombie.

"Spores .150—.220 mm. long, .050—.70 mm. broad." (Nyl.) "Spores .112—.230 mm. long, .040—.70 mm. broad." (T. M. Fr.)

12. P. melaleuca, (Sm.) yellowish-cream-colour, thin, membraneous, sub-determinate, smoothish; verrucæ scattered, hemisphaerico-depressed, irregular; ostiola brownish-black, pseudo-disciform, depressed, thalline margin lacerate; spores 2, colourless, ellipsoid, simple.

On trees, not common. 1812.

OF GREAT BRITAIN.

Fig. — E. Bot. 2461. Leight. Ang. Lich. t. 10, f. 3.

Geog. Distr. — Germany, Italy, Portugal.

Bot. Prov. — 2, 3, 7, 8...24...26.


Wales: — Dolgelley!

“Spores .015 to .019 in. long, by .007 to .008 in. broad.” (Mudd.) Spores .07—.075 mm. long, .035 mm. broad.

13. P. fallax, (Pers.) albido-flavescens or cinereo-flavescens, sub-ellipsoid, verrucae aggregato-deformed; ostiola brownish-black or nigricant, dilated, deformed, sub-lecanoroid, thalline margin thick, undulato-sub-crenate; spores 8, colourless, ellipsoid, simple.

On trees and rocks, not common. 1801.


Geog. Distr. — Germany, Switzerland, Italy, Pyrenees, France, Madeira.

Bot. Prov. — 1, 2, 3, 4, 5...10, 11, 12...19...30.


Wales: — Barmouth! Rev. T. Salwey. Bettystwy-coed! Llanbedrog! Trefriw! “Spores .017 to .021 in. long, by .007 to .011 in. broad.” (Mudd.) “Spores .053—.055 mm. long, .028—.031 mm. broad.” (Nyl.) Spores .07—.08 mm. long, .035—.04 mm. broad.

forma sulphurea, (Scher.) sulphur-yellow, tartareous, effuse; verrucae differm, crowded into an areolato-verrucose crust; apothecia many; ostiola punctiform, nigricant, depressed; spores 8, colourless, ellipsoid, simple.

On rocks, frequent, but generally sterile.


Fig. — Mass. Ric. f. 388.


Geog. Distr. — Europe.

Bot. Prov. — 5...7...26.


Wales: — Crib Coch! Cwm Clwyd! Llanbedrog! near Pwllheli.

“Spores .021 to .023 in. long, by .008 to .011 in. broad.” (Mudd.)
THE LICHEN-FLORA

forma sparsilis, Nyl. verrucæ scattered and dispersed (K yellow C reddish orange.)

On rocks, rare. 1876.

IRELAND:—Near Lough Feagh! Connemara. Mr. Larbaestier. (1876.)

D. Thallus K yellow, C crimson.

14. P. gyrocheila, Nyl. cinerascen, sub-granulosu-unequal, rimoso-diffract; apothecia in thelotremoid tubercules, simple or ultimately sub-gyrose, thalline margin thick, sub-gyrose; epithecium gypholecine, hymenium pale; spores 8, colourless, ellipsoid; gela-
tina hymenia and thece blue with iodine.

On alpine rocks, rare. 1864.

SYN:—Nyl. in Flora 1865. p. 354.

GEOG. DISTRIBUT—Europe.

BOT. PROV.:—15.

SCOTLAND:—Summit of Ben Lawers! Mr. Carroll.

"Spores .063—70 mm. long, .036—50 mm. broad." (Nyl.)

E. Thallus K—, C crimson.

15. P. velata, (Turn.) milk-white or whitish, smoothish or rugoso-
unequal, rimulose, determinate, radiato-rugose or plicate towards the circumference, verrucæ small, depressed, concolorous; apothecia pale, plane, lecanoroid; spores 1, colourless, ellipsoid, simple, very large.

On trees and rocks, rare. 1808.


GEOG. DISTRIBUT:—Madeira, Ceylon, Italy, Norway, Martinique, St. Vincent, Ohio.

BOT. PROV.:—1, 2, 3, 4, 5, 7, 8...11. 12., 15., 16...19..30.

ENGLAND:—St. Leonard's Forest; Henfield; Itchenor, Sussex. Mr. Borrer.


SCOTLAND:—Invercauld; Sidlaw Hills! Mr. Gardiner. Ben Brecht, Argyle-
shire. Mr. Paterson.


Cwm Cywion! Aran Mowddy! Twll Du! Crib Coch!

"Spores .065 to .061 in. long, by .014 to .016 in. broad." (Mudd.) "Spores .214—.310 mm. long, .067—.090 mm. broad." (Nyl.) Spores .490 mm. long, .14 mm. broad.

F. Thallus K—, C rose-colour.

16. P. faginea, (L.) glaucous-white, thickish, tartareous,
effuse or sub-determinate, brown and zonate at the circumference, smooth, rugose; verruca convexus, confluent, sorediate, margin narrow, obscure, eventually excluded; spores not seen.

On trees and rocks, common.


Fig:—E. Bot. 1713.

Exs:—M. & N. 284. Mudd 283.

Geog. Distreb:—Arctic America.

Bot. Prov:—1, 2, 3, 4, 5...10...15...30.


Mr. Holmes. Haughton Hill ! Shropshire.

Scotland:—Hunter's Hill, Glamis! Mr. Gardiner.

Ireland:—Near Belfast and Devise Mountain. Mr. Templeton.

Although I have been unable to detect spores, yet the different chemical reaction indicates this to be distinct.

G. Thallus K—C—.

17. P. ophthalminza, Nyl. greyish, thin, smoothish, or slightly rugoso-unequal, verruca crowded, small, albo-sorediate; apothecia 1 rarely 2 or three in each verruca, lecanoroid, nigricant, thalline margin rugose, or sub-leprose; spores 1, colourless, ellipsoid.

On aged pine trees, rare. 1864.


Geog. Distreb:—Europe.

Bot. Prov:—15.

Scotland:—Glenfalloch! Messrs. Jones & Carroll. (1864.)

"Spores .160—.265 mm. long, .080—.100 mm. broad." (Nyl.)

18. P. globulifera, (Turn.) greyish, cartilagineo-membranaceous, verrucoso-rugose, albo-sorediate, smooth, zonate and brown at the circumference; verruca large, globular, closed, slightly depressed, lycoperdoid, eventually lacertate-deshiscent, and pseudo-scutelliform, albo-sorediate, spores 1 or 2, colourless, ellipsoid, simple, large.

On trees, rare. 1802.


Fig:—Linn. Tr. 9, t. 10. f. 2. E. Bot. 2008. and 1714.


Geog. Distreb:—Europe, Ohio, Tasmania.

Bot. Prov:—1, 2, 3, 4, 5...10...19...26.


Ireland:—Castlemary Deer Park co. Cork. Mr. Carroll. Ashley Park! near Galway. Mr. Larbalester.

Wales:—Bala, Dolmelynon. Mr. Holmes.

19. P. Hutchinsie, (Turn. & Borr.) white or cream-colour, thin, effuse, minutely rugoso-unequal; verruca small, crowded, deformed, pseudo-disciform; ostiola large, brownish-black, cæsio-pruinose, depressed, margin laccate; spores 1, colourless, ellipsoid, simple, large.
On moss in alpine districts, rare. 1812.


**Geog. Distrib.** — Europe.

**Bot. Prov.** — 19

**Ireland:** — Near Bantry! Miss *Hutchinson*. (1812.)

"Spores .042 to .052 in. long, by .014 to .016 in. broad." (Mudd.) Spores .095 mm. long, .035 mm. broad.

20. *P. glomulifera*, (Borr.) *whitish*, thin, effuse, verrucose globoso-oovate, smooth; apothecia 1; ostiola small, punctiform or papillate, depressed, nigricant; spores 4, colourless, ellipsoid, simple.

On moss in alpine places, rare.

**Syn:** — Leight. Ang. Lich. 30. (1851.) Mudd Man. 277.

**Fig.** — Leight. l. c. t. 11. f. 2.

**Geog. Distrib.** — Europe.

**Bot. Prov.** — 19

**Scotland:** — Highlands! Mr. Borrer and Dr. Mainway.

21. *P. pustulata*, (Ach.) *grey or greyish-olive*, smooth, thin, effuse, contiguous or rimose; verrucose scattered, hemispherical, convex, small; apothecia many; ostiola dark-brown, punctiform, slightly depressed; spores 2, colourless, ellipsoid, simple.

On trees.


**Fig.** — Leight. l. c. t. 10. f. 4.

**Geog. Distrib.** — Europe.

**Bot. Prov.** — 1, 2, 3...5...7...19—30...31

**England:** — Shanklin! Isle of Wight. Dr. Holl. Budleigh Salterton, Devon. Dr. Dickie. Braxted; Messing; Yeldham, Essex. Mr. Varenne. near Cirencester. Mr. W. Jokhu.

**Ireland:** — Frequent. Mr. Carroll.

**Wales:** — Near Dolgelley! Tanybwchl! near Capel Curig.

**Channel Islands:** — Guernsey! Rev. T. Salway. Quenvals, Jersey. Mr. Larbalestier.

"Spores .016 to .021 in. long, by .007 to .009 in. broad." (Mudd.)

22. *P. leioplaca*, (Ach.) *glaucescent-white or pale-yellowish-brown*, membranaceous, smooth, verrucose scattered, depresso-hemispherical, large; apothecia 1; ostiola brownish-black, punctiform, slightly depressed; spores 4, (sometimes 5 or 6 or 8), colourless, ellipsoid, simple.

On trees, not uncommon.


**Fig.** — Hepp Sporen t. 77. f. 675.


**Geog. Distrib.** — Sweden, Germany, Switzerland, Scandinavia.

**Bot. Prov.** — 2, 3...5...7...10...15...19...24...26...31


**Wales:** — Craig Breiddin! Drwsynant! Bettws-y-coed! Trefriw! Eddertan Wood! near Forden.
P. nolens, Nyl. cinereous, smooth, areolato-rimose, determinate; apothecia innate, without thalline prominence; ostiola black, plane, rotundate, oblong or deformed, 2 or more approximate, colourless within; spores 8, colourless, ellipsoid, simple; thecae cylindrical, intensely blue with iodine.

Externally much like Lecanora cinerea.

On maritime basaltic rocks, rare. *T864.*

23. *P. noleus,* Nyl. cinereous, smooth, areolato-rimose, determinate; apothecia innate, without thalline prominence; ostiola black, plane, rotundate, oblong or deformed, 2 or more approximate, colourless within; spores 8, colourless, ellipsoid, simple; thecae cylindrical, intensely blue with iodine.

On maritime basaltic rocks, rare. *T864.*

24. *P. xanthostoma,* (Smmrf.) milk-white, smooth, thin, verrucose subglobose, somewhat depressed above, 2 or 3 concrescent; apothecia 1 or 2 in each thalline verruca; ostiola depressed, pale or pallide-luteescent; spores 4, colourless, ellipsoid, simple.

On Erica tetralix. Very rare.

25. *P. inquinata,* (Ach.) cinerascens, areolato- or verrucoso-rimose; apothecia innate, one or more in each areola; ostiola black, nearly plane, variously flexuoso-deformed and rotundate, margin thin, irregular, persistent, paler; spores 8, colourless, rotundo-ellipsoid, simple.

On rocks, very rare. 1876.

26. *P. incarnata,* Leight. creamy-white, thin, tartareous, effuse, smooth, plane, minutely rimuloso-diffract. (K — C —.) apothecia single, of a waxy appearance, paler than the thallus, prominent, sessile, depresso-globose, variable in size according to age, in maturity large; ostiolum yellowish-flesh-colour, lecanoroid, at first small and round, poriform, eventually dilated and areolate, surrounded by a broad, thick, pale, waxy, thalline margin; hymenium in section ceraceo-gelatinose, flesh-coloured; paraphyses slender,
more or less branched and entangled, apices colourless; spores 2, colourless, very large, linsari-oblong or ellipsoid, simple, with a very narrow limb or epispore.

On granite rocks, very rare. 1875.

**Syn.** — Leight. in Linn. Trans. 2d ser. 1. 241. (1877.)

**Fig.** — Linn. Trans. 1. c. t. 33. f. 1. 2 & 3.


**Ireland.** — Doughruagh Mountain! Mr. Labalester, (1875.)

Spores. .062—.067 mm. long. .033—.035 mm. broad. Gelatina hymenes I. violet.

This beautiful lichen is excessively rare, and apparently quite new to science. It has occurred only once to Mr. Labalester, whose indefatigable and skilful lichenological researches in the west of Ireland have added so many and such rare novelties to our lichen-flora. In general external aspect it a good deal resembles Lecanora epulatea, Ach., for which it might cursorily be readily mistaken; but the number, size, and shape of the spores and other characters keep them abundantly apart. It seems allied to Pertusaria rhodoleuca, Th. Fries; but that species is at once distinguished by its 8 smaller spores. Pertusaria rhodocarpa of Garovaglio's 'Comment. de Pertussariis Europ. Med.' p. 8, t. iv. f. 4, is like it in the large size and narrowly limbed two spores, but differs in growing in mosses, and having a verrucoso-granulose thallus and coacervate aggregate numerous apothecia. Garovaglio's plant, which he refers doubtfully to P. rhodocarpa, Krbr. (Syst. p. 384), cannot be identical with that German lichen, as much as Th. Fries, who has examined an original specimen from Körber, 'in Lich. Scand.' p. 322, refers Körber's lichen to Variellaria rhodocarpa, Th. Fr., which has an immense single 1-septate spore, and is represented in Th. Fr. L. Scand. Exs. 73! and has reaction K,—C crimson, and is altogether different in its sorediate thallus.

**H. Thallus** K brownish, C—.

27. *P. fastigiata*, (Turn. & Borr.) albido-cinereous, tartareous, thick, consisting of erect closely juxta-posed simple columns, their apices fastigate, forming an areolate surface, areolæ convex, rough, papillato-sorediate or pulverulent; apothecia 2, 3, 4 or 5; spores not seen.

On siliceous rocks, rare. 1813.

Dr. Taylor Fl. Hib. 2. 114. well describes this lichen his *Variolaria polytheia* as forming large patches on the rocks, "conspicuous by the crowded and stalked apothecia, placed in contact, like certain basaltic columns." His specimens in the Hook. Herb. at Kew are perfectly identical with the authentic specimens of *Isidium oculatum*, β fastigiatum of T. & B. Lich. Brit. 103. in the Borrer Herb. A vertical section shewed sufficient to enable us to regard this a Pertusaria, although the microscope failed to discover the spores.


**Ireland.** — Connemara, Mr. Mackay, near Bantry! Miss Hutchins. Dunkerton! Dr. Taylor. Borr's Head Rocks! Mr. Borrer.

28. *P. sublactea*, (Leight.) creamy-yellow, tartareous, thin, undulato-rugose, very slightly rimose; apothecia scattered, distinct, elevated, depresso-convex, albo-sorediate; spores unknown.

On siliceous rocks, rare. 1813.

This occurs as a single specimen in Borrer Herb. at Kew, under the name of *Variolaria lactea*. *V. lactea* and its var. arenaria, T. & B. ! Lich. Brit. 69. have reaction K—C crimson and are referable as states of *P. velata*, Turn. The present lichen has a totally different reaction K pale-brownish-yellow C— and is no doubt the plant spoken of in the Lich. Brit. p. 72.

**Syn.** — Turn. & Borr. Lich. Brit. 72. (1813.)
IX. PHLYCTIS, Wallr.

Thallus slightly crustaceous, continuous or pulverulent. Apothecia erumpent, rotundato-difform, thalline margin indistinct. Spores 1-2, colourless, ellipsoid or oblong, murali-divided, large. Spermatia short, slender, straight.

1. \textit{P. agelæa}, (Ach.) whitish or albo-canescence, thin, subdeterminate or effuse, rugose or sub-leprous or sub-lævigate, rimoso-diffract; apothecia irregular, depressed, scattered or crowded, nigricant, albido- or cæsio-suffused, thalline margin leprous, inflexed, irregularly crenate; spores 2, luteo-fuscescent, ellipsoid, murali-divided, \textit{apically mucronate} (thallus K yellow, then orange).

On trees, frequent. 1807.


FIG. = E. Bot. 1790. Hepp Sporen. t. 80. f. 708.


GEORG. DISTRIB. =Italy, Germany, Bavaria, France, Switzerland.

BOT. PROV. = 2, 3, 4, 5...10...19...24...26...31.


WALES: = Edderton Wood! Forden, Montgomeryshire.

CHANNEL ISLANDS: = Jersey, Guernsey. Mr. Larchestier.

"Spores .012 to .017 in. long, by .004 to .007 in. broad." (Mudd.) "Spores .045—70 mm. long, .014—27 mm. broad." (Nyl.) "Spores .045—72 mm. long, .014—32 mm. broad." (T. M. Fr.)

2. \textit{P. argena}, (Ach.) silvery-grey or cream-colour, thin, effuse, rugose or sub-leprous, pulverulent; apothecia orbicular, scattered or crowded, depressed, pulverulent, brown, cæsioprunose, thalline margin rugose, inflexed; spores 1, luteo-fuscescent, narrow-oblong or \textit{cylindraceo-oblong}, 5-septate, \textit{murali-divided}, very large; (thallus K yellow, then red.)

On trees, frequent. 1808.


FIG. = Hepp Sporen t. 80 f. 705.


GEORG. DISTRIB. = Switzerland, Germany.

BOT. PROV. = 2, 3...7, 8...10.


"Spores .025 to .035 in. long, by .007 to .009 in. broad." (Mudd.) "Spores .100—140 mm. long, .027—50 mm. broad." (Nyl. & T. M. Fr.)
THE LICHEN-FLORA

SUB-TRIBE VIII. THELOTREMEI.

Apothecia verruciform, open. Spores 8, murali-divided.

X. THELOTREMA. Ach.

Thallus slightly crustaceous, continuous. Apothecia verruciform, at first closed, then open; ostiolum rotundato-poriform, margin double, external or thalline one thin, even, internal or proper one membranaceous, lacero-dehiscent, disk urceolate, depressed; spores 8, colourless, fusiform, murali-divided.

1. T. lepadinum, Ach. whitish or yellow-cream-colour, sub-effuse, smooth or slightly rugulosose-unequal; apothecia hemispherical, scattered, ostiolum round, open, margin even; disk urceolate-scutelliform, dark-brown, cæsioc-pruinose or naked, proper margin lacerate, inflexed; spores 8, colourless, oblongo-fusiform, murali-divided.

On trees, holly, frequent, rarely on rocks. 1800.


IRELAND:—Common on trees, rare on rocks. Mr. Carroll. Lough Muck! co. Galway. Mr. Lerbalestier.

WALES:—Hafod, Cardiganshire. Sir. J. E. Smith. Cors-y-gedol! Rev. T. Salwey. Dolgelley! Betwys-y-coed! "Spores .012 to .018 in long, by .003 to .0045 in. broad. t. 5. f. 116." (Mudd.) "Spores .0135—70 mm. long. .011—16 mm. broad." (Nyl.) Spores .080—.090 mm. long. .015—.020 mm. broad.

forma rupestris, T. & B. deep-yellow or ochrey, tautareous, dispersed; apothecia deformed, crowded, ostiolum dilated, thalline margin tumid, disk darker-brown; spores 1-2.

On rocks, not common. 1813.


IRELAND:—Dunkerron! Dr. Taylor. Kylemore Castle! co. Galway. Mr. Lerbalestier.

WALES:—Llyn Bodlyn! Rev. T. Salwey.

Spores .070 mm. long. .015 mm. broad.
2. *T. subtile*, Tuck. whitish or milky-white, macular, somewhat shining; apothecia erumpent, small, white, thalline margin slightly prominent, proper margin albo-pulverulent; spores 8, colourless, oblong, 10-13-celled.

On young oaks and birch, very rare. 1864.

**Syn.:**—Tuck. Suppl. 1. 426. (1858.) *Nyl.* in Flora 1854. p. 491.

**Geog. Distri:**—Europe, N. America.

**Bot. Prov.:**—19...26...29.


Derryc ready Island! co. Galway. *Mr. Larba lestier.*

"Spores .040—56 long, .009—.010 mm. broad." (*Nyl.*)

**XI. URCEOLARIA, Ach. pr. p. Nyl.**


1. *U. scruposa*, (L.) albido-cinerascent, tartaraceous, verrucoso-rugose or granulose, areolato-diffract, areolae verrucoso-rugose; apothecia immersed, urceolate, black, more or less cinerea-pruinose, proper margin migrant, thalline margin thick, rugose or crenulate on the inner side; spores 8, virenscenti-fuscescent, ellipsoid, 5-sep tate, murali-divided; (thallus C red.)

On rocks, walls, &c., frequent. 1741.


**Fig.:**—E. Bot. 266. Leight. Ang. Lich. t. 11. f. 3.


**Geog. Distri:**—Switzerland, Germany, Italy, Pyrenees, France, E. Lap land, New Zealand, Ceylon.

**Bot. Prov.:**—2, 3, 4, 5...7, 8...10, 11, 12...19...22, 23, 24...26...31.


**Wales:**—Dolgelly, Cader Idris. *Mr. Holmes.* Barmouth! Aran Mowaddy! *Channel Islands:*—Jersey; Guernsey; Sark. *Mr. Larba lestier.*

"Spores .005 to .007 in long. by .002 to .00275 in. broad. t. 3. f. 57." (*Mudd.*)

"Spores .026—38 mm. long, .012—15 mm. broad." (*Nyl. & T. M. Fr.*) Spores .025 mm. long, .012 mm. broad.

forma *gypseaca*, (Ach.) creamy-white, thick, soft, rugoso-unequal, sub-pulverulent, sub-areolate; apothecia urceolate, black, castio pruinose; thalline margin tumid, inflexed; (thallus C red.)

On calcareous rocks, rare.

**Syn.:**—Ach. L. U. 383. (1810.) *Syn.* 142.
THE LICHEN-FLORA

FIG. — Hepp Sporen t. 104. f. 916.
Geog. Distri布. — Portugal, Switzerland, Spain, Finland, Tyrol, Italy.
Bot. Prov. — 5...7...10...12...15...26.
Llanymynech! Hill! Shropshire.
Ireland. — Giancorbol. Mr. Larbalestier.

forma broyophila. Ach. greyish-white or white, granulato-rugose, effuse; apothecia urceolate, immersed, nigro-caesious, margin tumid, inflexed and crenulate; (C red.)

On mosses and Cladoniæ, rare.

Fig. — Hoffm. Pl. L. t. 21. f. 1. Leight. Ang. Lich. t. 11. f. 4. Hepp Sporen
Nyl. 129. Leight. 359. 360.
Geog. Distri布. — Switzerland, Germany, Sweden, France, Italy, Hungary, Russia.
Bot. Prov. — 3...5...7...15...19...23...31.
Essex. Mr. Vurenne. High Rock! near Bridgnorth! Church Stretton! Shropshire; Eredon Hills! Leicestershire.
Wales. — Llyn Gwernan!
Channel Islands. — Quenvais. Jersey. Mr. Larbalestier.
Spores .026 mm. long. .018 mm. broad.

TRIBE XV. LECIDEINEI.

I. LECIDEA. Ach. Nyl.

Thallus crustaceous, various, squamose, granulose, areolate, powdery or evanescent. Apothecia patellulate, discocoloured (not black) and biatorine, or black and lecideine, with proper margin, often obliterated, or urceolate and galectine. Apothecia internally without gonidia. Spermatia acicular, straight or crenate, or shortly cylindrical.

A. Spores simple.

* Thallus squamulose or verrucoso-squamulose.

† Hypothecium pale or colourless.

1. L. decipiens, Ehrh. reddish-flesh-coloured, squamose, squamules appressed, rotundo-lobate or crenate, flatish, smooth, scattered, margins sub-flexuose, upturned, white as well as the under surface, (K — C —); apothecia marginal, adnate, plano-convex, black, margin thin, paler, entire, soon obliterated; hypothecium pale; spores 8, colourless, ellipsoid, simple, about 2 ½ longer than broad; I blue.

On the earth among calcareous rocks, not common.
Fig. — E. Bot. 870. Hepp Sporen t. 14. f. 129.
apothecia—long, R spores violet; colourless, gelatina aggregate Mr. Pentland. The spores "0.0015 L. 0.003—6.000 0.005—7 mm. 0.005—6.000 0.005—7 mm. broad.) (T. M. Fries.) " .0005 in. long, by .00125 in. broad." (Mudd.) Medulla 1—.

2. L. globifera, (Ach.) fusco-rufous or castaneo-rufescent, squamose, squamales reniform, imbricated, rigid, somewhat shining, rimoso-incupicent, lobate, flexuose, subhorizontal, thickened at the margins, concolorous or paler beneath (K—C)—; apothecia fuscos or black, elevated, convex and globose, immarginate, pale within, solitary or aggregate; spores 8, colourless, ellipsoid, simple.

On earth in sub-alpine calcareous localities, rare.


Exs.—Hepp Spores t. 57. f. 489. Sturm D. Fl. t. 26.

Smrft. 53.

GEOG. DISTRIB.:—Scandinavia, Norway, Sweden, Bavaria, Switzerland, Lombardy.

BOT. PROV.:—7...14.

SCOTLAND:—Arthur's Seat, Edinburgh; Pentland Hills. Dr. Maingay.

WALES:—Great Orme's Head!

The hypothecium is thin and fuscous and rests on a white globose upraised prominence of the thallus. Hymenium pale-brownish, paraphyses coherent, rufo-fuscous at the increassae spicæ; gelatina hymenæa I violet deep-blue then rufo-fuscous. "Spores 0.012—15 mm. long, 0.005 mm. broad." (Nyl.) ; "9—13 mikrom long, 2—2½ longer than broad." (Hepp.) ; "0.012—15 mm. long, 0.005—6 mm. broad." (T. M. Fr.) ; "0.015 in. long, by .00075 in. broad." (Mudd.) .010—.013 mm. long, .005—006 mm. broad.

forma rubiformis, (Whlnb.) squamales pale brown, imbricate, erect, margins and under surface whitish.

On the earth in alpine places, rare. 1864.

Exs.—Th. M. Fries 38. Anzi Langob. 137.

GEOG. DISTRIB.:—Norway, Sweden, Lombardy.

BOT. PROV.:—15.

SCOTLAND:—Summit of Ben Lawers! Mr. Carroll.

Thallus K—C—; medulla I—. The structure of the apothecium is precisely similar to that of L. globifera, but the hymenium and hypothecium are more darkly fuscous, and the spores are about one-fourth larger. Paraphyses coherent; chemical reaction nearly similar. "Spores 0.012—17 mm. long, and 0.005—7 mm. broad." (T. M. Fr.) Spores .015 mm. long, .007 mm. broad.

3. L. Salveæi, Borr. whitish or creamy-white, tartareous, effuse or continuous, squamulose, squamales depressed, tumid or granulose, bluntly lobed, appressed, unpolished, minutely innato-granulate, (K yellow C red); apothecia sessile, solitary or clustered, plane, lurid umbra-brown, pruinose, margin paler, thin, elevated, flexuose; hypothecium pale; spores 8, colourless, ellipsoid, simple, large, twice as long as broad.

On earth among rocks, frequent. 1825.

**FIG.**—E. Bot. Suppl. 2861.

**EXS.:**—Zw. 78. Anzi Langob. 171. Larbal. 32.

**GEOG. DISTRIB.:**—Germany, Switzerland, Lombardy, Arctic America, Norway.

**BOT. PROV.:**—1, 2, 6, 7, 19, 31.

**ENGLAND:**—Near Sennen, Cornwall, Mr. Ralf. Valley of Rocks at Linton, N. Devon! Mr. Borrer. Trevithal Moor! near Penzance. Mr. Curnow. Plymouth. Mr. Holmes.

**IRELAND:**—Priest Leap Mountain near Dunkerron. Dr. Taylor.

**WALES:**—Craig Breidden, Montgomeryshire. (1825.); near Drw y Nant Isaf; Road from Bala to Dolgelley; Gelli-rhudd near Barmouth. Rev. T. Salwey. Twi-du. Mr. Borrer. Crib Coch! Snowdon. Pen Cow! near Fishguard, Pembroke.

**CHANNEL ISLANDS:**—Saints Bay Guernsey! Rev. T. Salwey. Beauport Bay, Jersey! Mr. Lerbalester.

Medulla of thallus I—1; paraphyses distinct, slender and entangled. Disk of apothecium K—C red. Gelatina hymenea I brownish. Spores .021 mm. long; .011 mm. broad.

4. *L. atrorufa*, (Dicks.) lurido-cinerascent or brownish, adnato-squamulose, squamules depressed, or sub-verrucose or sub-imbricate, (K—C—); apothecia fuscous or nigricant, adnate, plano-convex, margin thin, soon obliterated; hypothecium colourless, the sides externally dark-brown; spores 8, colourless, ellipsoid, simple; gelatina hymenea I bright-blue.

On earth among sub-alpine rocks, not unfrequent.


**FIG.**—E. Bot. 1102. Hepp Sporen t. 15. f. 122. Dicks. L. c. t. 12. f. 4.


**GEOG. DISTRIB.:**—Germany; Denmark; Norway; Sweden, Switzerland, Austria, Lapland, Italy, Russia, Lapland, Norway, Sweden, Switzerland, Austria, Lapland, Italy.

**BOT. PROV.:**—5, 6, 7, 10, 11, 12, 19, 22, 31.


**SCOTLAND:**—Ben Lawers; Lochnagar; Ben Macdhui; Bennaboard. Rev. J. M. Crombie. Ben Lawers; Crainlarich. Dr. Hall.


**WALES:**—Cwm Glas! Snowdon. Fort Hill! near Fishguard, Pembroke.

**CHANNEL ISLANDS:**—Guernsey! Rev. T. Salwey.

Paraphyses compact, incrassate and fuscous at the apices. "Spores 0.010—17 long, 0.006—5 mm. broad." (Nyl.) "9—13 micr. long. 2—2½ as long as broad." (Hepp.) "0.012—17 mm. long, 0.005—8 mm. broad." (T. M. Fr.) "0.002—0.0025 in. long, by .001 in. broad." (Mudd.) Spores .014—.015 mm. long, .007 mm. broad.

5. *L. rhizbola*, (Nyl.) castano-fuscous or lurido-fuscescent, squamo-squamules rigid, rotundate or rotundato-deformed, crenate at the margin, under surface pale or whitish, unequal, with long central radicles; apothecia nigricant, moderate, pale within; spores 8, colourless, oblongo-ellipsoidal, simple; paraphyses indistinct; gelatina hymenea vinous-red with iodeine.

On the earth among rocks in alpine districts, rare. 1865.

**SYN.**—Nyl. in Flora 1865. p. 4. Crombie En. 64.

**GEOG. DISTRIB.:**—Europe.

**BOT. PROV.:**—7.

**SCOTLAND:**—Ben Lawers. Adm. Jones.

Allied to *L. globifera*. "Spores .012—16 mm. long, .006—7 mm. broad." (Nyl.)
6. *L. glaucolepidea*, (Nyl.) *glauc-o-virescent*, membranaceous, squamulose, squamules scattered, ascending, rounded, margins inciso-lobate and crenate, soredio-cherous; *apothecia* large, adnate, solitary, reddish-black, convex, or cephaloid, depressed in the centre, margin obliterated; hypothecium thick, pale-brown; spores 8, colourless, ovate or elliptical, simple.

On mountain turfy ground, rare. 1812.


**Fig.** — Nat. Hist. Rev. 1859. t. 32. f. 2. 3. a. b. c. Mudd t. 3. f. 62.

**Geo. Distribs.** — Europe.

**Bot. Prov.** — 19...30.

**Ireland.** — Near Bantry. Miss Hutchins. (1812.) South side of Crochen Mountain! 4 m. from Ballintoy co. Antrim. Dr. Moore.

Thallus like a Cladonia. "Spores .0015 in. long, by .005—.00075 in. broad." (Mudd.)

7. *L. armeniaca*, (DC.) *pale-ochraceo-lutescent*, areolato-diffract, areole sub-squamoso-verrucose, plane or subconvex, smooth, hypothallus bluish-black; *apothecia* innate, nearly plane, immarginate, moderate; hypothecium dusky or colourless; spores 8, colourless, ellipsoid or oblong, simple; (thallus K orange yellow, C red.)

On rocks, rare.


**Geo. Distribs.** — Europe.

**Bot. Prov.** — 15.


Paraphyses thick, short, distinct, but compact. Gelatina hymenea I intense blue. "Spores 0.009—0.013 mm. long, 0.005—0.006 mm. broad." (Nyl.) "0.009—0.013 mm. long, 0.004—5 mm. broad." (T. M. Fr.)

8. *L. confertula*, (Strtn.) *pallido-cinereo*, squamuloso-crustaceous, squamules small, contiguous or dispersed (K—C—); *apothecia* fuscos, nearly plane, minute, very numerous, often contiguous, obtusely margined, *internally pale*; spores 8, colourless, ellipsoid, simple; paraphyses not very distinct, almost conglutinate, fusco-clavate; *hypothecium* colourless; gelatina hymenea I blue then vinoso-violet especially the theca.

On rocks, rare. 1875.

**Syn.** — Stirton in Trans. Glasgow Soc. Nat. p. 86. (1875.)

**Bot. Prov.** — 15.

**Scotland.** — Near Killiecrankie. Dr. Stirton. (1875.)

"Spores .01—.013 mm. long, .0055—.007 mm. broad." (Stirtn.)

9. *L. endocyanea*, (Stirt.) *cinereous or cinerereous-black*, or even black, squamuloso-diffract, squamule plane or somewhat convex, appressed (K—C—); *apothecia* fuscos-black, at first small and ureolate, then expanded plane or convex and immarginate, sessile, *internally nearly all but especially upwards of a violet-colour*; *hypothecium* slightly fuscos or nearly colourless; paraphyses distinct, filiform, closely intertwined at the apices; *asci* cylindrical, attenuate at the base; spores 8, colourless, ellipsoid or oblongo-ellipsoid, simple.

On rocks, rare. 1877.
THE LICHEN-FLORA

SYN:—Stirton in Scottish Naturalist 4. 165. (1877.)
BOT. PROV.:—16.
SCOTLAND:—Mull. Dr. Stirton. (1877.)
“Spores .011—.014 mm. long, .006—.007 mm. broad. Gelatina hymenea is blue then flavescent and the ascus fulvescent. The epithecium is overlaid with a dense granular darker layer.” (Stirt.)

10. L. sporeta, (Stirt.) whitish, disperso-squamulose, squamules small, appressed, plane or somewhat convex and sometimes crenulate (K—C—); apothecia fuscous or fuscous-black, very crowded, adnate, plane, obtusely margined, somewhat shining, small; hypothecium colourless; paraphyses not well discrete, apices fuscent; spores 8, colourless, ellipsoid, simple.
On rocks, rare. 1877.

SYN:—Stirton in Scottish Naturalist 4. 166. (1877.)
BOT. PROV.:—16.
SCOTLAND:—Island of Mull. Dr. Stirton. (1877.)
“Spores .011—.015 mm. long, .005—.006 mm. broad. Gelatina hymenea is blue then fulvescent.” (Stirt.)

11. L. pissodes, (Stirt.) fusco-badious or fuscous-black, squamulose-disjunct, squamules small, somewhat concave or plane, (K—C—); apothecia black, crowded, innate, small, plane, slightly margined; hypothecium colourless; paraphyses indistinct, irregular, slender, apices black or dark-blue-black; spores 8, colourless, oblong, simple.
On rocks, rare. 1877.

SYN:—Stirton in Scottish Naturalist 4. 166. (1877.)
BOT. PROV.:—16.
SCOTLAND:—Island of Mull. Dr. Stirton. (1877.)
“Spores .007—.01 mm. long, .0035—.0045 mm. broad. Gelatina hymenea is blue then fulvescent.” (Stirt.)

†† Hypothecium dark.

12. L. lurida, (Swartz.) lurido-fuscescent, imbricato-squamose, squamules rigescant, sub-horizontal, sub-orbicular, smooth, sinuate, lobate, under surface white, (K—C—); apothecia nigro-fuscous, adnate, plane or convex, margin thin, flexuose, soon obliterated; hypothecium thick, dark-brown; spores 8, colourless, ellipsoid, simple.
On earth among calcareous rocks. 1793.

FIG:—E. Bot. 1829. Sturm D. Fl. t. 27. Hepp Sporen t. 14. f. 121.
GEO. DISTRIBUT:—Sweden, Norway, Italy, Pyrenees, Hungary, France, Switzerland, Bavaria, Algeria.
BOT. PROV.:—1...7...12...15...23...26...31.

The excipulum is dark-brown, and horny in texture, inclosing a thick dark-brown medullary mass upon which the hymenium rests. Paraphyses densely coherent, apices rufescent. I brown with greenish hue, but Nyl. and T. M. Fr.
say I pale-blue then vinous-red. "Spores 0.013—15 mm. long, 0.006—7 mm. broad." (Nyl.) "0.012—16 mm. long, 0.005—7 mm. broad." (T. M. Fr.) "0.002 to 0.025 in. long, by 0.01 to 0.0125 in. broad." (Mudd.) "9—15 µm long, twice as long as broad." (Hepp.) "0.010—0.011 mm. long, 0.006—0.007 mm. broad. "Spermatia ellipsoid or sub-cylindrical." (Mudd.) The margins of the thalline squamules are generally thickened and sometimes slightly upturned. There is a paler state of the thallus, forma pallescens, Th. M. Fries Scand. 414.

13. L. Friesii, Ach. brownish-olive, cartilaginous, diffuse, glebulo-squamose, squamules scattered or crowded, convexo-gibbos, smooth and polished; apothecia black, prominently sessile on the squamules, margin thickish, flexuose and incurved; hypothecium dark-brown; spores 8, colourless, ellipsoid, simple, minute; (thallus K—C—.)

On trees and palings, rare. 1854.


Fig :—Ann. and Mag. N. Hist. ser. 3. 14. t. 9. f. 8. 9. 11.

Exs :—Mudd 142. Fries 28.

Geog. Distr. :—Sweden, Norway.


England :—Farndale! Stogdale! Kildale! Baysdale! Cleveland! Yorkshire. Mr. Mudd.

Paraphyses coherent, apices fuscous. "Spores 0.007—8 long, 0.003—4 mm. broad." (Nyl.) "0.006—8 mm. long, 0.003—5 mm. broad." (T. M. Fr.) "0.0015 in. long, by 0.0075 in. broad. Spermatogonia prominent, verrucoform, black, scattered or confluent. Spermatia ellipsoid or sub-cylindrical, straight." (Mudd.) Spores 0.007 mm. long, 0.004 mm. broad.

14. L. ostreata, (Hffm.) pale-olive, squamulose, squamules imbricate, ascending or sub-erect, reniform, smooth, crenate, margins and under surface albo-granulato-pulverulent; apothecia black, opaque, plane, adnate, slightly glauco-pruinose, margin flexuose; hypothecium fuscous; spores 8, colourless, ellipsoid, simple, minute; (thallus K—C crimson.)

On trees and palings, frequent. 1805.


Fig :—E. Bot. 1501. Mass. Ric. f. 195.


Geog. Distr. :—Germany, Sweden, Denmark, Norway, Bavaria, E. Lapland, Italy, Austria, Switzerland, Scandinavia.

Bot. Prov. :—3, 4, 5...10.


Medulla I.—Exocarp externally dark, internally pale. Paraphyses coherent. "Spores 0.011—12 mm. long, 0.0025—0.0035 mm. broad." (Nyl.) "0.010—12 mm. long, 0.0020—35 mm. broad." (T. M. Fr.) "0.010—12 mm. long, 0.0035 mm. broad." (Mudd.) "Gel. hym. I blue. Spermatia cylindrical, straight." (T. M. Fr.)

15. L. mamillaris, (Gouan) white, thick, tartaraceous, verrucoso-or areolato-squamulose, areola sub-lobato-plicate, turgid and convex,
cancellato-insculpted or rimose; apothecia on the margins of the areole, sessile, black, plane, naked, margin thin, eventually obliterated; hypothecium nearly black, thick; spores 8, colourless, elongato-ellipsoid, simple or obscurely bilocular; (thallus K—C—).

On calcareous rocks, rare. 1791.

SYN:—Gouan Montp. 88. (1796.) Nyl. Prodr. 120. Mudd Man. 173.

FIG:—Limn. Trans. L. t. 4. f. 3.


GEOG. DISTRIB:—France, Algeria, Germany, Italy.

BOT. PROV:—1:8.


"Spores .0025 to .003 in long, by .00075 in. broad." (Mudd.) "4 to 5 times longer than broad." (Korb.) "Spermatia straight, minute, sterigmata nearly simple." (Nyl.) Spores .011—.014 mm. long, .004—.005 mm. broad.

16. L. intumescentes, (Flot.) fusco-cinereous or cervino-fuscescent, determinate, sub-squamoso-plicato-verruculose, areolato-diffractus; apothecia black, numerous, crowded, minute, innato-appressed, plane, margin thin, prominent, flexuoso; hypothecium nigro-fuscescent; spores 8, colourless, ellipsoid, simple.

In insulated patches between the thallus of Lecanora glaucoma on rocks, frequent. 1854.


FIG:—Mudd Man. t. 3. f. 76.


GEOG. DISTRIB:—France, Sweden, Denmark, Lombardy, Austria, Westphalia.

BOT. PROV:—5, 6, 7...10...15.

ENGLAND:—Cliffrigg! Loundsale! Cleveland. Mr. Mudd. Oakham Dingle near Church Stretton; Pontefract Hill! Caer Caradoc! Shropshire.

SCOTLAND:—Portlethen, Coast of Kincardineshire. Rev. J. M. Crombie.


Paraphyses indistinct with dark-fuscescent apices, I pale-blue then dirty-violet. "Spores .010—12 mm. long, .005—6 mm. broad." (Nyl.) " .010—13 mm. long, .005—6 mm. broad." (T. M. Fr.) " .0025—.003 in. long, by .001 in. broad." (Mudd.) .012 mm. long, .006 mm. broad.

17. L. lugubris, Smmrf. fusco-cinereous, cartilaginous, thickish, squamulos-areolate, granuloso-concrete, glebuloso-diffractus; apothecia black, opake, superficial, plane, margin thick, entire, hymenium cinerascent; hypothecium nigro-fuscescent; spores 8, colourless, sphaerical, simple, minutely multi-nucleolate.

On sub-alpine rocks, rare. 1856.


FIG:—Micr. Journ. 5. t. 11.


GEOG. DISTRIB:—Sweden, Norway, Finland, Bavaria, Prussia.

BOT. PROV:—10...15.


Paraphyses slender, distinct, slightly incrassate at the apices, I dirty-yellow. Spores umiserate in the ascus, "diam. 0.008—9 mm." (Nyl.) "diam. 0.008—9 mm." (T. M. Fr.) " .00175 in. diam." (Mudd.) diam. .008—.011 mm. "Sper-
mogonia very minute, punctiform or subverruceform, slightly prominent, black, sparingly scattered. Spermatia straight, cylindrical, .00075 to .001 in. long by .00012 in. broad.” (Mudd.)

18. L. fuliginosa. Tayl. dark-brown or fusco-rufescent, glebuloso-squamulose, pulvinulo-conglomerate; (K—C—) hypothallus nigro-fuscous, subbyssoid; apothecia black, small, solitary or aggregate, plano-convex, margin thin, soon obliterated, internally blackish; hypothecium brownish-black, thick; spores 8, colourless, ellipsoid, simple, minute.

On rocks, frequent. 1836.


Exs:—Leight. 305.

Geog. Distrib:—Sweden, Norway.

Bot. Prov:—5...7...15...19...26.

England:—Caer Caradoc! High Rock! near Bridgnorth, Shropshire.

Scotland:—Crianlarich. Dr. Hall.

Ireland:—Dunkerron; Carig Mountains! co. Kerry. Dr Taylor. (1836.) Glengariff; Dunmanway! Mr. Carroll. near Kylemore! Doughruagh Mountain! Galway. Mr. Earbalastic.

Wales:—Between 4 & 5 milestone between Barmouth and Dolgelley! Rev. T. Sálwey, Barmouth! Cader Idris! Llwyn Geirionydd! Glyder Vach!

Paraphyses pale-yellowish-brown, coherent, apices brownish-black. “Spores 0.008—0.010 mm. long, 0.004—6 mm. broad.” (Nyl.) “0.007—10 mm. long, 0.004—6 mm. broad.” (T. M. Fr.) “.002 to .00275 in. long by .001 in. broad.” (Mudd.) .007 mm. long, .004—.005 mm. broad. AscI I blue. “Spermatia siliform, arcuate.” (Nyl.)

19. L. botryzic, Nyl. cinereo-virescent, squamuloso-pulverulent thin, (K—C—); apothecia pale-brown to dark-brown, small, simple, or aggregate, prominent, almost spherical; hypothecium thick, dense brownish-black; spores 8, colourless, elliptical, simple; hymenium colourless, pellucid; paraphyses not discrete, apices colourless; gelatina hymenea I cœruleamentos then vinous-red.

On alpine rocks, rare. 1871.

Syn:—Stirton in Grevillea 2. p. 71.

Bot. Prov:—15.

Scotland:—Ben Vorlich. Dr. Stirton. (1871.)

“Spores .008 mm. long, .004 mm. broad.” (Stirt.)

20. L. endomeleca, Leight. pale cinereo-virescent, opake, glebulose, glebulce scattered or areolato-diffract, thick, convex, composed of minute, conglomerate, convex, roundish or sub-lobate, sulfurfuraceous squamules (K pale-yellow C pale-yellow); apothecia violet-black, rather large, innato-sessile, at first plane with a thickish margin, afterwards very convex, and immarginate, slightly pruinose, concolorous within; hypothecium very thick, nigro-fuscous, with a paler-brown enclosed intermediate stratum; spores 8, colourless, small, elongato-ellipsoid, simple.

On stone walls, rare. 1874.

Syn:—Leight. in Linn. Trans. ser. 2. 1. p. 239.

Fig:—Linn. Trans. 1. c. t. 92. f. 13 & 14.

Bot. Prov:—7.

Wales:—Trefriw! near Llanrwst. (1874.) Moel-y-gest near Tremadoc! A very distinct species. Hymenium palish-blue. I dense-violet. Paraphyses coherent, apices fuscescent. Spores .0115—.0125 mm. long, .0045—.005 mm. broad.
21. *L. dispensa*, Nyl. black, thin, furfuraceous, rimulose; apothecia numerous, minute, scattered, sessile, black, plane, marvyn thin, smooth; hypothecium thin, nigro-fuscous; epithecium nigro-fuscous; hymenium colourless; spores 8, colourless, ellipsoid, simple.

On water-washed sandstone boulders, in sub-alpine localities, rare. 1854.


**GEOG.** **DISTRIB.**—Europe.

**BOT. ** **PROV.**—5...7...10...19...26...31.

**ENGLAND:**—Near Battersby! and near Roseberry! Cleveland, Yorkshire. Mr. Mudd. near Bewdley, Worcestershire. Dr. Holz.

**IRELAND:**—Near Cork! Mr. Carroll. Glencorbot! Mr. Larbalestier.

**WALES:**—Cwm Idwal! Glym Ceiriog! near Chirk.

**CHANNEL ** **ISLANDS:**—Rozel, Jersey! Mr. Larbalestier.

Paraphyses distinct, but coherent, apices nigro-fuscous. "Spores 0.007—0.010 long, 0.0035—0.0040 mm. broad." (Nyl.) "0.0075 in. long, by .0005 in. broad. Spermatia minute, cylindrical or sub-ellipsoid." (Mudd.) Spores .010—.012 mm. long, .004—.005 mm. broad.

*L. dispensa* and *L. sylvicola* and its varieties approach each other closely, but attention to the characteristic features of their diagnoses will enable an easy and certain recognition.

22. *L. demarginata*, Nyl. whitish or cinerascens, very thin, subepiprose; apothecia convex, similar in analysis to those of *L. dispensa*, Nyl. of which it may be a subspecies.

On rocks, rare. 1877.

**SYN:**—Nyl. in Flora 1878. p. 245.

**GEOG.** **DISTRIB.**—Europe, Finland.

**BOT. ** **PROV.**—28.

**IRELAND:**—Kylemore. Mr. Larbalestier. (1877.)

23. *L. sylvicola*, (Flot.) cinerascens or pale-yellowish-tawny, thin, furfuraceous, rimulose, effuse, (K—C—); apothecia black, small, convex, immarginate, solitary or 2-3-connate, colourless within; hypothecium violaceo-nigricans; hymenium caeruleo-cinerascens; epithecium pale; paraphyses indistinct; spores 8, colourless, ellipsoid, simple; gelatina hymenoea vinous-red with iodine.

On maritime rocks, rare.


**EXS:**—Larbalestier. 84. Arn. 499. b.

**GEOG.** **DISTRIB.**—Germany, Sweden, Norway, Finland, Lapland Orient.

**BOT. ** **PROV.**—1...7...26...31.

**IRELAND:**—Salrock Road! and Kylemore, Connemara. Mr. Larbalestier.

**WALES:**—Barmouth!

**CHANNEL ** **ISLANDS:**—St. Peter's Valley, Jersey! Mr. Larbalestier.

Apices of paraphyses pale. "Spores 0.007—9 mm. long, 0.0035—0.0045 mm. broad. Spermatia slender, straight." (Nyl.) "0.006—8 mm. long, 0.0025—35 mm. broad." (T. M. Fr.) Spores .010 mm. long, .005 mm. broad.

Var. *infidula*, Nyl. whitish or pale-yellowish-tawny; apothecia nigricans, cinerascens within; hypothecium fuscous; paraphyses, spores and other characters as in type.

On maritime rocks, rare.
OF GREAT BRITAIN.

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Syn.:—Nyl. in Flora 1868. p. 475. Crombie Enum. 69.
Geog. Distrib.:—Europe.
Bot. Prov.:—1...7...26...31.
England:—Buckfastleigh, Devon. Dr. Holl.
Ireland:—Twelve Fins. Mr. Larbalestier.
Wales:—Abertygwyn, Dolgelley! Dr. Holl, near Builth! 
Channel Islands:—The Warren ! Jersey; St. Peter’s Valley ! Jersey. Mr. Larbalestier.

Var. Hellbomii, Lahm. dark-cinereo-fuscescent; apothecia black, turgescent, globose, immarginate, scattered colliculose, in conglomerations resembling the minute fruit of a bramble.

On rocks, not common.

Syn:—Lahm in Flora 1870. p. 177.
Exs:—Arn. 409 a.
Geog. Distrib.:—Norway, Sweden, Germany.
Bot. Prov.:—7...10.
England:—Lambraugh-rigg ! Cleveland. Mr. Mudd.

24. L. paucula, Nyl. albido-cinerascent, thin, furfuraceus, effuse, (K—C—); apothecia very black, minute, scattered, convex, immarginate; hymenium dusky, cinerascent, paraphyses indistinct, apices colourless; hypothecium thick, fusco-nigrant; spores 8, colourless, lineari-oblong, simple, small.

On stones in streams, very rare. 1876.

Syn:—Nyl. in Flora 1876. p. 573.
Ireland:—Near Kylemore! Connemara. Mr. Larbalestier. (1876.)

“Spores.006—7 mm. long, .003 mm. broad. Gelatina hymenae I vinosofulvascent.” (Nyl.) Spores.0145 mm. long, .004 mm. broad.

25. L. sympathetica, Tayl. pale-brown, sub-determinate, tartareous, thickish, plane, rimuloso-areolate, furfuraceus, (K yellow C yellow); apothecia black, numerous, distinct, small, sub-innate, ruge, margin indistinct, ruge; hypothecium thick, black or brownish-black; spores 8, colourless, ellipsoid, simple; paraphyses indistinct, epitecium fuscosum.

On sandstone blocks in maritime localities, rare. 1831.

Hook. Br. Fl. 2. 176.
Fig:—E. Bot. Suppl. 2687. fig. 1. (2 left hand figs). Hepp Sporen t. 15. f. 130.
Exs:—Hepp 130. Arn. 23 & 45.
Geog. Distrib.:—Europe.
Bot. Prov.:—2...5...7...19.
Ireland:—Dunkerron! Dr. Taylor in herb. Borrer.
Wales:—Llandudno!

Spores.011 mm. long, .006 mm. broad.

26. L. crustulata, (Ach.) pale-brownish or greyish, very thin, tartareous, effuse, slightly rimuloso-areolate, furfuraceus, (K—C—); apothecia very numerous, scattered, sessile, plane, black, margin thin, entire; hypothecium thick, brownish-black; spores 8, colourless, oblong, simple; paraphyses indistinct, apices fuscos.

On sandstone rocks, rare.
27. *L. trochodes*, Tayl. rust-brown thin, leproso-tartareous, slightly rimose, indeterminate; apothecia black, small, adnate, roundish, uneven, centrally umberate or tuberculate, *margin tumid, uneven; hypothecium thick, black; spores 8, fuscous, elliptico-oblong, simple, large; paraphyses indistinct.

On calcareous mountain rocks, rare. 1836.

**SYN.**—*Lecidea parassima var. crustulata*, Ach. *Syn. 18. (1817.) L. crustulata, Mudd Man. 209. (1861.)*

*Exs.*—Mudd 177. Leight. 333.

**Geo. Distribs.**—Hamburg, Germany, Sweden.

**Bot. Prov.**—1, 2, 3...5...10...19.


**Oa Skay, Wilts. Mr. Joshua.**

**Ireland.**—Kilcally! Cork. Mr. Carroll. O'Donoghue's Prison! Killarney. Mr. Taylor.

"Spores 0.014—15 long, 0.007—8 mm. broad." (Nyl.) "Spores 0.012—18 mm. long, 0.006—7 mm. broad." (T. M. Fries) "0.003—004 in. long, by .00125—0015 in. broad." (Mudd.) I blue, asci-brown. Spores .0165 mm. long, .008 mm. broad.

28. *L. subgyratula*, Nyl. blackish, opaque, very thin, subrimose; apothecia black, gyroso-rugose, minute; hypothecium blackish; spores 8, colourless, oblong, simple, (half the size of those of *L. trochodes*, Tayl.); epithecium brownish; paraphyses slender, not discrete; gelatina hymenea I pale-bluish and then tawny-vinous-red.

On stones in alpine districts, rare. 1872.

**SYN.**—*Nyl. in Flora 1873. p. 289—300. Grevillea 4. 25.*

**Fig.**—Grevillea 4. t. 52. fig. e. f. g.

**Geo. Distribs.**—Europe, Sweden, Norway, Finland.

**Bot. Prov.**—19.

**Ireland.**—Carig Mountain! co. Kerry, Mr. Taylor in herb. Borrer.

"Spores 0.018—30 mm. long, 0.011—16 mm. broad. I blue then intensely vinous-red. Spermatia cylindrical, straight." (T. M. Fries Lich. 'Scand. p. 531.) The large fuscous spores, double the size of those of *L. subgyratula*, Nyl. keep these plants distinct. .028 mm. long, .016 mm. broad.

29. *L. subfurva*, Nyl. brownish-black or greyish-brown, above minutely furfuraceous and opake, areolato-diffract, indeterminate (K.—C——); apothecia black, sessile, plane, ruguloso-opake, margined, often angulate, brownish within; epithecium brownish; hypothecium fusco-nigrigent, thickish; spores 8, colourless. subgloboso-ellipsoid, simple; paraphyses slender, irregular, indistinct, thickened, branched and articulate upwards; gelatina hymenea intensely-blue with iodine.

On micaceous stone-walls. 1870.


**Bot. Prov.**—15.

**Scotland.**—Glen Fender and Craig Tulloch! Blair Athole, Rev. J. M. Crombie. (1870.)
"Externally somewhat resembling *L. furvella*, but belonging to the section of *L. petrosa*. Spores .011—.12 mm. long, .009 mm. broad." (Nyl.) Spores .012—.013 mm. long, .0065—.007 mm. broad.

30. *L. ochracea*, (Hepp.) ochraceo-fuscescent, thin, furfuraceous, (K—C—); apothecia black or fuscous black, plane, sessile, with a thinner darker polished margin; hypothecium fulvo-fuscescent, paler upwards; paraphyses indistinct, apices colourless; spores 8, colourless, linear-ellipsoid, simple.

On rocks, not common. 1876.

**Syn:** —Hepp Europ. 263.

**Fig.:** —Hepp t. 29. f. 263.

**Exs.:** —Hepp 263. Lojka Transylv. 2344.

**Geog. Distrib.** —Germany, Transylvania.


**Ireland:** —Near Kylemore and Mweelan! Ballinahinch! Twelve Pins! Connemara. Mr. Larbalestier. (1876.)

Spores .012—.013 mm. long, .0055—.007 mm. broad.

31. *L. ochracea*, (Hepp.) ochraceo-fuscescent, thin, furfuraceous, (K—C—); apothecia black or fuscous black, plane, sessile, with a thinner darker polished margin; hypothecium fulvo-fuscescent, paler upwards; paraphyses indistinct, apices colourless; spores 8, colourless, linear-ellipsoid, simple.

On rocks, not common. 1876.

**Syn.:** —Körb. Par. 161. (1865.)

**Geog. Distrib.** —Germany, Sweden.


**Ireland:** —Coast near Kylemore! Galway. Mr. Larbalestier. (1876.)

Spores .016—.017 mm. long, .0095 mm. broad.

32. *L. picila*, (Mass.) dirty-yellowish-white, thin, effuse, furfuraceous, farinose; apothecia black, sessile, plane or hemispherical-marginate, eventually obliterate; when wetted transparent-pale-brown; hypothecium black; paraphyses distinct, coherent, apices pale; hymenium colourless; spores 8, colourless, linear-ellipsoid, simple.

On rocks, rare. 1876.

**Syn.:** —Mass. Misc. 38. (1856.)

**Exs.:** —Am. 73.

**Geog. Distrib.** —Germany.


**Ireland:** —Twelve Pins, Connemara. Mr. Larbalestier. (1876.)

Spores .013—.0155 mm. long, .004—.005 mm. broad.

†† Hypothecium fuscescent.

33. *L. advertens*, Nyl. olivaceo-nigricant, indeterminate, thin, furfuraceous, hyssoid; apothecia black, minute, at length sub-convex and immarginate, concolorous within; hypothecium black or fuscous-black; spores 8, colourless, ellipsoid, simple, small; paraphyses indistinct; gelatina hymenea caeruleus with iodine.

On calcareous alpine rocks, rare. 1866.

**Syn.:** —Nyl. in Flora 1866. p. 419.

**Geog. Distrib.:** —Europe.

**Bot. Prov.:** —6, 7...26.
34. *L. antrophila*, Larbal. ochraceo-virescent, thin, effuse, pulverulo-furfuraceous, (K—C—); apothecia fulvo-rufescent, small, scattered, excessively convex and prominent, sessile, immarginate, a very pale narrow margin only appearing when wetted; hypothecium darkly-fulvo-rufescent, thick; hymenium colourless; paraphyses indistinct, apices colourless; spores 8, colourless, linear, or linear-oblong, simple, very minute.

On the interior of caves, rare. 1877.

**Syn.:** Leight. in Linn. Trans. 2d. ser. 1. 242.  
**Fig.:** Linn. Trans. 1. c. t. 33. f. 10 & 11.


**Ireland:** Mweelan! near Kylemore, co. Galway. *Mr. Larbalestier.* (1877.)

A very remarkable and apparently distinct species. Gelatina hymenae I very pale-blue. Spores .009 mm. long, .0025 mm. broad.

35. *L. polyantha*, Tayl. pale-brown, tartareous, thinnish, plane, rimuloso-aroseolate, furfuraceous, (K yellow C orange-yellow); apothecia black, small, subinnate or innato-sessile, margin thick and very prominent, entire; hypothecium pale-rufescent; paraphyses distinct, apices pale, I blue but asci brown; spores 8, colourless, ellipsoid or oblong, simple.

On sandstone blocks, rare.

**Syn.:** Tayl. MS. in herb. Borrer!  
**Geog. Distrib.:** Italy.

**Bot. Prov.:** 27.

**England:** Hurstpierpoint! *Mr. Borrer.  
**Wales:**—Festiniog road, Dolgelley!  
Very similar generally to *L. sympatethica* and *L. crustulata*, but recognizable by different diagnoses. Spores .011—.012 mm. long, .007 mm. broad.

36. *L. rusticella*, Nyl. ochraceo-whitish, thin, subleprose; apothecia black, opake, convex, immarginate, internally dark; paraphyses indistinct; epithecium and hypothecium fuscos or fuscescent; spores 8, colourless, sub-oblong, simple.

On micaceo-schistose ferruginous rocks, rare. 1877.

**Syn.:** Nyl. in Flora 1878. p. 246.


**Ireland:** Kylemore. *Mr. Larbalestier.* (1877.)

"Spores .006—.01 mm. long, .0025—.035 mm. broad. Gelatina hymenae I blue than vinoso-fulvuscent or vinoso-subrufescent. To be compared with *L. rusticella*, Nyl. in Flora 1866. p. 371. from which it differs in the different thallus and smaller spores. It varies with a paler hypothecium." (Nyl.)

† † † Hypothecium colourless.

37. *L. limosa*, Ach. albid- cinerascent, subleprose, thin, or furfuraceous, effuse, (K—C—); apothecia black, scattered or crowded and conglomerate; opake, naked, convex, subglobose, internally cinerascent, adnate; hypothecium colourless or slightly-fuscescent; spores .008, colourless, ellipsoid, or fusiformi-ellipsoid, simple.

On the earth in mountain ranges, rare. 1870.
OF GREAT BRITAIN.

253

Fig:—Hepp. t. 57, f. 488.
Geogr. Distri:—Switzerland, Norway, Sweden, Lapland.
Bot. Prov:—15.
Scotland:—Ben Lawers; Ben Macdhui; Summit of Cairn Gowar. Rev. J. M. Crombie.

Paraphyses thickish, numerous, distinct, but coherent, bluish, apices pale. I bluish then dirty-fulvaceous. The thallus generally of a loose furfuraceous character, the pale-fulvaceous hypothecium, the distinct paraphyses with pale apices, distinguish it from its allies L. assimilata, Nyl. (Fellm. 164, 165. & 166.) and L. olpestris, Smrft. both of which have a distinct granular thallus, and the former has a dark-fuscousent hypothecium, turned nearly black by K., with few indistinct paraphyses, fuliginous at the apices, whilst the latter has a pale-fulvaceous hypothecium with distinct paraphyses, fuliginous at the apices, and spores double in length. "Spores 0.011—18 mm. long, 0.004—6 mm. broad." (Nyl.); "0.009—18 mm. long, 0.004—6 mm. broad." (T. M. Fr.) Spores .012—.018 mm. long, .0055 mm. broad.

38. L. lutulata, Nyl. yellow-ochreous, thin, leprose or indistinct; apothecia greenish-black, convex, immarginate, pale within; hypothecium colourless; epithecium bluish; paraphyses not discrete; spores 8, colourless, ellipsoid or oviform, simple; gelatina hymenea bluish and then tawny-wine-red with iodine.

On maritime rocks, very rare. 1873.

SYN:—Nyl. in Flora 1873. p. 297.
Bot. Prov:—31.
Channel Islands:—Rozel meadow, Jersey! Mr. Lurbaletier. (1873.)
The specimen communicated by Mr. Lurbaletier does not agree with Dr. Nylander’s description in Flora, and has gonidia in the pale hypothecium.

Spores .009—.010 mm. long, .004—.005 mm. broad.

39. L. phyllodiscus, Strttn. black, minutely granulose or scurfy, thin, often scarcely visible; apothecia black, moderate, often 2-3-aggregate, and then undulate, sometimes conglomerate, margin shining, thin, flexuose or sinusose, internally pallido-cinerascent or cæruleo-cinerascent (K purpurascens or rosy); spores 8, colourless, ellipsoid, simple; paraphyses distinct, nigro-clavate or cæruleo-nigro-clavate; hypothecium concolorous or sometimes darkly (1—4) zonate; gelatina hymenea. I slightly-blue then vinoso-fulvaceous or sometimes vinoso-violet; hymenium and hypothecium purpurascens with nitric acid.

On rocks, rare. 1875.

Scotland:—Near Kilmcrankie. Dr. Stirton. (1875.)
"Spores .007—.009 mm. long, .0045—.0055 mm. broad. Allied to L. phylliscocarpa, Nyl. Beneath the apothecia are often seen curious cushions composed of yellowish granular matter." (Stirt.)

40. L. chondrodes, Mass. white, thick, amylaceo-tartareous, plicato-rugose, nigrescent, furfuraceous, (K—C—); apothecia nigro-fusceous when dry, subsanguineous and transparent with a dark circumferential ring when wet, foveolato-innate, or adnato-sessile, plane, with a thin nigrescent margin; hypothecium colourless or slightly-fuscous, with a narrow fusceous excipulum; paraphyses conglutinate, apices fuscos; spores 8, colourless, narrowly-ellipsoid, simple, large, oleoso-guttate.

On calcareous rocks, not common, 1876.
THE LICHEN-FLORA


Exs.:—Anzi 246. Arn. 186. 196 b.

Geog. Distrib.:—Germany, Italy, Sweden, Norway.

Bot. Prov.:—L.

England:—Yatton, Som. Mr. Joshua. (1876)

Gelatina hymenea I pale-blue then reddish-brown. Spores .017—.022 mm. long, .007—.009 mm. broad. Spores double the size of those of L. immersa.

41. L. dilutionesula, Nyl. similar to L. infidula, Nyl. but the apothecia are livid or livid-pale and entirely pale within; epithecium and hypothecium colourless; paraphyses distinct; spores 8, colourless, ellipsoid, simple.

On maritime schistose rocks.

Syn:—Nyl. in Flora 1876. p. 308.

Bot. Prov.:—L...

England:—Devonshire. Dr. Holl.

Ireland:—Near Renvyle House! Connemara. Mr. Labalestier.

"Spores .007—.010 mm. long, .004—6 mm. broad." (Nyl.) Spores .008 mm. long, .004 mm. broad.

42. L. chloroticula, Nyl. virescent, very thin, subepigeous or scurfy; apothecia whitish-flesh-colour, plane, very minute, with a whitish margin; hypothecium colourless; paraphyses not well discrete; spores 8, colourless, acicular, slender, simple.

On micaceous-schistose stones in a stream, very rare. 1877.

Syn:—Nyl. in Flora 1877. p. 564.

Bot. Prov.:—L...

Ireland:—Kylemore! Galway. Mr. Labalestier. (1877.)

Gelatina hymenea I vinous-red. Spores .020—.35 mm. long, .001 mm. broad. Spermata arcuate, .030—40 mm. long, .0008 mm. broad." (Nyl.)

43. L. orphiacea, Stirt. black, opake, minutely granuloso-fur- furaceous, continuous; apothecia black, sessile, plane or somewhat convex, opake, margin somewhat shining, often flexuose or irregularly lobate, or even lobato-incised, internally pellucid; hypothecium colourless; paraphyses rather thick, not well distinct, generally conglutinate; spores 8, colourless, oblong or fusiformi-oblong, simple.

On rocks, rare. 1877.

Syn:—Stirton in Scottish Naturalist 4. 166. (1877).

Scotland:—Null. Dr. Stirton. (1877.)

"Spores .013—.018 mm. long, .003—.004 mm. broad. Gelatina hymenea I intense-blue almost black. Epithecium thick, black, NOs darkly violaceous, K—." (Stirt.)

*** Thallus powdery.

44. L. lucida, Ach. citrine-yellow or virescent, thin, effuse, leproso-pulverulent (K yellow C—); apothecia minute, pale-waxy-yellow, plane or convex, immarginate; spores 8, colourless, oblongo-ovoid or narrowly obovate, simple, minute; gelatina hymenea cærulescens, then vinous-red with iodine.

On shady rocks, and stone walls, common. 1803.


Mass. Ric. f. 249.


Geog. Distrib.:—Sweden, Norway, Finland, Denmark, Silesia, Switzerland, Germany, Lombardy, Russia.
OF GREAT BRITAIN.

BOT. PROV. — 2, 3...7...9...15...19...31.

SCOTLAND: — Blair Athole; Falls of Tummel, Glen Fender, Rev. J. M. Crombie.
IRELAND: — Castlebernard Park. Mr. Carroll.
WALES: — Garth near Dolgelley. Dr. Holl.; between Bala and Dolgelley! Talylyn Pass! Cader Idris.
CHANNEL ISLANDS: — Rozel Manor! Jersey; Guernsey! Sark. Mr. Larbalestier.

Scotland: — High Rock! Bridgnorth, Shropshire.
IRELAND: — Kylemore, Glencorbot, Doughruagh, Galway. Mr. Larbalestier. (1869.)

45. L. clavulifera, Nyl. cinereo-virescent or subflavovirescent, thin, subdisperso-granulate or subleprose; apothecia dirty-ochraceo-rufous or dirty-testaceo-rufescent or nigricant or black, convex; epithecium and hypothecium pale; paraphyses indistinct; spores 8, colourless, oblong or clavate, simple, most minute, .004—6 mm. long, .001 mm. broad; gelatina hymenial blue then vinoso-fulvescent.

On roots of trees, rare.


forma subviridans, Nyl. subvirescent; gonidia small, glomerulosconnate.

On rocks, rare. 1869.

SYN: — Nyl. in Flora 1877. p. 463.

IRELAND: — Kylemore, Glencorbot, Doughruagh, Galway. Mr. Larbalestier. (1869.)

**** Thallus granulate.

† Hypothecium colourless.

46. L. prominula, Borr. pale-tawny-brown, determinate, somewhat tartareous, thin, minutely granulate, (K yellow C yellow); apothecia black, numerous, crowded but distinct, small, sessile, plane, opaque, margin obtuse, entire, slightly flexuose and polished, internally grey or pale-brownish; excipulum nigro-fuscous, lateral only; hypothecium colourless; spores 8, colourless, elliptico-oblong, simple.

On flints, not common.
THE LICHEN-FLORA


FIG:—E. Bot. Suppl. 2687. fig. 1. (2 right hand figs).

EXS:—Arn. 4116. Richardson 150.

GEOG. DISTRIB:—Europe, N. America.

BOT. PROV:—1, 2.

ENGLAND:—Sussex Downs! Mr. Borrer. Exmouth; Haldon, Devon. Mr. Parrett.

"Spores .00275—.003 in. long, by .0015 in. broad." (Mudd.) Spores .015—.014 in. long, .006—.007 mm. broad. Paraphyses pale, distinct, thickish, apices nigro-fuscous. I pale-vinous-red.

47. L. parissima, Nyl. cinereo-virescent, thin, granulose, effuse; apothecia black, innato-sessile, numerous, minute, scattered, simple or congregate, plano-convex, internally pale, margin obliterated; hypothecium pale or merely a thin brown line; paraphyses distinct; spores 8, colourless, oblong or fusiformi-oblong, simple, minute; gelatina hymenae vinous-yellow with iodine.

On old palings, rare. 1870.

SYN:—Nyl. in litt. 1870. Comb. in Linn. Journ. 11. 484.

GEOG. DISTRIB:—Europe.

BOT. PROV:—3...5.


"Allied to L. denigrata, Fr. but differing in reaction. Spermatica oblongo-cylindrical. Spores .006—.011 mm. long, .0025—.0035 mm. broad." (Cromb.) Spores .011 mm. long, .0035 mm. broad. An indistinct or obsolete septum is often visible and the hymenium is slightly cinerascens with K.

48. L. flexuosa, (Fries.) virescent or viridi-cinerascens, granulose, effuse, thin (Ky or—C red); apothecia black, plane, scattered, sessile, margin thin, flexuose, hypothecium colourless; spores 8, colourless, ellipsoid, simple, minute; gelatina hymenae dilutely cærulescent, then slightly fulvo-rubescens.

On old pines, wood, rails, &c., frequent.


FIG:—Hepp Sporen t. 56. f. 486.


GEOG. DISTRIB:—France, Switzerland, Bavaria, Lombardy, Sweden, Scandinavia, Central Lapland.

BOT. PROV:—7...10...15.


WALES:—Chirk Castle Park! Denbighshire.

"Spermatica very slender, cylindrical, straight. Spores .0015 to .002 in. long, by .0005 to .00075 in. broad." (Mudd.) "Spores .007—8 mm. long, .0035—.0045 mm. broad." (Nyl.) "Spores .007—9 mm. long, .0030—.05 mm. broad." (T. M. Fr.) Paraphyses indistinct, apices brownish.

forma aeruginosa, (Borr.) granules of thallus dissolved into dark-verdigris-green powder, and forming a rimoso-diffract crust (K yellow C red).

On decaying rails and trees, not common. 1831.

SYN:—Borrer in E. Bot Suppl. 2682. (1831.) Mudd Man. 197.

FIG:—E. Bot. Suppl. 2682.

EXS:—Leight. 406.

GEOG. DISTRIB:—Europe.

BOT. PROV:—1...2...5...9...10...20.

ENGLAND:—Sussex! Mr. Borrer. (1831.) Leicestershire. Rev. A. Bloxam.

Ayton Moor! Stogdale! Baysdale! Cleveland. Mr. Mudd. near Treflach Hall!

IRELAND:—Glanmirre! Cork. Mr. Carroll.

49. L. conglomerata, Fr. pale-green or greyish-green, granulose, thin, effuse, (K—C—); apothecia minute, very numerous, solitary or conglomerate, convex, pale-brown or reddish-brown, immarginate; hypothecium colourless, only slightly yellowish-brown in the lower portion; spores 8, colourless, narrow, cylindrical or oblongo-cylindrical, simple.

On trees, not common.

SYN:—Fries S. V. S. p. 112. (1846.) Mudd Man. 194.

ENGinctions:—Europe.

B. Bot. PROV.:—2...8.

50. L. ochroconca, Nyl. lutescenti-ochraceous, granulose, effuse, granules small, contiguous or sub-dispersed, firm, (K—C—); apothecia Rufous or rufescence, plane, margin obtuse or indistinct, whitish within; hypothecium pale; spores 8, colourless, oblongo-fusiform, simple, small; paraphyses indistinct; gelatina hymenea I carulescent then vinous-red, especially! the asci and apices of the paraphyses.

On pine trees, rare. 1861.


Scand. PROV.:—Norway.

B. Bot. PROV.:—15.

51. L. spododes, Nyl. greenish-yellow, thin, granulate, some what evanescent, (K—C—); apothecia cinerous or sordid-pale, small, convex, immarginate; hypothecium colourless; spores 8, colourless, oblong, simple; gelatina hymenea blue then vinous-red with iodine.

On old pales, rare. 1869.


Scand. PROV.:—Europe.

B. Bot. PROV.:—2, 3...5.

52. L. microconca, Korb. dark-bright-green, effuse, minutely granulose, (K—C—); apothecia minute, carneo-lutescent, innato-sessile, s
convex, immarginate; hypothecium colourless; paraphyses indistinct, conglutinate, apices pale; spores 8, colourless, ellipsoid, simple, minute; gelatina hymenea I vinous or fulvescent.

On old holly stumps, rare. 1875.

**SYN:** Körber Par. 155. (1865.)

**EXS:** Zw. 416. Korb. 250. Rabh. 733. Arn. 279.

**GEOG. DISTRIBUTION:** Germany.

**BOT. PROV.:** 26.

**IRELAND:**—Lough Inagh! Mr. Larbalestier. (1875.)

Spores .012 mm. long, .0045 mm. broad.

53. *L. decolorans*, Flk. whitish or glauco-ciner ascent, thin, incrusting, effuse, minutely granulose and leprose or pulvularent, or more largely granuloso-verrucose and smooth (K yellow C red); apothecia very variable in colour, form and size, brick-reddish, cinereo-carneous, livido-fuscous, pallido-fuscescent, nigrant or fuscous-black, scattered or conglomerase, appressed, plane, and with a flexuose entire margin, or convex and immarginate, whitish within; spores 8, colourless, oblongo-ellipsoid, simple; paraphyses indistinct.

On the earth in hilly and sub-alpine localities, common. 1793.

The size of the thalline granules, and the colour of the apothecia are very variable, apparently resulting from locality and climatal influence. The chemical reaction (K yellow C red) might lead us to connect this with *L. coarctata*, *glebulosa*, &c., and perhaps they are all forms or states of one and the same lichen.


**FIG.:** E. Bot. 1185.

**EXS.:**—Leight. 322. Scher. 213. Mudd 165.

**GEOG. DISTRIBUTION:**—Hungary, Switzerland, Brazil, Sweden, Russia. Bot. Prov.:—1, 2, 3, 4, 5, 7...19, 11, 15, 20, 22, 23, 26...30.


"Spores 0.009—0.016 mm. long, 0.004—6 mm. broad. Gel. hym. I slightly blue then slightly red.” (Nyl.) "Spores 0.008—16 mm. long, 0.004—7 mm. broad. Gel. hym. pale-blue then violet or slightly fulvo-rubescens.” (T. M. Fr.) "Spores .003—.0035 in. long, .00125 in. broad.” (Mudd.) Spores .0115—.013 mm. long, .005—.006 mm. broad.

forma escharoides, (Ehrh.) granulose, (K y C red); apothecia confluent, difformed, convex, immarginate, fuscous or nigrant.

On peaty earth, frequent.


**FIG.:** E. Bot. 1247.


Leight. 58.

**GEOG. DISTRIBUTION:**—Switzerland, Italy, Hungary, Sweden, Germany.

**BOT. PROV.:** 5.

**ENGLAND:**—Stiperstones Hill! Arcol! Hill! Lawrence Hill! Shropshire.
forma aporetica, Kbr. granules of thallus deliquescing into a
leproso-pulverulent, condition, (Kycl C red); apothecia varying in
colour as in the type, margined or immarginate.

On peaty earth, frequent.

Not to be confounded with L. gelatinosa, (Flk.) which it externally resembles.
SYN:—Körber Syst. 193. (1855.)
EXs:—Mudd 166. Tuck. 45. Scher. 214. Crombie 81.
GEOG. DISTРИB:—Switzerland. N. America.
BOT. Prov:—2...5...10.
ENGLAND:—Cliffirigg! Mr. Mudd. Sussex! Mr. Borrer. Craigforda! near

forma saxatilis, Larbal.
W. side of Lough Much, Galway. Mr. Larbalestier. (1877.)

54. L. vernalis, (L.) Ach. whitish or albido-cinerascent, very thin,
unequal or sub-granulosalunequal or evanescent, (K—C—); apothecia
rufous or pallido-rufous, adnate, moderate, scattered or crowded,
convex, immarginate, palish within; spores 8, colourless, oblong or
ellipsoideo-oblong, simple; paraphyses indistinct; epithecium
colourless.

On mosses, frequent.

Scand. 200. Lapp. Or. 145.
EXs:—Fellm. 153. Tuck. 44. M. & N. 845.
GEOG. DISTРИB:—Scandinavia, Sweden, E. Lapland, Hungary, North
America, N. Zealand, Switzerland.
BOT. Prov:—5...15...15.
ENGLAND:—Berrow! Malvern. Mr. Lees. Common in Shropshire!
SCOTLAND:—Ben Lawers; Bennaboard. Rev. J. M. Crombie.
CHANNEL ISLANDS:—Jersey; Guernsey. Mr. Larbalestier.

"Spores 0.013—25 mm. long, 0.005—7 mm. broad. Spores 0.011—23 mm.
long, 0.005—7 mm. broad. Gelatine hymena I pale-blue then vinous-red."
(Nyl.) "Spores 0.010—20 mm. long, 0.004—6 mm. broad." (T. M. Fr.)
Spores .014—.0145 mm. long. .0045—.005 mm. broad.

forma minor, Nyl. apothecia much less in size (about one-
fourth) than those of the type.

On trees, probably common. 1866.

EXS:—Fellm. (sine num.) Arn. 417.
GEOG. DISTРИB:—E. Lapland, N. Zealand, Switzerland.
BOT. Prov:—6...7.
ENGLAND:—Llanymynech Hill! Shropshire (1871.)
WALES:—Near Dolgelley! (1866.)
"Spores 0.009—15 mm. long, 0.004—5 mm. broad." (Nyl.)

forma subduplex, Nyl. similar to the type, but with a few uni-
septate spores mixed with the more numerous simple ones.

On mosses, &c. 1870.

SYN:—Nyl. Scand. 201. (1861.) Lapp. Or. 145. Crombie En. 68.
GEOG. DISTРИB:—Scandinavia.
BOT. Prov:—15...26.
SCOTLAND:—Central Counties. Rev. J. M. Crombie. (1870.)
IRELAND:—Opposite Leenane, Conmemara. Mr. Larbalestier.
"Spores 0.011—17 mm. long, 0.0045—0.0055 mm. broad." (Nyl.)

55. L. atrofuscus, (Hepp) whitish or glauco-cinereous, leproso-granu-
lose, indeterminate; apothecia luteo-fuscos or black, adnate, plane
or concave, margin thickish, prominent, darker, shining, eventually
convex, sub-immarginate; hypothecium colourless; spores 8, colourless, minute, ellipsoid, simple.

On moss, possibly frequent. 1877.


**Fig:** — Hepp Sporen. t. 30 f. 268.


**Geo. Distrib.:** — Switzerland, Germany, Italy.


**Ireland:** — South side of Kylemore Lake. Mr. Larbalestier. (1877.)

56. *L. accediant, Nyl. whitish, nearly smooth, dispersed or evanescent; apothecia testaceous or testaceo-brownish, convex, immarginate, whitish within; epithecium and hypothecium colourless; spores 8, colourless, oblong, simple; paraphyses indistinct; gelatina hymenea I bluish, then vinous-reddish.

On micaceous schist, rare. 1876.

**Syn:** :— Nyl. in Flora 1876 p. 306, Flora 1877 p. 463.


**Ireland:** :— Renyle; Doughraugh, Connemara, Galway. Mr. Larbalestier. (1879.)

"Spores .009 — .012 mm. long, .003—4 mm. broad. Spermogonia with arcuate thin spermatia .014—19 mm. long, .0005 mm. broad. Apparently belonging to the section of *L. verinalis.*" (Nyl.)

57. *L. sativalis, Ohl. yellowish-green, granular, evanescent, incrusting mosses; apothecia brown, small, immarginate, with light grey pruina; hymenium and hypothecium colourless; spores 8, colourless, linear-oblong, simple, .015—16 mm. long, .005—6 mm. broad; gelatina hymenea I blue then vinous-red.

On mosses, &c. 1876.

**Syn:** :— Ohlert Lich. Preussen p. 16. (1870.)

**Geo. Distrib.** :— Prussia.


**Ireland:** :— Killery Bay, Galway. Mr. Larbalestier. (1876.)

Allied to *L. metamorpha, Nyl.* but differing in the simple spores and the firm (not soft peziza-like consistency) structure of the apothecia. Consociated with and somewhat resembling *L. verinalis* (L.)

58. *L. dubia, Bor. pallido-virescent, thin, effuse, minutely granuloso-pulverulent, rimulose, (K yellow C orange red); apothecia black, moderate, scattered, or confluent, sub-immersed or sub-sessile, plano-convex, margin soon obliterated, caramescent within; hypothecium nearly colourless, or very slightly fuscescent in the lower part, lateral excipulum bluish-black; spores 8, colourless, oblong, simple; paraphyses distinct, apices bluish-black; gelatina hymenea intense-blue with iodine.

On old palings, not common. 1813.

**Syn:** :— Borrer in E. Bot. 2547. (1813.)

**Fig.** :— E. Bot. 2547.

**Geo. Distrib.** :— Europe.

**Bot. Prov.** :— 2, 3, 4, 5.


Spores .0135 mm. long, .007 mm. broad.

59. *L. turgidula, Fr. whitish, very thin, effuse, minutely granu-
loso- or leproso-pulverulent, often evanescent; apothecia fusco-nigricant or fusco-rufescent, slightly cæsiopruinose, small, plane, or convex, immarginate, solitary or congregate, sub-innato- sessile; *hypothecium yellowish-pale-brown*; paraphyses indistinct, apices brownish; spores 8, colourless, ellipsoid or ellipsodeo- oblong, simple, small; gelatina hymenea intense blue then violet with iodine.

On pine trees and old wood, not common.


**Geog. Distrib.** — Sweden, France, Italy, Arctic America, Scandinavia, E. Lapland.

**Bot. Prov.** — 2...5, 6...10...15.


"Spores 0.005—0.05 in. long, 0.005—0.0075 in. broad." (Mudd). "Spores 0.006—0.012 mm. long, 0.0035—0.0055 mm. broad." (Nyl.) Spores 0.007—0.008 mm. long, 0.0035—0.004 mm. broad.

**Var. pithyophila.** (Smrft.) cinerascens, very thin, or evanescent; apothecia crowded minute, convex, rugulose, immarginate, internally fuscous.

On old fir pales. 1872.

**Syn.** — Smrft. Lapp. 154 (1826.) Crombie in Journ. Bot. n. s. 2. 134.

**Geog. Distrib.** — E. Lapland.

**Bot. Prov.** — 15.

**Scotland.** — Glen Fender, Blair Athole and Killin. Rev. J. M. Crombie. (1872.)

"From this *L. endopella*, Leight. Lich. Fl. 301 differs chiefly in the hymenial gelatine being of a beautiful blue colour with iodine." (Crombie t. c.)

**Var. endopella.** (Leight.) evanescent; apothecia black, numerous, crowded, plano-depressed, margin oblitterated, internally pallido-fuscous; *hypothecium pallido-fuscous*; spores 8, colourless, very minute, ellipsoid, simple, with 2 rather large nuclei.

On old fir palings, rare. 1870.

**Exs.** — Crombie 84.

**Scotland.** — Blair Athole! Rev. J. M. Crombie.

This comes very near to Scher. 529, but in that the spores are larger, and linear-oblong, without nuclei; nevertheless both may be only states of the same lichen. Spores 0.009—0.0095 mm. long, 0.0045 mm. broad.

60. *L. prasina*. (Fries) dull-green or yellowish-green, minutely granuloso-pulverulent, effuse; apothecia minute, hemispherical, livid-brown or nigricant, immarginate; *hypothecium pale-yellowish-brown*; paraphyses conglutinate, apices pale; spores 8, colourless, oblong, simple.

On trees towards the bases, not uncommon.

**Syn.** — Micarea prasina, Fr. S. O. V. 257. (1825.) Mudd Man. 196.

**Exs.** — Mudd 164. Zw. 9.

**Geog. Distrib.** — Switzerland, Germany, Bavaria.

**Bot. Prov.** — 5...10.


"Spores 0.002—0.0025 in. long, 0.001 in. broad." (Mudd). "Spores 0.007—10
mm. long, 0.003—5 mm. broad. Gel. hym. I blue then vinous-red. Spermatia shortly acicular, straight, 0.008—10 mm. long." (T. M. Fr.) Spores .01 mm. long, .004 mm. broad.

61. L. guernae, (Dicks,) yellowish or pale-fusco-flavescent, minutely granuloso-pulverulent, effuse, thin, (K yellow C orange-red); apothecia fuscous or fusco-rubescient, moderate, scattered, sub-immersed, plano-convex, immarginate, concolorous within; hypothecium pale-yellow; paraphyses slender, fulvescent, apices reddish-brown; spores 8, colourless, ellipsoid, simple; gelatina hymenea cæruleascens with iodine.

On aged oaks and sycamore, not unfrequent. 1785.


Fig. :—E. Bot. 485. Dicks. Br. Cr. t. 2. f. 3. Mudd Man. t. 3. fig. 75.


Geog. Distri.:—France, Portugal, Italy, Sweden, Denmark.

Boy. Prov. :—1, 2, 3, 4, 5, 9, 10, 11...31.


Ireland:—Butler’s town river! Castlebernard. Bandon, and in Lord Kinmare’s Deer Park, Killarney. Mr. Carroll.

Channel Islands:—Rozel; St. John’s; Jersey! Mr. Larbalestier. Guernsey. Rev. T. Salwey.

"Spores .0025 in. long, by .00125—.0015 in. broad." (Mudd). "Spores 0.007—11 mm. long, 0.005—7 mm. broad. Gel. hym. and especially the asci I blue, then vinous-fulvescent." (T. M. Fr.) "Spores 0.008—0.012 mm. long, 0.005 mm. broad." (Nyl.) Spores .01 mm. long, .0055 mm. broad.

62. L. viridecens, (Schrad.) pallido-virescent, thin, diffuse, minutely granuloso-pulverulent, (K yellow C crimson red); apothecia fuscos-black, moderate, scattered, or confluent, sessile or sub-immersed, more or less convex, margined when young, subsequently sub-immarginate, obscure or palish-brown within; hypothecium pale-brown; spores 8, colourless, ellipsoid, simple; paraphyses indistinct; gelatina hymenea cæruleascens with iodine.

On old stumps and pales, not common.


Fig.:—Hepp Spore t. 84. f. 731.


Geog. Distri.:—Germany, Hungary, Lombardy, Sweden.

Bot. Prov.:—1, 2, 5.

England:—New Forest; and near Exeter. Rev. J. M. Crombie. Midland Counties. Mr. Purton. near Shrewsbury!

Spores .011 mm. long, .004 mm. broad.

63. L. sanguinaria, (L.) whitish or cinerascents, moderate or thickish, sub-tartaceous, granuloso-unequal or granuloso-concrescent, (K yellow C)—; apothecia black, convex, immarginate, greyish
within, *medulla of thallus underneath vermilion-red*; hypothecium thin, pale-yellowish; *spores* 1, colourless, ellipsoid, simple, very large, minutely granulose, epispore broad; paraphyses indistinct, apices thick, bluish-black; *asci* and *epispore* blue with iodine.

On trees and rocks, frequent.


**Fig.**—E. Bot. 155. Hfwm. Pl. L. t. 41. f. 1. Hepp Sporen t. 56. f. 483.


**Geog. Distr.**—Scandinavia, E. Lapland, Sweden, Switzerland, Pyrenees, Italy.

**Bot. Prov.**—2...5...7, 8...10, 11, 12...14, 15...19...23.


**Ireland.**—Lough Bay near Dublin. *Mr. Templeton*. Turk Mountain, Killarney. *Mr. Carroll*.


"Spores 0.015—0.018 in. long, 0.007—0.008 in. broad. Spermogonia very minute, black, punctiform, immersed. Spermatia cylindrical, straight." (Mudd.)

"Spores 0.070—100 mm. long, 0.028—40 mm. broad. Spermatia shortly acicular, straight, 0.088—10 mm. long." (T. M. Fr.)

"Spores 0.070—0.0100 mm. long, 0.028—58 mm. broad." (Nyl.) Spores .021—.035 mm. long, .011—.011 mm. broad. Epispore .002 mm. broad. Spermatia .006 mm. long, .001 mm. broad. There is frequently an uniform sanguineous stratum below the gonidia in the thallus, which state is f. pletorica, Norm. Spec. loc. nat. 117, *polyerythrina*, Nyl. in lb. Penn.

Var. *affinis* (Schær.) differs from the type chiefly in the absence of the sanguineous stratum and in having only one large colourless spore.

On mosses, in alpine localities, rare.


**Exs.**—Schær. 629. Zw. 336 A.

**Geog. Distr.**—Scandinavia.

**Bot. Prov.**—15.


Spores .06 mm. long, .0338 mm. broad. Epispore .003 mm.

Var. *melina* (Krpibh.) differs from the type in the absence of the sanguineous stratum, but has two colourless spores.

On bark, rare. 1871.


**Bot. Prov.**—15.

**Scotland.**—Ben Lawers. *Dr. Stirton* (1871.)

"Spores 0.037—77 mm. long, 0.034—48 mm. broad. Spores 0.052—64 mm. long, 0.034—44 mm. broad." (Nyl.) Spores 0.051—68 mm. long, 0.028—44 mm. broad. (T. M. Fr.)

64. *L. enterolena*, Ach. albido-virescent, crustaceous, granulose, areolato-rimulose, sub-furfuraceous, or evanescent, (K yellow C—);
apothecia black, numerous, crowded, small, sessile, plane or plano-convex, margin thin, smooth, paler, eventually obliterated; hypothecium colourless; spores 8, colourless, broadly-oblong, simple, with 2 nuclei.

On rocks and stone walls, frequent.

FIG:—Hepp Spores t. 3. f. 6.

GEOG. DISTRIBUT:—Switzerland, Germany, Italy, France, Pyrenees, Sweden.

BOT. PROV:—1, 2, 3...5...7...10...26...31.


IRELAND:—Longhootner, Galway. Mr. Carroll.

WALES:—Aberdovey! Rev. A. Bloom. Barmouth! Holyhead! Moel-y-gest!

CHANNEL ISLANDS:—Common on all the Islands. Mr. Larbateaster.

"Spores 0.010—15 long, 0.006—9 mm. broad." (Nyl.) Spores .0135—.015 mm. long, .0085—.01 mm. broad. Paraphyses distinct, apices fuscous or blackish, I blue. Excipulum externally laterally slightly nigrant.

65. L. minuta, (Schær.) greenish-whitish or cream-coloured, very thin, granulate, indeterminate or obsolete, (K—C—); apothecia minute, numerous, scattered, adnate, plane, pallido-testaceo, redish or nearly black when old, and then convex and immarginate; hypothecium pale; paraphyses indistinct, apices colourless; spores 8, colourless, elliptical or oblong, simple, minute; gelatina hymenea I vinous-red.

On trees, not common. 1854.


FIG:—Hepp Spores t. 4. f. 17. f. and t. 86. 487.


GEOG. DISTRIBUT:—Switzerland, Sweden, Norway, Bavaria, Hungary.

BOT. PROV:—2, 3...5...10...15.


"Spores .0025—.003 in long, .00075 in broad." (Mudd). "Spores 0.009—15 mm. long, 0.003—4 mm. broad." (T. M. Fr.) "Spores 0.007—0.011 mm. long, 0.003—4 mm. broad." (Nyl.) Spores .011—.0135 mm. long, .004—5 mm. broad.

Var. sarcopsioides, (Mass.) dirty-white or sub-virescent, granulose, effuse; apothecia dark-violet, globulose, cesio-pruinose.

On old posts, &c., rare.


FIG:—Mass. Ric. fig. 252.

EXS:—Anzi Venet. 61. 62.

GEOG. DISTRIBUT:—Italy.

BOT. PROV:—2...10.

ENGLAND:—Shanklin; Lyndhurst; Rev. J. M. Crombie. Cleveland. Mr. Mudd.

"Spores .0061 mm. long, .00122 mm. broad." (Mass.) Spores .008—.01 mm. long, .003—.0035 mm. broad.

66. L. tenebrosa, (Ach.) greenish-white or cream-coloured, very thin, granulate, indeterminate or obsolete, (K—C—); apothecia fuscous or rufo-fuscous, minute, scattered, plane, margined;
hymenium pale; paraphyses distinct, thickish, apices incrassate, fuscous; spores 8, colourless, elliptical or oblong, simple, minute; gelatina hymenea I blue.

On trees, not common.

EXS:—Leight. 326. Anzi Ven. 27.

GEORG. DISTRIB:—Scandinavia, E. Lapland.

BOT. PROV:—10.

ENGLAND:—Cleveland! Yorkshire. Mr. Mudd.

"Spores 0.010—18 mm. long, 0.004—5 mm. broad—or spores 0.008—0.015 mm. long, 0.0040—0.0045 mm. broad." (Nyl.)

67. L. aphana, Nyl. grey, thin, sub-verrucoso or subgranulos-unequal, indeterminate; apothecia black, rather small, slightly convex, immarginate, albicant within; hymenium colourless or sometimes slightly violaceo-fuscescent in the lower portion; epithecium violaceo-fuscescent; spores 8, colourless, ellipsoid or oblong, simple, minute; thalamium vaguely violaceo-fuscescent; gelatina hymenea cæruleascent with iodine.

On maritime rocks, rare. 1865.

SYN:—Nyl. in Flora 1867. p. 327. Crombie En. 84.

GEORG. DISTRIB:—Europe.

BOT. PROV:—24.

IRELAND:—Near Kilkee! co. Ciare. Mr. Carroll. (1865.)

Externally comparable with L. sylvicola, but quite distinct. "Spores 0.008—0.011 mm. long, 0.0035—0.0045 mm. broad." (Nyl.)

68. L. aphanoides, Nyl. darkly-olivaceo-cinerascens, thin, sub-verrucoso or sub-granulos-unequal, indeterminate or sub-evanescent; apothecia black, smallish, slightly convex, immarginate, naked, whitish within; hymenium colourless or slightly-rubricoso-rufescens in lower portion; epithecium cæruleascent; spores 8, colourless, ellipsoid, simple; thalamium cæruleascent; paraphyses indistinct; gelatina hymenea cæruleascent, then violaceo-rubescent with iodine.

On calcareous mountain rocks, rare. 1865.

SYN:—Nyl. in Flora (1868.) p. 476. Crombie En. 84.

GEORG. DISTRIB:—Europe.

BOT. PROV:—15.

SCOTLAND:—Craig Guie, ! Braemar. Rev. J. M. Crombie. (1868.)

Approaching L. aphana, Nyl. but with a differently colored thalamium and smaller spores, &c. "Spores 0.009—0.013 mm. long, 0.045—0.0055 mm. broad." (Nyl.)

69. L. misella, Nyl. luteo-virescent, thin, effuse, minutely unequally granulose, almost furfuraceous; apothecia livido-fuscous, fuscous or nigro-fuscous, somewhat greenish when wet, minute, scattered or numerous, subinunato-sessile, convex, immarginate; hypothecium colourless; hymenium pallido-nigrescent, or pale-violet, like pale ink; spores 8, colourless, minute, oblongo-ellipsoid, simple; paraphyses indistinct, epithecium colourless; I pale-blue then slightly-vinous.

On putrid fir pales, rare. 1870.


GEORG. DISTRIB:—Finland.

BOT. PROV:—15.
THE LICHEN-FLORA

Scotland:—Near Loch Tummel, Perthshire! Rev. J. M. Crombie. (1870.)

"Spores 0.007—9 mm. long, 0.0030—0.0035 broad." (Nyl.) Spores .01—.012 mm. long, .004—.0045 broad.

70. L. confusa, Nyl. olive-grey or bright-brownish-grey, thin-nish, granulate, or granulato-conglomerate, glomerules dispersed; apothecia black, adnate, convex, immarginate, white within; epithecium yellowish-brown; hypothecium colourless; spores 8, colourless, ellipsoid, simple, somewhat small; paraphyses slender, indistinct, but distinct with K.

On micaceous old stone walls. 1871.

Syn.:—Nylander in Flora 1872. p. 360.
Bot. Prov.:—15.

"Spores 0.007—11 mm. long, 0.0040—45 mm. broad." (Nyl.)

71. L. sporadiza, Strn. yellow or greenish-yellow, granulose, or granuloso-verrucose, granules often conglomerate and pulverulent, (K yellow C orange-red); apothecia black, sessile, small or moderate, plane, rugose, margined, internally cinerascens; hypothecium colourless; spores 8, colourless, ellipsoid, simple; paraphyses indistinct, few; gelatina hymenea l untinged.

On old wood. 1874.

Syn.:—Stirton in Grevillea 3. p. 33. (1874.)
Bot. Prov.:—15.
Scotland:—Near Grantown, Inverness. Dr. Stirton. (1874.)
Allied to L. neglecta. (Nyl.) 

"Spores .006—7 mm. long, .004—45 mm. broad." (Strn.)

72. L. epimarta, Nyl. whitish, minutely-depresso-granulate, scattered, (K yellow); apothecia jucundus, subboboconical, somewhat plane on upper part, immarginate, generally suffused with a ferruginous-ochraceous colour, internally dusky-pale-ochre; spores 8, colourless, oblong, minute; thalamium somewhat ochrey; paraphyses slender, few; hypothecium thick, solid, nearly colourless or dilute-ochraceous.

On the earth in alpine mountains. (1876.)

Syn.:—Nyl. in Flora 1877. p. 226.

"A small but singular species approaching Lecidea uliginosa. Spores .006—9 mm. long, .0025—.0035 mm. broad. These clave, thick and solid in the upper part. Gelatina hymenea l blue then luteo-fulvescens, especially the theca. Apothecia somewhat crowded, prominent, tuberculiform, or plane above, narrow below, their lamina thin, somewhat ochraceous, but ochraceo-fuscous in the upper portion. The epithelial granulations on the addition of K are changed into raphides, a peculiar characteristic of this species." (Nyl.)

73. L. callicarpa, Larbal. pale-aluvido-sulphurous, pulverulento-granulate, effuse, (K—C—reddish); apothecia pallido-carnesous, minute, clustered or scattered, convex, somewhat pruinose, immarginate, (K—C reddish), hypothecium colourless; paraphyses coherent, apices colourless; spores not seen.

On damp perpendicular rocks, very rare. 1877.

Bot. Prov.:—25.
Ireland:—Glencorbot near Kylemore, Galway. Mr. Larbal ester. (1877.)

74. L. rufofuscus, Anzi. albo-lutescent or albo-fuscous, thickish, crowded into a verruculose-granulose crust; hypothallus white; apothecia rufo-fuscous or albo-purpureous, plane, sessile, with an
elevated concolorous margin, at length convex and immarginate; hymenium fuscosus upwards; paraphyses conglutinate; hypothecium yellowish; spores 8, colourless, ellipsoid-oblong, simple.

On trees, rare. 1877.

**SYN** —Anzi Catal. Sondr. p. 76. (1860.)

**GeoG. DISTR** —Italy.


**IRELAND** —Twelve Pins, Kylemore, Galway. Mr. Larbalestier. (1877.)

†† **Hypothecium dark.**

75. *L. sanguineo-atra*, (Ach. pr. p.) cinerascant or virescent-cinerascent, granulose, thin or sub-continuous or obsolete; apothecia sanguineo-black, or fuscosus-black or fusco-rufescent, moderate, convex, immarginate, fusco-nigrant within; hymenium paler or pallescent; hypothecium thick, fuscosus; spores 8, colourless, ellipsoid or oblong, simple.

On mosses, trees and earth, in sub-alpine localities, not frequent.


**GeoG. DISTR.** —Scandinavia, Sweden, France, Pyrenees, Switzerland, Bavaria, Lombardy, Algeria, Arctic America, Great Bear Lake.

**Bot. Prov.** —5...7...10...15...19...30.

**ENG.** —Broughton Bank and Hoggarts Wood, Ingleby, Cleveland. Mr. Mudd. Downton Castle Woods, Shropshire!

**SCOTLAND.** —Ben Lawers! Rev. Churchill Babington, Glen Falloch. Dr. Holl.

**IRELAND.** —Deer Park, Belfast. Dr. Dickie, near Bantry. Miss Hutchins.

**WALES.** —Cader Idris. Dr. Holl. Dewsant!

"Gelatina hymenae I blue then vinous-red or violet. Spores 0.010—19 long, 0.005—8 mm. broad." (*Nyl.*) "Gelatina hymenae I commonly distinctly and intensely red, but sometimes at first blue then dark-violet. Spores 0.010—31 mm. long, and 0.004—6 mm. broad." (T. M. Fries.) "Spores .0025 to .008 in. long by .001 in. broad." (Mudd.) T. M. Fries (Lich. Scand. 436) says this lichen and its varieties are notably distinguished by cornescent or violet granules amongst the paraphyses, not found in any other lichen not even in its allies, *L. Berengeria* and *L. albofuscascens*, but these do not occur in the specimens above cited. Can our British plant then be referable to *L. albofuscascens* since the thallus is thickish-granulose and with K gives a pale dirty yellow?

76. *L. valentinus*, *Nyl.* cinereous or subvirescent, thin, continuous, rimose; apothecia fuscus, immarginate, somewhat plane or convex, often obsolescent submarginate, and margin pallescent; hypothecium dark-fuscosus; hymenium pale-fusoscent; paraphyses distinct, apices colourless; spores 8, colourless, ellipsoid, simple, large.

On decomposed rocks, rare. 1876.

**SYN.** —Nyl. in Flora 1877. p. 229.


**IRELAND.** —Lough Inagh! Galway. Mr. Larbalestier. (1876.)

"Probably a subspecies of *L. sanguineo-atra*, from which it scarcely differs except in the constantly larger spores .012—17 mm. long, .006—8 mm. broad." (*Nyl.*) Spores .0156 mm. long, .0065 mm. broad.

77. *L. fusca*, (Schær.) viridulo-cinerascent, disperso-granulate, thin, evanescent; apothecia fuscescent or nigrant, opake, adnate, at first plane with a thin elevated margin, then convex and immarginate; hypothecium luteo-fuscoscent; spores 8, colourless, oblong or fusiform-oblong, simple; paraphyses distinct, filiform.

On dead mosses, in mountainous regions, rare.
THE LICHEN-FLORA


GEORG. DISTRIB:—France, Switzerland, E. Lapland, Sweden.

BOT. PROV:—7...15.

SCOTLAND:—Ben Lawers! Adm. Jones and Mr. Carroll.

WALES:—Near Dolgelley!

"Gelatina hymenea I blue then vinous-red. Spores 0.010—14 mm. long, 0.0045—0.0055 broad.” (Nyl.) “0.010—15 mm. long, 0.004 mm. broad.” (T. M. Fries.) Dark-coloured granules irregular in form are intermixed with the paraphyses, in all the specimens in my herbarium cited as above. Spores .014—.016 mm. long, .005 mm. broad.

78. L. moestula, Nyl. darkly-cinerascence; thin, depresso-subgranulate or evanescent (K—C—); apothecia black, minute, crowded, plane or convex, immarginate, colourless within; spores 8, colourless, ellipsoid, simple; paraphyses indistinct; epithecium colourless; hypothecium entirely fusco-obscurate; gelatina hymenea slightly-blue then vinous-red with iodine.

On palings &c. rare. 1868.

SYN:—Nyl. in Flora 1868. p. 344. Crombie En. 69.

EXS:—Crombie 85.

GEORG. DISTRIB:—Europe.

BOT. PROV:—2.

ENGLAND:—Near Lyndhurst in New Forest! Rev. J. M. Crombie. (1868.) Approaching L. myriocorpidae, Nyl.; L.dispansa, Nyl.; and L. turgidula, Fr. “Spores 0.007—8 mm. long, 0.0025—0.0033 mm. broad. SpERMATIA oblong 0.004—0.0045 mm. long, 0.0015 mm. broad. Sterigmata short.” (Nyl.)

79. L. submaestula, Nyl. cinerascence, minutely subverrucos-granulose or subdispersed; apothecia black, convex, immarginate, often 2 or more connate, internally concolorous; hypothecium thick, nigro-fuscous; paraphyses indistinct, apices submaragdulognescent; spores 8, colourless, ellipsoid, simple, gelatina hymenea I blue then vinoso-fulvescent.

On dry sand-rocks, rare. 1876.

SYN:—Nyl. in Flora 1876. p. 235.

BOT. PROV:—26.

IRELAND:—Road to Westport five miles from Kylemore! Mr. Larpaiter. (1876.) “Spores .006—.010 mm. long, .0035 mm. broad.” (Nyl.) Spores .011 mm. long, .0045 mm. broad.

80. L. parasema, (Ach.) whitish or cinerous or greenish-yellow, sub-determinate, often nigro-limitate, thin, smooth or granulose or verrucoso-granulose, (K yellow C orange-reddish); apothecia black, small, plane or sub-convex, margin thin, smooth, at length obliterated; hypothecium fuscenscent, lateral excipulum pale or bluish; spores 8, colourless, ellipsoid, simple, with one or two nuclei.

On various trees, old palings, occasionally on rocks and walls, frequent.

SYN:—Ach. L. U. 275. in part (1810.) Nyl. Scand. 216.

FIG:—E. Bot. 1450. in part.

GEORG. DISTRIB:—Europe, Sweden, France, Switzerland, Hungary, Italy, Germany, Pyrenees, Portugal.

ENGLAND:—Common.


IRELAND:—Common. Mr. Carroll.

WALES:—Common.
Of Great Britain.

Channel Islands:—Common on all the Islands, Mr. Larvalesist.


The characteristics in all forms are the chemical reactions (K yellow C orange-reddish); the fuscescent hypothecium with a pale or bluish lateral excipulum; and the nucleolate spores.

Var. tabescens, (Körb.) cinereo-virescent or yellowish-green, thin, effuse, somewhat shining, subrimulose (K yellow C orange-red); apothecia lindo-fuscos, adnate or subimnate, tumid and convex, differentiated, margin obscure, soon obliterated.

On beech. not common. 1866.

Syn.—Korb. Syst. 203. (1855.)
Fig.—Hepp Spore t. 41. f. 525.
Exs.—Hepp 525. Leight. 329.
Geog. Distrib.—Switzerland, Germany.
Bot. Prov.—7.
Wales.—Barmouth! (1856.)

Var. flavens, Nyl. similar to the type, but with a yellowish thallus and apothecia internally whitish, and hypothecium nearly colourless, (K yellow C orange-red).

On trees, rare. 1869.

"Latet sub elaecromia. Ach. (ex. hh. Ach.) a qua etiam parum diversa." (Nyl.)
Syn.—Nyl. Scand. 217. (1861.) Crombie En. 77.
Geog. Distrib.—Scandinavia.
Bot. Prov.—5...7...15.
Wales.—Dolgelley!

Var. elaecromia, Ach. greenish-yellow or yellow or dirty and dark-greyish-green, effuse or nigro-limitate, granulose or granulosofurfuraceous and cracked, (K yellow C orange-reddish); apothecia black, small, numerous, plane or convex, margin thin, afterwards obliterated.

On trees, frequent.

Fig.—E. Bot. 1450. in part.
Geog. Distrib.—France, Switzerland, Italy, Hungary, Germany.
Bot. Prov.—1...2...3...4...7...8...10...15...16...19...20...31.
Scotland.—Glen Nevis! Dr. Lindsay. Long Island, Prof. Balfour.
The Lichen-Flora

**Ireland:**—Fermoy! Mr. Chandler. Castlebernard! Bandon; Blarney! Glanmire! Cork! Mr. Carroll.

**Wales:**—Woods! common. Llandegidog! Capel Curig! Barmouth!

**CHANNEL ISLANDS:**—Common on all the Islands. Mr. Larbalestier.

Var. **ecrustacea,** thallus nearly or quite evanescent.

On old palings, probably frequent. 1858.

**EXS:**—Leight. 308.

**GEOG. DISTRIB:**—Hungary, Italy.

**BOT. PROV.:**—5...7.

**ENGLAND:**—Caer Caradoc! Shropshire.

**Wales:**—Aberdovey!

Var. **latypea,** Ach. whitish or sub-cinereous or almost evanescent, effuse, unequal, *granolato-arreolate,* (K yellow C orange-red); apothecia black, sessile.

On rocks, not common.


**GEOG. DISTRIB:**—Norway, Sweden.

**BOT. PROV.:**—15...19...26...30.


Var. **monticola,** (Ach.) similar to the type, but with *evanescent* thallus, apothecia and spores smaller.

On stones, rare. 1864.


**GEOG. DISTRIB:**—Scandinavia.

**BOT. PROV.:**—15.


**forma latypiza,** Nyl. *subcinereous,* effuse, *granulose,* *apothecia* black, sessile.

On rocks, rare. 1876.

**SYN:**—Nyl. Pyr. or. p. 201.

**BOT. PROV.:**—26.

**IRELAND:**—Kylemore. co. Galway. Mr. Larbalestier. (1876.)

81. *L. protrusa,* Fr. *pale-sulphur-colour,* effuse, thickish, crustaceous, *verrucoso-granulose,* rugulose, *areolato-rimose,* (K yellow C orange-red); apothecia black, numerous, moderate, *congregated,* *innato-sessile,* plane, at length convex, margin thin, smooth, entire, often flexuose, eventually obliterated; *hypothecium rufo-fuscous,* spores 8, colourless, elliptico-oblong, simple.

On alpine and subalpine rocks, frequent.


**FIG:**—Mass. Ric. fig. 150.

**EXS:**—Schar. 578. Zw. 12.

**GEOG. DISTRIB:**—Switzerland, Germany, Italy, France.

**BOT. PROV.:**—1...6, 7...13, 16...26...31.

**ENGLAND:**—Near Torquay! Devon. Dr. Deakin. Lanorma Cave! Cornwall. Mr. Borrer.

**SCOTLAND:**—Isle of Skye! Mr. Borrer.

**IRELAND:**—Glengariff! Mr. Carroll. Dawros river! near Rynvyle. Conmemara! Glencorbot! Mr. Larbalestier.

CHANNEL ISLANDS:—Fort Essex! Alderney. Mr. Larvaldier.

"Spores .0025—.003 in. long, by .00125 to .0015 in. broad.” (Mudd). Spores .0015—.004 mm. long, .007—.008 mm. broad.

82. L. viridans, Fw. pale-sulphur-colour, effuse, thin, minutely granulose, (K yellow C orange-red); apothecia black, moderate, innato-sessile, more or less dusky-virido-pruinose, plane, at length convex, margin thin, smooth, entire; hypothecium pale-fusco-fuscous; spores 8, colourless, elliptico-oblong, simple.

On subalpine rocks, frequent. 1875.

FIG:—Hepp Sporens t. 84. f. 726.
EXS:—Zw. 203. Hepp 726. and 133. left hand specimen. Anzi Langob. 155.

Leight. 331.

GEOG. DISTRIB:—Germany, Italy.

BOT. PROV:—5.

ENGLAND:—Lyth Hill! Shropshire.

WALES:—Y Ffegle Fawr near Barmouth! (1875.)

The apothecia, when moistened, appear paler and transparent, owing to the pale hypothecium, surrounded by a dark ring, "humecatitis disco hyalino." Flot. 1. c. Spores 1.5—3 longer than broad.

forma nigrita, Leight. similar to the type, but dark and nigricant, from the predominating black hypothallus.

On subalpine rocks, frequent. 1856.

BOT. PROV:—5.

ENGLAND:—Cowcombe! Gloucestershire. Mr. Joshua. Haughmond Hill! Shropshire (1856.)

83. L. entrochiora, Tayl. pale-sulphur-colour, effuse, thin, closely appressed, smooth, rimulose, eventually breaking up into a sordidate state, (K yellow C orange-red); apothecia black, moderate, innato-sessile, plane, at length convex, margin thin, smooth, entire, often flexuose, eventually obliterated; hypothecium rufo-fuscos; spores 8, colourless, elliptico-oblong, simple.

On subalpine and maritime rocks, frequent.

SYN:—Tayl! in herb. Borrer. L. subviridana, Nyl.
EXS:—Leight. 299. Zw. 235.

GEOG. DISTRIB:—Sweden, Germany, Italy.

BOT. PROV:—1. 5. 6. 7...10. 11...19. 20. 26.


IRELAND:—Derriquin! Dr. Taylor. Cork! Mr. Carroll. Ruins at Cleggan near Kylemore, Lettermore! and Lough Teagh! Mr. Larvalstier.


This and the two preceding species may be possibly only states of one and the same lichen. Spores .013—.014 mm. long, .0075 mm. broad.

84. L. sublatypea, Leight. whitish or albido-cinerascen! tartareous, sub-arculato-granulose, or unequally granulose, more or less dispersed, (K—C); apothecia nigro-fuscos, numerous, scattered, sessile, concave, margin thickish, prominent, elevated, somewhat polished; hypothecium nigro-fuscos; hymenium and epithecium dark-blush-black; paraphyses crowded, indistinct; spores 8, colourless, ellipsoid, simple, small.

On alpine rocks, rare. 1870.

EXS:—Crombie 88.

GEOG. DISTRIB:—Europe.
BOT. PROV. :—15.


Externally somewhat resembling some state of L. paraexema var. lutypea, (K yellow C orange-reddish) but differing in chemical reaction and other characters. Certainly not identical with L. verticosa, (Fkl.) as stated by T. M. Fries L. Scand. p. 515. if that species be correctly represented by Anzi Langoh. 353 and Rabh. 771. Spores .011—.0125 mm. long, .0045—.005 mm. broad.

85. L. rusticula, Nyl. albido-glaucescent, granulate, granules sub-conglomerate, depresso-convex, sub-crenate, smooth, (K yellow, C yellow); apothecia minute, somewhat concave, black, margin obtuse, entire, eventually obliterated; hypothecium fuscous; spores 8, colourless, ellipsoid, simple; paraphyses indistinct; gelatina hymenea deep-blue, afterwards dirty-lutescent with iodine.

On quartzose rocks, rare. 1866.


WALES :—Giant’s Pebbles! Cader Idris. IRISHLAND :—Salrock Road! Connemara. Mr. Larbalestier.

"Spores .010—.015 mm. long, .005—.006 mm. broad." (Nyl.) Spores .014 mm. long, .0055 mm. broad.

86. L. furvella, Nyl. nigro-fuscous, effuse, obliterato-squamulose, granuloso-furfuraceous, diffracto-areolate, (K—C red); apothecia small, scattered, appressed; plane, black, rugulose, margin thin, smooth, flexuose; epithecium migrante; hypothecium nigro-fuscous; paraphyses indistinct, conglutinate, spores 8, colourless, oblong or ovate, simple.

On micaceous-schistose alpine rocks, rare. 1861.


SCOTLAND :—Ben Lawers! Mr. Carroll. Glen Calletar, foot of Ben-y-gloe; Glen Fender! Blair Athole. Rev. J. M. Crombie.

"Spores .009—.011 mm. long, .0045 mm. broad." (Nyl.) "Spores .003 in, long, by .001—.00125 in. broad." (Mudd.) The thallus has a good deal the appearance of that of Pannaria nigra and is composed of minute spherical brown granules containing gonidia, on a thickish-brown hypothallus. Gel. hym. I lutescent. Spores .016 mm. long, .009 mm. broad.

87. L. furvula, Nyl. nigro-fuscous, effuse, obliterato-squamulose, granuloso-furfuraceous, continuous, (K—C red); apothecia scattered, sessile, plane, black, margin thin, sub-flexuose; epithecium cœrulascens; hypothecium black; paraphyses indistinct; spores 8, colourless, oblong, simple.

On schistose alpine rocks, very rare. 1864.


SCOTLAND :—Ben Lawers! Messrs. Carroll (1864.) and Holf.

"Spores .012—.017 mm. long, .006—.008 mm. broad." (Nyl.) Thallus similar in structure to the preceding. Are not this and the preceding states only of one and the same lichen? Gel. hym. I lutescent. Spores .012—.014 mm. long, .006 mm. broad.

88. L. alpestris (Smmrf.) cinerascent, thin, granulate or granulato-sub-areolate or sub-evanescent, hypothallus whitish, (K faint yellow or — C —); apothecia black, convex, moderate, immarginate,
subconglomerate, concolorous within; epithecium and thalamium sordidly carneoluscent; hypothecium fuscescent; spores 8, colourless, elongato-ellipsoid or oblong, simple; paraphyses scarcely distinct; gelatina hymenea carneoluscent, then fulvescent with iodine.

On the earth in alpine places, rare. 1864.

**SYN:**—Sommerfelt Lapp. 155. (1826.) Nyl. Lapp. Or. 158. Crombie Enum. 79.

**EXS:**—Fellm. 164.

**GEOG. DISTRIB.**—E. Lapland, Norway, Sweden, Finland.

**BOT. PROV.**—15.

**SCOTLAND.**—Summit of Ben Lawers! Mr. Carroll. (1864.) Ben Macdhui; Braedalbane and Braemar. Rev. J. M. Crombie.

"Spores 0.011—15 mm. long, 0.004—5 mm. broad." (Nyl.) "Spores 0.014—25 mm. long, 0.003—4 mm. broad." (T. M. Fries.)

89. *L. cuprea*, Smrft. white, thick, verrucoso-granulate, diffract, granules sublobate, contiguous, (K.— or slightly yellow C.—); apothecia rufo-ochraceous, or fusco-rufous, hemispherical, immarginate, often botryoso-conglomerate; hypothecium pale-luteo-fuscescent; paraphyses distinct, fulvescent; spores 8, colourless, elongato-oblong, simple; gelatina hymenea I slightly carneoluscent, then vinous-red.

On the earth in alpine regions, rare.


**EXS:**—Fellm. 162.

**GEOG. DISTRIB.**—Sweden, E. Lapland, Norway.

**BOT. PROV.**—15.

**SCOTLAND.**—Summit of Ben Lawers and above Loch-na-Cat. Rev. J. M. Crombie.

"Spores 0.009—0.016 mm. long, 0.004—5 mm. broad." (Nyl.) "Spores 0.010—22 mm. long, 0.003—6 mm. broad." (T. M. Fries.) Spores .016 mm. long, .005 mm. broad.

**Var. cupreiformis.** E. Nyl. thin, egranulose; apothecia rufo-fuscescent.

On the earth in alpine regions, rare. 1868.


**GEOG. DISTRIB.**—E. Lapland.

**BOT. PROV.**—15.

**SCOTLAND.**—Loch-na-Cat. Adm. Jones. (1868.)

**Var. lecanodes** Nyl. apothecia spuria lecanoroidea, Ben Lawers (1871). Dr. Stirton.

Grenvillea 2.71.

90. *L. Berengeriana*, (Mass.) white, squamuloso-granulate, squamules lobulate, concrescent into a continuous crust, (K.— or slightly yellow C.—); apothecia thin fusco-nigricant, at first plane with a thin obtuse margin, then plano or depresso-convex, and inmarginate; hypothecium thick, fuscos; paraphyses conjunctuate, indistinct; spores 8, colourless, oblong or elliptosoide-oblong, simple; gelatina hymenea I vinous-red.

On the earth in alpine regions, rare.


**FIG.:**—Mass. Ric. fig. 254.

**EXS:**—Fellm. 162. Arn. 439.

**GEOG. DISTRIB.**—E. Lapland, Norway, Sweden, Finland.

**BOT. PROV.**—15.
SCOTLAND:—Ben. Lawers. Mr. Carroll.
"Spores 0.010—0.018 mm. long, 0.0045—0.0065 mm. broad." (Nyl.) "Spores 0.009—0.016 mm. long, 0.004—0.006 mm. broad." (T. M. Fries.) Spores .012—.015 mm. long, .005 mm. broad.

91. L. arctica, Smrf. albido- or fuscescents-cinerasc, effuse, granulose or granuloso-verrucose, granules small, papilloso-sub-globose, (K faint-yellow C orange-red); apotecia small, black, slightly castio-pruinose, convex, immarginate, within obscurely cinerasc; hypothecium fuscesc; spores 8, colourless, ellipsoid or oblong, simple; paraphyses indistinct; gelatina hymenea slightly cæruleascerent with iodine.

On alpine mosses, rare. 1860.

GEOG. DISTRIBUTION:—Greenland, Finmark, E. Lapland, Finland, Russia, Sweden, Norway.
BOT. PROV.:—15.

"Spores 0.013—18 mm. long, 0.0065—0.0075 mm. broad." (Nyl.) "Spores 0.013—18 mm. long, 0.006—8 mm. broad." (T. M. Fries.) "Spores .003—.004 in. long. .001—.0015 in. broad." (Mudd.) Spores .015—0175 mm. long, .0065—.0075 mm. broad.

92. L. uliginosa, (Schrad.) fuscos or fusco-nigricot, minutely granulose, sub-leprose, effuse, (K—C—); apotecia fuscos-black or black, plane or sub-convex, scattered or confluent, darkish within, margin entire evanesc; hypothecium fuscos; spores 8, colourless, ellipsoid, simple; paraphyses indistinct; gelatina hymenea reddish-brown with iodine.

On moist or turfy earth, common. 1799.

FIC:—E. Bot. 1456. Hepp Sporen t. 16. f. 132.
GEOG. DISTRIBUTION:—Sweden, E. Lapland, Germany, Switzerland, Hungary, Italy.

BOT. PROV.:—1, 2, 3, 4, 5—10, 11...15, 16...(19—30)...31.


IRELAND:—Not uncommon. Mr. Carroll.

CHANNEL ISLANDS:—Jersey; Guernsey. Mr. Labbalestier.
"Spores 0.008—0.017 mm. long, 0.004—8 mm. broad." (Nyl.) "Spores 0.008—17 mm. long, 0.004—8 mm. broad." (T. M. Fries.) "Spores 10—14 mikrml. long, twice as long as broad." (Hepp.) "Spores .003 in. long, by .00125 in. broad." (Mudd.) Spores .014—.015 mm. long, .007—.008 mm. broad.

forma fuliginea, (Ach.) only differs in the habitat on old stumps and wood, and is rarer.
HYPOTHECIUM

Booking, gelatina colourless, apo-L. Leicestershire. differs congregated, 1871. it Kildale 1869. spores osewa, epithecium L. hypothecium L. Hill 1859. epithecium; M. colourless, paraphyses Mr. spores cream-coloured, spores near ellipsoid, black granules thecia Shropshire. gelatina thin, reddish) simple. Shropshire. Syn Exs Ikeland Channel Islands.—Near St. Aubins, Jersey! Mr. Larbalestier.

Var. humosa, Leight. cervino-lutescent, sub-squamuloso-granulate, granules convex, coarse, more or less dispersed, (K—C—); apothecia concave, margined, at length convex, immarginate.

On earth and peat walls, rare. 1869.


GEOG. DISTRIB:—Europe.

BOT. PROV:—2. 3...8...10.


IRELAND:—Near Letterfrack. Mr. Larbalestier.

CHANNEL ISLANDS:—Near St. Aubins, Jersey! Mr. Larbalestier.

93. L. Mooreana, Carr. greyish-white or cream-coloured, thin, tartareous, granuloso-verruculose, rugulose, effuse, (K yellow then reddish); apothecia black, large, solitary or congreagated, sessile, plane, somewhat scabrous, margin thin, entire, flexuose; hypothecium thin, dark-brown; spores 8, colourless, elliptico-oblong or ovate, simple.

On sub-alpine trap rocks, rare. 1859.


GEOG. DISTRIB:—Ireland.

BOT. PROV:—30.

IRELAND:—Crowglen! near Belfast. Dr. Moore.

"Paraphyses very slender, flexuose, mixed with much mucoso-gelatinous matter. Spores .0035—.004 in. long by .0015 in. broad." (Mudd.)

94. L. mesotropiza, Nyl. white, verrucose, moderate, (K yellow); apothecia black, sometimes slightly pruinose, convex, immarginate, bluish-grey within; spores 8, colourless, ellipsoid, simple; epithecium dark-greenish-blue; paraphyses not well discrete; gelatina hymenea bluish, theca violet-coloured with iodine.

On schistose stones. 1872.

SYN:—Nylander in Flora 1873. p. 17—23.

BOT. PROV:—15.

SCOTLAND:—Old wall on the hill of Ardo near Aberdeen, very sparingly. Rev. J. M. Crombie. (1872.)

"From L. mesotropoides, Nyl. its nearest ally, it differs amongst other characters by the verrucose thallus and bluish epithecium. Spores 0.011—12 mm. long; 0.007 mm. broad." (Nyl.)

95. L. asema, Nyl. white, thin, unequal, sub-dispersed; apothecia black or livid-black, margined, often subplicate; spores 8, colourless, ellipsoid, simple; epithecium glaucescent; hypothecium reddish; gelatina hymenea bluish, then tawny-wine-coloured with iodine.

On sandstone rocks. 1871.

SYN:—Nylander in Flora 1872. p. 356.

BOT. PROV:—31.
Channel Islands:—Jersey. Mr. Larbalestier. (1871.)

"Allied to L. sublatypea, Leight. which differs in having black apothecia, a darker hypothecium and smaller spores. Spores 0.013—16 mm. long, 0.006—8 mm. broad." (Nyl.)

96. L. callista, Stru. fuscos-black, granulose, granules dispersed or conglomerate; apothecia black, aësio-pruinose, small, sessile, crowded, often contiguous, margin prominent indistinct, thickened, apices clavate, fuscoscent; gelatina hymenea I intensely-blue, almost black.

On alpine granitic rocks, rare. 1874.

Syn.:—Stirton in Grevillea 3. p. 34. (1874.)

Scotland:—Near Grantown, Inverness. Dr. Stirton. (1874.)

"Spores 0.012—014 mm. long, 0.003 mm. broad." (Stirton.)

97. L. neglecta, Nyl. albido-cinerous, thin, granulose, granules subconfluent; substipitate; apothecia black, minute, superficial, opake, somewhat plane, margin obtuse or at length evanescent, internally almost concolorous or cinereo-nigrescent; spores 8, colourless, fusiform-oblong or oblong; paraphyses moderate; hypothecium fuscoscent; gelatina hymenea I— or lutescent.

Amongst mosses in alpine places, rare.


Exs.:—Am. 601.

Geog. Distrb.:—Scandinavia.


"Spores .008—.011 mm. long, .003—4 mm. broad." (Nyl.)

98. L. pedatula, Nyl. whitish, granulose, thin, (K yellow); apothecia black, minute, somewhat convex, immarginate, stipitate; hypothecium stipitiform, rufescent; hymenium cæulescent, epithicum darker; gelatina hymenea I slightly blue; spores not seen.

On rocks, very rare. 1876.

Syn.:—Nyl. in Flora 1876. p. 236.


Ireland:—Connemara. Mr. Larbalestier. (1876.)

"The attenuate stipes of the apothecium often exceeds the capitulum in height. Probably near L. neglecta." (Nyl.)

99. L. livescens, Leight. white, granulose or granulato-verrucose; granules scattered and dispersed, (K—C pale-reddish); hypothallus very black and predominating; apothecia scattered, arising from the hypothallus, submature or innato-sessile, round or angulari-difform, concealing, the disk or epithecium of a pale-grey-livid appearance, surrounded with a thick, prominent, black, entire or flexuose margin; hypothecium nigro-fuscosum; paraphyses thick, apices brown; spores 8, colourless, linear-oblong, simple, very minute.

On rocks, rare. 1875.

Syn.:—Leighton in Grevillea 4. p. 78.


Ireland:—Doughruagh Mountain! Galway. Mr. Larbalestier. (1875.)

Spores .007 mm. long, .003 mm. broad.
100. *L. aniptiza*, Strttn. nigro-cinereous or nigro-virescent, granulose, thin; apothecia black, small, prominent, convex, immarginate, papillose (as it were glomerate), internally entirely cinerascant; spores 8, colourless, oblong or oblongo-cylindrical, simple; paraphyses irregular indistinct; gelatina hymenea I bright blue; thalamium K slightly but distinctly purpurascant.

On decorticated wood, rare. 1875.

 SYN:—Stirton in Trans. Glasgow Soc. Nat. p. 86. (1875.)
 BOT. PROV:—15.
 SCOTLAND:—Near Killiecrankie. Dr. Stirton. (1875.)
 “Spores .0075—.011 mm. long, .0025—.003 mm. broad. The paraphyses are rendered distinct by K when they are seen, as slender, irregular, and occasionally branching filaments. Gonidia often conglomerate.” (Strttn.)

101. *L. relicta*, Strttn. nigro-cinereous, rugose, almost granulose; apothecia black, small, adnate, plane, obtusely marginate, at length convex immarginate and rugose; spores 8, colourless, oblong, simple; paraphyses few, slender, distinct, pellucid, apices clavate, fuscos; hypotecium fuscos-black; gelatina hymenea I slightly blue then vinous-red.

On rocks, rare. 1875.

 SYN:—Stirton in Trans. Glasgow Soc. Nat. p. 89. (1875.)
 BOT. PROV:—15.
 SCOTLAND:—Blair Athole. Dr. Stirton. (1875.)
 “Spores .009—.013 mm. long, .005—.006 mm. broad.” (Strttn.)

102. *L. meiococca*, Nyl. pale-yellowish-sulphur-colour, coarsely granulate, areolato-diffract, thickish, (K yellow C—); apothecia brownish-black, moderate, at first somewhat concave and with a thinnish margin, then plano-convex and depressed and immarginate, adnato-sessile; hypotecium thickish, bright-fuscous, subtended by a pale cartilaginous excipulum, slightly tinged with brown; hymenium pale, paraphyses distinct, apices colourless; spores 8, colourless, oblong, simple.

In deep recesses of maritime rocks, rare. 1876.

 SYN:—Nyl. in Flora 1876. p. 578.
 BOT. PROV:—26.
 IRELAND:—Lettormore! Connamara. Mr. Larbalestier. (1876.)
 Externally very similar in appearance to *Lecidea pruorsa*, Fr. but with different reaction, as well as different nature of the hypotecium. Spores .0155 mm. long, .008 mm. broad. Gelatina hymenea I dark-vinous-fuscous, especially the ascii.

103. *L. humosa*, Ehrh. olivaceo-virescent, minutely disperso-granulate; apothecia fuscos-black or black, innato-sessile, plane, with a slightly prominent pale margin; hypotecium brownish; hymenium pale-brown, paraphyses coherrent; spores 8, colourless, oblong, simple.

On shady rocks, rare. 1876.

 GEOG. DISTRIB:—Europe.
 BOT. PROV:—26.
 IRELAND:—Lough Inagh! Galway. Mr. Larbalestier. (1876.)
 Spores .014 mm. long, .0085 mm. broad.

104. *L. continuor*, Nyl. similar to *L. latypea*, Ach. but differing only in the nearly plane, rimoso-areolate thallus (C orange).
THE LICHEN-FLORA

On micaceous-schistose rocks, rare. 1877.

SYN.:—Nyl. in Flora 1877. p. 463.
BOT. PROV.:—26.
IRELAND:—Kyloemore. Mr. Larbalestier. (1877.)
Var. subviridans, Nyl. yellow, plane, thin, areolato-diffract, sorediate, (C orange); excipulum nigrant; hypothecium fuscous.
On walls, rare. (1877).

SYN.:—Nyl. l. c.
IRELAND:—Kyloemore. Mr. Larbalestier. (1877.)

105. L. uliginascens, Stirt. fuscous or fusco-nigrant, minutely granulose, effuse; apothecia black, plane or subconvex, internally K violet; hypothecium fuscous-black; paraphyses few, irregular, slender; spores 8, colourless, oblong, simple.

On turfy earth, rare. 1877.

SYN.:—Stirton in Scottish Naturalist 4. p. 164. (1877.)
BOT. PROV.:—16.
SCOTLAND:—Near Garve. Dr. Stirton. (1877.)
"(Gelatina hymenea I very pale-blue then dark-vinos-red. Spores .01—.013 mm. long, .006—.007 mm. broad." (Stirt.)

***** Thallus areolate, areolae convex or granular.
† Hypothecium pale or colourless.

106. L. aglaea, Smmrf. flavescent or ochroleucus and virescent-cinereous, crustaceous, thickish, areolato-diffract, rimose, areolae tumid, convex, generally minutely diffracto-insculpt or unequally rugose or smoothish, (K yellow C yellow); hypothallus black; apothecia black, innate in the areole, moderately large, plano-convex, somewhat shining, immarginate, darkly cinerescent within; hypothecium pale, slightly rufescent; spores 8, colourless, ellipsoid, simple; thalamium cœruleo-cinerascens, epithecium cœruleo-nigrant; paraphyses indistinct, apices fuliginous; gelatina hymenea cœruleuscent with iodine.

On alpine rocks, rare. 1808.


FIG.:—E. Bot. 1831.
EXS.:—Zw. 23. Anzi Langob. 150.

GEOG. DISTRIBUTION:—Norway, Finland, Sweden, Lapland, Switzerland, Hungary, Italy.

BOT. PROV.:—7...11...15...19...26.

ENGLAND:—Near Winch Bridge; near Whey-Syke, Teesdale Forest, Durham. Rev. J. Harriman. (1808.)


IRELAND:—Mangerton. Mr. Carroll. summit of Diamond Mountain! co. Galway. Mr. Larbalestier.

WALES:—Mynydd-y-Gader! near Dolgelley. Dr. Holl. Cader Idris north escarpment; Llyn Cwylid! Aran Mowddwy! Llanbedrog! Llyn Gelironydd! Sychnant! near Conway, Twll Du! Glyder Vach! Owain Ffynnnon lloer!
"Spores .010—.16 mm. long, .006—.8 mm. broad. I blue then dirty-violet. Spermataia sub-cylindrico-elongate 0.006—8 mm. long and 0.0010—.15 mm. broad." (T. M. Fr.) "Spores .010—.15 mm. long, .006—.7 mm. broad." (Nyl.) Spores .014—.0145 mm. long, .007—.8 mm broad. Medulla I—.

A remarkable species, readily recognised by the tumid convex areolae of the thallus and the innate deep-black and shining apothecia.
107. *L. areolata*, Schær. *pallido-flavescent*, crustaceous, thickish, areolate or areolato-diffract, rimose, areola plano-convex, smooth, *(K yellow C yellow)*; hypothallus black; apothecia black, adnate to the areola, naked, opake, moderate, plano-convex, immarginate, cinerascence within; hypothecium colourless, very slightly rufescence; spores 8, colourless, ellipsoid, simple; paraphyses crowded but distinct.

On schistose rocks in mountain ranges, rare. 1864.


**Scotland**—Summit of Ben Lawers! Adm. Jones & Mr. Carroll. (1864.)

The above description was drawn up from examination of the original specimen in Mr. Carroll’s Herbarium, which was externally similar to *L. agleca* and *L. Crombieii* and internally differed in no respect. I cannot but regard it as a state or variety of *L. agleca*. Can our Scotch lichen be identical with Schær’s, which is described as having the areole of the thallus “intus albus” and the apothecia “intus albus”?

108. *L. tessellata*, (Flk.) creamy or whitish, tartaceous, sub-determinate, areolato-rimoso-diffract, areola angular, plano-convex, smooth, opake, *(K yellow then red)*; apothecia scattered or confluent, sessile, adnate, black, slightly pruinose, plane or sub-convex, internally white, margin thin, acute, elevated, flexuose; hypothecium colourless, the margin only with a thin black line; epithecium migrant; thallium pale-yellowish; spores 8, colourless, ellipsoid, simple, moderate, granular.

On alpine rocks, not common. 1870.


**England**—Caer Caradoc! Shropshire. **Scotland**—Ben Lawers. Messrs. Jones and Carroll. **Ireland**—Lough Bray near Dublin. Messrs. Jones & Carroll. “Spores 0.011—17 mm. long, 0.007—0.010 mm. broad.” *(Nyl.)* Spores 0.01—16 mm. long, 0.006—0.008 mm. broad. Medulla I—.

109. *L. spilotata*, Fr. similar externally and internally to *L. tessellata*, Flk. but with a different chemical reaction K—C—.

On alpine rocks, not common.

I have never seen British specimens of the typical form, but the ferruginous state, forma ochracea, (Ach. *L. U. 166*) frequently occurs. **Syn.**—Fries L. Eur. p. 297. (1831.) in part (specimen from Dr. Th. M. Fries).


forma ochracea, *(Ach.)* thallus ferruginous; apothecia white within. On alpine rocks, not common. 1856.


110. *L. mollis,* (Whlnb.) cinereous or pallido-fusco-cinerascens, rimuloso-areolato-diffract, areolae minutely albo-verrucose, convex, nigro-limitate, (K yellow C yellow); apothecia fuscos-black or black, superficial, plane, margined, whitish within; hypothecium colourless; spores 8, colourless, ellipsoid, simple; paraphyses distinct.

On mountain rocks, not unfrequent.


Geog. Distr:—E. Lapland, Norway, Germany.

Bot. Prov:—5, 7, 10, 15.


Scotland:—Braemar; Breadalbane. Rev. J. M. Crombie.

Wales:—Barmouth!

"Spores .007—8 mm. long, .005—6 mm. broad. Gelatina hymenea I slightly blue, then vinous-violet, especially the solid apices of the thecia." (Nyl.) "Spores .007—9 mm. long, .005—6 mm. broad." (T. M. Fr.)

111. *L. mesotropa,* Nyl. cinerascens, verrucos-areolato-diffract, areolae plano-convex, sub-squamose around the apothecia, indeterminate, (K—C reddish); apothecia fuscos-black or nigricant, opake, somewhat plane, adnate to the areolae, margin obtuse or evanescent, whitish within; hypothecium colourless; epithecium fuscescent; spores 8, colourless, ellipsoid, simple; paraphyses slender, indistinct.

On mountain schistose rocks, rare. 1867.

Syn:—Nyl. in Flora 1867, p. 323. Crombie En. 81.

Geog. Distr:—Europe.

Bot. Prov:—15.

Scotland:—Ben Lomond! Craig Tulloch. Rev. J. M. Crombie. (1867.)

"Spores 0.009—0.013 mm. long, 0.005—6 mm. broad." (Nyl.) Spores .012 mm. long, .006 mm. broad.

112. *L. inserena,* Nyl. darkly cinereous, rimoso-areolato or areolato-granulose, areolae often scattered, hypothallus black, very conspicuous; apothecia black, plane; hypothecium with an opaque white stratum in the lower portion; epithecium caerulescentifuscescent; spores 8, colourless, ellipsoid-oblong, simple; paraphyses indistinct; gelatina hymenea caerulescent, then violet, especially the thecia, with iodine.

On quartzose mountain rocks, rare.

Resembling *L. tenebrosa* *tumidior,* Nyl.

Syn:—Nyl. in Flora 1869, p. 84. En. 85.

Geog. Distr:—Europe.

Bot. Prov:—15.

Scotland:—Craig Guie, Braemar. Rev. J. M. Crombie. (1869.)

"Spores .014—17 mm. long, .006—8 mm. broad." (Nyl.)

113. *L. coarctata,* (Sm.) whitish or cinerascens, thin, rimulose or areolato-granular or sub-continuous or leprose, (K faint yellow or—C red); apothecia fuscos, fusco-rufescens or blackish, small, scattered, innate or sessile, often with a white pulverulent, coarctate, spurious thalline margin; hypothecium colourless; spores 8, colourless, ellipsoid, simple, large.

A very variable lichen, the principal forms of which are detailed below.

"Spores .014—26 mm. long, .007—12 mm. broad." (T. M. Frics.) "Spores 014—20 mm. long, .007—11 mm. broad." (Nyl.) "Spores .0035—.00425 in. long, by .00175 in. broad." (Mudd.)
forma *elacista*, (Ach.) greyish-white, very thin, effuse, leprose; apothecia innate or sessile, concave or plane, with a conspicuous white coarctate margin.

On walls and stones, frequent. 1798.


Eng.:—E. Bot. t. 534. (1798.) Ach. Meth. t. 4. f. 4. Hepp Spenor t. 21. f. 186.

Exs:—Nyl. L. f. 54. Schen. 312. Leight. 177.


Bot. Prov.:—1, 2, 3, 4, 5, 7...10, 11...16...30, 31.


Ireland:—Near Belfast. Mr. Templeton.

Wales:—Moel-y-Golfa! Montgomeryshire. Penstegrae! near Oswestry!

Cader Idris! Trefriw Falls! Eglwyseg rocks!

Channel Islands:—Jersey; Guernsey. Mr. Lardalester.

forma *involuta*, (Tayl.) greyish-white, tartaraceous, verrucose or areolato-granulose, verrucose often scattered, convex or flatish; apothecia fusco-rufescent, concave or more or less convex, sessile, margin obliteration.

On siliceous rocks, not unfrequent. 1836.


fig:—Leight. Ang. Lich. t. 13. f. 4.


Geog. Distrib:—Germany, Hanover, Italy.

Bot. Prov.:—5, 6, 7...10...19...20.


Ireland:—Carig! and Dunkerron Mountains. Dr. Taylor. (1836.) Mweerlan!

Rynnyle! Dawros river! near summit of Doughruagh Mountain! Twelve Pines! co. Galway. Mr. Lardalester.

Wales:—Yr. Bif! Mr. Holmes. Cwm Glas! Snowdon. Trefriw falls! Cwm Cywion! Drwsynant! Pass of Llanberis! Aran Mowddwy! Eglwyseg rocks!

Spores .0195 mm. long, .015 mm. broad.

forma *glebulousa*, (Sm.) whitish, tartaraceous, verrucoso-glebulous or sub-squamulose, verrucose tumid, scattered or crowed; apothecia minute, rufo-fuscescent, plane, margin thin, evanescent.

On shady rocks, not unfrequent. 1808.

SyN:—Sm. E. Bot. 1935. (1808.)

fig:—E. Bot. 1955.

Exs:—Leight. 149.

Geog. Distrib:—Europe.

Bot. Prov.:—1...3...5...7, 8...10...15.


Scotland:—Craig Tulloch. Rev. J. M. Crombie.

Wales:—Aberdovey!

forma *ornata*, (Smnrfr.) greyish-white, verruculous or areolato-squamulose, squamules flat or more or less irregularly convex, margins more or less crenate.
On alpine rocks, rare.

Syn. — Smarr. Lapp. 92. (1826.)

Exs. — Mudd 123.

Geog. Distrib. — Norway, Pyrenees.

Bot. Prov. — 3...5...7...10...15...26.


Bergholt; Copford, Essex. Mr. Varenc. Church Stretton! Lyth Hill!


Wales — Cadair Idris! Cwm Clyd.

Ireland — Doughruagh Mountain! Galway. Mr. Larbalestier.

Spores .022 mm. long, .011 mm. broad.

forma dispersa, Leight. convex verrucae of thallus scattered and dispersed; hypothallus black, predominating; apothecia prominent, almost tubercular, spurious thalline margin conspicuous, minutely crenulato-laciniate.

On rocks, rare. 1875.


Ireland — Near Rynvyle! co. Galway. Mr. Larbalestier.

forma variolosa, Fw. thalline margin white and leprose or powdery, connivent over and concealing the epithecium.

On rocks,

This state is frequently observable in conjunction with f. elacista.

Syn. — Flotow Lich. Siles. 120. (1850.)

Geog. Distrib. — Silesia, Hungary, Switzerland.


Engl. — Nor'dy Bank! Shropshire.

forma depauperata, Leight. thallus entirely obliterated, apothecia naked and prominent.

On rocks and stones washed by water. 1866.


Wales — Cadair Idris! n.w. escarpment (1866.) Dewsant! Aran Mowddwy!

Pass of Llanberis! Cwm Cywion!

Spores .0226 mm. long, .0156 mm. broad.

forma terrestris, growing on the earth in crevices of rocks and walls.

Wales — Moel-y-gest!

114. L. prerninata, Nyl. white or whitish, continuous, rimose, rimoae subaroeolate or everywhere subparallelo-radiant, with convex or confluent soredia, (K — C red); apothecia fuscosus, biatorine, superficial, but imperfect and without spores.

On felspathic maritime rocks, rare. 1876.


Canal Isl.: — Jersey. Mr. Larbalestier. (1876.)

Possibly a subspecies of L. coarctata, with which it agrees in reaction of thallus.

115. L. mesotropoides, Nyl. cinerascent, verrucoso-areolato-diffract, areolae convex, (K yellow, medulla I — ) ; apothecia fuscosus-black or nigricans, at first plane, margined, at length convex, prominent, immarginate, lamina thin, excipulum circumcinctum; hypothecium colourless; spores 8, colourless, ellipsoid, short, simple.

On old limestone walls. 1871.
OF GREAT BRITAIN.

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SYN:—Nylander in Flora 1872. p. 359.

BOT. PROV.:—15.

SCOTLAND:—Craig Tulloch, Blair Athole. Rev. J. M. Crombie. (1871.)

"Externally similar to L. mesotropa, but with different reaction, thinner lamina and shorter spores. Spores 0.009—11 mm. long, 0.006—7 mm. broad. Spermatia 0.007—10 mm. long, scarcely 0.001 mm. broad." (NyL.)

116. L. caligens, NyL. fuliginous-black, thin, rugose, diffract, indeterminate; apothecia blackish, plane, obtusely margined, within pale; spores 8, colourless, thinly acicular; epithecium colourless; paraphyses not distinct; hypothecium colourless, (excipulum somewhat brownish above); gelatina hymenea l vinous-red.

On maritime rocks, rare. (1873.)

SYN:—NyL in Flora 1874. p. 10.

BOT. PROV.:—31.

CHANNEL ISLANDS:—Alderney. Mr. Larbalestier. (1873.)

Allied to L. eximius, but a very distinct species, "Spores .030—35 mm. long, .0015 mm. broad." (NyL.)

117. L. pammicta, Strn. whitish or cinero-albescent, thick, areolato-diffract, areolae smooth, minutely papillose, (K yellow then orange-red); apothecia black, sessile, plane or somewhat convex, margin undulate, sometimes paler, internally pale; hypothecium colourless; epithecium almost constantly gyroso-plicate; spores 8, colourless, ellipsoid, simple, rather small; paraphyses thick, indistinct, apices clavate, nigricant; gelatina hymenea l blue then violet.

On alpine rocks, rare. 1874.

SYN:—Stirton in Grevillea 8. p. 34. (1874.)

BOT. PROV.:—15.

SCOTLAND:—Ben Arthur. Dr. Stirton. (1874.)

"Somewhat similar to L. moliis, (Whlnb.) and L. tessellata, (Flk.) Spores .003—.01 mm. long, .005—.06 mm. broad." (Stirt.)

118. L. tenebrosa, (Flot.) cinero-nigricant or darkly-cinereous tartarose, rimoso-areolato-granulose, often smooth, opake, areolae more or less tumid, (K dirty yellow C dirty yellow); hypothallus black; apothecia small, sub-innate in the areolae, black, plane, margin thickish, eventually obliterated; hypothecium colourless; spores 8, colourless, ellipsoid, simple; paraphyses distinct, except a dark discoloured line; gelatina hymenea blue with iodine.

On alpine rocks, not common.


GEOG. DISTRI:—Sweden, Pyrenees, Bavaria, Germany, Lombardy, Italy.

BOT. PROV.:—5. 7...15. 22. 23...31.

ENGLAND:—Malvern Hills. Dr. Holl. Abdon Burf! Devil's Chair! Stiperstones; Caer Caradoc! Shropshire.

SCOTLAND:—Braemar; near Portlethen; Kincardine. Rev. J. M. Crombie.

IRELAND:—Killarney and Lough Bray, Dublin; Luggelaw, Wicklow. Adm. Jones.

WALES:—Cwm Fflynnon idder!

CHANNEL ISLANDS:—Noirmont, Jersey. Mr. Larbalestier.

"Spores .011—.017 mm. long, .006—7 mm. broad." (Nyl. & T. M. Fr.) Spores .0125—.014 mm. long, .0055 mm. broad. Medulla I reddish.

119. L. asperella, Strn. black, thickish, granuloso-furfuraceous, diffracto-areolate, determinate; apothecia black, small, adnate, shining, plane, margin thin shining; hymenium seen in a thin section
entirely ceruleo-virescent; spores 8, colourless, ellipsoid or oblongo-ellipsoid, simple; paraphyses not very distinct, apices clavate cerulescent, (violet-purple with nitric acid); hypothecium colourless, subtended by a fuscous-black excipulum; gelatinula hymenea I intensely and persistently blue.

On rocks. 1875.


BOT. PROV.:—15.

SCOTLAND:—Ben-y-gloe. Dr. Stirton. (1875.)

"Spores .0075—.01 mm. long, .004—.005 mm. broad. Very closely allied to L. furvella, Nyl. The stratum beneath the hypothecium is composed of large cells intermingled with branching fibres (which, however, prevail more in the lower portion) and is accordingly, quite unlike the usual exciple." (Stirtn.)

†† Hypothecium dark.

120. L. parvula, Ach. albido-cinereous or creamy or pale-tawny, areolato-granulose, areola large, tumid, rimoso-diffract, flattish or sub-convex, smooth, more or less polished, (K faint yellow C red) with tuberculose reddish cephalodia intermixed, hypothallus dark brown; apothecia black or nigro-fuscous, appressed or immersed, plane or sub-encave, more or less pruinose, margin thin, prominent, smooth; hypothecium thick, dark-brown; spores 8, colourless, ellipsoid, simple, very large, with broad epispore; paraphyses slender, apices fuscous; gelatinula hymenea intense-blue with iodine.

On granite rocks in alpine localities, not uncommon. 1807.

forma vera, Leight. apothecia prominent, adnate or appressed, margin prominent, often paler than the epiteicum.


FIG.:—E. Bot. 1829.


GEOG. DISTRIBUTION:—E. Lapland, Sweden, Switzerland.

BOT. PROV.:—5...7...11...15...19...25...30.

ENGLAND:—Cromley and Eglaston, Durham. Rev. J. Harriman. (1807.)

Teesdale! Mr. Robertson. Abdon Burf! Shropshire.

SCOTLAND:—Ben Lawers! Mr. Carroll. Ben Cruachan; Craig Guie; Khoil. Rev. J. M. Crombie.


"Spores .017—.27 mm. long, .008—12 mm. broad." (T. M. Fr.) "Spores .018—.34 mm. long, .010—16 mm. broad." (Nyl.) "Spores .006—.008 in. long, by .0035—.004 in. broad." (Mudd.) Spores .0295—.032 mm. long, .016 mm. broad.

forma subconcentiens, Leight. apothecia concave, immersed in the areole, immarginate, but with a spurious thalline margin.

On alpine granitic rocks, not common. 1871.

BOT. PROV.:—7.

WALES:—Cwm Cwiston! Cwm Ffynnon Llugwy! Cwm Ffynnon Lloer! Gylder Vach! Aran Mowddwy!
A conspicuous form, but intermediate states may be observed between this and f. vera. Paraphyses distinct, apices fuscous, lateral excipulum colourless, hypothecium central, dark fuscous. Spores with very thick epispore, double the size of those of L. consœntiens, which this form externally assimilates. Spores — 0.033 mm. long, 0.0175 — 0.019 mm. broad.

forma obliterata, Leight. thallus smooth, creamy, thin, effuse, nearly denuded, probably by water, with cephalodia; apothecia prominent, with conspicuous proper margin.

On alpine rocks, rare. 1871.

Wales:—Cwm Cywion!
Hypothecium nigro-fuscous, thick; paraphyses distinct; spores 8, colourless, with narrow epispore, 0.088 mm. long, 0.015 mm. broad.

121. L. fusco-cinerea, Nyl. cinerascens or cinereo-fuscous, effuse; rimoso-areolate, areoles often verrucaform or tuberculata; hypothallus black; apothecia closely appressed or adnate, plane, margin thin prominent; hypothecium nigro-fuscous; paraphyses concrecent, apices fuliginous very obtuse and thickly clavate; spores 8, colourless, oblong or ellipsoid, simple; gel. hym. I slightly blue, then vinous-red.

On alpine rocks.

Fig.:—Nyl. Obs. Lich. Holm. fig. 9.
Exs.:—Arn. 114. 227. Fr. L. Suec. 406 C.
Geog. Distrib.:—Sweden, Norway, Finland, Germany.
Wales:—Cwm Idwal! Llyn Geirionydd!
Externally like L. tenebra, but internally different. "Spores .009—14 mm. long, .006—10 mm. broad." (T. M. Fr.) "Spores .014—29 mm. long, .007 mm. broad." (Nyl.) Spermata shortly acicular, straight. Spores .012—.015 mm. long, .006 mm. broad. Medulla reddish. Thallus K dirty-yellow C reddish.

122. L. Bruyeriana, (Scheuer.) pale-yellow, verrucoso-glebulose, verrucose tumid, scattered or concrete, often evanescens, (K yellow, C apothecia red but thallus yellow); apothecia large, sessile, concave, fuscous or black, margin thick, incurved, entire or flexuose; hypothecium black; spores 8, colourless, ellipsoid, large, simple, granular; paraphyses distinct; gelatina hymenea yellow with iodine.

On alpine rocks, rare. 1866.

Syn.:—Scheuer. Enum. 77. (1850).
Fig.:—Hepp Sporen t. 70. f. 615.
Exs.:—Scheuer. 539. Hepp. 615.
Geog. Distrib.:—Switzerland.
Bot. Prov.:—7...11.
England:—Force Garth, Taesdale. Dr. Holl.
Wales:—Craig-y-Ylam near Dolgelley. Dr. Holl. Cader Idris! (1866). Aran Mowddwy! Moel-y-Golfa!

Bot. Prov.:—7...10...15.
f. ochrodes. Nyl. found in Glen Callater 1872 by Dr. Stirton.
Spores .0135 mm. long, .009 mm. broad. The large apothecia have much the appearance of a Peziza.

123. L. Kochiana, Hepp. mouse-colour or pale-cinereo-fuscescent, rimoso-areolato-diffract, areoles plano-convex, nigro-limitate, (K—C—); apothecia black, innate, immarginate, flexuoso- or anguloso-
deformed, disk plane, somewhat shining and smooth, internally dusky; hypothecium a thin nigro-fuscous line resting on the hypothallus; spores 8, colourless, oblong, simple; paraphyses distinct.

On alpine rocks, not unfrequent.


**CHANNEL ISLANDS.**—Rozel, Jersey. Mr. Larbarestier. IRELAND.—near Letterfrack! Mr. Larbarestier.

"Spores .008—11 mm. long, .006—8 mm. broad." (Nyl.) Spores .01—011 mm. long, .006—7 mm. broad: Medulla I—.


On rocks, rare. 1865.


"Spores .008—11 mm. long, .006—8 mm. broad." (T. M. Fr.) Medulla I—.

124. *L. segregans*, Nyl. whitish or albido-cinerascent, verrucosograniulose, granules various, somewhat convex, more or less segregate or verrucoso-confluent, laxly adnate; hypothallus nigricant, scarcely visible; apothecia black, somewhat plane, immarginate, at length convex, and often aggregato-confluent, small, concolorous within; hypothecium fuscous; epithecium scarcely obscure; spores 8, colourless, oblong, simple; hymenium dusky; paraphyses moderate, scarcely distinct; gelatina hymenea dilutely-cerulescent then vinoso-fulvescent with iodine.

On alpine micaceous-chiostose rocks, rare. 1866.


125. *L. symphorella*, Nyl. whitish or albido-cinerascent, areolate, areolae convex more or less scattered and dispersed, (K yellow C yellow); apothecia black, minute, somewhat convex, immarginate, aggregato-acervulate, acervuli composed of many connate apothecia, internally concolorous, sessile upon and nearly obliterating the areolae; spores 8, colourless, lineari-oblong, simple, the contents having a tendency to separate into 3 nuclei or cells; paraphyses moderate, indistinct; epithecium darkly-fuscescent; hypothecium
brunneo-infuscate; gelatina hymenea and asci at first blue, then red or vinous-violet with iodine.

On weathered quartzose stones, rare. 1869.


**Exs.:** — Crombie 89.

**Geog. Distr.:** — Europe.

**Bot. Prov.:** — 15.

**Scotland:** — Summit of Morrone; Braemar! Rev. J. M. Crombie. (1869.)

Apparent very near to *L. aggregata*. "Spores .010—18 mm. long, .004—7 mm. broad." (Nyl.) Spores .019—.02 mm. long, .0035 mm. broad.

126. *L. commaculans*, Nyl. fuscos-black or nigricant, thin, opake, sub-areolate, areole depressed, generally dispersed, indeterminate; apothecia black, somewhat convex, with scarcely any margin, concolorous within; hypothecium thickish, rubricoso-fuscous, this colour passing upwards into the thalamium; epithecium nigricant; spores 8, colourless, oblong, or linear-oblong, simple; paraphyses indistinct; gelatina hymenea cœrulescent with iodine.

On felspathic boulders, rare. 1868.

"Approaching *L. Kajardta*, in which the spores are different and the thallium not tinged with red, but more allied to *L. dimana*, Nyl. Sporormia cylindrical straight. Spores .008—.011 mm. long, .003—4 mm. broad." Nyl. Hypothecium has the same reddish tinge which is produced by K on the hypothecium of *Lecanora subfuscus var. coilocarpa*, and this colour passes without distinguishable tint into the thalamium.

**Syn.:** — Nyl. in Flora 1858. p. 476. Crombie En. 93.

**Geog. Distr.:** — Europe.

**Bot. Prov.:** — 15.

**Scotland:** — Morrone! Braemar. Rev. J. M. Crombie.

Spores .01—.011 mm. long, .003—4 mm. broad.

127. *L. amphotera*, Leight. white, tartaceous, areolato-diffract, areole of compound clustered convex granules, (K yellow C yellow); apothecia fuscous, clustered or conglomerate, innate, prominent, large, immarginate; hypothecium fuscous, thickish; paraphyses crowded, but distinct; spores 8, colourless, lineari-oblong, simple.

On alpine rocks, rare. 1870.

**Bot. Prov.:** — 7...15.

**Scotland:** — Hill of Ardo near Aberdeen. Rev. J. M. Crombie. (1870.)

**Wales:** — Conway!

The thallus of this has the general appearance of that of *Pilophoron fibula* with its fuscous cephalodia, and the spores resemble those of *Lecidea lapicida*, from which the nature of the thallus and the different hypothecium distinguish it. Spores .0175 mm. long, .005 mm. broad.

128. *L. dealbatula*, Nyl. white, thin, rimose or scatteredly convexo-subareolate, unequal, (K—C—); apothecia black, small, prominent, margined, umbonate or at length subgyrose in the centre, concolorous within; spores 8, colourless, ellipsoid, simple, minute; epithecium and hypothecium nigro-fuscous; paraphyses moderate, distinct but coherent; gelatina hymenea I intensely-bluish.

On schistose and hard-grained rocks, rare. 1874.

**Syn.:** — Nyl. in Flora 1874. p. 315.

**Bot. Prov.:** — 7...15...26.

**Scotland:** — Skronaclachan, Killin. Rev. J. M. Crombie. (1877.)

**Ireland:** — Kylemore Castle ! co. Galway. Mr. Larbalestier.
Wales:—Trefriw ! near Llanrwst.

"Allied to L. deparvula, Nyl. Spores 0.010—12 mm. long, 0.006—8 mm. broad." (Nyl.)

129. L. silacea, Ach. bright-ferruginous-red, areolate, areolae verrucoso-granulate, convex, tumid, smooth, (K— C—); apothecia dark-bluish or violet-black, numerous, scattered or crowded, various in size, closely adnate on or between the areolae, plane or convex, margin entire or flexuose; hypothecium dark-fuscescent, subtended by a darker-excipulum; hymenium bluish, paraphyses distinct, apices violet-black; spores 8, colourless, roundish-oblong, simple, small; I intense-blue.

On alpine rocks, probably not uncommon. 1870.


FIG:—Mass. Ric. fig. 123.

EXS:—Scherm. 190, 191. Anzi Langob. 159.

GEOG. DISTRIB:—Sweden, Norway, Finland, Switzerland, Italy.

BOT. PROP:—15.

SCOTLAND:—Glen Fender ! Blair Athole. Rev. J. M. Crombie (1870.) "Spores .008—11 mm. long, .005—6 mm. broad." (T. M. Fr.) Spores .01 mm. long, .005—.0055 mm. broad.

130. L. calpodotis, Stirtn. darkly-cinereous, areolato-diffract, areolae somewhat convex, contiguous or dispersed; apothecia black, minute, very numerous, innato-sessile, concave, subacute, acute or margined, at length somewhat explanate, internally pale or pallido-fuscescent; spores 8, colourless, ellipsoid, almost spherical, simple; paraphyses irregular, indistinct, apices fuscous; hypothecium fuscous or pallido-fuscescent, thin; gelatina hymenea I slightly blue then vinous-red.

On rocks, rare. 1875.


BOT. PROP:—15.

SCOTLAND:—Killicrankie. Dr. Stirton (1875.) "Spores .007—.0055 mm. long, .005—.007 mm. broad. K renders the paraphyses as distinct, filiform, irregular, branching fibres." (Stirtn.)

131. L. Multennis, Stirtn. cinereous or nigro-cinereous, areolato-verrucose, diffract. (K yellow, internally yellow then ferruginous-red) formed of erect columnææ, which are either connate or segregate and dispersed; apothecia black, subinnate, small, plane, acutely margined, margin often flexuose or undulate; hypothecium thickish, fuscous or fuscous-black; paraphyses very irregular and indistinct; nigro-apiculate; spores 8, colourless, ellipsoid, simple.

On rocks, rare. 1877.

SYN:—Stirton in Scottish Naturalist. 4, 166 (1877.)

BOT. PROP:—16.

SCOTLAND:—Mull. Dr. Stirton. (1877.) "Spores .006—.009 mm. long, .004—.006 mm. broad. Gelatina hymenea I bluish, then vinous-red. Hymenium K yellow, then "with stellate groups of reddish adiculæ crystals. Ascl with thick pellucid walls upwards." (Stirtn.)

****** Thallus areolate, areolae flat or plane.

† Hypothecium pale.

133. L. polyacarpa, Flk. cinrascent, very thin, tartareous,
minutely rimuloso-areolate, areole plane or plano-convex, smooth, somewhat evanescent, (K yellow then red); hypothallus black; apothecia numerous, scattered or aggregate, adnate, plane, opake, black, soft, velvety, margin very thick, subtumid, prominent, flexuose; hypothecium pale or more or less rufescent, with short lateral black excipulum; epithecium nigrivant; thaladium pale; spores 8, colourless, elliptical, simple, binucleolate.

On alpine rocks, frequent.

EXS: — Fellim. 159.

GEOG. DISTRIBUT: — E. Lapland, Scandinavia, Hungary, Sweden, France.

BOT. PROV: — 5...7...15...19.

ENGLAND: — Devil's Chair! Stiperstones, Shropshire.

SCOTLAND: — Mollon; Ben-na-board; Ben Cruachan; Ben Lawers; Ben Nevis; Braemar. Rev. J. M. Crombie.

IRELAND: — Magerton. Mr. Carroll.

WALES: — Cadfaid Idris, north escarpment! Craig Breiddin! Nevin! Eglwyseg rocks! Llyn Geirionydd! Barnmouth!

"Spores .009—.014 mm. long, .004—7 mm. broad." *Nyl.* "Spores .009—12 mm. long, .005 mm. broad. I blue then discoloured, asci violet-red or fulvescent. Sporangia shortly adceular, straight or slightly curved .009—12 mm. long." (T. M. Fries.) Medulla bluish. Spores .015 mm. long, .0065 mm. broad.

Var. declinans, *Nyl.* nearly ecrustaceous; hypothecium fuscous or fuso-rufescent, (K yellow then red).


EXS: — Fellim. 187. 188. Rahm. 844.

GEOG. DISTRIBUT: — E. Lapland, Scandinavia.

BOT. PROV: — 7...15...23.


IRELAND: — Killiney Hill. Dr. Moore.

WALES: — Cadfaid Idris, north escarpment! Pass of Llanberis !

133. *L. marginata,* Scher. pale-apricot-colour, tartareous, malarial, diffuse, rimuloso-areolato-diffract, areole plane, unequal, (K yellow); apothecia black, sessile, plane or tumid, margin thick, prominent, sometimes flexuose, at length obliterated; hypothecium pale; spores 8, colourless, oblong, simple, I blue.

On alpine rocks, rare. 1868.


EXS: — Scher. 189.

GEOG. DISTRIBUT: — Switzerland.

BOT. PROV: — 2...15.

ENGLAND: — Isle of Wight. Dr. Hall.


Spores .015—.015 mm. long, .0065—.0075 mm. broad.

134. *L. lapicida,* Fr. cinerascens, tartareous, thin, areolato-rimoso-diffract, areole flat or plane, (K—C—); hypothallus black; apothecia numerous, small, scattered or aggregate, plane, opake, raven-black, soft, velvety, margin thin, obtuse, slightly prominent, flexuose; hypothecium pale, with a thin blackish wavy line subtending the sides—and base; epithecium nigrivant; thalamium pale and yellowish; spores 8, colourless, narrowly oblong, simple, often with 2 nuclei; paraphyses distinct, apices nigrivant.

On alpine rocks, frequent.
THE LICHEN-FLORA.

Mudd Man. 209.

EXS. — Zw. 130. Leight. 157.


Wales. — North. Dr. Moore.

Wales. — Nant Gwynant! Crib Coch! Snowdon! Cwm Bochiwyd! "Spores .003 in. long by .001 in. broad." (Mudd.) "Spores .008 — .012 mm. long, .004 — 7 mm. broad." (Nyl.) "Spores .009 — 13 mm. long, .004 — 6 mm. broad." (T. M. Fr.) Spores .011 — .0125 mm. long, .003 — 4 mm. broad. Medulla 1 —

Var. ochracea, ferruginous-red.
On alpine rocks, not common.


Wales. — Nant Gwynant! Snowdon! Cwm Clyd!

135. L. lithophila, Ach. cinerascent, tartaceous, thin, rimuloso-areolate, areolae plane, (K — C —); hypothallus black; apothecia numerous, small, scattered or aggregate, plane, opake, black, or nigrorufescent, soft, velvety, innate or sessile, margin thin, prominent, flexuose; hypothecium pale, slightly obscure; epithecium rufescent when moistened; thalamium pale; spores 8, colourless, oblongo-ellipsoidal, simple; paraphyses distinct.
On alpine rocks, frequent.


EXS. — Fellm. 190.

SCOTLAND. — E. Lapland, Scandinavia, Madeira.

Ireland. — Ben Lawers; Morrone; Glen Fender; Blair Athole. Rev. J. M. Crombie.


Ireland. — Blackrock, Mr. Carroll. Killery Bay. Mr. Larvalesnier. "Spores .009 — 12 mm. long, .005 — 6 mm. broad. I intense-blue. Spermatia acicular, nearly straight, .012 — 15 mm. long." (T. M. Fr.) "Spores .011 — 15 mm. long, .006 — 7 mm. broad." (Nyl.) Spores .01 — .013 mm. long, .0045 — 006 mm. broad.

136. L. plana, Lahm. cinereous, or glaucescenti-whitish, rimoso-areolate, areolae plane, (K — C —); apothecia black, opake, small, adnate, variously angulose by confluence or compression, plane, margin thin, entire or flexuose; hypothecium colourless, with a brown lateral excipulum extending about half way under the hypothecium; paraphyses distinct, but coherent, apices fuscescent; spores 8, colourless, narrow-oblong or lineari-oblong, simple; I intense deep-violet-blue.
On sub-alpine rocks, rare.


EXS. — Nyl. Pyren. Or.

SCOTLAND. — Sweden, Norway, Germany, Eastern Pyrenees.

SCOTLAND:—Craig Tulloch. Rev. J. M. Crombie.

"Spores .011—.15 mm. long, .0035—.0045 mm. broad." (Nyl.) "Spores .009—.12 mm. long, .0025—.004 mm. broad. Intense-blue." (T. M. Fries. Spores .013 mm. long, .004 mm. broad.

137. L. rivulosa, Ach. mouse-coloured or pallido-fusco-cinerascent, rimuloso-areolato-diffract, areolae plane, nigricanti-limiteat, (K——C——) apothecia fuscous-black, moderate, sessile, margin thin, puler, flexuose, disk plane, opake, minutely granuloso-papillate, internally entirely whitish; hypothecium pale; spores 8, colourless, oblong, slightly curved, simple; paraphyses distinct, apices fuscous.

On mountain rocks, common. 1807.


Fig:—E. Bot. 1737. Hepp Sporen t. 57. f. 491.


Geog. Distrib:—Sweden, France, Germany, Italy, Switzerland.

Bot. Prov:—1...3...5...7...16, 11...18, 19...26, 31.


Ireland:—Near Glengarriff! Mr. Carroll. Delphi, Connemara. Mr. L. D.

Wales:—Holyhead! Barmouth!

Channel Islands:—Le Fret! Jersey; Jererugh! Guernsey. Mr. Larbalestier.

"Spores .009—.12 mm. long, .004—.06 mm. broad. I blue then vinous-red, especially apices of asc. Spermatia cylindrical, slender, straightish or curved, .004 mm. long, .001 mm. broad." (T. M. Fries.) "Spores .009—.012 mm. long, .0045—.0055 mm. broad." (Nyl.) "Spores .0025 in. long by .001 in. broad. (Mudd.) Spores .012 mm. long, .0055 mm. broad. I deep-blue. The exidium is laterally and externally fuscous, and may be frequently traced under the entire pale hypothecium. The internal contents of the spores have a tendency to constriction and division in the middle. In the typical form the thallus is thicker and more crustaceous, and verrucoso-areolate.

Forma depressa, Leight. minutely areolato-rimose, areolae depressed, flat, plane, sometimes slightly concave; apothecia sessile.

On mountain rocks, frequent.


Geog. Distrib:—Germany, Italy.

Bot. Prov:—7...20.

Ireland:—West Cork! Mr. Carroll.


Forma obscurior, Crombie. Thallus areolato-rimose, of a dark dusky colour caused by the intersection and predominance of the serpentine lines of the brownish-black hypothallus; apothecia sessile.

On mountain rocks, not common. 1865.

Bot. Prov:—7.

Wales:—Glyder Vach! Aran Mowddwy! Llyn y Dinas, near Beddgelert!

Forma depauperata, Leight. thallus evanescent, leaving only the dusky hypothallus; apothecia sessile.

On quartzose rocks and boulders, rare. 1871.

Bot. Prov:—7.

Wales:—Cwm Cywion! Nant Francon (1871.)

There is a corticol form represented by Hepp 730. Rabh. 508. T. M. Fries 43. Zw. 267, growing on Beech and Birch in Scandinavia and Germany, but not yet detected in Great Britain,
138. *L. atrofuscens*, Nyl. *cinereo-nigricant* or *fusco-nigrescent*, deplanate, areolato-diffract, sub-opake, areole plane or flat; hypothallus black, here and there visible; apothecia black, adnate, plane, at length somewhat convex, margined, moderate, often sub-angulose, nearly colourless within; hypothecium colourless; epithecium fuscescent; spores 8, colourless, ellipsoid, simple; paraphyses slender, sub-irregular; gelatina hymenea carulescent, then partly vinoso-rubescent with iodine.

On micaceo-schistose rocks, rare. 1864.

*Syn:*—Nyl. in Flora 1866, p. 371. Crombie En. 83.  
*Geog. Distr.:—Europe.*  
*Bot. Prov.:—.*  
*Scotland:*—Lower slopes of Ben Lawers! *Mr. Carroll* (1864). Intermediate between *L. fuscoatra* and *tenebrosa*, but distinguished by the larger spores and other characters. "Spores .018—20 mm. long, .005—.011 mm. broad." (Nyl.)

139. *L. lithophiliza*, Nyl. *cinerascent*, firm, unequally deplanate, areolato-diffract or areolato-rimose, thin, rhagadiose, (K yellow); apothecia brown-black, innate, plane or convex, immarginate, white internally, bounded beneath with a thin black line; spores 8, colourless, oblong, simple; paraphyses moderate, lurido-fuscescent at the apices; hypothecium with the middle stratum chalky-white, opake (not hyaline), the lower conceptacular stratum thin black; gelatina hymenea carulescent with iodine.

On micaceo-schistose maritime rocks, rare. 1868.

*Syn:*—Nyl. in Flora 1866, p. 473. Crombie En. 66.  
*Geog. Distr.:—Europe.*  
*Bot. Prov.:—7.15.  
*Wales:*—Dolgelley. *Dr. Holt.*

Distinct from *L. lithophila* and systematically near *L. phoopsa*, "Spores .003—.017 mm. long, .0035—.0045 mm. broad." (Nyl.) T. M. Fries Lich. Scand. 497. considers this to be a form of *L. lithophila*. (Ach.)

140. *L. interludens*, Nyl. *whitish or cinereous-white*, thin, rimuloso-areolate, areola plane, minutely wrinkled, nigro-limitate, (K pale tawny C—); apothecia black, superficial, sessile, rather large, somewhat plano-convex, immarginate or with a very thin white thalline margin, internally colourless; paraphyses slender, distinct, clavate and fuscous at the apices; spores 8, colourless, ellipsoid, simple; gelatina hymenea blue, afterwards the entire theca vinos or violet-red.

On calcareous alpine rocks, rare. 1869.

*Geog. Distr.:—Europe.*  
*Bot. Prov.:—15.  
*Scotland:*—Morrone! *Brzeimar. Rev. J. M. Crombie.* (1869.)

Externally similar to *L. molitis*, which however has the areole minutely albornuose; and differs from *L. Kochiana*, which has a mouse-coloured thallus and innate apothecia. “Spores .010—12 mm. long, .006—.008 mm. broad.” (Nyl.)

141. *L. nigrifrons*, Nyl. *blackish*, opake, thin, rugulose, areolato-rimose, areole flat; apothecia black, plane, subprominent, marginate, whitish within; hypothecium colourless; epithecium greenish-
black; spores 8, colourless, ellipsoid, simple; paraphyses distinct, moderate; gelatina hymenea I vinous-reddish.

On dry argillaceous schistose maritime rocks, rare. 1876.

SYN.—Nyl. in Flora 1876. p. 307.
BOT. PROV.—26.
IRELAND.—South side of Killery Bay, Connemara. Mr. Larbalestier. (1876.)
“Spores .011—12 mm. long, .006—7 mm. broad. Belongs probably to the section of L. confusa, Nyl. The thallus entirely green within, margin of apothecia sometimes cespito-sulphured.” (Nyl.)

142. *L. luteo-atra*, Nyl. dirty-yellowish, minutely areolato-diffract, the dark hypothallus appearing between the areoles, areolae dirty-yellowish, plane, more or less dispersed, (K—C pale-yellow); apothecia black, one or two innate in each areola, plane, immarginate; hypothecium colourless; hymenium pale, paraphyses distinct, coherent, apices brownish-nigricant; spores 8, colourless, linear-oblong, simple.

On alpine rocks, rare.

BOT. PROV.—15.
SCOTLAND.—Morrone! Braemar. Rev. J. M. Crombie. Spores .012—.013 mm. long, .0055 mm. broad.

†† *Hypothecium dark.*

143. *L. fusco-atra*, Ach. fuscus or chestnut-coloured or fusco-nigricant or lurido-cinerascens, areolate, areolae gibuso-convex or plane, smooth and shining (K yellow C red); apothecia appressed, plane or convex, scattered or confluent, black, naked or sometimes pruinose, margin thin; hypothecium thick, black; thalamium thin; spores 8, colourless, elliptoid, simple, small.

“Spores .010—16 mm. long, .005—7 mm. broad.” (Nyl.) “Spores .010—15 mm. long, .005—7 mm. broad. Spermatia cylindrical, straight, I blue then violet or red.” (T. M. Fries.) Spores .011—.013 mm. long, .0055—.006 mm. broad.

forma *gibba*, Wahl. chestnut-coloured, areolae gibuso-convex, smooth and shining.

On alpine and mountain rocks, not common.

Fig.—Hym. Pl. Lich. t. 54. f. 1. a.
EXS.—Leight. 215. 239. Anzi Langob. 280.
DISTR.:—Sweden, Italy.
BOT. PROV.—5...7...15...19...30.

SCOTLAND.—Ben Lawers; Morrone; Craig Tullock; Hill of Ardo. Rev. J. M. Crombie.


WALES.—Craig Aderyn! near Towyn.

forma *fumosa*, Ach. pallido-fuscescent, areolato-diffract, areolae flat, or slightly concave, angular, the edges raised up into a very thin sharp margin, smooth and shining, (K yellow C red); apothecia appresso-inmate, plane, scattered or confluent, margined.

On mountain rocks and stones, common.

THE LICHEN-FLORA

Geog. Distribs.—Hungary, Switzerland, Bavaria, Italy, Norway.
Bot. Prov. — 5, 6, 7...10, 11...15...31.


Channel Islands:—Noirmont, Jersey. Mr. Larbalestier.

forma Morisii, Ach. areola pallido-fuscaceous, and like those of f. fumosa, (K yellow C red), but apothecia innate, plane, cæsio-pruinose.

On maritime rocks, rare.

Exs. — Zw. 137.

Geog. Distribs.—Sweden, Italy.
Bot. Prov. — 6, 7...26.

Ireland:—River Dawros! Doughruagh Mountain! co. Galway. Mr. Larbalestier.

Wales:—Barmouth! Builth!

forma grisella, Flk. lurido-cinerascens or lurido-whitish, areole plane or rugoso-tumid, (K yellow C red); apothecia appresso-innate, margined, often pruinose.

On mountain rocks, rare.


Geog. Distribs.—Sweden, Italy, Switzerland, Lombardy, Bavaria, Pyrenees, Madeira.
Bot. Prov. — 5...7...9...11...15...26...31.


Scotland:—Grampians, Kincardine, Rev. J. M. Crombie.

Ireland:—Lough Feagh! Mr. Larbalestier.

Wales:—Trefriw! and Llyn Geirionydd! Cwm Bochlyyd!

Channel Islands:—Noirmont, Jersey. Mr. Larbalestier.

forma meiosporiza, Nyl. whitish or albido-cinerascents, rimoso-diffract; apothecia plane or convex, cæsio-pruinose.

On rocks and boulders, not unfrequent. 1876.

Syn. — Nyl. in Flora 1876, p. 239.

Geog. Distribs:—France.

Scotland:—Rev. J. M. Crombie.

Ireland:—Connemara. Mr. Larbalestier.

forma denusta, Stenh. fusco-nigricant, areolato-diffract, (K yellow C red.)

On alpine rocks, rare.

Exs. — Fries 405. Leight. 240. Zw. 228.

Geog. Distribs:—Sweden.
Bot. Prov. — 5...7...15.


Scotland:—Grampians, Rev. J. M. Crombie.

Wales:—Moel-y Gofa! Montgomeryshire.
144. *L. lactea*, (Flk.) yellow-whitish or cinerascen, thin, smooth, rimoso-areolato-diffract, areole plane, (K yellow then deep orange-red); apothecia black, numerous, scattered or aggregate, plane, innate, naked or pruinose, internally-cinerascen, margin thin, entire or flexuose; hypothecium dark-nigro-fuscous; spores 8, colourless, ellipsoid, simple; paraphyses distinct.

On mountain granitic rocks, rare.


**GEOG. DISTRIB.:**—Switzerland, Pyrenees, Sweden, Tyrol.

**BOT. PROV.:**—5...7...10...15...24.


**IRELAND:**—Limerick. *Adm.* Jones.

**WALES:**—Capel Curig! Mr. Borrow. Barmouth! Glyder Vach! Llanberis ascent of Snowdon! Conway! Pen-maen-mawr! Crib Coch! Snowdon! Llyn Cwylid! Glyder Vach! Cwm Cywion! Cwm Beochlyd! Pass of Llanberis! Treffri! Llyn Geirionydd! Craig Aderyn! Moel Siabod! Cwm Ffynnnon Lloer! Cym Glas! “Spores.012—15 mm. long. 006 mm. broad. I blue.” (Nyl.) “Spores .0025 in. long, by .001 in. broad.” (Mudd.) Spores .01—.0125 mm. long. .0055 mm. broad. The apothecia by excessive confluence appear as gyrose. The most general colour of the thallus is yellow-whitish or yellowish cream-colour, the grey cinerascen thallus is less frequent, and the cesio-pruinose state of the apothecia rather rare. The chemical reaction is the confirmatory character in all the states.

145. *L. nitida*, (Schaër.) olivaceo-fuscous, crustaceous, nigro-limitate, areolato-diffract, areole shining, flat and dispersed in some states, concave, margins upturned, whitish and sub-pulverulent, (K—C—); hypothallus black, often predominating; apothecia black, at first innate in the areole, eventually superficial and sessile, plane, solitary or confluent, margin thin, prominent, entire or flexuose; hypothecium nigro-fuscous; spores 8, colourless, ellipsoid, simple.

On alpine and maritime rocks, not unfrequent. 1856.

**SYN:**—*L. fumosa var. nitida*, Schaër. Enum. 110. (1850.)

**FIG.:**—Hoffm. Pl. L. t. 49. fig. 2. a. b. Hepp Sporen t. 15. f. 131.

**EXS:**—Hepp 131. Anzi Anglob. 84. A. 85. Leight. 278. (status hypothallo predominante).

**GEOG. DISTRIB.:**—Europe.

**BOT. PROV.:**—7...26.


**IRELAND:**—Summit of Doughraugh Mountain! co. Galway. Mr. Darbalestier. Approaching *L. fuscoatra var. devata* in external appearance but with different reaction.

146. *L. sub-Kochiana*, Nyl. cinereous, crustaceous, thin, nigro-limitate, areolato-diffract, areole plane, (K—C—); apothecia black, numerous, scattered, innate or inattato-sessile, plane, margin thickish, sometimes slightly paler; hypothecium thick, nigro-fuscous; spores 8, colourless, ellipsoid, simple; (size of those of *L. fuscoatra*).

On sub-alpine rocks, not common. 1864.

147. L. contigua, Nyl. whitish, thin, areolato-rimose, surrounded at the circumference by a black hypothallus, (K—); apothecia black, adnate, plane, margined, concentric within; hypothecium brown; spores 8, colourless, oblong, simple; epithecium dark-bluish; paraphyses moderate; gelatina hymenea I. bluish, then vinous-reddish.

On quartzose boulders, rare. 1872.

SYN:—Nyl. in Flora 1873. p. 289—300.

148. L. scutulata, Strn. pale-cervino-fulvescent, thinnish, areolato-diffract, areolae plane or somewhat convex, (K—C—); apothecia fusco-migricant or black, rather large, innate, or sometimes slightly emersed and elevate, margin thin; hypothecium thick, fuscous-black; epithecium convex; spores 8, colourless, ellipsoid, simple, large; paraphyses slender, apices fuscescent; gelatina hymenea II. convulescent, then the middle of the hymenium vinoso-fulvescent, the upper portion remaining coeruleus.

On alpine rocks, rare. 1874.

SYN:—Stirton in Grevillea 3. p. 34. (1874.)

“Closely allied to L. pancula. (Ach.), but with different reaction and without the characteristic reddish cephalodia. Spores .024—.032 mm. long, .012—.015 mm. broad.” (Strn.)

149. L. corollidia, Strtn. pale or pallido-cinereous, somewhat thick, diffracto-areolate, somewhat plane, (K yellow then red); apothecia black, adnate, large, plane, rugose, sometimes coeso-pruinose, margin obtuse, flexuose or sinuose; spores 8, colourless, ellipsoid, simple; paraphyses pellucid, indistinct, apices fuscescent; hypothecium thick, fuscous-black; gelatina hymenea I. intense-blue.

On rocks, rare. 1875.


“Spores .015—.025 mm. long, .011 mm. broad. Beautiful acicular crystals .018—.025 mm. long, .002 mm. broad, are formed by the action of K on the thallus and subhymenial spaces. At first a clear solution of a yellow colour appears and thereafter stellate groups of these reddish crystals. Perhaps a form of L. Moricina.” (Strn.)

Thallus continuous, rimulose, plane.

† Hypothecium pale.

150. L. Taylori, (Salw.) creamy or brownish-white, tartaceous, thickish, effuse, smooth, rimuloso-diffract, (K deep yellow C—);
apothecia fusco-rufescent, immersed or superficial, numerous, scattered, plane or plano-convex, margin thin, entire or immarginate; hypothecium pale-yellowish-brown, prolonged downwards into the thallus; spores 8, colourless, elliptical, or elongato-elliptical, large, simple, granulate; paraphyses distinct, somewhat conglutinate, apices fuscescent.

On mountain rocks, not common. 1814.


FIG.—E. Bot. 2580.


GEOG. DISTRIBUT.—France, Italy.

BOT. PROV.—1, 5, 6, 7...19...26.


"Spores .0025—.003 in. long, by .001 in. broad." (Mudd.) "Spores .018—.22 mm. long, .008—.010 mm. broad." (Nyl.) Spores .015—.019 mm. long, .0065—.007 mm. broad, frequently filled with sphaerical globules or granules. Spermogonia numerous, scattered, brownish, immersed. Spermatisa cylindrical, exceedingly slender and delicate, variously curved. Gelatina hymenea I blush, then fuscescent. Excipulum lateral, brown externally.

151. L. leioteca, Nyl. fuscosus or griseo-nigricant, thin, varnished, smooth, determinate, continuous, obsoletely rimulose; apothecia black, plane, obtusely margined or margin indistinct, adnate; hypothecium colourless; spores 8, colourless, ellipsoideo-oblong, simple; paraphyses moderate, thicker at the fuscescent apices and there generally septato-articulate; gelatina hymenea slightly cærulescent.

On sub-alpine basaltic rocks, rare. 1867.


GEOG. DISTRIBUT.—Europe.

BOT. PROV.—7...19.

IRELAND.—Cregham! Killarney. Mr. Carroll. (1867.)

WALES.—Trefriw falls!

"Spores .008—.011 mm. long, .006—.007 mm. broad. Spermatia ellipsoideo-oblong, .004 mm. long, .0015 mm. broad." (Nyl.) Spores .012 mm. long, .006 mm. broad. Asci linear, spores in single series.

152. L. ænea, (Duf.) cervino-fuscescent, somewhat shining, rimoso-areolate or verrucoso-areolate, (K yellow C——); apothecia fuscosus-black, adnate, internally whitish, often rimulose; spores 8, colourless, oblongo-ellipsoid, simple; hypothecium colourless; paraphyses coherent, apices fuscescent or fuliginous.

On quartzose boulders, rare. 1872.


EXS.—Anzi Langob. 111.

GEOG. DISTRIBUT.—Pyrenees, Sweden, Norway.

BOT. PROV.—15.

SCOTLAND.—Near summit of Morrone, Braemar. Rev. J. M. Crombie. (1872.)
"Spores .015—18 mm. long, .005—7 mm. broad. Somewhat like L. badia."
(Nyl.) "Spores .010—15 mm. long, .005—6 mm. broad. Spermatia long, acicular, curved."
(T. M. Fries.)

153. **L. semipallens**, Nyl. dirty- whitish, or albido- glaucous, thin, rimulose; apothecia vivid or in part pallescent, convex, immarginate, internally colourless; epithecium and hypothecium colourless; spores 8, colourless, shortly ellipsoid, minute, simple; paraphyses indistinct; gelatina hymenea I vinoso-fulvo- rubescens.

On quartzose rocks, rare. 1876.

SYN.: —Nyl. in Flora 1876. p. 234.
IRELAND:—Lough Inagh, Kylemore river, Connemara. Mr. Larbalestier. (1876.)

"Spores .006—9 mm. long, .0035—.0045 mm. broad." (Nyl.)

154. **L. confusior**, Nyl. dark-greyish, rimoso-areolate, indeterminate; apothecia black, convex, immarginate, when young plane, obsolesly margined, white within; spores 8, colourless, ellipsoid or oblong, simple; paraphyses thickish, not very well discrete, blackish at the apices; hypothecium colourless; gelatina hymenea I intensely bluish and then vinous-red.

On micaceous rocks, in alpine places. 1874.

BOT. PROV.: —15.
SCOTLAND:—Craig Tulloch, Blair Athole. Rev. J. M. Crombie. (1874.)

"Allied to L. confusa**, Nyl. but differing in character of thallus and spores. Spores 0.010—17 mm. long, 0.004—6 mm. broad." (Nyl.)

155. **L. restricta**, Strtn. nigro- cinereous, rugose, thin; apothecia black, adnate, small, plane, obtusely margined; spores 8, colourless, ellipsoid, binucleate, simple; thece saccate; paraphyses distinct, filiform, thick; epithecium fusescent, rosy-purple with nitric acid; hypothecium colourless; gelatina hymenea I blue then fulvescent, especially the thece.

On rocks, rare. 1875.

BOT. PROV.: —15.
SCOTLAND:—Blair Athole. Dr. Stirton. (1875.)

"Spores .013—.017 mm. long, .008—.01 mm. broad." (Strtn.)

156. **L. Breadalbanensis**, Strtn. black or fuscescent-black, thin, somewhat rugulose; apothecia black or fuscescent-black, small, convex, rugose, immarginate, often conglomerate, internally pale or rather pallido-rufescent; spores 4—8, colourless, ellipsoid, simple, with a double epispore; paraphyses indistinct, conglutinate, apices rufus-fuscescent; hypothecium pale, or in a thin section under a lens rufous; gelatina hymenea I intense-blue.

On mosses and jungermanniae, rare. 1875.

SYN.:—Stirton in Trans. Glasgow Soc. Nat. p. 87. (1875.)
BOT. PROV.: —15.
SCOTLAND:—Ben Lawers. Dr. Stirton. (1875.)

"Spores .016—.022 (rarely .025) mm. long, .011—.014 mm. broad. Allied to L. Tornocensis, Nyl. K reveals the paraphyses as slender, somewhat irregular threads." (Strtn.)

157. **L. Henrica**, Larbal. white, tartareous, thin, continuous smooth, slightly rimulose, (K yellow C yellow); apothecia pale
yellow-carnaceous, scattered, sessile, somewhat plane, with obtuse or obsolete margin, or convex, subimmarginate, (K—); hypothecium colourless, lateral excipulum pale, slightly dusky externally; paraphyses distinct, thick, apices colourless; spores 4—6 or 8, colourless, oblong or ellipsoid or fusiform-ellipsoid, simple, small; gela-
tina hymenca I blue then fulvescent.

On rocks in mountain streams, very rare. 1877.

SYN. — Nyl. in Flora 1877. p. 563.

BOT. PROV. — 28.

IRLAND. — Near Kylemore! co. Galway. Mr. Larbalestier. (1877.)

"Spores .015—.29 mm. long, .006—7 mm. broad. Spermatia arcuate .018—
22 mm. long, .0005 mm. broad." (Nyl.) Spores .01—.011 mm. long, .005 mm.
broad.

† † Hypothecium dark.

158. L. contigua, Fr. greyish-white or even creamy, tartareous or thin, contiguous or areolate, areolate plane, smooth or rugose, hypothallus black; apothecia arising from the thallus, sessile, plane or convex, roughish, margin thick, prominent and obtuse; hypotheca-

um thick, blackish-brown; thalamium white; spores 8, colourless,
oblong, large, simple.

forma limitata, Leight. bluish-grey, thin, contiguous, smooth, or

limited by black hypothallus; apothecia moderate, sessile, plane or

plano-convex, with pale or blackish-brown pruina.

On rocks, common.

SYN. — L. contigua, a, a. Fries L. Eur. 298. in part (1831.) excl. syn.

EXS. — Leight. 155. Nyl. Pyr. Or. 44.

GEOG. DISTRIB. — Europe, Eastern Pyrenees.

BOT. PROV. — 1, 2, 3,...5,...7,...10,...18, 19,...31.

ENGLAND. — Sussex! Mr. Borrer. Fairlight, Hastings; Leith Hill; Mon-

mouth. Mr. W. Joshua. Lanthrough-rigg! Cockshaw near Ayton! Yorkshire.

Mr. Mudd. Tors of Dartmoor; Exeter; Dartmouth, Devon. Mr. Parfit.

Tiptree Heath, Essex. Mr. Varene. Plymouth. Mr. Holmes. Abdon Burf!

Hapchmond Hill! Soundley Quarries! near Hope Bowdler! Shropshire;

Wapley Hill! Herefordshire.

SCOTLAND. — Garrynahine, Lewis; Stennis, Orkney. Dr. Lindsay.

IRELAND. — Near Cork! Mr. Carroll.

WALES. — Penmaen-Mawr! Carnarvonshire; between Corwen and Bala!

Llyn-y-Cae! Cader Idris.

CHANNEL ISLANDS. — Common on all the Islands. Mr. Larbalestier.

"Spores .016—25 long, .008—.012 mm. broad." (Nyl.) "Spores .004—

.00425 in. long, by .0015—.002 in. broad. Spermatia straight, cylindrical." (Mudd.) Spores .022—.0235 mm. long, .011—.012 mm. broad.

forma platycarpa, Fr. greyish-white, diffuse, thin, at length evanescent; apothecia very large, flat and expanded; margin paler.

On rocks, common.


FIG. — Massal. Ric. fig. 125. Ach. L. U. t. 2. f. 5.


GEOG. DISTRIB. — Germany, Pyrenees, Switzerland, E. Lapland, Italy,

Hungary, France, N. Zealand.

BOT. PROV. — 5,...7,...10,...15,...(19—30),...26.

ENGLAND. — Ludlow. Mr. Joshua. Haughmond Hill! Abdon Burf! Long

Mynd! Shropshire.


Mr. Larbalestier
Wales: — Aberdovey! Rev. A. Bloxam. Pen-y-gwyr! Snowdon; Eglwyseg rocks! near Islangollen; Crib Coch! Nant-Gwynant! Snowdon; Barmouth! Moel-y-Golfa! Drwsynant! Aran Mowddy! Cwm Ffynnnon Llugwy! Geu Craig! Cader Idris. Moel-y-gest! "Spores .018—.23 mm. long, .006—.012 mm. broad." (Nyl.) Spores .016—.024 mm. long, .010—.013 mm. broad.

forma sterisa, Ach. similar generally to platycarpa but with convex apothecia.

On rocks, common.

Bot. DISTRIB: — Sweden, E. Pyrenees, Italy, Switzerland, Hungary.

ENGLAND: — Ayton! Mr. Mudd.
SCOTLAND: — Amulree! Perthshire. Dr. Lindsay.
IRELAND: — Kylemore! Mr. Larbalestier.

Wales: — Barmouth! Aran Mowddy! Eglwyseg rocks! "Spores .020—.22 mm. long, .007—.08 mm. broad." (Nyl.) Spores .019 mm. long, .0105 mm. broad.

forma hydrophila, Fr. milky or cinerascent, very thin, smooth, continuous or rimose or dispersed; apothecia tumid and convex, naked.

On water-washed rocks, frequent.

SYN: — Fries L. Eur. 301. (1831.)
Bot. DISTRIB: — Sweden.
Bot. Prov. — 7...10...15...26.


Wales: — Nant Gwynant! Aran Mowddwy! Moel-y-gest!
Spores .019—.025 mm. long, .008—.0095 mm. broad.

forma leposra, Leight. dirty-pale-brown, scurfy or leprose, in round patches, thin, minutely verrucose; apothecia small, sub-concentric, sub-immersed, plane or convex, margin paler.

On crumbly soft rocks and stones, common.

EKS: — Leight. 156.
Bot. Prov. — 1, 2, 3...5...8...10...19.


IRELAND: — Leight. 156.

Wales: — Nant Gwynant! Aran Mowddwy! Moel-y-gest!
Spores .0165—.019 mm. long, .0085 mm. broad.

forma calcarea, Fr. creamy-white, tartaraceous, contiguous, smooth or rimulose or areolate, areole slightly convex; apothecia rather small, appressed, plane or plano-convex.

On rocks, not unfrequent.

Bot. DISTRIB: — Switzerland, Pyrenees, Italy, E. Lapland, Lombardy, Madeira.
Bot. Prov. — 7...10...19.

ENGLAND: — Banks of Tees near Middleton. Mr. Robertson.
IRELAND: — Ballyoran Wood, Fermoy! near Cork! Mr. Carroll.

Wales: — Cwm Idwal! Aran Mowddwy! Manorbeer! Cwm Ffynnnon Llugwy!
Llyn Aran! Cwm Clyd! Cwm Cywion! Crib Coch! Cwm Glas!
Spores .02 mm. long, .01 mm. broad.
formae nobilis. Fr. pale-ashy-bluish-grey, very thick and tartareous, areolate, areolæ turgid and convex; apothecia large, more or less convex and hemispherical, slightly pruinose, margin frequently paler.

On mountain rocks, frequent.

SYN:—Fries. Eur. 301. (1831.)
EXS:—Mudd 180. Arn. 192. Fellm. 185. Leight. 337.
GEOG. DISTRIB:—Pyrenees, Italy, E. Lapland, Norway.
BOT. PROV:—6...7...10...14.


SCOTLAND:—Pentland Hills! Dr. Grenville.
WALES:—Aber! Diganwy! Carnarvonshire; Craig Breidden! Montgomeryshire; between Llangollen and Corwen! Moel Siabod! Snowdon! Barnmouth! Aran Mowddwy! Cwm Ffynnon Llugwy! Cader Idris!

Spores .019 mm. long, .015 mm. broad.

formae Hoffmanni, Leight. dirty-cream-colour, thick, tartareous, rimuloso-areolato-diffract, areolæ flattish; apothecia large, sub-innate or sessile, flat or convex.

On rocks rare.

SYN:—Verrucaria contigua. Hoffm. Fl. Germ. 2. 184. (1798.)
Fig:—Hoffm. Pl. Liech. t. 62.
GEOG. DISTRIB:—Europe.
BOT. PROV:—2...7...19.

ENGLAND:—Sussex! Mr. Borrer.
IRELAND:—Musharagh Mount! co. Cork. Mr. Carroll.
WALES:—Owm Idwal!
Spores .02 mm. long, .011 mm. broad.

formae flavicunda, Ach. rusty-red, thick, tartareous, areolæ flat; apothecia large, appressed, black, flat or plano-convex, more or less albo-pruinose.

On rocks frequent.

Fig:—Mass. Ric. fig. 143.
GEOG. DISTRIB:—Italy, Pyrenees, Tyrol, Switzerland, Sweden, Finland.
BOT. PROV:—5...7...15...26.


SCOTLAND:—Loch-na-gar! Braemar; Anmulree! Perthshire. Dr. Lindsay.
IRELAND:—Doughruagh Mountain! co. Galway. Erriff River! Mr. Lavaletier.

"Spores .015—21 mm. long, .008—.011 mm. broad." (Nyl.) Spores .0215—.023 mm. long, .0115—.012 mm. broad.

formae aggerata, Mudd. greyish-brown or grey, effuse, thin, sub-tartareous, granuloso-rimoso-areolata; apothecia minute, numerous, aggregated, convex, immarginate; hypothecium black; spores 8, colourless, oblong, simple.

On rocks and walls, rare.

SYN:—Mudd Man. 208. (1861.)
EXS:—Mudd 175.
GEOG. DISTRIB:—Europe.
BOT. PROV:—3...7.10.
THE LICHEN-FLORA

ENGLAND:—Lanbraugh-rigg and near Battersby! Cleveland. Mr. Mudd. (1861.) Kelvedon, Essex. Mr. Varenne.

WALES:—Cwm Glas! Snowdon.

forma notabilis. Nyl. white or whitish, unequally minutely granulose or nearly leprose, sometimes dispersed, sometimes acervulate and then with an aspect almost of Stereocaulon condensatum; apothecia somewhat prominent, plane (trachyloid), opaque, the margin scarcely distinct.

On rocks, rare.


BOT. PROV:—15.


"Spores .018—.21 mm. long, .008—.010 mm. broad." (Nyl.)

forma umbonata, Leight. cinerascent, thin, effuse; apothecia large and prominent as in f. platycarpa, plane or convex, centrally umbonate, margin thin, prominent, flexuose.

On subalpine rocks, frequent. 1864.

BOT. PROV:—5...7.

ENGLAND:—Brown Clee Hill! Shropshire. (1854.)

WALES:—Aberdovey! Rev. A. Bloxam. Moel Siabod! Moel-y-Golfa!

Spores .0215 mm. long, .011 mm. broad.

forma meiospora. Nyl. cinerascent, thin, areolato-rimulose; apothecia black, moderate, plane, marginate, slightly glauco-pruinose; hypothecium smaller; spores smaller.

On subalpine rocks, not common. 1870.

SYN:—Nyl. L. Scand. 225.

BOT. PROV:—7...26.

GEOG. DISTRIBUTION:—Finland, Bavaria, Pyrenees, N. Zealand.

IRELAND:—Delphi, Killery Bay, Connemara. Mr. Larbalestier.

WALES:—Crib Coch! Snowdon. (1870.)

"Spores .011—.16 mm. long, .006—.08 mm. broad." (Nyl.) Spores .015—.17 mm. long, .001 mm. broad.

forma pustulata, Leight. yellowish-grey; areolato-rimulose, nigricanti-limitate, areole plane with a central sorediate protuberance, some of which are enlarged into orbicular hemispherical subdepressed tubercules in which are imbedded a conglomeration of minute marginate black apothecia.

On subalpine rocks, rare. 1866.

BOT. PROV:—7.

WALES:—Cader Idris! (1866.)

Spores .02 mm. long, .01 mm. broad.

159. L. alumnula, Nyl. white, thin, in sublobatulate insular patches (K—); apothecia black, subininate, plane, marginate, and often umbonate in the centre, internally concolorous; paraphyses indistinct, apices fusco-nigricant; hypothecium and excipulum fusco-nigricant; spores 8, colourless, ellipsoid, simple.

Best developed on the thallus of Lecidea contigua on rocks, rare. 1876.

SYN:—Nyl. in Flora 1876. p. 574.

BOT. PROV:—26.

IRELAND:—Near Letterfrack, Connemara. Mr. Larbalestier. (1876.)

"Spores .009—.012 mm. long, .005—.06 mm. broad. Gelatina hymenea I blue then the thece subvinous." (Nyl.)
160. *L. tenebrans*, Nyl. leaden-greyish or dark-leaden-coloured, smoothish, continuous, rimulose (medulla I partly bluish); apothecia black, large, scattered or aggregate, plane or subconvex, margin thin, prominent, eventually obliterated; hypothecium thick, black; spores 8, colourless, ellipsoidal, simple, large; gelatina hymenae and thecae I persistently intense-blue.

On subalpine micaceous schistose rocks, rare. 1876.

**Syn:**—Nyl. in *Flora* 1876. p. 309.  
**Ireland:**—Genevebal! and summit of Doughnagh Mountain (1800 feet) Galway. Mr. Larbalestier. (1876.)

161. *L. albo-caerulescens* (Wulf.) glauceous or creamy-white, opake, continuous, smooth, (K—C—); apothecia closely appressed, plane, cæsio-pruinose, margin thinnish, entire, more or less flexuose; hypothecium thickish, dark-brown-black; spores 8, colourless, narrowly oblongo-elliptical, simple, large.

On rocks in mountainous districts, not common.

**Fig:**—Hoffm. Pl. Lich. t. 14. f. 2.  
**Exs:**—Zw. 129. B. Anzi It. S. 282.  
**Geog. Distrib:**—Germany, Italy, Pyrenees, Hungary, Austria, Switzerland.  
**Bot. Prov:**—1...3...7...10...26.  
**Ireland:**—Kylemore! Mr. Larbalestier.  
**Wales:**—Tanybwlch wood, Capel Curig!

Not to be confounded with *L. cyanæa*, (Flik.) which is similar in external appearance, but has the apotheca white within and the epithecium when wetted becomes pallido-rufescens. The hypothecium is sometimes interrupted, sometimes continuous and variable in thickness. The size of the spores incline one to consider that it may be a variety of *L. contigua*.

"Spores .022—.028 mm. long .010—12 mm. broad." (Nyl.) "Spores .016—.25 mm. long .007—10 mm. broad." (T. M. Fries.) Spores .02—.0245 mm. long, .008—.09 mm. broad.

**Var. alpina,** Scher. apothecia large, elevated, sessile, plane or tumid, cæsio-pruinose, margin thick, prominent, flexuose; spores as in the type.

On rocks, rare.

**Syn:**—Scher. Enum. 119. (1850.) Spic. 143. Mudd Man. 211.  
**Exs:**—Zw. 129. A. Scher. 185. Anzi It. S. 283.  
**Geog. Distrib:**—Switzerland, Germany, Italy.  
**Bot. Prov.:**—31.  
**Channel Islands:**—Rozel, Jersey. Mr. Larbalestier.

162. *L. confluentes*, (Webr.) dull-smoky-grey, tartareous, continuous or areolato-rimulose, smooth or slightly rugulose, effuse or sub-determinate, (K—C—); hypothallus black; apothecia numerous, crowded or scattered, large, confluent, appressed or adnate, margin thin, slightly prominent, flexuose; disk plane, in age convex, of full-opake-black, very smooth, soft and velvety; hypothecium dense, nigro-fuscous; thalamium pale; spores 8, colourless, ellipsoidal, simple, small, half the size of those of *L. contigua*.

On mountain rocks, not frequent.

"Spores .007—9 mm. long, .005—7 mm. broad. Spermogonia commonly ellipsoid, oblong or variously liriiform, with a narrow nigricaut rima. Spermatic acidelliform, straight or slightly curved .007—12 mm. long." (T. M. Fries.)

forma lavigata, Leight. thallus smooth, continuous, rimulose; apothecia large, appressed, almost innate, simple, confluent by juxtaposition, margin thin, prominent, entire or flexuose, paler than the epithecium.

On mountains or subalpine rocks, not frequent.

Fig:—Web. Spic. t. 2. Hepp. Spores t. 15, f. 125.

GEOG. DISTR.:—Switzerland, Hungary, Pyrenees, Italy.

Bot. Prov:—1, 2, 3, 15.


Spores .01—.0115 mm. long, .0055 mm. broad.

forma rimoso-areolata, Leight. thallus coarsely-rimoso-areolate; apothecia and spores as in f. lavigata.

On subalpine rocks, not frequent. 1871.

Fig:—Hoffm. Pl. Lich. t. xix. f. 1 (excl. a. b. c. d.)

GEOG. DISTR.:—Switzerland.

Bot. Prov:—7.

WALES:—Cwm Tryfaen! Cwm Cywion! (1871.) Pen-y-rhiw! near Fishguard, Pembrokeshire.

forma complicata, Leight. thallus minutely rimulose; apothecia very large, adnate, complicate or compound by excessive lateral pressure or confluence of many apothecia so as to render the epithecium reticulate by the prominent thin margins.

On subalpine rocks, not frequent. 1871.

Fig:—Hoffm. Pl. Lich. t. xix. f. 1 a. b. c.

Exs.—M. & N. 463, upper specimen.

Bot. Prov:—7.

WALES:—Glyder Vach! Cwm Idwal! Cwm Cywion! (1871.)

Spores .0115 mm. long, .0055 mm. broad.

forma steriza, Leight. thallus evanescent, apothecia sessile.

On subalpine rocks, not frequent. 1851.

Exs.:—Scher. 228.

Bot. Prov:—7.

WALES:—Craig Breidden! Crib Coch! Snowdon. Diganwy! near Conway.

(1851.)

Spores .0115 mm. long, .0055 mm. broad.

forma minor, Hoffm. thallus rimulose; apothecia half the size of the type, plane or convex, more or less confluent.

On subalpine rocks, not frequent. 1871.

Syn:—Hoffm. Pl. Lich. vol. 1, 58. (1790.)

Fig:—Hoffm. L. c. t. xix. f. 1 d.

Bot. Prov:—7.

WALES:—Aberdovey! Rev. A. Bloxam. Aran Mowddwy! Cwm Bochlwyd!

(1871.)

Spores .011—.012 mm. long, .004—.005 mm. broad.

forma oxydata, Leight. thallus ferrugineo-ochraceous.

On subalpine rocks, rare. 1875.
163. *L. sorediosa*, Nyl. *cinerascens*, smooth, areolato-rimulose, sprinkled with small rotundate plane soredia, nigricanti-limitate, (K—C—); hypothallus nigricant; apothecia black, plane, margined; epithecium *cesio-pruinose*; spores 8, large, colourless, fusiformi-ellipsoid; epithecium fuscescent; paraphyses moderate or thickish; hypothecium fuscos-black; gelatina hymenea I blue, even the theca.

On rocks not common.


**Fig.**—Mass. *Ric.* p. 140.

**Exs.**—Mudd 181.

**Geog. Distr.**—Sweden, Norway, Finland, E. Pyrenees.


**England.**—Leathraughrigg! Cleveland, Yorkshire, Mr. Mudd.

**Ireland.**—Glencorbot! near Kylemore. Mr. Larbalester.

"Spores .016—22 mm. long. .007—9 mm. broad; in Mudd’s specimen .016—23 mm. long. .008—9 mm. broad. Like *L. contigua*, but differing in the sorediate thallus, thicker paraphyses, and different reaction with I." (Nyl.) "Spores .014—21 mm. long. .006—12 mm. broad." (T. M. Fries.) "Spores .0035 in. long. .00125 in. broad." (Mudd.) Spores .018 mm. long. .011 mm. broad.

164. *L. consentiens*, Nyl. *whitish*, continuous, moderate, smoothish, rimoso-diffract, (K—C—); cephalodia pale; apothecia black, innato-impressed, plane, obtusely margined; hypothecium thin, blackish; spores 8, colourless, ellipsoid, simple, large; paraphyses slender; epithecium fuscescent; gelatina hymenea carulescent then fulvescent with iodine.

On alpine rocks, rare. 1866.

Not unlike some state of *Lecanora cinerea*, (L).


**Geog. Distr.**—Europe.

**Bot. Prov.**—8, 6, 7…15.

**England.**—Spout Valley! Longmynd near Church Stretton, Shropshire.

**Scotland.**—Ben Lawers. *Adm. Jones.*


"Spores .026—38 mm. long. .015—22 mm. broad." (T. M. Fries.) "Spores .027—38 mm. long. .016—22 mm. broad." (Nyl.) Spores .026 mm. long. .016 mm. broad.

165. *L. umbonella*, Nyl. *whitish or pale-yellow*, thin, determinate, in orbicular irregular patches, rimoso-diffract, smooth, (K yellow then red); apothecia black, small, innate, marginate, generally subgyrose or umbonate in the centre; hypothecium fuscos or fuscescent (the umbo and peritheciun fusco-nigricant, as seen in a thin section); epithecium nearly colourless; spores 8, colourless, ellipsoid, simple; paraphyses moderate; gelatina hymenea bright-blue with iodine.

On micaceo-schistose alpine rocks, rare. 1866.

**Syn.**—Nyl. in *Flora 1866.* p. 372. Crombie *En.* 85.

**Geog. Distr.**—Europe.

**Bot. Prov.**—7…15.
166. *L. melaphana*, Nyl. nigricant, thin, opake, *díffracto-un*—equal; apothecia black, smallish, convex, immarginate, *dusky within*; *hypothecium* *slightly infuscate in lower portion*; *epithecium* *caeruleuscent*; spores 8, colourless, oblong, simple; *thalamium* caeruleuscent upwards; paraphyses indistinct; gelatina *hymenea caeruleuscent*, then partly violet with iodine.

On calcareous mountain rocks, rare. 1869.

**SYN.**—*Nyl.* in Flora 1869. p. 83. Crombie En. 84.


Naturally near *L. aphanoïdes*, but distinct by the black thallus, the infuscate *hypothecium*, &c. approaching *L. paraphana*, Nyl. Spores .011—13 mm. long, .0045—.0055 mm. broad. *(NyL.)*

167. *L. interjecta*, Nyl. *whitish* or *cinerascent*, unequal, thin; *rimoso-díffract*, indeterminate (C red); apothecia black, moderate, plane, margined, *dusky within*; *hypothecium fuscous*; *epithecium* nearly colourless or slightly lutescenti-fuscescent or dusky; paraphyses slender, not well distinct; spores 8, colourless, ellipsoid, simple; gelatina *hymenea caeruleuscent*, then vinous-red with iodine.

On sandstone rocks in sub-alpine places, rare. 1866.

**SYN.**—*Nyl.* in Flora 1866. p. 418; Lapp. Or. 177. Crombie En. 81.


Spores .010—12 mm. long, .006—.007 mm. broad. *(NyL.)*

168. *L. nitescens*, Leight. white, thin, *continuous*; minutely and irregularly *rimulose*, effuse, indeterminate, (K yellow, C yellow), often overspread, more or less, with a dark-brown alga; apothecia numerous, small, planoconvex, polished and shining, immarginate; *hypothecium* very thick, black; paraphyses distinct, but conglutinate, apices pale; spores 8, colourless, oblong or linear-oblong, simple, moderate in size; gelatina *hymenea I. fulvescent*.

On rocks. 1875.

**SYN.**—Leight. in Grevillea 4. 79. (1875).

**Bot. Prov.**—Salrock Road! Connemara. Mr. Labbalestier. (1875).

Spores .017 mm. long, .0055 mm. broad.

169. *L. subumbonata*, Nyl. white, *subopake*, thin, unequal, (K—C—); apothecia black, opake, somewhat plane, *umbonate in the centre*, margined, internally concolorous; *hypothecium* thick, nigro-fuscous; spores 8, colourless, oblongo-ellipsoid, simple; paraphyses distinct, apices fuscous; gelatina *hymenea I. blue*, afterwards the thece vinoso-fulvo-rubescent.

On micacceo-schistose rocks, rare. 1876.

**SYN.**—*Nyl.* in Flora 1876. p. 236.

Ireland:—Near Letterfrack! Connemara. Mr. Larbalestier. (1876).

"Belongs to the section of L. furana, Scher. Spores .016—22 mm. long, .007—9 mm. broad. Spermatia cylindrical or absolutely fusiform-cylindrical .004—7 mm. long, .0008 mm. broad." (Nyl.) Spores .0175 mm. long, .009 mm. broad.

170. L. contortula, Stirto. pale-cinerascent, or somewhat plumbeocinerascent, thickish, rugulose, rimoso-areolate, (K—C—); apothecia black, adnate, rather large, plane or somewhat convex, with a thick margin, umbonate or gyroso-plicate; hypothecium fuscous-black, fuscous upwards; paraphyses moderate, distinct, fusco-apiculate; spores 8, colourless, oblong or fusiform-oblong, simple.

On rocks, rare. 1876.

Syn:—Stirton in Scottish Naturalist 4. 167. (1877).
Bot. Prov. :—16.
Scotland:—Near Salen, in Mull. Dr. Stirton. (1876).

"Nearly allied, if not identical with L. subumbonata, Nyl. Flora 1876. p. 236. Spores .015—.021 mm. long, .006—.0075 mm. broad. Gelatina hymenea I blue then vinous-red, especially the asci." (Stirto.)

171. L. spodoplaca, Nyl. cinereous or ochraceous-brown or leaden-ochraceous, thin, smooth, rimulose or rimoso-diffract; apothecia black, plane, prominent, margined, concolorous within; epithecium and hypothecium brown; spores 8, colourless, oblong, simple; paraphyses indistinct; gelatina hymenea I bluish, then vinous-red.

On siliceous rocks in a stream with L. lacustris, very rare. 1876.

Syn:—Nyl. in Flora 1877. p. 567. L. batiola, Nyl. in Flora 1876. p. 308.
Ireland:—Glencorbot, Galway. Mr. Larbalestier.

"Spores .008—9 mm. long, .002—3 mm. broad." (Nyl.)

172. L. indigula, Nyl. white, thin, continuous, rugulose, (K—C—); apothecia nigricant, somewhat prominent, plane, margined, internally concolorous; hypothecium thick, nigro-fuscos, excipulum thin, colourless; paraphyses slender, distinct, apices colourless; spores 8, colourless, ellipsoid or oblong, simple.

On micaceous-chistose stone walls; very rare. 1877.

Syn:—Nyl. in Flora 1877. p. 563.
Ireland:—Glencorbot! Galway. Mr. Larbalestier. (1877).

I describe the hypothecium as I saw it in the only specimen, but Nylander l. c. says "hypothecium rufescent parte superra subhymenial crassë nigrescente. Gelatina hymenea I pale-blue then vinous-red. Spores .013—16 mm. long, .006—7 mm. broad." (Nyl.) Spores .017 mm. long, .008 mm. broad.

******** Thallus evanescent.

† Hypothecium pale.

173. L. mutabilis, Fec. evanescent; apothecia rufo-fuscoscent, small, scattered, sessile, plane, margin thin, entire; hypothecium colourless; spores 8, colourless, rotundo-oblong, simple, large.

On trees, Myrica Gale, rare. 1851.
174. L. gelatinosa, (Flk.) ærugino愈加, leproso-gelatinous, evanescent; apothecia black, appressed, plane, immarginate, scattered, moderate, pale-brown within; hypothecium concolorous with the hymenium, lutescent; spores 8, colourless, ellipsoid, simple; paraphyses indistinct; gelatina hymenea not coloured by iodine.

On earth in sub-alpine places, not common.

175. L. perobscura, Nyl. black, subopake, thin, or very thin, effuse; apothecia concolorous, or brownish-black, slightly convex, immarginate, gregious within; spores 8, colourless, ellipsoid, small; paraphyses not discrete; epithecium brownish-inspersed; hypothecium colourless; gelatina hymenea I bluish.

On old fir pales, rare. 1873.

176. L. subnervalis, Strn. white, hypophloeodal, very thin; apothecia pale-yellow, then bluish-black, ultimately fusco-nigricant, small and convex, pellucid within; hypothecium colourless; spores 8, colourless, oblong, simple, moderate; paraphyses conglutinate; gelatina hymenea I ceareulous, then violet or vinoso-violet.

On old putrid woods, rare. 1874.

177. L. arridens, Nyl. white, very thin, plane, effuse, dispersed and evanescent, (K—C—); apothecia bright-fleshy-rose-colour, plane, immarginate, often with a white irregular spurious thalline margin;
hypothecium colourless; hymenium colourless, I. dirty-lutescent; paraphyses distinct, apices colourless; spores 8, colourless, ellipsoid, simple.

On stones, rare. 1876.

SYN.—Nyl. in Flora 1876. p. 573.

BOT. PROV.—26.

IRELAND.—Delphi! Connemara. Mr. Larбалестиер. (1876.)

“Somewhat generally similar in character to L. coarctata. Spores .014—.018 mm. long, .007—.010 mm. broad. Iodo gelatina hymenialis vinose fulvoretuscent.” (Nyl.) Spores .019 mm. long, .009 mm. broad.

178. L. grumosa, Leight. evanescent; apothecia rufo-fuscescent, minute, scattered, adnato-sessile, plano-convex, the slight margin soon obliterated; hypothecium colourless; hymenium yellow, grumous; paraphyses altogether indistinct, apices colourless; spores 8, in lineari-obovate asci, colourless, oblong, simple, filled with very minute spherical granules.

On pine bark, rare. 1877.

SYN.—Leight. in Linn. Trans. 2d. ser. 1. 242.

Fig.—Linn. Trans. 1. c. t. 33. f. 7. 8. 9.

BOT. PROV.—26.

IRELAND.—Ballinafinch! Glendalough! Galway. Mr. Larбалестиер. (1876.)

“Gelatina hymenae I blue, then fulvescent. Spores .013—.015 mm. long, .007—.009 mm. broad.”

179. L. antiloga, Stirt. nearly evanescent; apothecia black, minute, adnate, plane, margin somewhat shining, internally obscure especially upwards; hypothecium colourless; paraphyses very indistinct, apices nigricant or virescenti-nigricant; spores 8, colourless, spherical, simple.

On decorticated wood, rare. 1877.

SYN.—Stirton in Scottish Naturalist 4. p. 164. (1877.)

BOT. PROV.—15.

SCOTLAND.—Aviemore, Elgin. Dr. Stirton. (1877.)

“Gelatina hymenae I blue then dark-violet. Spores .004—.0055 mm. broad.” (Stirt.)

†† Hypothecium dark:

180. L. diducens, Nyl. evanescent; apothecia aggregate, black, moderate, plane, margin elevated, flexuose, lobate, dark within; hypothecium fuscous, lateral excipulum horny and black; spores 8, colourless, ellipsoid or oblong, small, simple; paraphyses thick, distinct, with black clavate apices; gelatina hymenae caeruleoscent with iodine.

On felspathic rocks, rare.


EXS.—Larbal. 39.

GEOG. DISTRIBUTION.—Europe.

BOT. PROV.—26...31.

IRELAND.—Dawros Bridge! co. Galway. Mr. Larбалестиер.

CHANNEL ISLANDS.—Noirmont! Le Fret Common! Jersey. Mr. Larбалестиер.

Spores .008—.009 mm. long, .0035—.0045 mm. broad. (Nyl.) Spores .008—.009 mm. long, .0044 mm. broad.

181. L. obsoleta, Nyl. evanescent; apothecia black, minute, opake, margin obtuse or indistinct, concolorous within; hypothecium
darkly-fuscescent; epithecium diluto-nigrescent; spores 8, colourless, oblong, simple or with an obsolete septum; paraphyses moderate, distinct, apices sub-clavato-incrassate, nearly colourless; gelatina hymenea scarcely tinged with iodine.

On chalky earth, rare. 1865.

Geoq. Distrib:—Europe.
Bot. Prov:—?

Systematically near L. neglecta, Nyl. Spores .009—.011 mm. long, .003 mm. broad. (Nyl.)

182. L. jurana, Schäer. white, tartarea-farinose, unequally disperso-granulose or evanescent; apotheca superficial, sessile, scattered or aggregate, black, at first concave, then plane, margin thick, prominent, flexuose, internally black; hypothecium and epithecium black; thalamium hyaline; spores 8, colourless, ellipsoid, simple; paraphyses distinct; gelatina hymenea blue with iodine.

On calcareous rocks, not common. 1869.

Geoq. Distrib:—Lombardy, Hungary, Germany, Sweden, Norway, Pyrenees.
Bot. Prov:—5, 6, 7...15.

England:—Llanymynech Hill! Shropshire.
Wales:—Llyn Aran! Llyn-y-Cae! Cader Idris. (1869.) Crib Coch! Snowdon.

Cwm Cywion! Cwm Idwal! Tanybwlch wood, Capel Curig! Aran Mowddwy! North Cliff, Tenby! Barmouth!
Possibly only a variety of L. contigua. "Spores .015—.018 mm. long, .010—.011 mm. broad." (Nyl.) "Spores .012—.016 mm. long, .007—.008 mm. broad." (T.M. Fries.) Spores .017 mm. long, .008—.009 mm. broad.

183. L. fusco-rubens, Nyl. cinerascent, very thin, effuse, granuloso-unequal or evanescent; hypothallus fuscos; apothecia not very numerous, scattered, sessile, fuscos-black, plano-convex, immarginate, internally fuscos; hypothecium thick, fuscos; epithecium pallido-rufescent; spores 8, colourless, ellipsoid or globoso-ellipsoid, simple.

On alpine rocks, rare.

Geoq. Distrib:—Sweden, Norway, Europe, Canaries.
Bot. Prov:—15.

Scotland:—Ben Lawers; Craig Guie; Craig Tulloch. Rev. J. M. Crombie.
"Near L. sanguineo-atra, Ach. Spores .010—.014 mm. long, .007—.009 mm. broad." (Nyl.)

184. L. calcivora, (Ehrh.) greyish-white or white, thin, effuse, evanescent; apothecia small, scattered, calcivorous, foveolato-immersed in the rock, black, cæcio-pruinose or naked, internally cinerascent in the middle; margin thin, evanescent; hypothecium fuscescent below; spores 8, colourless, elliptico-oblung, simple, granulate; paraphyses indistinct; gelatina hymenea blue then vinous-red with iodine.

On calcareous rocks, frequent. 1794.
SYN.:—Ehrh. Cr. Exs. 244. (1793.) Nyl. Prodr. 135. L. immersa, (Schrad.) Ach. Meth. 34.

Fig. 1—E. Bot. 193. Leight. Ang. Lich. t. 24. f. 5. Mudd Man. 203.


'GEOG. DISTR.:—France, Switzerland, Europe.

BOT. PROV.:—1. . . . 6. 7. 8. . . 10. 11. (19—30).


IRELAND:—Not uncommon. Mr. Carroll.

WALES:—Eglwyseg rocks! near Llangollen; Great Orme's Head! Tenby!

Externally and generally similar to, but not to be confounded with Verrucaria immersa. Leight. Ang. Lich. t. 26. F. 2. "Spores .005—.00825 in. long, by .001—.00125 in. broad." (Mudd.) "Spores .013—18 mm. long, .008—9 mm. broad." (Nyl.) "Spores .010—15 mm. long, .007—8 mm. broad." (T. M. Fries.)

Spores .011—.013 mm. long, .007 mm. broad. The apothecia, when wetted, remain of a black colour by reason of the dark hypothecium and so prevents its confusion with Lecidea Metzleri, (Körb.) and Lecanora Agaranoideas, Mass. in which the disk of the apothecia, when wetted, becomes of a translucent chestnut-brown by reason of the pale hypothecium.

185. L. Metzleri, (Körb.) greyish-white, thin, effuse, evanescent; apothecia black, innato-adnate, plane, slightly margined, at length convex, immarginate; epithecium when wetted translucent chestnut-brown, the margin darker-brown; hypothecium colourless; spores 8, colourless, broadly oblong, simple, large; paraphyses distinct, conglutinate, apices fuscos; gelatina hymenea I blue then fulvescent, these reddish.

On calcareous rocks, rare. 1872.

SYN.:—Körber Par. 162. (1865.) T. M. Fr. Scand. 478.

EXS.:—Arn. 351.

'GEOG. DISTR.:—Germany, Sweden, Norway.

BOT. PROV.:—6.

WALES:—Gibraltar Point! Tenby. (1872.) "Spores .016—.26 mm. long, .006—10 mm. broad." (T. M. Fries.) Spores .02 mm. long, .0115 mm. broad.

186. L. enclitica, Nyl. thallus nearly evanescent; apothecia black, minute, convex, immarginate, dispersed, internally obscure; epithecium nigrescent; paraphyses indistinct; hypothecium fuscos; spores 8, colourless, oblong, simple; gelatina hymenea cæruleus; then dusky-vinous with iodine.

On old fir pales in sub-alpine localities, rare. 1870.


EXS.:—Arn. 405.

'GEOG. DISTR.:—E. Lapland.

BOT. PROV.:—15.

SCOTLAND:—Pass of Killiecrankie in Blair Athole. Rev. J. M. Crombie. "Spores .008—.015 mm. long, .003—4 mm. broad." (Nyl.) "Sporogonia papilliform; spermata shortly cylindrical, slightly curved somewhat at each apex .0030—.03 mm. long." (T. M. Fries.)

187. L. depaupolar, Nyl. greyish, thin, sub-areolate, dispersed, evanescent, hypothallus black, but little conspicuous; apothecia black, small, somewhat deformed, slightly prominent, subumbonate, in the centre, concolorous within, margin obtusely turgid and sometimes subcrenate; hypothecium brownish-black; spores 8, colour-
less, ellipsoid, simple; epithecium obscurely-bluish; paraphyses moderate, bluish-green towards the apices; gelatina hymenea intensely-blue or dark-blue with iodine.

On calcareous stones. 1871.

**Syn.**—Nylander in Flora 1872, p. 361.

**Bot. Prov.**—15.

**Scotland.**—Summits of Ben-y-gloe and Cairn Gowar. Rev. J. M. Crombie. (1871.)

"Spores .009—12 mm. long, .005—7 mm. broad." (NyL.)

188. L. confederans, Nyl. thallus scarcely any visible; apothecia black, plane, obtusely margined, verrucoso-congested, (verruce composed of 20—30 or more apothecia), blackish within; hypothecium thick, brownish-black, (K purplish); spores 8, colourless, lineari-oblong, simple, minute; paraphyses moderate or thickish, clavato-incrassate and bluish-black or greenish-black at the apices.

On quartzose boulders in alpine regions, rare. 1872.

**Syn.**—Nyl in Flora 1873, p. 289—300.

**Bot. Prov.**—15.

**Scotland.**—Morrone, Braemar! Rev. J. M. Crombie. (1872.)

"A very distinct species. Spores .010—11 mm. long, .003—4 mm. broad." (NyL.) Spores .0105 mm. long, .003 mm. broad. The structure of the apothecium is very peculiar. The very thin narrow hymenium of a pale-bluish color, surmounted with a thickish violet-black epithecium, rests on a thick nigro-fuscous hypothecium, beneath which is a pale colourless stratum, and the whole included in a violet-black thickish excipulum.

189. L. phylliscocarpa, Nyl. brown, very thin or evanescent; apothecia black, phylliscoid i.e. umbilicately affixed, rosulato-compound, rotundato-diffused, large, above with the margins thin, subradiately and irregularly disposed, slightly costate and at the circumference sub-crenato-effigurate, within blackish, the hymeneal stratum whitish; spores 8, colourless, ellipsoid or oblong, simple; epithecium bluish-blackish; paraphyses thickish, bluish-black at the clavate apices; hypothecium sordidly dark; gelatina hymenea I intensely-bluish.

On quartzose stones in alpine places, rare. 1874.

**Syn.**—Nyl in Flora 1874, p. 314.

**Bot. Prov.**—15.

**Scotland.**—Summit of Morrone, Braemar. Rev. J. M. Crombie. (1874.)

"Spores 0.009—0.011 mm. long, 0.0035—0.0045 mm. broad." (NyL.)

190. L. sarcogyniza, Nyl. greyish, thin, indeterminate, opake, evanescent; apothecia black, plane, margin often flexuose, dusky within; hypothecium sub-hymeniale distinct fuscescent, its middle stratum nearly colourless, lower stratum nigricant or black; epithecium black; spores 8, colourless, oblong, simple; thalamium colourless; paraphyses moderate, distinct but coherent, nigricant-clavate at the apex; gelatina hymenea intensely-blue with I.

On mountain and marine granitic rocks, rare. 1868.

**Syn.**—Nyl. in Flora 1868, p. 475. Crombie Ed. 82.

**Exs.**—Zw. 22. Schar. 187.

**Geog. Distript.**—Switzerland.

**Bot. Prov.**—15.

**Scotland.**—Morrone; near Nigg, Kincardine; Cairn Gowar; Hill of Ardo. Rev. J. M. Crombie. (1868.)
OF GREAT BRITAIN

"Approaching L. sarcocymoides, Kbr. but differs in the colourless thalamium and other characters. Spores .007—.011 mm. long, .003 mm. broad." (Ny1)

Spores .0065—.009 mm. long, .003 mm. broad.

191. L. sarcocymoides, Kbr. evanescent; apothecia black, crowded and aggregate, closely adnate, difformi-angulate by close justa position, plane, margin thick, prominent, flexuose; hymenium narrow, bluish-grey; paraphyses thick, indistinct, conglutinate, apices nigrant; hypothecium very thick, nigro-fuscous; spores 8, colourless, lineari-ellipsoid, simple, minute.

On granitic maritime rocks, rare.

SYN:—Korber S. L. G. 252. (1855.) Par. 224.
EXS:—Korb. 47.
GEOG. DISTRIBUT:—Germany.
BOT. PROV:—31.
CHANNEL ISLANDS:—La Moye, Jersey. Mr. Larbalestier.

192. L. tephrizans, Leight. thallus nearly obliterated, only a few whitish depressed scattered areolae, (K—C—); hypothallus predominating, cinerascens; apothecia black, numerous, plane, or slightly concave, prominent, sessile, moderate, margin thickish, eventually obliterated; hypothecium nigro-fuscous, subtended by pale-greyish-blue hyaline excipulum; hymenium thin, pale-greyish-blue; paraphyses distinct, but coherent, apices nigro-fuscous; spores 8, colourless, narrowly ellipsoid, simple, minute.

On hard slaty rocks, rare. 1876.

SYN:—Linn. Trans. 2d. ser. vol. 1. p. 237.
FIG:—Linn. Trans. l. c. tab. 32. f. 3, & 4.
BOT. PROV:—6...26.
IRELAND:—Kylemore! Mr. Larbalestier.
WALES:—Llanachar Bridge! near Fishguard, Pembrokeshire. (1876.)
Spores .006—.01 mm. long, .004—.005 mm. broad. Spermatia minute shortly cylindrical, straight. Gelatina hymenea I dirty-blue.

B. Spores polari-bilocular.

193. L. polospora, Leight. white or albo-glaucus, very thin and filmy, effuse, smooth and somewhat shining, unequal or rugulose, (K—C—); apothecia black, minute, scattered, adnate, plane, with a narrow slightly prominent margin, at length plano-convex and immarginate; hypothecium nigro-fuscous; hymenium colourless; paraphyses distinct, thickish, apices globular, nigro-fuscous; spores 8, fuscous, elliptical, with a paler-fuscous roundish cell at each apex.

On old hawthorns, very rare. 1877.

SYN:—Leight. in Linn. Trans. 2d. ser. l. p. 241.
FIG:—Linn. Trans. l. c. t. 33. f. 4. 5. 6.
IRELAND:—Ballinahinch Churchyard! co. Galway. Mr. Larbalestier. (1877.)
Much resembling in general aspect Lecidea myricaria, D.C. Gelatina hymenea I deep blue. Spores .02—.022 mm. long, .009 mm. broad. The peculiar shape and structure of the spores keep it an entirely distinct species.

C. Spores 1-septate, brown.

* Hypothecium dark.

194. L. canescens, (Dicks.) white or albo-glaucenscent, sub-tartareous, orbicular, adnate, radiato-plicate, sorediate, circumference truncato-or repando-lobate, surface generally smooth, minutely
albo-granulos-pruinose, (K yellow C—); hypothecium black; apothecia rare, small, black, plane, depressed, central, crowded, cæsio-pruinose, margin paler, entire, flexuose; spores 8, fuscosus or fusco-nigricans, elliptico-oblong, 1-septate or bilocular and nucleolate.

On old trees, oak, sycamore, lime, ivy, walls and rocks, frequent but rare in fruit. 1785.


FIG.—Dicks. Crypt. L t. 2. f. 5. E. Bot. 582. Hepp Sporen t. 61. f. 527, 528.


GEOG. DISTRIBUTION.—Normandy, Germany, Switzerland. Portugal, France, Italy, Africa, K. Indies.

BOT. PROV.—1, 2, 3, 4, 5...7...10, 11...15...19...24, 25...30, 31.


WALES.—Barmouth and Dolgelley. Mr. Holmes. Llanbedrog! Harlech Castle!

CHANNEL ISLANDS.—Fliquet Bay! Jersey; Guernsey; Sark. Mr. Larbatoli.

“Spermogonia rare, black, punctiform, slightly prominent. Spermatia rather large, straight, cylindrical .00175 in. long, by .0002 in. broad. Spores .0025—.003 in. long, by .001—.00125 in. broad.” (Mudd.) “Spores .011—.014 mm. long, .006—.007 mm. broad. Intense-blue.” (T. M. Fria.) Spores .0115—.0135 mm. long. .007 mm. broad.

195. L. insignis, (Næg.) sulphury-white, tartareous, verrucoso-granulose or subleprose; (K yellow C orange or orange-red); apothecia rather large, adnate, often confluent, very black, opake, plane, obtusely margined, at length convex; hymenium fuscosus upwards; paraphyses lax; hypothecium fuscosus; spores 8, fuscosus, rather large, oblong, 1-septate, constricted in the middle.

forma corticicola, Kbr.

SYN.—Kbr. Syst. 290. (1855.) Grevillea 1. 134.


GEOG. DISTRIBUTION.—Germany, Switzerland, Italy.

BOT. PROV.—5.

ENGLAND.—Bomere Pool, Shropshire! (1871.)

Spores .0175 mm. long. .0065 mm. broad. I violet.

196. L. saxorum, (Mass.) dirty-yellowish-white, thin, minutely areolato-rimulosus, plane, nigro-limitate, (K yellow C orange-red); apothecia numerous, scattered, sessile, plane, black, margin thick, entire, rather paler; hypothecium black, or nigro-fuscosus; spores 8, fuscosus, oblong, 1-septate, somewhat curved, nucleolate.

On rocks, not common. 1870.
OF GREAT BRITAIN.

315

Not to be confused with *L. disciformis*, which has a different chemical reaction, larger spores, and other characteristics.


**Fig.** — Mass. Ric. fig. 169. Hepp *Sporen* t. 96. f. 752.


**Geog.** — Distrib.: Italy, France, Pyrenees.

Bot. **PROV.** — 10. 31.

**England:** — *Farndale* ! Yorkshire. **Mr. Mudd.**

**Channel Islands:** — *Noirmont* ! Jersey. **Mr. Larbatetier.**

Spores .0135—.015 mm. long, .006—.008 mm. broad.

197. *L. saxatilis*, (Schaër.) *white or whitish*, moderately thick, tartaceous, *rugoso-unequal*, (K faint yellow C orange); *apothecia minute, scattered, at first innate, then sessile, black, plane, margin thin, entire*; *hypothecium nigro-fusceous*; spores 8, fuscous, oblong, 1-septate, *small*.

On sub-alpine rocks, not common.


**Fig.** — Hepp *Sporen* t. 17. f. 145.


Schaër. 240.

**Geog. Distrib.** — Bavaria, Switzerland, Lombardy, Italy.

Bot. **PROV.** — 7. 15...26...30.

**Scotland:** — Near Nigg, Kincardine. **Rev. J. M. Crombie.**

**Ireland:** — *Divis Mountain co. Antrim. Dr. Moore. Doughraugh Mountain! Galway. Mr. Larbatetier.**

**Wales:** — Barmouth. **Rev. T. Salway. Craig Breidden! Montgomeryshire.**

Drwsynant!

“Spores .002 to .0025 in. long, by .001 in. broad.” (Mudd.) “Spores .009—.015 mm. long, .0045—.0065 mm. broad.” (Nyl.) “Spores .009—.014 mm. long, .004—.006 mm. broad. Paraphyses coherent, apices nigricanti-fusceous. Asci I vinous-red, apices blue, the other parts dirty-blue.” (T. M. Fries.) Spores .011—.012 mm. long, .005 mm. broad. Hymenium I blue.

198. *L. verruculosa*, (Borr.) *greenish-yellow*, thin, sub-determinate or effuse, *minute or arenato-rimulose, smooth, plane, or convexo-unequal*, (K yellow C red); *hypothallus brownish-black*; *apothecia minute, innate and solitary in the areola, black, plane or depressed, margin thin, soon obliterated; hypothecium dark-brown*; spores 8, fuscous, oblong, 1-septate.

On maritime and mountain rocks, not unfrequent. 1811.


**Fig.:** — *E. Bot. 2317.*


**Geog. Distrib.** — Germany, Lombardy.

Bot. **PROV.** — 1...6, 7...10, 11...19...26.

**England:** — Muggleswick Fell, West Durham. **Mr. Winch. (1811.) Lynmouth. Miss Attwood. Lanbraugh Rigg! Carlton Bank! Cleveland. **Mr. Mudd.**

**Scotland:** — *Craig Tulloch. Rev. J. M. Crombie.*

**Ireland:** — Dunkerron! **Dr. Taylor. Hill near Cork! Blackwater Bridge and Lough Carag co. Kerry. Mr. Carroll, near Kylesmore! Galway. Mr. Larbatetier.**

**Wales:** — Barmouth! Llanachar Bridge! near Fishguard, Pembrokeshire.

“Spores .0025—.003 in. long by .00125—.00175 in. broad.” (Mudd.) “Spores .014—.015 mm. long, .007—.009 mm. broad.” (T. M. Fries.) Spores .013—.016 mm. long. .006—.008 mm. broad.

The *kaleida, Tayl. MS.* and the *occulta* forms of the continental lichenists appear to be only states of *L. verruculosa*, differing chiefly in the more dispersed areoles of the thallus which surround the apothecia with a pseudo-thalline pro-
minutest margin. Internally \( L. \) verruculosa has a nigro-fuscous lateral excipulum whilst in \textit{kaleida} and \textit{oellato} this excipulum is colourless; the hypothecium being dark-brown in both and the spores of the same size.

\textbf{Var. proponens, Nyl. yellow, arecolato-erruculose or slightly granulo-lato-erruculose,} (K yellow C red); apothecia \textit{sub-innate}, not margined by thallus, \textit{rugulose, immarginate}; spores as above.

On \textit{maritime rocks}, rare. 1868.


\textbf{SCOTLAND :—Portlethen! Kincairdine. Rev. J. M. Crombie.}

Merely a state of \( L. \) verruculosa not worth distinguishing. "Spores .015—17 mm. long, .008—.010 mm. broad. " \textit{(Nyl.)}

199. \( L. \) stellulata, Tayl. white or albo-cinereous, thin, sub-orthiculairi-determinate, \textit{minutely arecolato-rimulose}, plane, smooth, (K yellow C—); hypothallus thin, black; apothecia minute, numerous, crowded and confluent, \textit{sub-innate}, black, plane, margin thin, entire; lateral excipulum nigricant, \textit{hypothecium brownish-black}; spores 8, fuscous, oblong, 1-septate, \textit{small}.

On \textit{maritime rocks} and stones, frequent. 1836.

\textbf{SYN :—Tayl. Fl. Hib. 2. 118! (1836.) Mudd Man. 216.}

\textbf{Exs :—Leight. 276. Zw. 403. Larbal. 33.}

\textbf{Fig :—Hepp SporeB t. 34. f. 313. GeoG. DistriRe:—Germany, Switzerland, Falkland Islands. Bot. Prov :—1, 2, 5, 6, 7, 12...19...24...30, 31.}


\textbf{IRELAND :—Carig Mountain! Dr. Taylor. Ardglass co. Down. Dr. Maingay, near Cork! Carrigogunnel near Limerick. Mr. Carroll.}


\textbf{CHANNEL ISLANDS :—Fortegut Bay! La Moye! Jersey; Guernsey. Mr. Larbalestier.}

"Spores .002 to .00275 in. long by .001 to .0015 in. broad. I blue." \textit{(Mudd.)}

"Spores .009—12 mm. long. .004—5 mm. broad. I blue." \textit{(T. M. Fries.)}

This is \textit{Buellia minutula}, Hepp 313, according to Arnold in Flora 1872, p. 4. His \textit{B. stellulata}, (Tayl.) L. c. is evidently made up, according to the Exs. quoted, of \textit{L. verruculosa}, (Borr.) and \textit{L. arecolata}, Nyl. Confcr Leight. Lich. Fl. p. 303. and 310. Paraphyses laxly coherent, apices nigro-fuscous. Spores .009—.011 mm. long, .005—.0055 mm. broad.

forma \textit{confluens}, Leight. \textit{apothecia} very numerous and in such close juxtaposition as to appear \textit{confluent}.

On \textit{rocks}, rare. 1876.

\textbf{Bot. Prov :—6, 7.}

\textbf{WALES :—Fort Hill! near Fishguard, Pembroke-shire. (1876.) near Tremadoc! forma \textit{dispersa}, Leight. \textit{arecolae} of thallus \textit{dispersed} and scattered. On \textit{rocks}, rare. 1876.}

\textbf{Bot. Prov :—6.}

\textbf{WALES :—Goodwick Bay! (1867.)}

200. \( L. \) scabrosa, Ach. citrine or \textit{flavo-virensceous}, thin, areolate or \textit{arecolato-granulose,} (K yellow C—); apothecia \textit{small}, scattered, \textit{black}, opake, somewhat convex, \textit{concolorous within; hypothecium black}; spores 8, fuscous, ellipsoid, 1-septate, \textit{small}.
On the earth and on thallus of Boeomyces rufus, in mountainous regions, rare. 1808.


FIG:—E. Bot. 1873. Flot. l. c. 74. Hepp Sporen t. 63. f. 548.


GEOG. DISTRIBUT:—Bavaria, Italy.

BOT. PROV:—2...15...19...26.

ENGLAND:—Sussex. Mr. Borrer. (1808.)


IRELAND:—Bantry. Miss Hutchins. Twelve Pins! Kylemore! Mr. Larbalester.

"Spores .012—18 mm. long, .006—8 mm. broad." (Nyl.) Spores .015 mm. long, .006 mm. broad.

201. L. disciformis, Fr. pale-yellowish-white, very thin, smooth, continuous or unequal or rimuloso-areolate, determinate, (K yellow C—); apothecia numerous, scattered, moderate, plane, marginate, black; hypothecium black; spores 8, fuscos, lineari-oblong, 1-septate.

On trees, frequent.


GEOG. DISTRIBUT:—E. Lapland, Italy, Switzerland, Germany, Madeira, Arctic America, Hungary.

BOT. PROV:—2...3...5...7...10...12...15...19...31.


SCOTLAND:—Banchory; near Aberdeen; Braemar; Callander; Blair Athole. Rev. J. M. Crombie. Killin! Breadalbane! Birks of Aberfeldy! Dr. Holl.


WALES:—Garth! near Dolgelley. Dr. Holl. Benarth! Conway! Dolgelley! Barmouth! Tanybwlch Wood, Capel Curig! Capel Arthog! CHANNEL ISLANDS:—La Coupe! Noirmont; St. Peter’s! Jersey. Mr. Larbalester.

"Spores .004 to .005 in. long by .0015—.002 in. broad. Spermogonia minute, punctiform, semi-immersed, black; spermatia cylindricai, straight, .00125 in. long by .00012 in. broad." (Mudd.) "Spores .019—30 mm. long. .008—.014 mm. broad." (Nyl.) Spores .02—.029 mm. long. .006—.012 mm. broad.

202. L. atrorubra, Aeh. griseo-pallescens or cinereo-fuscescent, tartaceous, areolato-diffracto-granulose, areolae plano-convex, (K brownish C brownish); apothecia plane, appressed, margin thickish, flexuose, black; hypothecium black or nigro-fuscos; spores 8, fuscos, oblong or oblongo-ellipsoid, 1-septate, large.

On maritime quartzose and schistose rocks, frequent.


EXS:—Fr. L. S. 392. (ide Nyl.) Fellm. Lapp. 194.

GEOG. DISTRIBUT:—E. Lapland, Pyrenees, Sweden.

BOT. PROV:—1...6...15...19...26...31.

ENGLAND:—Moreton and North Bovey, Devon. Rev. J. P. Jones.

SCOTLAND:—Kincardine! Rev. J. M. Crombie.

IRELAND:—On maritime rocks, frequent. Mr. Carroll. Clifden! Connemara, Mr. Larbalester.
Wales:—Fort Hill! Goodwick Bay! near Fishguard, Pembrokeshire.

Channel Islands:—Jersey. Mr. Laphaleston.

L. spuria, Schäer. is similar externally, but differs in the colourless hypothecium, smaller spores and chemical reaction K yellow C red, and also from L atroalbedo which has reaction K yellow then red. "Spores .024—.034 mm. long, .012—.17 mm. broad." (NyL.) Spores .025—.029 mm. long, .013—.0145 mm. broad.

203. L. badioatra, Flk. fuscous or fuso-griseous, tartareous, areolato-diffract, rimulose, areole plano-convex, scattered or conccrscent (K brownish C tawny-yellow); apothecia sub-innate, appressed, plane, black, margin thin, entire or flexuose; hypothecium black; spores 8, fuscous, oblongo-ellipsoid, 1-septate, large.

On alpine schistose rocks, rare.


Fig.—Hepp Sporen t. 5. f. 32.


Geog. DistriB:—Switzerland, Austria, Norway, Transylvania.

Bot. Prov.:—15..23.


Distinct from L. atroalba by the different reaction. "Spores .030—.36 mm. long, .015—.18 mm. broad." (NyL.) "Spores .027—.36 mm. long, .011—.18 mm. broad." (T. M. Fries.) Spores .0295—.0305 mm. long, .012—.013 mm. broad.

204. L. atrobadia, Nyl. dull-brown or greyish-brown, thinnish, areolato-diffract, hypothallus black, radiating at the circumference, (medulla I—); apothecia black, somewhat convex, immarginate, concolorous within; epitheccium violet-brown, with K faintly purple; hypothecium brown; spores 8, brown or blackish, oblong, 1-septate; gelatina hymenea intensely-bluish with iodine.

On quartzose rocks. 1871.


Bot. Prov.:—15.


"Allied to L. badioatra. Spores .028—.30 mm. long, .010—.14 mm. broad." (NyL.)

205. L. conios, (Whlbh.) cinereo-ferruginous, thickish, verruculoso-granulate, unequal, granules minute, crenate, at length conglomerate, (K—C—); hypothallus nigrincent, radiant; apothecia minute, adnate, black, naked, margin thin, elevated, entire; excipulum nigro-fuscos; hypothecium fuscacent; paraphyses distinct, apices incrassate, fuscous; asci ventricoso-clavate; spores 8, fuligineo-fuscos, ellipsoid, obtuse at the apices, slightly constricted in the middle.

On maritime rocks, rare. 1870.


Exs.:—Th. M. Fries 69.

Geog. DistriB:—Norway, Lapland.


"Spores .012—.17 mm. long, .008—.9 mm. broad. Spores .011—.13 mm. long, .007—.011 mm. broad. (NyL.) "Spores .011—.18 mm. long, .007—.11 mm. broad. Spermatia acicular, arcuate; stigmata simple." (T. M. Fries.) Spores .0175—.19 mm. long, .0095 mm. broad.
206. *L. myriocarpa*, (DC.) cinerascen, thin, unequal, or subgranulose, effuso or evanescens, (K—C—); apothecia small, plane or sub-convex, black, margined; hypothecium nigro-fuscos; spores 8, fuscos, oblong, 1-septate, small, epispore distinct.

On trees, old wood palings, and rocks, frequent.


**Geog. Distrib.**—Italy, Sweden, Germany, Hungary, Switzerland, France, E. Lapland, Arctic America, South America.

"Spores .009—.016 mm. long. .0055—.0075 mm. broad. Spores .010—.16 mm. long. .006—.8 mm. broad." (Nyl.) "Spores .009—.16 mm. long. .004—.8 mm. broad." (T. M. Fries.) "Spores .003—.00325 in. long. .001—.00125 in. broad. Sperrmatia cylindrical, curved or undulate. .003 in. long. by .00012 in. broad." (Mudd.) Hypothecium a nigro-fuscos central mass separated from the nigro-fuscos lateral exculium by a paler interval. Paraphyses distinct, coherent, apices large, nigro-fuscos or nigricant. Spores .012—.015 mm. long. .0045—.006 mm. broad.

**A. Corticolar forms.**

forma *chloropolia* (Fr.) thickish, crustaceous, viridi-cinerascens, rugoso-verruculose, unequal.

On boarded buildings, old palings and trees (elm, pear).

**Syn.**—Fr. S. V. Sc. I. p. 115. (1846.)


**Geog. Distrib.**—Scandinavia, Germany, Switzerland, Italy.

**Bot. Prov.**—:—2—5, 6—10...31.


**Wales**—:—Knighton! Radnorshire.

**Channel Islands**—:—Beaupoit! Mr. Larbalestier.

forma *pinicola*, Ach. thin, brownish-grey, effuso, pulverulento-granulose.

On pines, yew, willow, frequent.


**Fl.**—E, Bot. t. 1851. Hepp Spore t. 6. f. 41. and 42.


**Geog. Distrib.**—:—Switzerland, Italy, Germany, France.

**Bot. Prov.**—:—2. 3...5...7...8...10...20.


**Wales**—:—Bettws-y-coed!

forma *quercicola*, Rabh. thin, whitish, effuso, slightly pulverulento-granulose, or evanescens.

On oaks, rare. 1857.

**Syn.**—:—Rabenhorf L. Europ. Exs. 832.

**Exs.**—:—Rabh. 832.

**Geog. Distrib.**—Europe.

**Bot. Prov.**—:—5...7...31.

**England**—:—Worfield! Shropshire.

**Wales**—:—Bettws-y-Coed! between Corwen and Bala! (1857.)

**Channel Islands**—:—Maunfa! St. Saviour, Jersey. Mr. Larbalestier.

forma *saprophila*, Ach. ecrustaceous, evanescens; apothecia larger, plane, margined, scattered or aggregate, numerous.
On subputrescent wood and stumps, probably not uncommon. 1856.

SYN:—Leight in Grevilles 5. p. 10. (1876.)

forma areolata, Leight. cinerascent, thin, effuse, minutely rimoso-areolata, areole plane; apothecia black, numerous, crowded, adnate-sessile, plane; margin slightly prominent, thickish and paler, eventually obliterated; excipulum lateral, nigro-fuscous, short; hypothecium central nigro-fuscous; paraphyses distinct, coherent, apices very large, nigro-fuscous or nigricant; spores 8, fuscous, oblong, 1-septate, small; gelatina hymenia I violet.

SYN:—Leighton in Grevilles 5. p. 10. (1876.)
EXS:—Leight. 10. (1876.)

forma leprosa, Leight. albido-cinerascent, areole dissolved into a leprose, pulverulent, effuse condition.

SYN:—Leighton in Grevilles 5. p. 10. (1876.)

forma crassitacea, Leight. thallus nearly or quite evanescent and obliterated, leaving the numerous minute apotheca naked and prominent.

SYN:—Leighton in Grevilles 5. p. 10. (1876.)

Intermediate states were often observable connecting the above forms. Externally f. crassitacea resembles L. dispansa, Nyl., but the different spores prevent confusion. According to specimens received years ago from Mr. Borrer, as occurring with his true L. prominula, on flints on the Sussex Downs, this form would appear to be the lichen mentioned by him in E. Bot. Suppl. t. 2687, as probably "true L. lygaea, Ach." It should be remembered that Mr. Borrer determined his lichens by external characters alone, the confirmatory character of the spores being at that time scarcely thought of.
forma opegraphina, Leight. thallus oblomerated; apothecia coacervate into gyrocarpous or opegraphine minute clusters.

**Fig**:—Leight. Br. Graph. t. 5. f. 6. a. b.
**Bot. Prov**:—7. 7.

207. *L. vernicoma*, Tuck. *viridi-stramineous*, crustaceous, effuse, subtartareous, composed of minute granules, at length conglomerated into a subrimose crust; apothecia black, rather small, appressed, nearly plane, with a thin erect evanescent margin.

On stones and rocks.

**Geog. Distr**:—N. America.
**Bot. Prov**:—31.
**Channel Islands**:—Fliquet Bay! and La Moya! Jersey, Mr. Larbalesquier.

Specimens from the above localities, which I have seen, are evidently saxicolar forms of *L. myriocarpa*.

208. *L. nigritula*, Nyl. cinerascens, minutely granulose, or pulvereo-granulose, thin, indeterminate or evanescent, (K—C—); apothecia minute, opake, plane or sub-convex, black, margin thin, soon oblomerated; hypothecium fuscos or fuscescens, excipulum laterall, nigro-fuscos; spores 8, fuscos, ellipsoid or oblong, 1-septate, minute; epispore thin.

On trees, oak, pine, and wood, rare. 1861.

**Fig**:—Hepp Sporen t. 6. f. 43.
**Geog. Distr**:—Paris, Germany, Switzerland, Italy, Hungary, Denmark, Sweden, Norway, Finland.
**Bot. Prov**:—2, 3...7...10.


**Wales**:—Treorw! Glumlet Rock! Fwthell! (on grass) Dolgelly! "Spores .007—11 mm. long, .0035—.0045 mm. broad." (Nyl.) “Spores .006—10 mm. long, .002—4 mm. broad.” (T. M. Fr.) “Spores .00175—.00225 in. long, .00075 in. broad.” (Mudd.) Spores .006—9 mm. long, .002—3 mm. broad.

209. *L. coricina*, Ach. nigricant or cinerea-nigricant, areolaterrimo-diffract, areole small, plane or convex, smooth, (K yellow then red); hypothallus very black; apothecia produced from the hypothallus, small, innate or adpressed, very black, plane or convex, margin thin, entire; hypothecium thick, black; thalamium pellucid; paraphyses coherent, apices nigricant; spores 8, fusco-nigricant, ellipsoid, 1-septate; gelatina hymenea intense-blue with iodine.

On alpine rocks, rare. 1808.

**Fig**:—E. Bot. 2335. Mudd t. 4 p. 80.
**Geog. Distr**:—Norway, Lapland.
**Bot. Prov**:—7...10...15.

**England**:—Near Easeby, Cleveland. Mr. Mudd. Staveley. Mr. Martindale.

210. *L. sub-disciformis*, Leight. *dirty-yellowish-white*, thin, minutely areolato-rimulose, plane, nigro-limitate, *(K yellow then red)*; apothecia scattered, sessile, plane, blackish, more or less pruinose, margin thick, entire, paler; *hypothecium black*; hymenium pale-brown; spores 8, fuscous, oblong, 1-septate.

On rocks, not common. 1851.

**Var. meiosperma**, Nyl. similar to the type, but with apothecia often cesio-pruinose, and smaller spores. *(K yellow then red.)*

On rocks, rare. 1868.

**211. L. succedens**, Nyl. *whitish*, thin, granulate, unequal or sub-areolate; apothecia fuscous-black, moderate, margined, colourless within; *hypothecium fuscous or rubricoso-fuscous*; spores 8, nigrescent, ellipsoidal, simple or 1-septate, *episporium thin*; paraphyses moderate, articulate, apex thickened, fuscous or fuscescent; gelatina hymenea caeruleuscent, then vinous-red with iodine.

On alpine micaceous-schistose rocks, rare. 1866.

**212. L. Hookerii**, *(Borr.)* *white* or *pale-yellow*, consisting of *oppressed or picato-rugose squamae*, somewhat farinose, effigurate at the circumference, *(K faint yellow C faint yellow)*; *apothecia small*, black, plane; *hypothecium black*; spores 8, *fuscous*, ellipsoidal, 1-septate.

On earth on alpine rocks, rare. 1808.
Imbedded in the thallus is a minute Spharia Hookeri, Nyl. (Dacampia, Mass.) with ellipsoid 3-5-septate fuscous spores; see Leight. Ang. Lich. t. 27. f. 5. Verrucaria, Borr. in E. Bot. Suppl. 2622. f. 2.

213. *L. proceavenda*, Nyl. thallus obscure, thin, scarcely visible; apothecia black, plane or somewhat concave, margined, small; hypothecium somewhat reddish-brown, above more intense in colour, epithecium obscurely amber-brown; spores 8, faintly blackish, elliptical, 1-septate; paraphyses slender; gelatina hymenea blue then vinous-red with iodine.

On decaying holly, very rare. 1869.

**GEOG. DISTRIBUTION:**—Europe.
**BOT. PROV.:**—2.

**ENGLAND:**—Near Lyndhurst in New Forest. Rev. J. M. Crombie. (1869.)

Distinct from *L. myriocarpa*, DC. by the form of the paraphyses and reaction with iodine, and from *L. adpressa*, Hepp, by the paraphyses and colour of spores and hypothecium.

214. *L. deludens*, Nyl. whitish, firm, thin, rimose, (K pale-yellowish), surrounded by a very thin, black hypothallus; apothecia black, innate, circumcised, plane, obtusely margined, concolorous within; hypothecium brown; spores 8, fuscous, 1-septate; paraphyses discrete, regular, moderate, clavate, brownish; gelatina hymenea I intensely-blue.

On weathered quartzose stones in alpine regions. 1871.

**SYN.:**—Nyl. in Flora 1873. p. 289—300.
**BOT. PROV.:**—15.

**SCOTLAND:**—Summit of Cairn Gowar, Blair Athole. Rev. J. M. Crombie. (1871.)

"Allied to *L. colludens*, Nyl. Spores .022—27 mm. long, .008—13 mm. broad." (Nyl.)

215. *L. hyperiza*, Strn. cinerascen or plumbeo-cinerascen, thin, smooth, continuous, obscurely limited, (K—C—); apothecia black, sessile, plane or somewhat convex, rather large, margin obtuse, internally cinerascen; hypothecium fuscescent, grumous; spores 8, fuscous, ellipsoid, 1-septate, very often with 3 or 4 nuclei, rather large; paraphyses distinct, slender, often articulate, apices branched, interspersed with numerous granules; gelatina hymenea I intensely-blue, almost black.

On smooth bark of trees. 1874.

**SYN.:**—Stirton in Grevillea 3. p. 35 (1874).
**BOT. PROV.:**—15.

**SCOTLAND:**—near Killin, Perth. Dr. Stirton. (1874.)
Spores .016—.022 mm. long; .009—.012 mm. broad. (Strn.)

216. *L. excelsa*, Leight. white, thin, effuse, areolata-rimose, areola plane and flat, somewhat shining, (K yellow C yellow); apothecia black, or violet-black, small, innate or innato-sessile, plane or somewhat concave, margin thickish, prominent; hypothecium nigro-fuscous; paraphyses indistinct, apices nigro-fuscous, incrassate, I dirty-blue; spores 8, fuligineo-fuscous, oblong, 1-septate, small.

On micaceo-schistose rocks, rare. 1875.

**SYN.:**—Leighton in Grevillea 4. p. 78. (1876).
**BOT. PROV.:**—26.
IRELAND:—Summit of Kylemore Mountains! co. Galway. Mr. Larbalestier (1873).
Spores .0155—.0165 mm. long, .007 mm. broad.

217. L. impressula, Leight. albido-cinerascent, thin, filmy, rimulose, nigro-limitate, (K yellow then red); apothecia black, minute, punctiform, numerous, crowded into small groups of 3 or 4 or more, impressed or sunken in the thallus, each sunken apothecium circumcised so as to appear surrounded by a thin thalline margin; hypothecium thin, nigro-fuscous; paraphyses indistinct, apices colourless; hynenum tinged with brown; spores 8, fuscous, rotundo-oblong, 1-septate, more or less constricted in the middle.

On bluish-grey slates, rare. 1876.

SYN:—Linnean Trans. 2d ser. vol. 1. p. 237.
FIG:—Linn. Trans. 1. c. tab. 32. f. 1 and 2.
BOT. PROV.:—6, 7.
WALES:—Llanasaer Bridge! and Fort Hill! near Fishguard, Pembrokeshire (1876). Festinlog Road near Dolgelly! near Tremadoc!
Gelatina hymenae I dirty-blue. Spores .014—.0145 mm. long, .009 mm. broad. Several plants grow on the same stone, and by the union of their dark hypothallus map out the surface as in L. geographica. Allied to L. stellulata, Tawl. but distinct by the thin filmy nigro-limitate thallus, larger spores, 1-3rd larger, and the singularly impressed apothecia.

218. L. ryssolea, Leight. albido-cinerascent, thick, tartarose, diffraocto-areolate, areola plane or subplano-convex, irregularly wrinkled, nigro-limitate, (K yellow then red); apothecia nigro-fuscous, opake, rusty, large, prominent, and sessile, numerous, margin thick, paler, entire or flabuo; hypothecium very thick, fusco-nigricant; hynenum thin, brownish, paraphyses indistinct, apices thickened, nigro-fuscous; spores 8, fuscous, oblong, 1-septate, small.

On Cambrian rocks, rare. 1876.

SYN:—Linnean Trans. 2d ser. vol. 1. p. 237.
FIG:—Linn. Trans. 1. c. t. 32. f. 5 and 6.
BOT. PROV.:—6.
WALES:—Fort Hill! near Fishguard, Pembrokeshire (Sept. 1876.)
Spores .016—.017 mm. long, .007—.008 mm. broad. Gelatina hymenae I pale-dirty-blue. Medulla I—.

** Hypothecium colourless.

219. L. atroalbella, Nyl. griseo-pallescens or fusco-griseous or cinereo-fuscous, areolato-rimo-so-diffract, areolae small, plane, smooth, (K yellow then red); hypothallus nigro-fuscous; apothecia innate in the areola, plane, margined; hypothecium colourless; spores 8, fuscous, ellipsoid, 1-septate.

On quartzose and schistose rocks, frequent.

SYN:—Nyl. Obs. Holm. 2. 11. (1853.) Mudd Man. 214.
FIG:—Hepp Sporen t. 5. f. 31. t. 61. f. 529.
GEOG. DISTRIB.:—Germany, Pyrenees, Sweden.
BOT. PROV.:—5...10...19.
IRELAND:—Kilcurry! near Cork. Mr. Carroll.
"Spores .012—13 mm. long, .007—8 mm. broad. Spores .019—18 mm. long, .007—9 mm. broad." (Nyl.) "Spores .003 to .0035 in. long, .00125 to .00175 in. broad." (Mudd.) Spores .013 mm. long, .005—6 mm. broad.

220. L. aloclzioides, Leight. cinerco-albescent, tartareo-pulverulent, almost evanescent, (K—C—); apothecia scattered, at first punctiform, immersed, then enervate-awnate, plane, fuscous-black, when moistened paler badio-fuscous, margin paler; hypothecium colourless; spores 8, fuscous, rotundo-oblong, 1-septate.

On calcareous rocks, 1851.


EXS:—Arb. 263. 264.

GEOG. DISTRIBUTION:—Italy, Bavaria.

BOT. PROV.:—1...5...7...20.

ENGLAND:—Buxton! Derbyshire. Dr. Holl. Torquay! Dr. Deakin. Weston-super-mare! Mr. Joshua. Llanymynech Hill!

IRELAND:—Carigaloo, Goat Island! Mr. Carroll.

WALES:—Eglwyseg rocks! Craig Breiddin! Diganwy near Conway! (1851.) Llandudno! Not L. aloclzia, Mass. Synm. 42. which is there described as having "diaphanous" or colourless spores. Paraphyses distinct, apices brown-dark. Spores .013—.016 mm. long, .008—9 mm. broad. Epispore narrow.

221. L. leucocinellina, Nyl. white, cream-coloured or cinereous, tartareous, diffracto-areolato-verrucose, (K yellow C red); apothecia appressed to the areola, or subnippato-sessile, black, plane, sub-immarginate; hypothecium colourless; spores 8, fuscous, oblong, 1-septate.

On quartzose and schistose rocks, not common.

SYN:—Nyl. in litt. 1870.

EXS:—Leight. 217 (in part).

GEOG. DISTRIBUTION:—Italy, Germany.

BOT. PROV.:—2...5...7...20.


IRELAND:—Clifden! Connenara. Mr. Larbasterier.

WALES:—Diganwy! near Conway.

Spores often nucleolate, epispore distinct, .013—.0145 mm. long, .008—9 mm. broad.

222. L. occulta, (Korb.) pallido-lutescent, effuse, adnate, thin, minutely areolate, areolae somewhat convex or ruguloso-gebulose; hypothallus dark; apothecia nigro-fuscous, very minute, adnate, at first margined by the thallus, eventually free and somewhat convex, proper margin more or less visible; epithecium fuscous; hypothecium lutescent; paraphyses indistinct; spores 8...fuscous, small, oblong, 1-septate; thallus tinged yellow with K and on immediate subsequent application of C still yellow, but soon obliterated (K y C—).

On rocks, sparingly. 1872.

SYN:—Korb. Par. 186. (1855.) Leight. in Grevillea 1. p. 58. (1872.)

FIG:—Grevillea t. 4. f. 6.

EXS:—Leight. 217. (in part).

GEOG. DISTRIBUTION:—Germany, Switzerland.

BOT. PROV.:—5...7.

ENGLAND:—Lyth Hill! Shropshire.

WALES:—Diganwy near Conway! Bettws-y-coed! (1872.) Moel-y-gest!

Spores .015—.0155 mm. long, .0075—.008 mm. broad.

223. L. discolor, (Hepp.) pale-cinerco-brownish, thin, tor-
tareous, minutely areolato-rimulose or almost continuous, areole plane, subverruculose, limited by a more or less conspicuous darkish-brown hypothallus (K y C y); apothecia blackish-brown, minute, numerous, adnate or subinnato-septile, plane, margin thickish, persistent, more or less flexuose; hypothecium colourless; paraphyses distinct, apices fuscos; spores 8, fuscos, 1-septate-oblong, cell, nucleolate, episporic distinct.

On rocks, chalks, flints, &c., not uncommon. 1842.


FIG.:—Hepp Spore t. 35 f. 319. 320.

EXS.:—Anzi Langob. 193. 195.

GEOG. DISTRIBUTION:—Italy, Hungary.

BOT. PROV.:—1, 2, 12, 20.


IRELAND:—Whitepoint! Cork. Mr. Carroll.

Spores .019—.021 mm. long, .01—.011 mm. broad.

224. L. interpolata, Stirr. fuscos or nigro-fuscos or black, minutely squamuloso-areolate, areole apressed, contiguous or dispersed, determinate; hypothallus black; apothecia black, small, adnate, plane, margined; hypothecium colourless; paraphyses slender, not well discrete, apices fuscos-black, clavate, conglutinate; asci saccate; spores 8, virescent or fuscos, ellipsoid, 1-septate, binucleate, nuclei rather large, generally virescent and sometimes conjoined by a tube.

On rocks, rare. 1877.

SYN.:—Stirton in Scottish Naturalist 4. 165. (1877).

BOT. PROV.:—16.

SCOTLAND:—Near Garve. Dr. Stirton. (1877).

"Gelatina hymenea I blue then dark-violet, the asci vinoso-fulvescent." (Stirr.)

D. Spores 1-septate, colourless.

* Hypothecium dark.

225. L. lutosa, (Mont.) dirty-ochraceous, tartareous, rimoso-areolate, areole plane, sometimes lobulate, (K—C—); apothecia black within and without, at first innate and immarginate, then apressed, plane, margin thin, prominent, entire; hypothecium black; spores 8, colourless, oblong, 1-septate, small.

On mountain rocks, rare.


FIG.:—Hepp Spore t. 89 f. 506.


GEOG. DISTRIBUTION:—Pyrenees, Germany, Switzerland, Hungary, Lombardy.

BOT. PROV.:—1, 5, 7, 10.

ENGLAND:—Thirsk, Yorkshire. Mr. Baker. Starcross! Devonshire! Mr. Park! Llanymynech Hill! Shropshire.

WALES:—Cader Idris! north-west.

Spores .01—.012 mm. long, .005—.006 mm. broad. Paraphyses distinct, apices incrustate, nigricant. Excipulum black, hypothecium brown-black.

226. L. chalybeia, Borr. cinereo-fuscescent or leaden-black, thin, slightly tartareous, minutely cracked, (K—C—); apothecia
minute, superficial, scattered, black, plane, margin entire, slightly elevated; *hypothecium nigro-fuscous*, thickish; lateral excipulum blush-black; paraphyses distinct, apices nigrlicant; spores 8, colourless, lineari-oblong; 1-septate, small.

On rocks, tiles, flints, &c., not uncommon. 1831.


**Fig.:**—E. Bot. Suppl. 2687 f. 2. Hepp Sporen t. 4, f. 13. & t. 55. f. 498.


**Geog. Distrib.:**—Europe.

**Bot. Prov.:**—1, 2...5, 6, 7...10, 19...26, 31.


**Scotland:**—Ben Lawers and Craig Guie. Rev. J. M. Cumbrie.

**Ireland:**—Dunkerron! Dr. Taylor. Whitepoint! near Cork; Blackwater; Blackstone Bridge; Mr. Carroll. Kylemore! Dawros Bridge! Glencorbot; Lettermore, co. Galway. Mr. Larbalestier.

**Wales:**—Abwywan! Dolgelley. Dr. Holl. Treffriw falls.

**Channel Islands:**—Bonne Nuit! Rosel Valley! Jersey. Mr. Larbalestier.

"Spermogonia minute, punctiform, semi-immersed. Spermataitia ellipsoid, short .0005 in. long, by .0001 in. broad. Spores .002 to .0025 in. long, by .0005 to .00075 in. broad." (Mudd.) "Spores .007—.010 mm. long, .0025—.003 mm. broad." (Nyl.) Spores .007—.012 mm. long, .0025—.0035 mm. broad.

**forma ecrustacea**, Leight. thallus evanescent and obliterated.

**Wales:**—Goodwick Bay! Pembrokeshire. (1875).

227. *L. umbrinella*, Nyl. umbrane-brown, thin, subrugulose, rimulose; apothecia black, somewhat prominent, plane, submargined, whitish within; epithecium and hypothecium brown; spores 8, colourless, fusiform, simple or 1-septate; paraphyses with brown clavate apices; gelatina hymenea I bluish then vinous-reddish.

On micaceous rocks, rare. 1876.

**Syn.:**—Nyl. in Flora 1876. p. 309.


**Ireland:**—Dawros river, Connemara. Mr. Larbalestier. (1876).

"Spores .008—.014 mm. long, .002—.003 mm. broad. Nearest to *L. prominula* Borr. but with thinner thallus and different reaction with iodine." (Nyl.)

228. *L. applanata*, (Fr.) griseo-pallescant, thin, disperso-areolate, areole plano-convex, depressed, (K brownish C brownish); hypothallus nigrlicant predominating; apothecia black, plane, innato-sessile, margin thick; hypothecium black; paraphyses conglutinate, apices clavate, fusco-nigrlicant; spores 8, colourless, oblong, 1-septate.

On quartzose and schistose rocks, not common. 1856.


**Geog. Distrib.:**—Scandinavia.

**Bot. Prov.:**—6, 7...15, 26.

**Scotland:**—Killin! Breadalbane. Rev. J. M. Cumbrie. Ben Lawers! Dr. Stirton.

**Wales:**—Barmouth! Cwm Glas! Snowdon; Llyn-y-Cae! Cader Idris; Pen Cow! near Fishguard, Pembrokeshire; Towyn! Holyhead.

**Ireland:**—Kylemore! Salrock Road! co. Galway. Mr. Larbalestier.

"Spores .018—.027 mm. long, .009—.014 mm. broad." (Nyl.) "Spores .016—.025 mm. long, .006—.013 mm. broad." (T. M. Fr.) Gelatina hymenea I dark-blue, Spores .026 mm. long, .011 mm. broad, colourless, sometimes fuscescent.
229. *L. atroalbicans*, Nyl. whitish, granulato-areolate, thin, tar-tarceous, effuse, areola minute, more or less scattered, convex or plane, (K—C—); apothecia black, small, innato-sessile, plane, margined; hypothecium nigro-fuscos; paraphyses distinct, coherent, apices nigro-fuscos; spores 8, colourless, broadly-oblong, 1-septate, epispore distinct.

On rocks, rare. 1876.

**SYN:** — Nyl. in Flora 1875. p. 363.

**EXS:** — Art. 559. c.

**BOT. PROV.:—** 28.

**IRELAND:** — Ruins at Cledgean! Lettermore! Connemara. *Mr. Larbalestier*, (1876).

Gelatina hymenea I pale-blue then darkly-fuscoscent. Spores .021—.0215 mm. long, .01—.012 mm. broad.

230. *L. alpicina*, (Schær.) like *L. geographica*, but with spores colourless, 1-septate.

On alpine whistone rocks, very rare. 1869.


**EXS:** — Schær. 173, Hepp 181.

**GEORG. DISTRIBUT.:** — Switzerland, France, Pyrenees, Sweden, Asia.

**BOT. PROV.:—** 15.

**SCOTLAND:** — Summit of Ben Nevis. Rev. J. M. Crombie. (1869).

231. *L. grossa*, (Pers.) cinterascent or cinereo-virescent or cinerea-albicant, thin, continuous or rimose, unequal, indeter-minate, (K—C—); apothecia large, scattered, sessile, plane, black, disk minutely papillate, margin thickish, more or less flexuose and polished; excipulum lateral, thick, internally and externally bluish-black with a central paler stratum, hypothecium black; spores 8, colourless, oblong or ellipsoid, 1-septate, very large.

On trees, elm, ash, oak, not uncommon.


**FIG.:** — Hepp Sporen t. 73. f. 647.


**GEORG. DISTRIBUT.:** — Europe, Sweden, Norway, Denmark, France, Germany, America, Australia.

**BOT. PROV.:—** 1, 2, 3...5, 6, 7...10, 11...13...15...19, 20...24...28...30...31.


**CHANNEL ISLANDS:** — Rozel, Jersey. *Mr. Larbalestier*.

"Spores .024—.03 mm. long, .012—.19 mm. broad. Gelatina hymenea I blue then vinous-red. Spermatia oblongo-ellipsoid .002—3 mm. long, .001 mm. broad." (Nyl.) "Spores .02—.03 mm. long, .008—.18 mm. broad." (T. M.)
Fries.) “Spores .006—7 in. long by .003 in. broad.” (Mudd.) Paraphyses slender, conglutinate, apices fuliginous. Spores .022—.027 mm. long, .013—.0145 mm. broad; epispore thick.

232. L. Laurevi, (Hepp) whitish, very thin, smooth, contiguous or rimulose, (K yellow C—); apothecia violet-black; moderate, numerous, solitary or confluent, plano or plano-convex, sessile, margin thin, pale, soon obliterated, internally dusky; hymenium violet-black; hypothecium reddish-violet-black; excipulum pale, not black or black-purple; paraphyses coherent, apices fuligineo-nigricant; gel. hym. I blue then darkly discoloured; spores 8, colourless, oblong or ellipsoid, 1-septate. On trees, rare. 1869.


Geog. Distrīb∶Sweden, Denmark.


“Spores .012—17 mm. 1ng. .006—.0075 mm. broad.” (T. M. Fries.) Spores .016 mm. long, .007 mm. broad. Apothecia when moistened dark, from the dark hypothecium, which, as well as other characters, distinguish it from L. atropurpurea, Scher., with which it is apt to be confused.

233. L. contristans, Nyl. fuscos or fusco-nigricant, thin, granulose; apothecia black, somewhat convex, immarginate, dusky within; spores 8, colourless, ellipsoid or oblong, 1-septate; paraphyses indistinct; epithecium nigricant; hypothecium dusky; gelatina hymenea carulescent, then dusky-yellow with iodine.

On mosses in alpine localities, rare. 1864.


Geog. Distrīb∶Europe.


Scotland∶—Near summit of Ben Lawers. Mr. Carroll. (1864.)

“Systematically near L. melena, Nyl. Spores .010—14 mm. long, .0045—.0065 mm. broad.” (Nyl.)

234. L. Templetoni, Tayl. greyish-white, thin, effuse, granulose, (K—C—); apothecia moderate, more or less crowded, sessile, black, slightly polished, plane, with a thin entire or flexuose margin; hypothecium thick, brownish-black; paraphyses conglutinate, rich-yellow-brown, apices darker; spores 8, colourless, oblong or obtusely fusiformi-oblong, 1-septate.

On mosses, rare. 1836.

Syn∶—Tayl. Fl Hb. 2. 123. (1836.) Mudd Man. 189.

Geog. Distrīb∶Europe.

Bot. Prov∶—5...7...11...15...19...29, 30.


man.


Wales∶—Twill Dd, Cwm Idwal! Cwm Tryfesw! Glyder Vaich!

“Spores .003—.004 in. long by .001 in. broad.” (Mudd.) Spores .013—.025 mm. long, .005 mm. broad.

235. L. anomaloides, Nyl. whitish, thin, granulose or evanescent;
apotepia fusco-nigrant or fusco-pall敏感 or black, small, sub-con-
convex, immarginate; hypothecium fuscos-black; spores 8, colourless,
oblung, 1-septate.

On schistose earth in mountainous districts, rare. 1860.

SYN:—Nyl. in Flora 1862. p. 464. Cumbrie En. 70.

GEOG. DISTRIB:—France.

BOT. PROV:—15.

SCOTLAND:—(forma denigrans, Nyl. in. litt.) Ben Lawers. Adm. Jones (1860).

236. L. candida, (Web.) white, squamulose, squamæ swollen,
lobato-plicate, congested and imbricate in the centre, lobed at
the circumference, densely albo-Granulato-farinose, (K—C—); apothecia
appressed, black, caesio-pruinose, plane or somewhat convex, margin
thickish, entire, flexuose; hypothecium reddish-brown; spores 8,
colourless, fusiform, obtuse, 1-septate.

On the earth among alpine rocks, rare.


GEOG. DISTRIB:—Europe, Norway, Sweden, Germany, Switzerland, Italy,
Pyrenees, Hungary, Africa, America.

BOT. PROV:—1...7...15.

ENGLAND:—Ansteys Cove, Torquay. Mr. Holmes.

SCOTLAND:—Ben Lawers. Adm, Jones & Cumbrie.

WALES:—Great Orme's Head! Carnarvonshire.

A section of the apothecium shows the hymenium to rest on a pale-redish-
brown dense hypothecium, which is subtended by a horny striated paler exci-
pulum, externally marked with a thin dark-brown line. By this and the
different chemical reaction at all times distinguishable from L. cereuleonigrum.

"Spores .004—.005 in. long. by .00075 in. broad." (Mudd.) "Spores .016
—23 mm. long. .0035—.0045 mm. broad." (Nyl.) "Spores .016—24 mm.
long. .003—4 mm. broad. Gelatina hymenia I blue, especially the apices
of the asc, then vinous-red." (T. M. Fries.) Spores .022 mm. long. .004 mm.
broad.

237. L. cereuleonigrum, (Lightf.) glauco or cereulo-nigrant
or pallido-olivaceo-fuscescent, squamulose, squamae bullate or
bulla plicate in the centre, rotundato-lobate at the circumference,
smooth, caesio-pruinose, (K dirty-brown); apothecia elevated, sessile,
bluish-black, naked or caesio-pruinose, plane, margin thick, obtuse,
entire or flexuose; hypothecium nigro-fuscescent; spores 8, colourless,
fusiform, acute, 1-septate.

On the earth among maritime calcareous rocks, frequent. 1772.


GEOG. DISTRIB:—Portugal, Algeria, Germany, Switzerland, Italy, France,
Pyrenees, Austria, Hungary, Sweden, Norway, Finland, Arctic America,
Cape Horn, Asia.

BOT. PROV:—1...2...4...5...7...8...10...11...12...15...19...23...29...30...31.

ENGLAND:—Near Buxton; near Torquay; Ventnor, Isle of Wight. Dr. Holl.
Westleigh! Devon. Mr. Parcift. Cambridgeshire. Rev. Mr. Hemsted. Teesdale,
Durham. Rev. J. Harriman. Westmoreand. Mr. Brunton. near Bristol. Miss
Attwood. Gognagog Hills, Cambridgeshire. Mr. Hailstone. Malham. Dr. Carr-
Mr. Tellam. Folkestone, near Sibertswoold, near Waldershake Park, Dover.


Ireland:—North Wall, Dublin. Mr. Brown, near Baldoyle. Dr. Taylor, near Cork and Middleton. Mr. Carroll, North of Ireland. Dr. Moore.

Wales:—Puffin Island, Anglesea. Rev. A. Bloxam. Great Orme's Head!

Eglwyseg rocks!

Channel Islands:—Quenvais! Jersey! Cobo, Guernsey. Mr. Larbalestier.

“Spores .008—.0035 in. long, by .00075 in. broad.” (Mudd.) “Spores .018—30 mm. long, .002—4 mm. broad.” (Nyl.) “Spores .014—25 mm. long, .002—4 mm. broad. Gelatina hymenea 1 blue then vinous-red. Spermata siliform, arcuate.” (T. M. Price.) A section of the epithecium shows the hymenium to rest on a nigro-fuscous hypotecium, subtended by a pale mass, with an external thickish nigro-fuscous excipulum. Spores .0145 mm. long, .0035 mm. broad.

** Hypothecium colourless.
† Apothecia black.

238. L. sub-migrata, Nyl. cinereo-nigrigente, furfuraceo-diffract, granulose, (K — C —); apothecia fuscous-black, convex, immarginate, generally conglomerate, internally colourless; hypothecium colourless; spores 8, colourless, ellipsoid, 1-septate, small; paraphyses indistinct.

On alpine rocks, rare. 1866.

Syn:—Nyl. in Flora 1866. p. 370.
Geog. Distrib:—Europe.
Bot. Prog.—5...7...11...15.


Wales:—North side of Cader Idris! (1866.) Crib Coch! Snowdon! Aran Mowddwy!

“Vix separanda a L. denigrata,” Nyl. “Spores .009—.011 mm. long,.004—5 mm. broad. Epithecium darkly luteascent.” (Nyl.) Spores .010—.013 mm. long,.004—.005 mm. broad.

239. L. subviridis, Nyl. greenish or dusky-dark-green, thin, continuous, granulato-rugulose, (K — C —); apothecia black, minute, scattered, sessile, distinctly marginated; hypothecium colourless, lateral excipulum brownish; epithecium plane, brown; spores 8, colourless, oblong or oviform, 1-septate; paraphyses moderate, apices rather large, roundish, dark-brown; gelatina hymenea bluish, then tawny-red with iodine.

On siliceous stones. 1873.

Syn:—Nyl. in Flora 1873. p. 239. 300.
Bot. Prog.—31.

Channel Islands:—Nairn Bay, Jersey. Mr. Larbalestier.

“Belongs probably to the section of L. arthonica. Spores .011—16 mm. long,.005—7 mm. broad.” (Nyl.) Spores .009—.010 mm. long,.003—4 mm. broad.

240. L. melastigma, Tayl. reddish-black, thin, continuous, minutely granulato-areolate, hypothallus predominating, areole greenish when wet, (K — C —); apothecia black, minute, scattered, sessile, plane, with a thickish margin, at length convex and immarginate; hypothecium pale-yellow, lateral excipulum nigro-fuscous; hymenium pale-blue in the lower part, paler or nearly colourless above, para-
physes distinct, apices nigro-fuscons; spores 8, colourless, lineari-oblung, 1-septate.

On siliceous rocks.


BOT. PROV.—19.


Gelatina hymenea I blue. Spores .015—.016 mm. long, .0045—.005 mm. broad. With a general external resemblance to L. subviridis, Nyl.

241. L. scotinodes, Nyl. dark-greyish, thin, unequal, arclato-rimose, sub-determinate; apothecia black, convex, immarginate, whitish within; hypothecium colourless; spores 8, colourless, oblong, simple or 1-septate; paraphyses moderate, incassate at the apices, dark-bluish-black; epithecium K,—, faintly violet; gelatina hymenea I bluish and then vinous-red.

On micaceous rocks, rare. 1871.

SYN.—Nyl. in Flora 1873. p. 289. 300.

BOT. PROV.—15.

SCOTLAND.—Craig Tulloch, Blair Athole. Rev. J. M. Crombie (1871.)

"Allied to L. scotina, (Krbr.) but differs as above. Spores .014—18 mm. long, .005—6 mm. broad." (Nyl.)

242. L. sub-confusa, Nyl. darkly virescent, slightly granulato-concrescent, areolato-diffract; apothecia black, opaque, innate, convex, internally concolorous; paraphyses thickish, somewhat indistinct, apices cerulescenti-infuscate; hypothecium colourless; spores 8, colourless, oblong, 1-septate.

On rocks, rare. 1876.

SYN.—Nyl. in Flora 1876. p. 307.

BOG. DISTRIB.—Scandinavia.

BOT. PROV.—26.

IRELAND.—Tollywhee Bridge! Kylemore, Connemara, Mr. Larbalestier. (1876.)

"Spores .007—8 mm. long, .0035 mm. broad. Gelatina hymenea I blue then vinous-red. Spermatia oblong, straight. Somewhat resembling L. fuliginosa, Tayl. but with a thallus darkly-cineraseent above and smaller spores." (Nyl.)

Spores .012—.0135 mm. long, .005—6 mm. broad. Gelatina hymenea I dark-blue.

243. L. columnatula, Nyl. darkly-virescent, granulato-concrescent, areolato-diffract; apothecia black, innato-sessile, plane or plano-convex, slightly margined, soon obliterated, somewhat shining; hypothecium colourless, opaque, subtended by a pale-brownish horny excipulum; hymenium cinerascens, paraphyses coherent, apices nigrescent; spores 8, colourless, lineari-oblung, slenderly 1-septate; gelatina hymenea I dark-diary-blue.

On rocks, rare. 1877.

SYN.—Nyl. in Flora 1877. p. 228.

BOT. PROV.—26.

IRELAND.—Kylemore! Mr. Larbalestier. (1877.)

"Spores .012—16 mm. long, .004 mm. broad. Spermatia oblong .0030—.0035 mm. long, .0006 mm. broad. Sterigmata articulate and branched." (Nyl.)

Spores .012—.0145 mm. long, .004—.005 mm. broad.

244. L. biformigera, Leight. dirty-whitish-subvirescent, thick, tartareous, verrucoso-areolate, rimoso-diffract, (K yellow C yellow); apothecia very variable in size, black or bluish-black, either small, conglomerate, plane and slightly margined, or large, simple, sessile,
prominent and with a thickish flexuose margin; hypothecium colourless; hymenium pale-bluish upwards, paraphyses distinct, apices nigrescent; spores 8, colourless, narrowly oblong, 1-septate, cells binucleate.

On alpine and maritime rocks, rare. 1856.

 GEOG. DISTRIBUTION:—Europe.
 BOT. PROV.:—6, 7,.26.
 WALES:—North escarpment of Cader Idris! (1856.) Llyn-y-Cae! Cader Idris; rocks near Llyn Aran! Cader Idris; Manorbeer near Tenby. Llanbedrog! Barmouth! Pen-y-Big! near Fishguard, Pembroke. Monet-y-gest!
 CHANNEL ISLANDS:—Coast of Alderney! Mr. Larvales.
The spores are similar in shape and size to those of Verrucaria biforis, Borr. 
.014—.015 mm. long, .004—.005 mm. broad. Gelatina hymenea I blue.

forma subbiformata, Nyl. thallus arecolato-diffract, areola plane.

On alpine rocks, not unfrequent. 1866.

 BOT. PROV.:—7,.26.
 IRELAND:—Doughraugh Mountain! Kylemore! near Tully! co. Galway.
 MR. LARVALESTEIR.
 WALES:—Llyn-y-Cae! Cader Idris. (1866.)

245. L. holomeloides, Nyl. dusky or nigricant, thin, effuse, subgranulate; apothecia black, somewhat convex, immarginate, dusky within; spores 8, colourless, oblong or sub-bacillar, 1-septate, variable in size; paraphyses indistinct; epithecium nigricant; hypothecium nearly colourless or very slightly fuscescent; gelatina hymenea slightly blue, then yellowish, with iodine.

On micaceous-chistose earth in alpine places, rare. 1866.

 SYN:—Nyl. in Flora 1866. p. 369. Crombie En. 70.
 GEOG. DISTRIBUTION:—Europe.
 BOT. PROV.:—15.
 "Approaching L. globulosa, Flk. but with the aspect of L. melanu, Nyl.
 Spores .010—17 mm. long, .0030—.0035 mm. broad." (Nyl.)

246. L. Lightfootii, (Sm.) greenish-white, tartaceous, effuse, granulosverrucose, (K.—O—); apothecia sub-immato-sessile, plane, polished, black, margin thin, smooth, paler, flexuose; hypothecium pale-grey; excipulum pale-brown; hymenium brownish, paraphyses confluent, apices fuscescent; spores 8, colourless, lineari-oblong, 1-septate, cells rounded and slightly dilated at the apices, small.

On trees, birch, rare. 1794.

 179.

 FIG:—E. Bot. 1451. Hepp Sporen t. 58, fig. 503.
 EXS:—Hepp 503, Schar. 581. (in part), M. & N. 839.
 GEOG. DISTRIBUTION:—France, Germany.
 BOT. PROV.:—2, 3,.5,.13,.31.
 ENGLAND:—
 Rev. J. Lightfoot. (1794.) Sussex! Mr. Borrer.
 SCOTLAND:—Caerlaverock road! Dumfries. Dr. Lindsay.
 IRELAND:—North of Ireland. D. Scott.
 CHANNEL ISLANDS:—Patrimoine, Jersey. Mr. Larbalesteir.

"Spores .002 in. long by .00075 in. broad. Spermogonia minute, punctiform, immersed in the thalloid verrucose, brown. Spermatia sub-cylindrical or ellipsoid, .0005—.00075 in. long by .00012 in. broad." (Mudd.) Spores .009—.010 mm. long, .004 mm. broad.
forma commutata, (Ach.) thallus dissolved and pulverulent.
On trees, beech, and birch, rare.

FIG:—Mass. Ric. f. 269.

Geog. Distrib:—Germany.

Bot. Prov:—2...19...24...28.

England:—Sussex! Mr. Borrer.

Ireland:—Cahirlogue; Ardrum near Cork; Killaloe, Clare. Mr. Carroll.

Armgagh near the Obelisk. Adm. Jones.

Spores as in the type.

247. L. globulosa, Flk. greyish-white, thin, effuse, granulose-leprose, (K—C—); apothecia minute, numerous, scattered, adnate, black, tuberculate or semiglobose, convex, immarginate, internally nigricant; hypothecium very pale, dirty-clouded; hymenium of pale bluish nigrescence, paraphyses distinct, apices nigricant; spores 8, colourless, oblongo-fusiform, 1-septate, small.

On trees, not unfrequent.


FIG:—Hepp Sporen t. 4. f. 16.


Fellm. 155.

Geog. Distrib:—E. Lapland, Germany, Italy, Hungary, Switzerland.

Bot. Prov:—15...19.


IRELAND:—Glencar co. Kerry. Mr. Carroll.

Readily distinguished from L. cyrtella and L. anomala by careful observation and comparison of the above characters and the size and form of the spores .010—.012 mm. long, .003 mm. broad. "Spores .009—.012 mm. long, .002—.003 mm. broad. Gelatina hymenea I blue then vinous." (Nyl.) "Spores .008—.015 mm. long. .002—.0035 mm. broad. Spermatia slender, straightish or slightly curved .004—5 mm. long." (T. M. Fries.)

248. L. denigrata, Fr. fusco-nigricant, somewhat virescent, thin, effuse, minutely granulose, (K—C—); apothecia minute, conglomerate, sessile, livid-black, convex, sub-immarginate; hypothecium colourless, pale-yellowish; paraphyses distinct, darker, somewhat virescent, apices yellowish-fuscaceous; spores 8, colourless, elliptico-oblong or ovate, straight or slightly curved, 1-septate, small.

On old pales, posts, &c., not unfrequent. 1831.


Geog. Distrib:—Switzerland, Italy, Germany, Scandinavia.

Bot. Prov:—2...3...5...10.


"Gelatina hymenea I blue. Spores .009—.013 mm. long, .0025—.004 mm. broad." (Nyl.) Spores .01—.011 mm. long, .003 mm. broad.

249. L. pulverea, Borr. pale-greyish-green, minutely granuloso-pulverulent or mealsly, soft, effuse, indeterminate, moderately thick, (K yellow C—); apothecia rather large, scattered or conglomerate, adnato-sessile, black, internally pale, plane, with a paler livid slightly
raised margin, eventually convex and immarginate; hypothecium colourless; hymenium narrow, seated on a pale-yellow thin stratum which rests on a white opake stratum, subtended by a lateral yellow excipulum; paraphyses distinct, apices nigricant; spores 8, colourless, oblong or elliptico-oblong, 1-septate, large.

On trees, mountain-ash, alder, rare. 1807.

**FIG:**—E. Bot. Suppl. 2726.
**GEOG. DISTRIB:**—Europe.
**BOT. PROV.:**—2...7...12...15...19...26.
**WALES:**—Capel Cwm, Barmouth! Rev. T. Salwey & *Mr. Borrer.* Llanbedr Valley. *Mr. Holmes.* Glyn! near Capel Curig. Trefriw! Capel Arthog! Gaer Ditches! Not unlike the commutata form of *L. Lightfootii,* but differs in size and shape of the spores and chemical reaction. "Spores .003—.0035 in. long, by .00125 in. broad." (Mudd.) Spores .016—.018 mm. long, .0075—.0085 mm. broad.

†† Apothecia livido-fuscosum to black.

250. *L. lenticularis,* Ach. brownish or nigricant or cinereofuscous, thin, indeterminate or evanescent, (K—C—); apothecia livido-fuscosus, rufo-fuscosus, black or fuscosus-black, small, plane, marginate; hypothecium colourless; spores 8, colourless, oblong or lineari-oblong, 1-septate, small.

On mountain and maritime rocks, not unfrequent.

**GEOG. DISTRIB:**—Switzerland, Germany, Italy, N. Africa, Denmark, Sweden, Norway, Finland
**BOT. PROV.:**—7...19...30...31.
"Spores .007—.011 mm. long, .003—.004 mm. broad." (Nyl.) "Spores .006—.011 mm. long, .002—.004 mm. broad." (T. M. Fries.)

forma vulgaris, (Korb.) albido-cinerascent or cinerascent, sub-pulverulent, scarcely granulose, thin, indeterminate; apothecia rufo-fuscosum or fuscosus-black.

On rocks, frequent.

**EXS:**—Zw. 272. Anzli Von. 67. Ital. S. 254. Langob. 120.
**BOT. PROV.:**—2...7...15...26.
**england:**—Beachy Head! *Mr. Holmes.*
**SCOTLAND:**—Craig Tulloch. Rev. *J. M. Crombie.*
**IRELAND:**—Lough Corrib! *Mr. Larbalestier.*
**WALES:**—Eglwyseg rocks! Nant Gwynant!

forma pulicaris, (Mass.) pallido-fuscoscum, smooth, thin, continuous, indeterminate; apothecia nigro-fuscosum or rufescem, small.

On rocks, not unfrequent.

**SYN:**—Mass. *Ric.* 136. (1852.)
**FIG:**—Mass. *Ric.* fig. 287.
**EXS:**—Anzli Von. 63.
**BOT. PROV.:**—7...26.
**IRELAND:**—Twelve Pins! Westport! Doughruagh! near Lettermore! Connemara. *Mr. Larbalestier.*
**WALES:**—Trefriw! Holyhead Mountain!
forma **rimoso-areolata**, Leight. *darkly-cinereous, tartareous, thickish, rimoso-areolate or diffract, areolae large, plane or flattish, uneven, (K—C—); apothecia black, small, subimnato-sessile or sessile, margin thin soon obliterated; hypothecium colourless; paraphyses distinct but coherent, apices blackish; spores 8, colourless, oblong or linear-oblong, sometimes subacute at each apex, 1-septate; gel. hym. I vinous.

On rocks, rare. 1875.


**Ireland** — Lettermore! near Rinvyle, co. Galway! Mr. Larbalestier. (1875.)

forma **chloropoliza**, Nyl. *cinereo-mescent, thin, unequal or rugulose; apothecia large. On maritime rocks, not common."

**Syn.** — Nyl. Armor. in Bull. Soc. Bot. Fr. 3. p. 758. (1861.)

**Geog. Distr.** — France.

**Bot. Prov.** — 15...24...31.

**Scotland** — Kincardine. Rev. J. M. Crombie.

**Ireland** — Kilkee co. Clare. Mr. Carroll.

**Channel Islands** — Boulay Bay, Jersey. Mr. Larbalestier.

forma **negricans**, Arn. *nigricant, thin, furfuraceous, diffract; apothecia large, black. On rocks and mortar, rare. 1875.*

**Syn.** — Arnold in Flora 1860. p. 74.

**Exs.** — Anzi Venet. 175.

**Geog. Distr.** — Sweden, Germany, Italy.

**Bot. Prov.** — 7

**Wales** — On the mortar of Pont Dysynni near Towy! (1875.)

"Spores 0.009—11 mm. long, 0.003 mm. broad." (Arnold.)

forma **rhiparocarpa**, Nyl. said to be found on rocks in Craig Tulloch, Scotland, by Rev. J. M. Crombie (1870), but I have seen neither diagnosis nor specimen.

forma **acrustacea**, Hepp. *thallus evanescent or altogether obliterated; apothecia black, variable in size, moderate. On rocks."

**Syn.** — Arnold in Flora 1858. p. 502.

**Exs.** — Arn. 471.

**Bot. Prov.** — 7...26.

**Ireland** — Rinvyle! Doughruagh! co. Galway. Mr. Larbalestier.

**Wales** — Crib Coch! Snowdon.

forma **oxydata**, Leight. *ferrugineo-ochraceous; apothecia black, minute. On rocks."


**Ireland** — Near Letterfrack! co. Galway. Mr. Larbalestier.

forma **nigro-clavata**, Nyl. evanescent; apothecia small, superficial, convex or plane, internally cinerascant in the middle; spores 8, pale-yellow, oblongo-cylindrical, simple.

On trees, cherry, elm.


**Geog. Distr.** — France, Germany, Russia, Algeria.

**Bot. Prov.** — 2...24.

**England** — Shanklin, Isle of Wight. Dr. Hott.

**Ireland** — Bostellan co. Cork; near Limerick. Mr. Carroll.
"Spores .010—9 mm. long, .004—2 mm. broad. Paraphyses thick, excessively nigro-clavate at the apices. Hypothecium excipulare fuscosum." (Nyl.)

forma minor, Cromb. smaller.

STN :—Crombie En. 91.
BOT. PROV :—19.
IRELAND :—Turk Mountain, Killarney.

251. L. rupicola, Nyl. glaucous, thin, opake, subrimulose; apothecia livid or livido-fuscosus, pallescent, plane, marginate, generally with a spurious thalline margin; hypothecium colourless; spores 8, colourless, oblong or sublinear-oblong, 1-septate; paraphyses distinct, coherent, apices colourless; epithecium sublutescenti-granulose.

On moist micaceous-chistose rocks. 1877.

STN :—Nyl. in Flora 1877. p. 228.
BOT. PROV :—26.
IRELAND :—Dawros Cliffs! Galway. Mr. Larvalester. (1877.)

"Spores .010—11 mm. long, .004 mm. broad. Gelatina hymeniae I blue then vinous-red. Scarcely specifically different from L. cyrtella, with which it agrees in the sparmata. May be regarded as a Lecanora, but far removed from L. erysibe. (Nyl.) Spores .012—.015 mm. long, .005—6 mm. broad.

252. L. anomala, (Fr.) albo-cinerascens, sub-granulos-pulverulent, thin, sometimes evanescent, (K—C—); apothecia livido-rufous or blackish, adnate, plane, margin thin, at length convex and margin obliterated, internally colourless; hypothecium colourless; hymenium colourless; paraphyses concrete, apices pale; spores 8, colourless, oblong or elliptical, 1-septate, large.

On trees, ash, holly, not common.

GEOG. DISTRIBUT :—Scandinavia.
BOT. PROV :—3...10...26.
ENGLAND :—Near Ayton; Airyholme! Cleveland. Mr. Mudd. Hickmore, Fen Wood; Milne End near Colchester; Felix Hall Park; Kelvedon, Pod's Wood, Messing, Essex. Mr. Varene.
IRELAND :—Near Lough Muck, co. Galway. Mr. Larvalester.

Form and size of spores distinguish it from L. tricolor and L. globulosa. The apothecia moistened with K and C remain dark and do not become transparent as in L. cyrtella. Spores .011—.014 mm. long, .004—.005 mm. broad.

253. L. tricolor, (With.) whitish, very thin, unequal or obolute or sub-granulos-rugose, effuse, (K yellow C orange); apothecia carneo-fuscosus or livido-fuscosus or nigricans, plane, margin thin, paler; hypothecium colourless, lateral excipulum very pale-brownish; spores 8, colourless, oblongo-ellipsoid or oblongo-fusiform, 1-septate.

On oak and pine, ash, hawthorn, sycamore, trees, common. 1796.


Fig :—E. Bot. 1735. Hepp Sporen t. 85. f. 738.
EXS :—Bohl. 119. Zw. 82. Arn. 216. Hepp 738. Korb. 278. Leight. 70.
GEOG. DISTRIBUT :—Sweden, Italy, Germany.
BOT. PROV :—2, 3, 4, 5...7, 8, 9, 10, 11...15...19...25...30, 31.


Ireland:—Near Cork and Gleustal, co. Tipperary. Mr. Carroll. near Belfast. Mr. Templeton. near Dunkerron. Dr. Taylor.

Wales:—Garn near Denbigh. Mr. Griffith. (1796.) Drwsynant! Builth! Tremadoc!

Channel Islands:—St. Peter’s Wood! Jersey. Mr. Larbalestier.

“...Spores .0025—.003 in. long, by .0075 in. broad. Spermatia cylindric-arcuate, more or less attenuated towards the extremities.” (Mudd.) “...Spores .010—.20 long, .055—.045 mm. broad.” (Nyl.) “...Spores .008—16 mm. long, .003—4 mm. broad.” (T. M. Fries.) Spores .011—.013 mm. long, .003—4 mm. broad.

254. L. prasiniza, Nyl. dirty-virescent, subgranulato-furfuraceous, scattered, indeterminate; apothecia livido-fuscous or blackish, minute, innato-sessile; hypothecium colourless; hymenium violaceo-blackish; paraphyses scarcely distinct, apices colourless; spores 8, colourless, oblongo-ellipsoid or lineari-oblong, simple, or 1-septate, minute.

On semiputrid trunks, rare.

Syn:—Nyl. in Flora 1874. p. 312.

Geog. DistriBR:—Finland.

Bot. Prov.:—16.


“...Spores .011—.012 mm. long, .004 mm. broad.” (Nyl.)

255. L. atropurpurea, Schær, greenish-grey, granuloso-leprose, effuse, (K—C)—; apothecia livido-carneous or livido-rufous, at length fusco-nigrant, (reddish-brown when moist,.) minute, scattered, sessile, plane or convex, margin thin, entire, darker than the epithecium; hypothecium pale, colourless or pale yellowish; excipulum externally fuscos; paraphyses coherent, apices fuscescent; spores 8, colourless, elliptical or ovate, 1-septate.

On trees, not common.


Fig:—Mass. Ric. f. 265.


Geog. DistriBR:—Switzerland, Germany, Denmark, Sweden, Norway, Finland.

Bot. Prov.:—2...7...19...31.


Wales:—Capel Arthog! Gwydir woods! Bettwys-y-coed.

Channel Islands:—Rozel, Jersey! Mr. Larbalestier.

“...Spores .010—14 mm. long, .005—7 mm. broad. Spermatia short, sub-cylindrical or slightly incrassate at both ends, straightish or slightly curved.” (T. M. Fries.) Gel. hym. I blue then deep-vinous-red or brown. Spores .011—.015 mm. long, .005—.007 mm. broad. The apothecia when moistened become reddish-brown and transparent from the pale hypothecium, with the margin dark-fuscous, thus distinguishing it from L. Laureri, Hepp.

256. L. atropurpuraceens, Nyl. “Somewhat similar to L. atropurpurea, Schær, but differing amongst other characters in having gel. hym. I intensely and persistently bluish.” (Nyl.)

On aged oaks. 1865.
257. *L. spodiza*, Nyl. dark-greyish, thin, subc opaque, minutely granulated, or inepersed with greyish-green minute granules (K—C tawny red); apothecia livid-grey or livid-pale, slightly convex, im- marginate, colourless within; spores 8, colourless, oblong, frequently subcurved, and sometimes obscurely or sparsely 1-septate; epithecium sordid; paraphyses not very well discrete; hypothecium colourless; gelatina hymenae I bluish.

On old fir pales, rare. 1873.

**Syn.** : Nyl. in *Flora* 1874. p. 9.

**Bot. Prov.** :—15.

**Scotland.** :—About Killin. Rev. J. M. Crombie. (1873.)

"Allied to *L. denigrata*, but distinct. Spores .011—.017 mm. long, .0025—.0035 mm. broad." (Nyl.)

258. *L. hemipoliella*, Nyl. "Forsitan sub-species *L. denigrata*, thallo vix ullo visibili; apothecis parvis lividis vel pro parte pallidis; sporis vulgo 1-septatis, long. .008—.011 mm. crass. .003 mm.; epithecium K leviter violaceo-dissolutum." Nyl. in *Flora*, 1875, p. 11.

No specimen has been seen by me.

var. *semiaubula*, Nyl. whitish or livid-whitish, thin, slightly rimuloso-areolate; spores 2—4—nucleated, septa discernible by K.

On decorticated wood, rare. 1875.

**Syn.** :—Stirton in Trans. Glasgow Soc. Nat. p. 89. (1875.)

**Bot. Prov.** :—17.

**Scotland.** :—Near Altnaharra co. Sutherland. Dr. Stirton. (1875.)

†† *Apothecia yellow.*

259. *L. luteella*, Nyl. white, very thin or albo-macular; apothecia pale-yellow, small, margined (or submarginate, young ones gyrolectoid), colourless within; spores 8, colourless, oblong, or oblongo-fusiform, 1-septate; thecae often thick and solid at the apices; paraphyses slender.

On calcareous rocks, rare. 1865.

**Syn.** :—Nyl. in *Flora* 1865. p. 6. Crombie En. 73.

**Geog. Distr:** — Europe.


**England.** :—Upperton, Eastbourne. Mr. Reper.

**Ireland.** :—Sheepwalk, Armagh. Adm. Jones.

"Systematically after *L. crysiboides*, Nyl. Spores .016—.023 mm. long, .003—.007 mm. broad." (Nyl.)

260. *L. littorella*, Nyl. glauco-virescent, very thin, rimulose; apothecia pale-yellow, biatorine, small, plane, submarginate; hypothecium colourless; spores 8, colourless, oblong, 1-septate; paraphyses slender, apices colourless.

On shady rocks, rare. 1876.

**Syn.** :—Nyl. in *Flora* 1877. p. 229.


**Ireland.** :—Lough Inagh! Galway. Mr. Larbalestier. (1876.)
“Like *L. polytropa*. Spores .006—.012 mm. long, .0035—.0045 mm. broad. Gelatina hymenes I blue then vinous-red.” (Nyl.) Spores .016 mm. long, .007 mm. broad.

261. *L. Arnoldi*, (Krmphbr.) whitish, effuse, tartareo-farinose, (K—C—); apothecia croceo-ferruginous, minute, sessile, somewhat concave with a thick paler margin, afterwards plano-convex and immarginate; hymenium yellowish-brown, paraphyses distinct but coherent, apices colourless; hypothecium grumous, pale-yellowish-brown; spores 8, colourless, narrowly elliptical, 1-septate.

On calcareous rocks, rare. 1876.


**Figs:**—Hepp Sporen t. 59. f. 507.

**Exs:**—Zw. 236. Hepp 507. Arn. 75.

**Geog. Distrib.**—Germany, Sweden.


**Ireland**—Twelve Pins! Connemara. *Mr. Larbalestier*. (1876.)

*Gelatina hymenea* I viol. Spores .015—.017 mm. long, .005 mm. broad.

262. *L. albicarnea*, Nyl. whitish, thin, at length rimuloso-diffract, (K—C—); apothecia pale-yellowish-flesh colour, convex, immarginate, internally colourless; hypothecium colourless; paraphyses slender, not fully distinct, apices colourless; spores 8, colourless, oblong, simple, or obsoletely 1-septate, minute.

On rocks and stone walls, rare. 1876.

**SYN:**—Nyl. in Flora 1876. p. 234.


**Ireland**—Mwerlan; Lettermore; Ballinahinch, Lough Inagh, Doughruagh! co. Galway. *Mr. Larbalestier*. (1876.)

“Spores .009—.014 mm. long, .003—.0035 mm. broad. *Gelatina hymenea* I bright-blue then vinous-red.” (Nyl.) Resembling *L. albicarnea*, but with different spores.

f. *umbrosa*, Nyl. thallus thicker, tartareous, coarsely areolato-diffract.

**Ireland**—Mwerlan! near Kylemore, Galway. *Mr. Larbalestier*. (1877.)

263. *L. luteorosella*, Nyl. dirty-yellowish, tartareous, thin, rimulose, furfuraceous; apothecia reddish-flesh-colour, scattered, convex, immarginate; spores 8, colourless, linearisubfustiform, 1-septate.

On rocks, very rare. 1877.

**Exs:**—Lojka Transyl. 3210 and 3261.


**Ireland**—Twelve Pins! *Mr. Larbalestier*. (1877.)

264. *L. subtilula*, Leight. dark-dirty-sea-green, thin, effuse, continuous, very slightly rimulose; apothecia pale, waxy, minute, elevato-sessile; epithecium pale-brown, plane or concave, surrounded by a thickish, pale, waxy, elevated margin; hypothecium colourless; paraphyses indistinct, conglutinate, apices brown; spores 8, colourless, oblong, 1-septate, minute, somewhat constricted in the middle.

On rocks, rare. 1872.

**SYN:**—Leight. in litt. 1872. May. Linn. Trans. 2d. ser. 1. p. 145.

**Fig.**—Linn. Trans. 1. c. tab. 22. fig. 18—19.

**Bot. Prov.**—31.
265. *L. lutea*, (Dicks.) albenscent, effuse, very thin, granulose-prose or evanescent, (K—C—); apothecia bright-carmine-fuscouscent, rather large, scattered, more or less concave, then plano-convex, margin entire, thin, smooth, paler, flexuose; hypothecium thick, colourless, carnose; spores 8, colourless, fusiform-oblong, 1-septate.

On mosses and trees, not common. 1785.


**GEOG. DISTRIBUTION:**—France, Germany, Austria, Bavaria, Cuba, Ceylon, Lapland, Norway, America, Sandwich Islands.

**BOT. PHYL.:—** 1. 2...5. 7...19. 28...30. 31.


**WALES:**—Near Bangor. Mr. Turner. near Cwm Bychan. Mr. Holmes. Llyn Gwerman! Cader Idris!

**CHANNEL ISLANDS:**—Quenvais! Rozel! Jersey. Mr. Larbalestier.

“Paraphyses conglutinate. Spores .0025 in. long by .0005 to .00075 in. broad.” (Mudd.) Spores .0145—.016 mm. long, .0035 mm. broad.

266. *L. cyrtella*, Ach. pale or whitish or cream-coloured, very thin, unequal or evanescent, (K—C—); apothecia pale-tawny-yellow or livido-rufescent or rufescent, plane or convex, small, generally with more or less of a pseudothalline white margin, internally colourless; hypothecium colourless; hymenium colourless, paraphyses concrete, apices pale; spores 8, colourless, linear-oblong, 1-septate, rather large.

On trees, not unfrequent; on rocks, rarer. 1810.


**FIG.:—** E. Bot. 2155.


**GEOG. DISTRIBUTION:**—Switzerland, Bavaria, Lombardy, Hungary, Germany, Italy, E. Lapland.

**BOT. PHYL.:—** 2...4. 5. 6...8. 10...24...30...31.


**WALES:**—Goodwick Bay! Pembrokeshire (saxicola).

**_CHANNEL ISLANDS:**—(saxicola) Ann Port, Jersey. Mr. Larbalestier.

The apothecia when moistened with K and subsequently with C become pale and transparent in the disk with a very thin greenish line around the circumference. Spores .0115—.015 mm. long, .004 mm. broad. Gelatina hymenae I blue.

267. *L. pilularis*, Korb. pale-glauco-virescent, minutely-granulato-leprose, effuse (K—C—); apothecia yellowish-flesh-colour, ses-
sile, convex, subimmarginate; hypothecium colourless or very pale-yellowish; paraphyses coherent, apices colourless; spores 8, colourless, ellipsoidal, 1-septate:

On old ivy, rare. 1877.

SYN:—Körb. Par. 136. (1865.)

Fig.:—Hepp Sporen t. 85. f. 739.


GEOG. DISTRIB.:—Germany, Hungary, Cuba, Amazons.

BOT. PROV.:—26.

IRELAND:—Glendalough! Galway. Mr. Larbalestier. (1877.)

K has no effect in tinging the apothecia. Spores .012—.013 mm. long, .004—5 mm. broad.

268. *L. fallax*, (Hepp.) cinereo-virescent, thin, subleprose, effuse; apothecia flesh-colour-yellow, somewhat convex or convex, immarginate (young apothecia with an obtuse margin), colourless within; spores 8, colourless, oblong or oblongo-fusiform, 1-septate; paraphyses slender or indistinct; epithecium, hymenium, and hypothecium colourless; gelatina hymenae blue, then violet, with iodine. (K turns apothecia reddish.)

On elms, rare. 1865.


Fig.:—Hepp Sporen t. 58. f. 505.


GEOG. DISTRIB.:—Germany, Switzerland, Pyrenees, Italy, Bavaria, Cuba.

BOT. PROV.:—1, 2.

ENGLAND:—Leigh Woods! Clifton, co. Somerset. Mr. Larbalestier. (1865.) near Shanklin, Isle of Wight. Dr. Holl.

"Spores .009—.012 mm. long, .002—.003 mm. broad." (Nyl.) Spores .012—.013 mm. long, .003 mm. broad.

269. *L. Ehrhartiana*, (Ach.) albido-flavescent, effuse, granulatirugose or evanescent; apothecia pale-yellow, small, numerous, adnate, plane, margin thin, afterwards convex and immarginate; hypothecium colourless; spores 8, colourless, linear- or fusiform-oblong, 1-septate, small.

On exposed old timber, barns, &c., not common. 1803.

Christostomum corrugatum, Fr. (Leight. Angioc. Lich. p. 69. t. 30. f. L) constitutes the spermogonia of this lichen.


Fig.:—E. Bot. 1136. Leight. Angioc. Lich. t. 30. f. 2.


GEOG. DISTRIB.:—Switzerland, Germany, Sweden, Lapland, Finland, Italy.

BOT. PROV.:—1, 2, 3, 4, 5.


"Spores .002—.003 in. long by .00075 in. broad. Spermatia linear-oblong or ellipsoidal, .0005—.00075 in. long by .0002 in. broad." (Mudd.) "Spores .08—.11 mm. long, .0025—.0035 mm. broad." (Nyl.) "Spores .007—.11 mm. long, .0025—.0035 mm. broad." (T. M. Fries.) Spores .007—.01 mm. long, .0015—.0025 mm. broad.

270. *L. Bouteillei*, (Desmaz.) albido-subvirescent, filmy, thin, effuse, minutely granulose, (K—C—); apothecia pale-yellow-flesh-colour, minute, scattered, adnato-sessile, plane, margin thin,
paler, entire or crenato-flexuose, (K—); hypothecium colourless; spores 8, colourless, ellipsoid, 1-septate, minute.

On leaves of box, fir and elm bark, rare. 1868.


Exs.:—Arn. 331. Rahl. 856.

Geog. Distr.:—France, Germany.

Bot. Prov.:—2.

England:—Danny Sandfield! Sussex, *Mr. Larbolestier.*

"Spores .005—.010 mm. long, .003—4 mm. broad. Paraphyses slender, irregular; gelatina hymenea I blue than dirty-lutescent, the apices of the asci remaining blue." (Nyl.)

271. *L. erysiboides*, Nyl. *green, leprose, thin, nearly indeterminate, almost evanescent, (K—C—); apothecia testaceo-rufous, small, sub-convex, immarginate, opake; hypothecium colourless; spores 8, colourless, *ovoid, apically obtuse, 1-septate; paraphyses indistinct.*

On old trunks and wood in moist shady places, rare. 1870.


Exs.:—Fellm. 156. Arn. 280.

Geog. Distr.:—Sweden.

Bot. Prov.:—I. 2...15.


"Spores .007—.010 mm. long, .0035—.0045 mm. broad. Gelatina hymenea I blue then dirty-vinoso-red." (Nyl.) "Spores .007—.010 mm. long, .003—.005 mm. broad." (T. M. Fries.)

272. *L. subspheroides*, Nyl. *whitish, thin, areolato-rimose, rugulose; apothecia pale-reddish, margined, at length convex, margin excluded, moderate; hypothecium colourless; spores 8, colourless, ellipsoid or oblongo-ellipsoid, 1-septate; paraphyses not discrete; gelatina hymenea I bluish, and thece violet.*

On young beech trees, rare. 1873.

SYN:—Nyl. in Flora 1873. p. 299—300.

Bot. Prov.:—2.


"Spores .014—17 mm. long, .005—7 mm. broad." (Nyl.)

273. *L. diluta*, (Pers.) *virescent, leprose, very thin, or evanescent, (K—C—); apothecia pale-rufous-yellow or whitish-flesh-colour, minute, numerous, scattered, concave, almost areolate, margin paler, smooth, thickish, waxy; hypothecium colourless; spores 8, colourless, elliptico-oblong, 1-septate.*

On bases of pine trees, frequent. 1808.


Exs.:—E. Bot. 1863. two lower fig.


Geog. Distr.:—Germany, Bavaria, France, Switzerland, Sweden, Finland, America, Hungary.

Bot. Prov.:—2...4. 5...8...10...19...22...24. 25...28...30. 31.

England:—Cossey near Norwich, *Sir W. J. Hooker.* (1893.) Wood east end


Channel Islands:—Rozel. Jersey. Mr. Larbalestier.

"Spores .002 in. long by .0005 in. broad." (Mudd.) "Spores .009—.019 mm. long, .003—4 mm. broad." (Nyl.) Spores .009—.012 mm. long, .003—4 mm. broad. Gelatina hymenea I very pale-blue.

forma leucostigma, Leight, apothecia quite pale, white and waxy, numerous, scattered or conjugate, very minute.

On elm (Ulmus montana), Rallt Hill! near Buttington and Welshpool, Montgomeryshire. (1875.)

D. Spores 1-3-septate (sometimes simple.)

274. L. subviridescens, Nyl. virescent, very thin, opake, or obsolete; apothecia fuscos, opake or fusco-livescent, convex, immarginate, dusky within; spores 8, colourless, oblong, simple or 1-3-septate; paraphyses indistinct; epithecium and hypothecium dusky; gelatina hymenea blue, then vinous-red with iodine.

On the earth in maritime localities, rare. 1868.


Geog. Distribs:—Europe.

Bot. Prov:—31.

Channel Islands:—Boulay Bay, Jersey. Mr. Larbalestier.

"Like L. viridescens, Ach. Spores .011—.018 mm. long, .004—.006 mm. broad." (Nyl.)

275. L. subturgidula, Nyl. whitish or virescent, very thin, effuse; apothecia livid or pale-dusky-livid, opake, convex, immarginate, in section hypothecium fuscos with a superior albicant stratum; spores 8, colourless, oblong, simple or 1-3-septate; paraphyses indistinct; epithecium white; hypothecium fuscescent; gelatina hymenea blue, then often fulvescent with iodine.

On holly, rare. 1868.

Syn:—Nyl. in Flora 1868. p. 343. Crombie En. 72.

Geog. Distribs:—Europe.

Bot. Prov:—2...7...26.

England:—Near Lyndhurst in the New Forest! Rev. J. M. Crombie. (1868.)

Ireland:—Tully wee Bridge! co. Galway. Mr. Larbalestier.

Wales:—Trefriw!

"Approaches L. aprocris. Nyl. Spores .008—.014 mm. long, .003—.004 mm. broad." (Nyl.) Spores .0125—.013 mm. long, .003—.004 mm. broad.

276. L. Caradacensis, Leight. dull-grey-greenish-olive, cartilaginous, effuse, rimoso-areolate, granulato-verrucose, scales minute, adnate, roundish, convex, crumped or wrinkled, more or less minutely crenulate, (K yellow C orange-yellow); apothecia dull-black, sessile on the areole, more or less imbedded, scattered or confluent, margin thin, flexuose; hypothecium rufo-fuscos or dark-brown; excipulum thin, lateral, nigro-fuscos; paraphyses conglutinate, brown, apices fuscos; spores 8, colourless, elliptico-fusiform, 3-septate, (sometimes 1 or 2-septate,) minute.
On fir trees, old palings, &c., frequent. 1854.


*Exs.* :—Leight. 160.

*Geog. Distr.* :—*Europe.*

*Bot. Prov.* :—2, 3...5...8.


Spores .0115—.0135 mm. long. .004—.0045 mm. broad.

277. *L. incompta,* Borr. cinereo-virescent, thin, crustaceous, unequal, sub-granuloso-furfuraceus; apothecia dull-black, numerous, adnate, plane, margin thin, flexuose; hypothecium thick, black; spores 8, colourless, shortly lineari-cylindrical, 1-2-3-septate.

On trees, frequent. 1831.


*Fig.* :—*E. Bot. Suppl.* 2699.


*Geog. Distr.* :—Switzerland, Italy, Germany, E. Lapland, Denmark, Sweden.

*Bot. Prov.* :—1, 2, 3...5...10...24...31.


*Ireland.* :—Adare near Limerick! *Mr. Carroll.*

*Channel Islands.* :—St. Martin's, Jersey. *Mr. Larbalestier.*

Spores .021—.025 mm. long. .002—.003 mm. broad.

278. *L. prasinoides,* Nyl. green, thin, sub-granulate or very thin, subleprose, indeterminate; apothecia pale-flesh-colour, minute, somewhat plane, obtusely or obsolesly margined (in dry state without margin, but in moist corneo-hyaline), colourless within; spores 8, colourless, bacillar or fusiformi-bacillar, 1-3-septate; paraphyses slender, colourless at the apices; hypothecium colourless; gelatina hymenea vinous-red with iodine.

On calcareous and sandstone rocks, rare. 1865.


*Geog. Distr.* :—*Europe.*

*Bot. Prov.* :—19...23.


"Resembling *L. lutola var. chlorotica,* Ach. but with spores even shorter than in the common *L. bacillifera,* Nyl. Spores .012—.021 mm. long. .0025—.0035 mm. broad." (Nyl.)

279. *L. Naegelii,* (Hepp.) albido-cinerascent, thin, filmy or slightly granulose, (K—C—); apothecia livido-carneous, sometimes livido-fuscescent, adnate, plane or slightly concave, margin thin, afterwards subconvex and immarginate, small; hypothecium colour-
THE LICHEN-FLORA

less; paraphyses distinct but coherent, apices colourless; spores 8, colourless, elongato-or sub fusiformi-oblong, apices obtuse, simple or 1-2 or 3-septate.

On trees. 1876.


FIG.:—Hepp Sporen t. 4. f. 19.


GEOG. DISTRIBUTION:—Denmark, Sweden, Norway, Finland, Germany, Lombardy, Italy, Scandinavia, Cuba.

BOT. PROV.:—3...26...28.

ENGLAND:—Shiere, Surrey. Dr. Capron.

IRELAND:—Banks of Erriff River! Connemara. Mr. Larbalestier. (1876.)


The apothecia when wetted with water display a pale transparent disk, surrounded by a dark circumferential ring. Gelatina hymenae I dark-blue then dirty-darkly-fulvescent. Spores .0145—.0165 mm. long, .004—.0045 mm. broad, generally straight sometimes curved. "Spores .015—.022 mm. long, .004—.006 mm. broad." (T. M. Fries.)

280. L. albidocarnea, Nyl. whitish, thin, irregular, rimuloso-difract. (K—C—); apothecia pale-yellowish-flesh-colour, convex, involutate, large, internally colourless; hypothecium colourless; paraphyses slender, distinct, apices clavato-incrassate, colourless; spores 8, colourless, oblong or oblongo-fusiform, 1-2 or 3-septate.

On micaceo-achistose rocks and stone walls, rare. 1876.

SYN.:—Nyl. in Flora 1877. p. 459.

IRELAND:—Ballinafinch! co. Galway. Mr. Larbalestier. (1876.)

"Similar to L. albidocarnea. Nyl. but of the stirps of L. sphaeroides. Spores .010—.018 mm. long, .0035—.0045 mm. broad. Gelatina hymenae I slightly blue then vinous-red." (Nyl.) Spores .013—.022 mm. long, .005 mm. broad.

281. L. chlorotropoides, Nyl. "similis L. albovirellae, Nyl." but apothecia testaceo-rufescent with a dark margin; hypothecium pale-violet; excipulum bright-violet; spores 8, colourless, bacillar, simple or 1-3-septate.

On calcareous rocks, rare. 1877.

SYN.:—Nyl. in Flora 1877. p. 567.

BOT. PROV.:—26.

IRELAND:—Kylemore. Mr. Larbalestier. (1877.)

"Gelatina hymenae I blue then vinous-red. Spores .014—.020 mm. long, .002—.003 mm. broad." (Nyl.)

E. Spores 3-septate, brown.

* Hypothecium dark.

282. L. alboatra, (Hoffm.) white or albicant, unequal, sub-farinose, effuse, sometimes sub-evanescent, (K—C—); apothecia black, albo-suffused or naked, small, adnate, sometimes spuriously lecanoroid; hypothecium fuscous; spores 8, fuscos, ellipsoid, 3-septate, sometimes irregularly muriform.

On various trees and pales, common. 1808.


FIG.:—E. Bot. 1892. Hepp Sporen t. 17. f. 148.

OF GREAT BRITAIN,


Bot. Prov: — 1, 2, 3, 4, 5, 6, 7...10...15...(19...26...30)...31.


"Spores .016—20 mm. long, .007—9 mm. broad." (Nyl.) "Spores .003—.004 in. long, .00125—.002 in. broad. Sporae straight, cylindrical." (Mudd.) "Spores .015—22 mm. long, .007—10 mm. broad." (T. M. Fries.) Spores .0165—.0185 mm. long, .0085—.0095 mm. broad.

forma populorum, Mass. greysih-white, sub-orbicular, determinate, unequal or areolato-verrucosus, (K—C); apothecia constantly naked.

On poplar, not common. 1860.


Fig: — Mass. Ric. f. 201.


Geog. Distrib: — France, Italy, Germany, Hungary.


England: — Near Easby and Carlton, Cleveland. Mr. Mudd (1860.)

forma epipolia (Ach.) white, tartaraceous, rimoso-areolata, areolae unequal or swelling; apothecia black, cæsio-pruinose, plane, at length convex or hemispherical, always sessile, proper margin persistent.

On calcareous rocks and walls, frequent. 1803.


Fig: — E. Bot. 1137. Hepp Spore t. 17. f. 146.


Geog. Distrib: — Egypt, Norway, Germany, Italy.

Bot. Prov: — 1, 2, 3, 4, 5,...7...10...31.


Wales: — Fishguard! Pembrokehire.

Channel Islands: — Jersey; Guernsey. Mr. Larbalestier.

forma margaritacea, (Ach.) glaucous-white or pearly, subpulverulent, tartaraceous, unequal, contiguous, subrimeose; apothecia black, albo-pruinose, minute, immersed, at first plane with a very thin margin, then hemispherico-convex, immarginate, with a spurious thalloidal margin.

On calcareous rocks and walls, frequent.


Fig: — Hepp Spore t. 17. f. 146.

Exs: — Hepp 146. Nyl. 64. Somrft. 59.

Geog. Distrib: — Hungary, Norway, France, Germany, Pyrenees.

Bot. Prov: — 2...5...7...10...20...36.

Ireland:—Near Cork! Mr. Carroll, near Kylemore! Connemara. Mr. Larbalestier.

Wales:—Dolbadarn Castle!

forma ambiguous, (Ach.) cinereo-fuscescent, thin, rimose; apothecia subimmersed, plane, when young with thin thallodial margin which at length vanishes, when adult with proper margin, naked.

On rocks, not unfrequent. 1871.


Geog. Distrb:—Germany, Transylvania, Switzerland, Sweden.

Bot. Prov:—5...23...26...31.

England:—Llanymynech Hill, Shropshire. (1871.)

Ireland:—Lettermore! Mr. Larbalestier. Portmarnock! Dublin. Dr. Taylor.

Wales:—St. David's! Pembroke.shire.

Channel Islands:—Green Island! St. Clement's Bay, Jersey. Mr. Larbalestier.

forma murorum, (Naeg.) pale-yellowish-white, thin, effuse, continuous, smooth, plane, rimose; apothecia black, very minute, deeply immersed, plane, with a very thin scarcely perceptible proper margin, naked.

On subalpine rocks, rare. 1877.

Syn:—Naeg. MS. in Hepp Exs. 30.

Fig:—Hepp Sporen t. 5. f. 30.

Exs:—Hepp 30.

Geog. Distrb:—Switzerland.


Ireland:—Base of the Doughruagh Mountain! Galway. Mr. Larbalestier. (1877.)

283. L. calcarea, (Weis.) white, orbicular, determinate, tartinco-farinose, rimulose-areolate in the centre, sub-effigurate at the circumference, (K—C—); apothecia largish, black, innate, plane, cesso-pruinose, when old convex, with white thallodal margin, proper margin black, thin, persistent; hypotecium fuscous-black; spores 5, fuscous, narrowly oblong or linear-oblong, 3-septate.

On calcareous rocks, frequent. 1808.

Syn:—Weis. Cr. Gotting. 40. (1772.) L. speirea, E. Bot!

Fig:—E. Bot. 1864.


Geog. Distrb:—Italy, Switzerland, Germany, Hungary, Bavaria.

Bot. Prov:—1...2...7...8...15. 16.


Wales:—Llandudno, Great Orme's Head! Eglwyseg rocks! Spores .019...02 mm. long, .006 mm. broad.

284. L. chlorophorae, Hepp. MS. tawny or creamy-white, verrucose or areolato-rimulose, unequal, scattered or sub-determinate, (K yellow then red); apothecia numerous, small, subinnavo-sessile, black, slightly pruinose, plane or convex; hypotecium dark-brown; spores 8, fuscous, oblong, 3-septate, irregularly muriform.

On maritime rocks, rare. 1868.
OF GREAT BRITAIN.

SYN:—Hepp MS. in herb. Arnold!

GEOG. DISTRIB:—Germany, Italy.

BOT. PROV:—6, 7.

WALES:—Aberdovey! North Wales. Rev. A. Bioxam. (1868.) North Cliff!

Tenby; Manorbier!

285. L. deducta, Nyl. greenish, effuse, obscurely sub-gelatinous; apothecia blackish, small, usually margined, reddish in a thin section; hypothecium more obscure in the middle; spores 8, colourless or faintly blackish, elliptical or oblong, 3-septate; paraphyses indistinct; gelatina hymenea blue, then vinous-red, with iodine.

On old felled holly stumps, very rare. 1869.


GEOG. DISTRIB:—Europe.

BOT. PROV:—2.

ENGLAND:—Near to Brockenhurst in New Forest! Rev. J. M. Crombie. (1869.)

"Perhaps only a var. of L. subturgidula, Nyl. but differing chiefly in the black and marginate apothecia. Spores .010—.013 mm. long, .0035—.0045 mm. broad." (Nyl.)

286. L. postuma, Nyl. cinerascent, evanescent; apothecia black, rather minute, somewhat plane, marginate, concolorous within; hypothecium and epithecidium fuscous; spores 6-8, colourless or fuscous, ellipsideo-oblong, 3-septate, generally with a few oblique or longitudinal septulae.

On calcareous stones in gravelly mountain localities, rare. 1868.

SYN:—Nyl. in Flora 1868. p. 345. Crombie En. 87.

GEOG. DISTRIB:—Europe.

BOT. PROV:—15.

SCOTLAND:—Morzone, Braemar. Rev. J. M. Crombie. (1868.)

"Possibly a starved variety of L. petrœa. "Spores .015—.016 mm. long, .006—.007 mm. broad." (Nyl.)

287. L. triphragmium, Nyl. similar to L. disciformis in the thallus (Ky then red) and general habit, but with spores 3-septate.

On shady rocks and trees in sub-alpine districts, rare. 1870.


EXS:—Wright 239.

GEOG. DISTRIB:—Norway, Sweden, Finland, Cuba, Calcutta.

BOT. PROV:—15.

SCOTLAND:—Morzone, Braemar. Rev. J. M. Crombie. (1870.)

"Spores .025—.034 mm. long, .009—.011 mm. broad." (Nyl.) Spores .022 mm. long, .009 mm. broad.

F. Spores 3-septate, colourless.

* Hypothecium dark.

288. L. Æderi, (Web.) ochraceo-ferruginous, thin, areolate or areolato-granulose, (K—C—); apothecia small, umbonate or generally plicate or sub-gyrose, black, plane, margin thin, flexuoso.

hymeneum black; spores 8, colourless, oblong, 3-septate, nucleolate.

On mountain and maritime rocks, frequent.


FIG:—Hepp Sporen t. 59. f. 508.

THE LIKEN-FLORA

Geog. Distrib.:—Switzerland, Bavaria, Austria, Sweden, Denmark, Norway, Finland.
Bot. Prov.:—1...7...10...15...19...26...30.


Scotland:—Ben Lawers. Dr. Holl. Castleton of Braemar; Blair Athole; Coast of Kincardine. Rev. J. M. Crombie.


"Spermata fine and delicate, cylindrical or subacircular." (Mudd.) "Spores .018—.024 mm. long. .008—.011 mm. broad." (Nyl.) "Spores .012—.022 mm. long. .006—.010 mm. broad." (T. M. Fries.) Spores .015—.018 mm. long. .007—.008 mm. broad.

289. L. mesoidea, Nyl. cinerascenet, thin, sub-opake, unequal, sub-areolato-rimulose, (K—C—) ; apothecia black, moderate, younger ones margined, then sub-convex and the margin evanescent, concolorous within; spores 8, colourless, oblong, 3-septate; paraphyses moderate, apices nigricant; hypothecium black with a yellowish-red or cerasino-rufescent middle stratum; gelatina hymenea caeruleuscent, then violet, with iodine.

On maritime micaceo-schistose rocks and old walls, rare. 1868.

Syn.:—Nyl. in Flora 1868. p. 475. Crombie En. 78.

Geog. Distrib.:—Europe.
Bot. Prov.:—26...31.

Ireland:—Killery Bay! Connemara. Mr. Larbalestier.
Wales:—Goodwick Bay! Pembrokeshire.
Channel Islands:—Sark. Fliquet Bay! Jersey. Mr. Larbalestier.

Approaching L. acclinis, (Flot.) but differs in the hypothecium, as also from L. squamulosa, Deck. by the distinct upper stratum of the hypothecium. The section of the hypothecium approaches most closely to that of L. squamulosa, but that species has a different thallus with different reaction, and larger spores of a different shape. "Spores .014—.017 mm. long. .006 mm. broad." (Nyl.) Spores .016—.018 mm. long. .0065—.007 mm. broad.

290. L. premneaoides, Nyl. pallido-virescent or cinereo-virescent, slightly leprous, effuse, (K—C—) ; apothecia black, moderate, marginated, plane, epithecium sometimes sub-virescenti-suffused; spores 8, colourless, oblong, obsolesly 3-septate; paraphyses slender; hypothecium black; gelatina hymenea vinous-red with iodine.

On walls in maritime localities, rare. 1865.

Syn.:—Nyl. in Flora 1865. p. 147. Crombie En. 79.

Geog. Distrib.:—Europe.
Bot. Prov.:—26...31.

Channel Islands:—Noirmont! Jersey. Mr. Larbalestier.
Ireland:—Doughraugh Mountain! Galway. Mr. Larbalestier.

Allied to L. aromatica, Ach. and granosa, Tuck. and with the aspect of L. prennea, Ach. "Spores .019—.25 mm. long. .007—.8 mm. broad." (Nyl.)

291. L. subimbricata, Nyl. darkly-cinerascenet, squamulose, squamules firm, subimbricate, subcrenate, everywhere concezent; apothecia black, plane, marginate, internally concolorous; hypothecium and excipulum rubricose; epithecium nigricant; spores 8, colourless, oblong, 3-septate; paraphyses distinct, moderate.

On calcareous rocks. 1876.

Syn.:—Nyl. in Flora 1877. p. 460.
Ireland:—Near Kylemore, Galway. Mr. Larbalestier. (1876.)
“Allied to L. squamulosa, Desk. but distinct by the thallus externally like that of Pannaria microphylla. Spores .015—16 mm. long, .0035—.0040 mm. broad. Gelatina hymenea I blue.” (Nyl.)

292. L. trachona, (Ach.) virescent, thin, leprose, minutely areolate, (K—C—); apothecia minute, sessile, black, scattered or confluent, convex, margin obliterated; hypothecium black; paraphyses indistinct; spores 8, colourless, lineari-oblong, 3-septate.

On maritime rocks, rare. 1868.


Geog. Distrib:—Germany, Sweden.

Bot. Prov:—31.

Channel Islands:—Warrten, Noirmont! Jersey. Mr. Larbalestier.

Spores .014 mm. long, .004 mm. broad. Spermatia long, slender, cylindrical, straight or curved.

293. L. carbonacea, (Anzi.) fuscos-black, sub-orbicular, thick, glebulo-disdviat, squamules small, rugoso-convex, entire or inciso-crenate, (K—C—); apothecia small, black, sessile, solitary or aggregate, plane, marginated, eventually convex and immarginate; hypothecium thick, reddish-black; paraphyses distinct, apices black; spores 8, colourless, lineari-oblong, straight or curved, 3-septate.

On calcareous rocks, rare. 1870.

Syn:—Tominia, Anzi Cat. Sondr. 68. (1860.) Crombie Enum. 78.

Exs:—Anzi Langob. 115.

Geog. Distrib:—Lombardy.

Bot. Prov:—15...26.

Scotland:—Craig (Guile, Braemar. Rev. J. M. Crombie. (1870.)

Ireland:—Recess Road five miles from Kyleneore! Mr. Larbalestier.

“Spores .015—.0220 mm. long, .004 mm. broad.” (Anzi.) Spores .015—

mm. long, .0045 mm. broad.

294. L. delimis, Nyl. dark-greyish, verrucoso-granulate or rugose, moderate, (K yellow C red), hypothallus subumbriate, in fusceate, limiting the thallus; apothecia black, at length convex, immarginate, greyish-suffused, concolorous within; hypothecium thick, black or black-brown; epithecium conspicuously coarsely granulate; spores 8, colourless, lineari-oblong or lineari-subsufsiform, 3-septate; paraphyses distinct; gelatina hymenea tawny-wine-coloured or somewhat reddish with iodine

On granitic rocks, rare. 1873.

Syn:—Nyl. in Flora 1873. pp. 289—300.

Bot. Prov:—31.

Channel Islands:—On east side of Mont Orgueil Castle, Jersey! Mr. Larbalestier. (1873.)

“Belongs to section of L. premnea. Spores .015—18 mm. long, .004—.5 mm. broad.” (Nyl.) Spores .21—23 mm. long, .004—5 mm. broad.

295. L. leucoblephara, Nyl. cinereo-virescent or cinerascent, subdetermine or indeterminate, thin, opake, (K y C—); apothecia fuscos-black or black, small, plane or somewhat plane, with a white lecanorine margin, internally nigmatic; hypothecium thick, nigro-fuscos; hymenium dusky-brown, paraphyses coherent; spores 8, colourless, fustiform, 3-septate.

On quartz rocks, very rare. 1877.

Syn:—Nyl. Nov. Gran. p. 52. (1863. & 1864.)
L. chloroscutina, Nyl. virescent, thin, subtartaceous, continuous, rinculous; apothecia black, scattered or congregate, adnate, plane with a thin margin; hypothecium nigro-fuscous; hymenium bluish, paraphyses coherent, apices colourless; spores 8, colourless, lineari-oblung, 3-septate.

On wet stones, rare. 1877.

Syn.:—Nyl. in Flora 1877. p. 565.


ON MARITIME AND SUBALPINE ROCKS, RARE.

On the earth, old walls, rocks, &c. frequent. 1807.

Fig.:—E. Bot. 1777. Hepp Sporun t. 32. f. 283.


Geog. Distrib.:—France, Algeria, Italy, Germany, Sweden, Norway, Finland.

Bot. Prod.:—1, 2, 4, 5, 7, 11, 16, 19, 25, 28, 30, 31.


WALES:—Barmouth! Dolgelley! Dolbadarn Castle! Snowdon.
CHANNEL ISLANDS:—St. Aubin’s Harbour, Mont Orgueil Castle, Jersey! and on all the Islands, Mr. Larbalestier.

A var. hypnophila, Nyl. has been found on mosses on Ben Lawers by Adm. Jones. (Crombie En. 78), and also at Caswell Bay! Mumbles, by myself.

"Spores .004 to .005 in. long by .001 in. broad." (Mudd.) "Spores .013—.025 mm. long, .0025—.0045 mm. broad." (Nyl.) "Spores .016—.024 mm. long, .004—.025 mm. broad." (T. M. Fries.) Spores .02—.0245 mm. long, .004—.05 mm. broad.

299. L. squamulosa, Deak. MS. pale-brown, thin, crustaceo-cartilaginous, squamulose, squamula sub-imbricated or flattish, appressed and rimulose, crenate, (K yellow, then turning dusky); apothecia small, solitary or aggregated, appressed or sub-sessile, plane, or convex and deformed, black, margin thickish; hypothecium darkish-reddish-brown thick, excipulum thin nigro-or rufous-fuscous; spores 8, colourless, lineari-cylindrical, 3-septate, cells nucleolate, half the size of those of L. aromatica.

On rocks and walls, not frequent. 1853.


GEOG. DISTRIBUTION:—Europe. Bot. Prov.:—1, 2, 7, 8, 15...19...28...31.


SCOTLAND:—Slaghead Kirk, Coast of Kincardine; near Stonehaven, Kincardineshire. Rev. J. M. Crombie.

WALES:—Barmouth. Mr. Holmes.
CHANNEL ISLANDS:—Herm. Mr. Larbalestier.

"Spores .003 in. long by .001 in. broad." (Mudd.) Spores .015—.018 mm. long, .004—.005 mm. broad.

300. L. Turneri, Leight. glaucous-white, thick, tartareo-farinose, areolato-verrucose, turgid, sublobate, (K—C—); apothecia solitary or confluent, appresso-sessile, black, plane or convex, margined; hypothecium black, thick; spores 8, colourless, lineari-cylindrical or lineari-fusiform, 3-septate, (occasionally 2 or 4-septate,) small.

On mortar, in walls, &c., rare.

SYN:—L. candida. E. Bot. 1138. (1803.)

FIG:—E. Bot. 1138.

GEOG. DISTRIBUTION:—Europe. Bot. Prov.:—1, 4, 5, 6...36.

ENGLAND:—Trigby Church! near Yarmouth. Mr. Turner. Torquay! Devon. Dr. Deakin. High Rock! Bridgnorth, Shropshire.

WALES:—Bishopston Churchyard! Glamorganshire.

IRELAND:—Near Dawros Bridge! Galway. Mr. Larbalestier.

Similar in general appearance to L. mamillaris, but distinct by the spores and reaction, both from that and L. Dillemiana. Spores .015—.016 mm. long, .0031 mm. broad.

301. L. melena, Nyl. fusco-nigricant, leproso-granulose, thin, effuse, (K—C—); apothecia minute, convex, black, internally concolorous, immarginate; hypothecium black; hymenium darkish-
blue, paraphyses distinct, apices nigricant; spores 8, colourless, linear-oblong, 3-septate.

On the earth and old wood, rare.

**Syn:** Nyl. in Bot. Notis. 1855. p. 182. Scand. 205. Mudd Man. 188.

**Exs:** Fries L. S. Exs. 212 B. (fide Nyl.) M. & N. 1329. Fellm. 159. Mudd 159.

**Geog. Distrib.**—Scandinavia, Switzerland.

**Bot. Prov.**—2...5...7...15...19...23.


**Scotland:**—Crampians; Braemar. Rev. J. M. Crombie.


**Wales:**—Trefriw! (on fir).

“Spores .0025 to .004 in. long, by .0005 to .001 in. broad.” (Mudd.)

“Spores .014—22 mm. long, .005—6 mm. broad. Hymenium hulish. Gelatin hymenea I blue then dark-violet.” (Nyl.) “Spores .012—22 mm. long, .004—6 mm. broad.” (T. M. Fries.) Spores .015 mm. long, .004 mm. broad.

302. *L. abietina*, Ach. white or whitish, thin, leprous, effuse, (K—C—); apothecia moderate or large, numerous, scattered, sessile, black, thickly suffused with a whitish or pale-yellowish pruina, rarely naked, plane or sub-convex, margin thickish, prominent, flexuose; hypotecium black; spores 8, colourless, acicular-fusiform or sub-bacilliform, 3-septate.

On old trees in mountainous regions, not unfrequent. 1830.


**Fig.**—E. Bot. Suppl. 2642. fig. 2. Leicht. Ang. Lich. t. 28. fig. 2.


**Geog. Distrib.**—Sweden, Germany, Switzerland, Bavaria.

**Bot. Prov.**—1, 2, 3...8...10...19...29...31.


**Channel Islands:**—Jersey! Guernsey. Mr. Larbalestier.

“Spores .007 to .008 in. long by .001 in. broad.” (Mudd.) “Spores .03—.045 mm. long, .0045—.006 mm. broad. Paraphyses slender. Gelatin hymenea I pale-blue then vinous-red.” (Nyl.) Spores .035—.04 mm. long, .003—.004 mm. broad. Sporocarps very large, oblongo-cylindrical, somewhat tapering at one or both ends, straight or curved, .012—.016 mm. long, .003—.004 mm. broad.

303. *L. thiopsora*, Nyl. sulphury-whitish, granulato-conglomerate, consisting of sub-pulvinato-concrescent granules, pulvinuli somewhat plane or variously confluent (K yellow); apothecia black, convex, often 2-4-connate, internally concolorous; paraphyses slender, not well discrete, hypotecium fuscos; spores 8, colourless, bacillar or subbacillar, straight or straightish, 3-septate.

On Jungermanniæ, rare. 1876.

**Syn:**—Nyl. in Flora 1876. p. 573.


**Ireland:**—Kylemore. Mr. Larbalestier. (1876.)

“Spores .022—.030 mm. long, .0025—.0035 mm. broad. Gelatin hymenea I—, these, especially their apices, cerulescent. Gonidia diam. .004—6 mm.” (Nyl.)
304. *L. rhexoblephara*, Nyl. albido-cinerascence, very thin or evanescent; apothecia black, moderate, plane, margin thick, rhagadio-diffract or crenate, internally concolorous; hymenium whitish; hypothecium dark-fuscous; spores 8, colourless, oblongo-ellipsoid or fusiform-ellipsoid, 3-septate.

On decaying mosses in alpine localities, rare. 1861.  
**GEOG. DISTRIBUT:**—Norway, Behring's Straits, Finland, Greenland.  
**BOT. PROV.**—15.  
**SCOTLAND:**—Ben Lawers. Adm. Jones. (1861.)  
“Spores .017—21 mm. long, .007 mm. broad. Paraphyses slender, apices fusaceous, somewhat incrassate, 3-articulate, adglutinate. Gelatina hymena I pale-blue.” (Nyl.) Spores .017—.02 mm. long, .0045—.005 mm. broad.  
**Hypothecium colourless.**

305. *L. exanthematica*, (Sm.) cinerascence, very thin or evanescent, (K—C—); apothecia pale-yellow, small, marginal, radiato-fissured, at length exposing the epithecium; hypothecium pale-yellow; spores 8, colourless, lineari-oblong or cylindrical, 3-septate, large.

On calcareous rocks, frequent. 1791.  
SYN.:—Sm. Linn. Soc. Tr. 1. 81. (1791.) Thelotrema, Leight. Ang. Lich. 32.  
**Ach. Syn.** 116. Leicrsea, Nyl. Scand. 188. Mudd Man. 278.  
**GEOG. DISTRIBUT:**—Switzerland, Germany, Hungary, Italy, Sweden.  
**BOT. PROV.:**—2...5...7...9...11...19...26...28...30.  
**IRELAND:**—Killarney! Dr. Taylor. near Belfast. Mr. Templeton. Sheepwalk; Armagh. Adm. Jones. near KYLEMORE. Mr. Larbalestier.  
**WALES:**—Eglwyseg rocks! near Llangollen.  
“Spores .005 to .006 in. long, by .0015 in. broad.” (Mudd.) “Spores .015—20 mm. long, .006—7 mm. broad. Paraphyses slender.” (Nyl.) Spores .023—.026 mm. long, .008—.006 mm. broad.  

306. *L. violacea*, Crouan. albido-cinerascence, very thin, almost evanescent; apothecia pallid-livid, small, sub-convex; hypothecium colourless; spores 8, colourless, oblong, obtuse, 3-septate.  

On maritime rocks, rare. 1860.  
**GEOG. DISTRIBUT:**—France, Sweden.  
**BOT. PROV.:**—18.  
**SCOTLAND:**—Lerwick, Shetland. Adm. Jones. (1860.)  
“Spores .012—18 mm. long, .005—5 mm. broad.” (T. M. Fries.)

307. *L. metamorphaea*, Nyl. green, thin, effuse; apothecia whitish or pale-flesh-coloured or sordid, small or moderate, innate, somewhat plane, sometimes difformed or two confluent, internally concolorous; spores 8, colourless, oblong or oblongo-fusiform, simple or 3-septate; paraphyses none; theca oblong, crowded, blue with iodine then vinous-red.  

On stones, rare. 1872.  
SYN.:—Nyl. Prod. 113. (1837.) Crombie in Journ. Bot. n. s. 2. 134  
**BOT. PROV.:**—15.
THE LICHEN-FLORA

Scottland:—Glen Tander, Blair Athole. Rev. J. M. Crombie (1872). “Spores .019—32 mm. long, .006—7 mm. broad.” (Nyl.)

Var. septenaria, Nyl.
Fissures of rocks, rare. 1876.

Syn.:—Nyl. in Flora 1876, p. 239.
Ireland:—Recess Road! near Kylemore. Mr. Larbalestier (1876). “Spores 7-septate .080—34 mm. long, .007—8 mm. broad.” (Nyl.)

308. L. albiovirella, Nyl. virescent, thin, effuse, subpulverulento-granular; apothecia pale-white-flesh-coloured, very minute, numerous, scattered, adnato-sessile, immarginate; hypothecium colourless; paraphyses coherent, apices colourless; spores 8, colourless, oblongo-cylindrical, obsolete or indistinctly 3-septate.

On shady rocks, rare. 1877.

Syn.:—Nyl. in Flora 1877, p. 567.
Ireland:—Leagh Feagh! Mr. Larbalestier (1877). “Spores .019 mm. long, .0085 mm. broad.” “Allied to L. chlorotropa, Nyl.

Gelatina hymenea I blue then the asci violet-red.” (Nyl.)

forma depauperata, Leight. thallus subevanescent.

Ireland:—Killary Bay! Connemara. Mr. Larbalestier.

309. L. hemipolioides, Nyl. pale-dirty-yellow, furfuraceous, very thin, effuse, almost evanescent; apothecia moderate, vivido-virescent, convex, immarginate, scattered or confluent, when moist one half appearing darker in colour than the other half, sessile; hypothecium colourless; spores 8, colourless, lineari-oblong, somewhat ellipsoid, 3-septate, minute; paraphyses remarkably much branched, apices colourless; gelatina hymenea and especially the thecae bluish with iodine.

On rocks, very rare. 1878.

Syn.:—Nyl. in Flora 1873, p. 294.
Channel Islands:—Near Archirondel Tower, Jersey! Mr. Larbalestier.

“Spores .012—18 mm. long, .0045 mm. broad.” (Nyl.) Spores .0125—.014 mm. long, .004 mm. broad. The apothecia have a semi-transparent hyaline appearance on one side, whilst on the other they are dark, reminding one slightly of the appearance of the moon during a partial eclipse. The dark colour inclines in the same direction on all the apothecia.

310. L. hyalinescens, Nyl. albido-cinerascent, very thin, effuse, subfurfuraceous; apothecia pale-dirty-rosy, hyalino-corneous or waxy, large, oppressed, crowded, somewhat concave, with a whitish, very thick, slightly albo-pulverulent, persistent horny margin; hypothecium colourless; paraphyses very slender; spores 8, colourless, lineari-oblong or oblongo-fusiform, 3-septate.

On river banks, very rare. 1876.

Geog. Distrib.:—France.
Ireland:—Twelve Pins! Kylemore! Connemara. Mr. Larbalestier (1876). “Gelatina hymenea I—, thecae vinoso-fulvescent. Spermatia slender, straight, .004 mm. long, on short simple sterigmata. Spores .016 mm. long, .005 mm. broad.” (Nyl.) Spores .021 mm. long, .005 mm. broad.
311. *L. herbidula*, Nyl. pale-yellow, thickish, areolato-diffract, pulverulento-granulate; apothecia rufo-fuscous, minute, subinnate, scattered, plane, with a thin darker margin; *hypothecium colourless*; spores 8, colourless, linear-oblong, 3-septate, small.

On damp cliffs, very rare. 1877.

SYN.:—Nyl. in Flora 1877. p. 563.

BOT. PROV.:—26.

IRELAND:—Glencorbot! Mr. Larbalestier. (1877). Spores .0115 mm. long, .0025 mm. broad. Nylander l. c. describes the spores as "fusiformes, 1-3-septates, .011—.018 mm. long, .0025 mm. broad," and gelatina hymenea I blue. Of the thallus he says, "Thallus omnino est peculiaris et facile proprium genus conformans (si proprius), nam sestit Gongrosiram, Ktz. et format stratum e filamentis intricatis brevissculis articulariis subchrolepeoldiis, articularis pariete incolore crasso strato normula offerente et contento e granulis flavoridiibus rotundatis numerosis constituto, articulis his rotundatis aut oblongis (latt. .015—.035 mm.), majoribus facile discretis, divisione transversa sessa multipliantibus; sed adsunt simul gonidias parva sparsa inter filamenta gongrosieve et cellulas discretas gongrosieae, cur subincestum manet quinam verus thallus sit hujus Lecidae."

312. *L. sphaeroides*, (Dicks.) albo-vivescens, granulose, sub-pulverulent; apothecia pale-whitish or pale-yellow-flesh-colour, congregate, convex, sub-globose; *hypothecium pale*; spores 8, colourless, oblongo-fusiform, 3-septate.

On trees and mosses, not common. 1785.


FIG.:—Dicks. l. c. t. 2. f. 2.


GEOG. DISTRIB.:—Scandinavia, Italy, Switzerland, Germany.

BOT. PROV.:—1, 2, 3...15...26...28.


"Gelatina hymenea I slightly blue when vinous-red, Spores .015—.023 mm. long, .005—.008 mm. broad." (Nyl.)

313. *L. carneo-lutea*, (Turn.) whitish, glaucescent, thick, smooth-effuse, (K—C—); apothecia numerous, minute, immato-emergent at first veiled by the pale hypothecium, which afterwards is irregularly stellato-dehiscent, disclosing the plane yellow-flesh-coloured disk, margin albicant, lacerate or crenate; spores 8, colourless, lineari-oblong, 3-septate.

On trees, especially elm, rarely on ash. 1808.


EXS.:—Fries 342. Larbal. 30. Leight. 363.

GEOG. DISTRIB.:—Sweden.

BOT. PROV.:—1, 2, 3, 4...31.

314. *L. ternaria*, Nyl. *albido-cinerascens, minutely granulate, sub-pulverulent, thin, effuse; apothecia black, shining, small, congregate, plane with an indistinct margin, then convex and immarginate; hypothecium colourless; paraphyses distinct, apices colourless; spores 8, colourless, obtusely fusiform, 3-septate, cells nucleolate.

On moss and stones, rare. 1877.


**GEOG. DISTRIBUT.**—Eastern Lapland.

**BOT. PROV.**—5...26...31.

**ENGLAND.**—Wapley Hill! Herefordshire.

**IRELAND.**—Lough Feagh! opposite Leenane, Kylemore! Mr. Larbauletier. (1877.)

**CHANNEL ISLANDS.**—The Warren, Noirmont! Jersey. Mr. Larbauletier.

"Spores .014—22 mm. long, .0045—.0055 mm. broad. Epithecium nigricant-cerulescent. Gelatina hymenea I blue, then (especially these), vinous-red." (Nyl.) Spores .018—.022 mm. long, .003—.006 mm. broad.

315. *L. squalida*, Ach. *cervino-fuscescent, cartilaginous, squamos, concrescent, rugoso-plicate, often diffract into pulvinuli, squamæ sublobate; apothecia black, adnate, plane, margined, at length convex irregular and confluent, internally whitish; paraphyses coherent, apices nigricant; hypothecium colourless; excipulum externally violaceo-nigricant; spores 8, colourless, cylindrical or fusiform-cylindrical, obtuse and broadish at one apex, attenuate at the other, simple or 3-septate, straight or curvate.

On the earth, rare. 1872.


**FIG.**—Hepp Sporen t. 15. f. 123.

**EXXS.**—Scher. 170, Hepp 123, Anzi Langob. 138.

**GEOG. DISTRIBUT.**—Scandinavia, Italy, Switzerland.

**BOT. PROV.**—15.

**SCOTLAND.**—Craig Guie, Braemar. Rev. *J. M. Crombie*. (1872.)

"Spores .018—36 mm. long, .0055—.0045 mm. broad." (Nyl.) "Spores .026—46 mm. long, .002—4 mm. broad. Gelatina hymenea I blue (especially apices of these) then vinous-red. Spermata acicular, very slender, variously curvate." (T. M. Fries.) Spores .0255—.0275 mm. long, .004 mm. broad.

316. *L. circumpallens*, Nyl. *pallido-cinerascens, thin, rimose; apothecia fuscos-black or fusco-rufescent, plane or sub-convex, margin pale; hypothecium colourless; spores 8, colourless, fusiform or fusiform-aciular, straight, 3-septate.

On argillaceous earth, rare.

**SYN.**—Nyl. in Flora 1866. p. 370.

**GEOG. DISTRIBUT.**—Europe.

**BOT. PROV.**—24.

**IRELAND.**—Kilkkee and Ross co. Clare. Mr. Carroll.

"Vix nisi variantas L. bacillifera." "Spores .018—25 mm. long, .0020—.0035 mm. broad. Epithecium somewhat nigrescent or nearly colourless. Paraphyses thickish, not well discrete. Gelatina hymenea I pale-blue then vinous-red." (Nyl.)

virescent, leprose, pulvaceous-granulose, at length areolate; apothecia black, minute, at first punctiform, then patellulate, castaneo-fuscous and pale-red, marginate; hypothecium colourless; spores 8, colourless, linear-elliptical, subacicular, 3-septate.

On peaty earth, rare. 1869.

SYN:—Nyl. Enum. 122. (1858.) Bilimbia cuprea, Mass. Sert. 77. (1856.)
GEOG. DISTRIBUTION:—Bavaria.
BOT. PROV.:—10.
ENGLAND:—Bilsdale, Yorkshire. Mr. Mudd. (1869.)
“Spores .0133 mm. long, .00150 mm. broad.” (Mass.)

318. L. foveolaris, (Ach.) whitish, crustaceous, thick, coarsely verrucoso-granulate, effuse, (K—C—); apothecia immersed, foveolate, large, pale-yellow-flesh-coloured, proper margin entire, elevated, paler, entirely covered by irregular crenulate thallodal one; hypothecium colourless; spores 8, colourless, oblong or ellipsoid, 3-septate.

On moist turfy earth in alpine places, rare.

SYN:—Urceolaria, Ach. Meth. 149. (1803.) Gyalecta Wahlenbergiana, Ach.
S YN. 9. Leveidea, Nyl. Scan. 190.
FIG:—Mass. Ric. f. 284.
GEOG. DISTRIBUTION:—Finmark, E. Lapland, Germany, Italy.
BOT. PROV.:—8...10, 11...15.
SCOTLAND:—Ben Lawers; Morrone. Rev. J. M. Crombie. Finlarig near Killin, Dr. Holl.
“Spores .018—21 mm. long, .007 mm. broad.” (Nyl.) “Spores .016—18 mm. long, .006—7 mm. broad.” (T. M. Fries.) Iodine turns the thick, horny ecioplum, hymenium, and paraphyses pale-vinous-brown, asci dull-blue. Spores .017—.019 mm. long, .007 mm. broad.

319. L. geoea, (Whlhub.) cinerascent, thin, sub-pulverulent, sub-evanescent; apothecia minute, immersed, cupular, waxy, pale-yellow-flesh, margin entire, persistent, waxy, naked or nearly so, white; hypothecium pale; spores 8, colourless, oblong or ellipsoid, 3-septate.

On the ground among mosses, on calcareous rocks, not common. 1870.

EXS:—Leight. 123. Arn. 38. 459.
GEOG. DISTRIBUTION:—Gotland, Finland, Hungary, Germany.
BOT. PROV.:—5...15.
ENGLAND:—Wickliffe rocks near Ludlow! Rev. T. Salwey.
SCOTLAND:—Ben Lawers! Rev. J. M. Crombie. (1870.)
“Spores .016—21 mm. long, .006—7 mm. broad.” (Nyl.) “Spores .012—15 mm. long, .006 mm. broad.” (T. M. Fries.) Spores .016—.0175 mm. long, .007 mm. broad.

G. Spores vermiciform, spirally contorted.

320. L. umbrina, Ach. nigricant or nigro-virescent, granulose-leprose, thin, effuse, often evanescent, (K—C—); apothecia black, plane or convex, small; hypothecium colourless; spores 8, colourless, vermiciform-cylindrical, spirally contorted, 3-5-multiseptate.
On rocks and stones, frequent. 1854.


FIG:—Mudd. Man. t. 3. f. 69.

EXS:—Leight. 158. Mudd 153. Zw. 29.

GEOG. DISTRIB:—Europe.

BOT. PROV:—1, 2...5...7...10...15, 16...(19...26...30)...31.

ENGLAND:—Broughton, Cleveland. Mr. Mudd. Shermanbury, Sussex. Mr. Larbalestier. Hales End, Malvern; near Laveacston, Cornwall. Dr. Holl. 

IRELAND:—On rocks and stones frequent. Mr. Carroll, near Rinvyle! near Kylemore! near Dawros Bridge! co. Galway. Mr. Larbalestier. 

WALES:—Pass of Llanberis! Snowdon; Cader Idris! Drwsynant! Crib Ceoch!

CHANNEL ISLANDS:—Noirmont! Le Fret Point! Jersey. Mr. Larbalestier.

"Spores .005 in. long by .00025 in. broad. Spermatia short, cylindrical, straight." (Mudd.) "Spores .020—.040 mm. long, .0025—.0035 mm. broad." (Nyl.) "Spores .02—.04 mm. long, .002—.003 mm. broad." (T. M. Fries.) Spores .026—.034 mm. long, .003—.004 mm. broad.

forma compacta, (Körb.) fuliginous, thickish, granuloso-leprose, or rimuloso-diffract; apothecia very black, minute, atlatine, convex.

On rocks and walls, not unfrequent.

SYN:—Körb. Syst. 268. (1855.)

EXS:—Leight. 158. (in part.)

BOT. PROV:—5...7...9, 10...26.


IRELAND:—Doughrugh! and Tullywhee Bridge, Kylemore. Mr. Larbalestier.

WALES:—Craig Breiddon! Pen-maen-mawr! Nant Gwynant! Cwm Tryfan!

forma leptomerea, Smrt. ochraceous, furfuraceo-granulate, very thin; apothecia nigro-fuscous, minute, scattered.

On rocks, rare. 1874.

SYN:—Smrt. Lapp. 161. (1826.)

BOT. PROV:—7.

WALES:—Trefriw! (1874.)

forma pelidniza, Nyl. umbrino-virescent, crustaceous, thin, effuse, minutely granulato-rimuloso or sub-diffract; apothecia livido-subfuscous, small, numerous, scattered, sessile.

On rocks, not common. 1876.

SYN:—Nyl. in Flora 1874. p. 318.

BOT. PROV:—1...5, 6, 7...26.


IRELAND:—Longh Feagh! Twelve Pins! Lettermore! co. Galway. Mr. Larbalestier (1876.)

WALES:—Moel-y-gest! near Tremadoc. Fishguard!

forma turgida, (Körb.) cinereo-virescent, granuloso-leprose, thickish; apothecia flesh-coloured, then fuscous-black, cephaloid, turgid.

On rocks, rare. 1865.

SYN:—Scliosporum turgidum, Körb. Par. 241. (1865.)

GEOG. DISTRIB:—Europe.

BOT. PROV:—7...24.
IRELAND:—Near Kilkee! co. Clare. Mr. Carroll. (1865.)
Wales:—Near Dolgelley!

forma corticola, Zw. virescent or cinereo-virescent, minutely fur-
furacea-granulate, thin, effuse; apothecia pale-rufous or fuscous,
blackish, small, sessile.

On Myrica Gale, rare. 1877.
Bot. Prov:—7.
Wales:—Llyn Gwernan! (1877.)

II. Spores multiseptate.

321. L. pachycarpa, (Duf.) creamy-yellow, sub-tartareous,
thickish, effuse, pulverulento-furfuraceous; apothecia large, scattered,
adnate, reddish-brown, plane or tumid, margin paler, obtuse;
hypothecium pale-yellowish-brown; spores 1, very large, colourless,
elongato-oblong or cylindrical, 10-septate.

On trees, rare. 1806.

Fig:—E. Bot. 1683. Hepp Sporen t. 27. f. 234.
Exs:—Zw. 80.
Geog. Distrib:—Switzerland, Bavaria, France.
Bot. Prov:—1, 2...5...7, 8...19.

England:—New Forest! Mr. Lyell. (1860.) Sussex. Mr. Turner. Tilegate
Forest and St. Leonard’s Forest! Sussex. Mr. Borrer. Charnwood Forest. Rev.
A. Bloxam. Stoke Wood, Devon. Mr. Parritt. Midland Counties. Mr. Purton.
Ireland:—Cromaglawn, Killarney! Dr. Moore. Castlebernard co. Cork;
Dinis, Killarney. Mr. Carroll.
Wales:—Owcn Bychas! Rev. T. Salwey.
“Spores .018—.025 in. long by .007 in. broad.” (Mudd.) “Spores .070—.140
mm. long, .025—.35 mm. broad. Spermatia straight .005—.0035 mm. long, .001
mm. broad, fixed on shortish simple sterigmata.” (Nyl.) Hypothecium very
thin, pale-yellowish-brown, resting on a white thickish medullary stratum, the
whole being enclosed in a thicker browner horny excipulum. Spore immense
.160 mm. long, .086 mm. broad.

322. L. homalotropa, Nyl. white, glabrous, very thin or albo-
macular, sub-determinate; apothecia black, moderate, plane, mar-
gined; hypothecium thin, nigricant; epithecium sub-rugose, dusky;
spores 8, colourless, cylindrical, closely multiseptate; paraphyses
slender, anastomosing; gelatina hymenea untinged with iodine.

On old ash trees in sub-alpine regions, rare. 1867.

Geog. Distrib:—Europe.
Bot. Prov:—19.
Ireland:—Near Derryculhy, and Eagle’s Nest, and between Killarney
and Kenmare. (1867.) ; and on MeCarthy Island in upper lake of Killarney.
Mr. Carroll.
Near to L. wreculata, Ach. Doubtful if not both referable to Melaspilea.
“Spores .150—.140 mm. long, .0045—.0050 mm. broad.” (Nyl.)

323. L. wreculata, Ach. glaucous-white or sub-cinerascent, smooth,
rugoso-rimose, cartilaginous, nigro-limitate; apothecia black, wrec-
ulate, sessile, prominent, externally albo-pruinose, margin thick, ele-
vated; hypothecium horny, livid; spores colourless, elongato-
cylindrical, maggot-like, 13-septate, constricted at the septa, arcuate.

On trees, rare.
THE LICHEN-FLORA


Fig.:—Hals. Lich. N. Y. t. 1. f. 1.
EXS.:—Zw. 300. Crombie 95.

GEOG. DISTRIB.:—Europe, N. America.

BOT. PROV.:—15.

SCOTLAND:—Airds, Appin! Rev. J. M. Crombie.

Spores .065 mm. long, .006 mm. broad.

324. L. milliaria, Fr. cinereo-nigrescent, coarsely granulose, effuse; (K yellow C orange red); hypothallus nigro-fuscous; apothecia black, crowded, sessile, convex, almost spherical, immarginate; hypothecium nigrescent; spores, colourless, narrowly fusiform-cylindrical, obtuse at the apices, almost sub-cylindrical, multisepitate.

forma terrestris, Fr.

On the earth, common.

SYN.:—Fr. L. Eur. 342. (1831.) Nyl. Scand. 205. Mudd Man. 188.
EXS.:—Leight. 238.

GEOG. DISTRIB.:—Scandinavia, Germany, Africa, America.

BOT. PROV.:—1, 2, 3, 5...7...10...12, 13, 15...(19...26...30)...31.


WALES:—Aber! Corwen! Pass of Llanberis! near Dolgelley! Cader Idris! Channel Islands:—Jersey; Guernsey. Mr. Larbalestier.

Var. montana, Nyl. cinerascens or whitish, slightly granulose; apothecia black, nigrant within; spores narrowly fusiform, obtuse at the apices, almost sub-cylindrical, multisepitate.

On mosses in mountain ranges, frequent.

SYN.:—Nyl. Scand. 205. (1861.)
EXS.:—Leight. 386, 388, Zw. 121. Mudd 156. Bohl. 55.

GEOG. DISTRIB.:—Scandinavia.

BOT. PROV.:—5...7...10...12, 13...22.


SCOTLAND:—Ayrshire! Mrs. Dobie.

IRELAND:—Co. Wicklow. Dr. Moore. between Letterfrack and Dawros Bridge! Galway. Mr. Larbalestier.

WALES:—Cader Idris! Pass of Llanberis!

Var. syncomista, Flk. thallus granuloso-squamulose, squamules concrescent, crenato-lobate; apothecia black; hypothecium nigrant; spores, colourless, narrowly fusiform-cylindrical, obtuse at the apices, multisepitate.

On sandy earth, rare.

SYN.:—Flk. in Berl. Mag. 3. 310. (1808.) Nyl. Scand. 205.
EXS.:—Anzi Langob. 148. Larbal. 82.

GEOG. DISTRIB.:—Europe.

BOT. PROV.:—8...15...31.

ENGLAND:—Deep Dale, Buxton. Dr. Holl.


CHANNEL ISLANDS:—Quenvais! Jersey. Mr. Larbalestier.

forma ligniaria, (Ach.) greyish-green, granulate, subleprose; apothecia black, crowded, and confluent, immarginate.

On dead wood and trees.
Cleveland. hypotheeium Cleveland. Mr. Mudd.

forma saxigena, Leight. greyish-green or greyish-brown, granulate, often evanescent.

On sandstone rocks, frequent.

SYN:—Leight. Exs. 210. Mudd Man. 188.


Bot. Prov:—10.

England:—Baysdale! Cleveland. Mr. Mudd.

forma saxigena, Leight. greyish-green or greyish-brown, granulate, often evanescent.

On sandstone rocks, frequent.

SYN:—Leight. Exs. 210. Mudd Man. 188.


Bot. Prov:—8...5...7...10...26.


Wales:—Cader Idris!

Var. endoleuca, Leight. albido-cinerascent, minutely and scatteredly granuloso-squamulose; apothecia black, convex, immarginate; hypothecium colourless; spores 8, colourless, narrowly fusiform-cylindrical, obturate at the apices, 3-5-septate.

On mosses in bogs. 1875.


Ireland:—Bogs near Kylemore! Doughruagh Mountain! co. Galway. Mr. Larbalestier. (1875.)

Spores .016—.018 mm. long, .004 mm. broad.

325. L. phacodes, (Körb.) glaucescent, scattered, granulose, effuse; apothecia pale-yellow-flesh-coloured, minute, numerous, scattered, sessile, convex, immarginate; hypothecium colourless; spores 8, colourless, cylindrical or acicular-cylindrical, multisepitate (7-septate).

On trees, rare.

SYN:—Bacidia, Körber Par. 130. (1865.) Crombie En. 73.


Geog. Distrib:—Germany, Italy, Bavaria, Sweden.

Spores .027—.034 mm. long, .009—.005 mm. broad. K and C when applied consecutively, manifest a marginal thin dark line around the apothecia.

forma chlorotica, Ach. pulverulento-granulose, virescent; apothecia pale-yellow.

On trees, Thymus Serpyllum, Ulex Europæus, Calluna vulgaris, Elm, rare. 1851.

SYN:—Ach. L. U. 196. (1810,) Crombie En. 73.

Geog. Distrib:—Switzerland.

Bot. Prov:—2, 3...7...10...19...24...26...31.


Ireland:—Dunscombe’s Wood, Cork; Muckruss demesne and Island in Upper Lake, Killarney; Castleconnel and Tervoe, Limerick; Killaloe, Clare. Mr. Carroll. Killery Bay. Mr. Larbalestier. (saxicole) Lough Foaght.

Wales:—Fort Hill! near Fishguard, Pembrokeshire.

Channel Islands:—Norman! Jersey. Mr. Larbalestier.

326. L. saxigena, Uloth. greyish-green granuloso-pulverulent; apothecia black, hemispherical, prominent, sessile; hypothecium colourless: paraphyses distinct, coherent, spores 8, colourless, fusiform, 3-5-septate.
On rocks, rare. 1876.

BOT. PROV.:—7...26.
IRELAND:—Doughmough Mountain! Mr. Larbalestier.
WALES:—Dolgellay!

327. *L. leucophoiaepis*, Nyl. white, squamulose, squamules small, rotundato-difformed, adnate, depressed in the centre, dispersed or contiguous, (K yellow C yellow); apothecia brownish-black, opake, convex, concolorous within; hymeneal stratum dark-greyish; spores 6 or 8, colourless, fusiform, generally 3-septate but sometimes 4-5-6-septate; paraphyses slender, distinct, entangled; epithecium and hypothecium yellowish-brown; gelatina hymenia bluish and thece vinous-red with iodine.

On quartzose stones, rare. 1872.

SYN:—Nyl. in Flora 1873. p. 20. Crombie in Grevillea 1. 141.
BOT. PROV.:—15.
SCOTLAND:—Plentiful, but rare in fruit on Ben Lawers! Rev. J. M. Crombie. (1872.)

"Spores .024—34 mm. long, .005—8 mm. broad." (Nyl.) Spores .027—.036 mm. long, .006 mm. broad.

328. *L. sabuletorum*, Flk. albido-cinerascent, thin, granulososquamulose, effuse; apothecia pallido-fuscescent or fuscescent or fusco-nigrant; convex; hypothecium slightly brown upwards, otherwise paler; spores 8, colourless, broadly fusiform, acute at the apices, 5-septate.

On decayed mosses on walls, frequent.

EYS:—Larbalestier. 138.
GEOG. DISTRIB:—Sweden, Germany, France.
BOT. PROV.:—3...5, 6, 7...15...19...26...31.

IRELAND:—Middle Road! near Blackpool! co. Cork. Mr. Carroll. Salrock!
Ballynakill Churchyard walls! Galway. Mr. Larbalestier.
WALES:—Near Dolgelley! Caswell Bay! Mumbles.
CHANNEL ISLANDS:—Jersey. Mr. Larbalestier.

"Spores .020—33 mm. long, .006—8 mm. broad. Spores .018—34 mm. long, .006—8 mm. broad." (Nyl.) Spores .028—.033 mm. long, .006—.007 mm. broad.

Var. Dufourei, (Ach.) spores 1-septate, Nyl. in Flora 1867, p. 373. f. simplicior, Nyl. Scand. 205. has occurred on Cader Idris! 1866, on moss and earth. Crib Coch! Snowdon. Spores .016 mm. long, .0055 mm. broad. (K—C—) Hypothecium colourless.

And also another var. monophragmia, Nyl. in litt. is mentioned as collected at Morrone, Braemar in Crombie En. 71.

329. *L. premnea*, Ach. cinerascant or cinereo-virescent, very thin, effuse, (K—C—); apothecia black, opake, naked or virescent-pruinose, moderate, plane, margin thin, prominent, flexuose; hypothecium black; spores 8, colourless, oblongo-or broadly-fusiform, apices acute, 5-septate.

On old trees, frequent. 1785.

Fig:—E. Bot. 1682. Leight. Ang. Licb. t. 28. f. 3.


GeoG. Distr:—Switzerland, Germany, France, Java.

Bot. Prov:—1, 2, 3, 4, 5...10, 11, 12...19...24...26...31.


Wales:—Nannau. Mr. Holmes.

Channel Islands:—Guernsey; La Moye, Jersey. Mr. L. Varblastier.

"Spores .0045 to .005 in. long, by .001 in. broad." (Mudd.) "Spores .018—25 mm. long, .005—7 mm. broad. Gelatina hymenea I pale-vinoso-fulvescent or rubescent." (Nyl.) Spores .018—.026 mm. long, .0055—.006 mm. broad.

forma saxicola, Leight. greyish-green, thin, granuloso-leprose, effuse; apothecia black, sessile, numerous, virescenti-pruinose.

On sandstone rocks, not uncommon. 1837.

Syn:—Leight. Exs. 185. Mudd Man. 222.


Rabh. 895.

GeoG. Distr:—Europe.

Bot. Prov:—5...7...10...26.


Ireland:—Doughruagh Mountain! Galway. Mr. L. Varblastier.

Wales:—Between Arddog and Ynysfaig! Rev. T. Salway. (1837.)

forma teichogena, Nyl. sub-ecrustaceous, apothecia black, plane, naked, margined.

On brick walls.

England:—Lele Monachorum! Devon. Mr. L. Varblastier.

forma crenatula, Nyl. evanescent; apothecia black, plane, naked, margin flexuose, somewhat crenulate.

On sandstone rocks, rare. 1867.

Channel Islands:—La Moye! Jersey. Mr. L. Varblastier. (1867.)

330. L. farinosa, (Ach.) white, powdery, unequal, thin, sometimes sub-granulose, (K—C—); apothecia black, albo-pruinose, plane or sub-convex, small; hypothecium nigricient; spores 8, colourless, fusiform, 3-5-septate.

On old trees, not common.


Fig:—Hepp Sporen t. 62. f. 523.

GeoG. Distr:—Switzerland, Germany, Sweden, Hungary.

"Spores .016—21 mm. long, .003—4 mm. broad. Gelatina hymenea I vinoso-fulvescent." (Nyl.) Spores .018—.021 mm. long, .002—.003 mm. broad. Gelatina hymenea I blue then reddish-brown.

331. L. carneo-albens, Nyl. glauco-virescent, thin, granulose, indeterminate, (K yellow C red); apothecia fleshy-white, somewhat
convex, immarginate, internally colourless; hypothecium colourless; paraphyses distinct, branched towards the colourless apices; spores 8, colourless, elongato-fusiform, 7-septate.

On inundated rocks, very scarce. 1876.

SYN.:—Nyl. in Flora 1876. p. 307.
IRELAND:—Killery Bay! Connemara. Mr. Larivalestier. (1876.)
Spores .0295 mm. long, .004 mm. broad. "Spore bacillares subrectae 3-5-septae; .022—.027 mm. long, .0025—.0035 mm. broad. Gelatina hymenea I fulvorumescent especially the thecia whose apices are at first blue." (Nyl.)

332. L. lubens, Nyl. greyish-glaucous, granulose, effuse; apothecia pale-flesh-coloured or livid-brownish, small, numerous, crowded, at length convex; hypothecium fuscescent; paraphyses coherent, apices colourless; spores 8 or very variable in number, colourless, fusiform, 5-9-septate; gelatina hymenea I deep-bluish.

On trees, near the roots, rare. 1874.

SYN.:—Nyl. in Flora 1874. p. 311.
Bot. Prov.:—3.
ENGLAND:—Shere! Surrey. Rev. J. M. Crombie. (1874.)
"Spores .028—.05 mm. long, .007—.011 mm. broad. Allied to L. sabuletorum, var. amena, Ohl. but differing in character of spores." (Nyl.) Spores .039—.042 mm. long, .006—.007 mm. broad.

333. L. subretusa, Strn. whitish or evanescent; apothecia black, moderate, convex, immarginate; hypothecium fuscos-black or fusco-rufous; spores 8, colourless, fusiform, 3-9- (generally 7-) septate; paraphyses not well discrete, almost conglutinate, evanescent at the apices.

On Weissia compacta, rare. 1871.

SYN.:—Stirton in Grevillea 3. p. 24. (1874.)
Bot. Prov.:—15.
SCOTLAND:—Ben Lawers. Dr. Stirton. (1871.)
"Spores .045—.06 mm. long, .01—.012 mm. broad. Allied to L. sabuletorum." (Stir.) "Possibly this may be Lecidea accedens, Arn. or an old state of Lecidea sabuletorum," (Crombie in Grevillea 3. 143.)

334. L. carneo-glaucus, Nyl. glaucous-green, thin, opake, subleprose, whitish, limitate, (K—C—); apothecia sordid, or pale-flesh-coloured, convex, immarginate, whitish within; hypothecium colourless; paraphyses slender, not very well discrete; spores 8, colourless, attenuato-fusiform, 1-5-septate.

On siliceous maritime rocks, very rare.

SYN.:—Nyl. in Flora 1873. p. 295.
CHANNEL ISLANDS:—Rozel, Jersey. Mr. Larivalestier.
"Spores .025—.40 mm. long, .0030—.035 mm. broad. Gelatina hymenea I bluish then tawny. Spermogonia pale, urecolate, spermatia oblong." (Nyl.)

335. L. citrinella, Ach. citrine or bright-flavo-virescent, granulose, pulverulent, effuse; apothecia black, appressed, solitary or conglomerate, margin thick, obtuse; hypothecium nigro-fuscous; spores 8, colourless, slender, elongato-acicular, multisepate, cells containing oily globules.

On earth and mosses amongst mountains, frequent. 1793.

336. *L. carneola*, Ach. *whitish or granulo-vulgent, evanescent*; *apothecia rufous or carneous-fuscous*, small, adnate, somewhat concave or sub-urceolate, margin thick, elevated, pale; *hymenium* pale, excipulum lateral, pale-brown; *spores* 8, colourless, elongato-acinular, multisepitate, (13-septate) *large*.

On trees, oak, beech, rare. 1794.


**Fig:** With 4. t. 31. f. 3. E. Bot. 965. Leight. Ang. Lich. t. 14. f. 4.


**Geog. Distrib:**—*Germany*, Italy, France, Switzerland, Sweden, N. America.

**Bot. Prov.**—1, 2...5, 7, 8...10, 11...19...31.


**Ireland:**—Disis, Killarney, Mr. Carroll.

**Wales:**—Garn near Denbigh. Mr. Griffith. (1794.) Bettws-y-coed! Trefiow! Channel Islands;—*Rozel*, Jersey. Mr. Larbalestier.

"Spores .008 to .012 in. long, by .00075 to .001 in. broad." (Mudd.)

"Spores .003—.004 mm. long, .003—4 mm. broad. Gelatinon hymenia I pale blue." (Nyl.) Spores .004—.007 mm. long, .004 mm. broad.

337. *L. endoleuca*, Nyl. *greyish-white or pale-tawny*, thin, effuse, smooth or granulose; *apothecia* black, scattered, sessile, plane or plano-convex, margin thick, smooth; *hymenium* colourless; and excipulum dusky externally; *paraphyses* distinct, apices nigricant; *hymenium* bluish in section; *spores* 8, colourless, elongato-acicilar, multisepitate, (7-septate.)

On trees, ash, Ulex Europaeus, alder, mountain-ash, Calluna vulgaris, frequent.


**Exs:**—Leight. 90. Bohl. 90.

**Geog. Distrib:**—France, Sweden, Switzerland.

**Bot. Prov.:**—1, 2, 3...5, 6, 7, 8...10...19...26...31.


**Ireland:**—Lord Sligo's demesne, Westport! co. Mayo; Dawros river! co. Galway. Mr. Larbalestier.
THE LICHEN-FLORA

Wales:—Barmouth! Builth! Capel Arthog! Fort Hill! near Fishguard, Llanbedrog! Pembroke-shire; Gaer Ditches!

Channel Islands:—Noirmont, Jersey. Mr. Larbalestier.

"Spores .062—68 mm. long, .004 mm. broad." (Nyl.) Spores .05 mm. long, .005 mm. broad.

forma muscicola, Nyl. On mosses, rare.


Wales:—Dolgelluy!

338. L. intermedia, Hepp. whitish, thin, unequal; apothecia rosy-flesh-colour, moderate, somewhat plane, obtusely margined (when moist corneo-hyaline); epithecium and hypothecium colourless; paraphyses slender; spores 8, colourless, acicular, 5-7-septate.

On elm, rare. 1877.

Syn:—Nyl. Lapp. Or. 184. (1866.)
Fig:—Sitzenh. Ndelf. Sp. p. 42. t. 2. f. 17.

Geog. Distribs:—E. Lapland.


Ireland:—Lord Sligo's demesne, Westport, co. Mayo. Mr. Larbalestier. (1877.)

"Spores .042—52 mm. long, .0020—.0025 mm. broad. Gelatina hymenea I blue then vinous-red." (Nyl.)

339. L. Leightoniana, Larb. virescent, thin, tartaraceous, effuse, granulato-furfuraceous, somewhat rimulose; apothecia livido-rufous, moderate, scattered, sessile, plane, with a thickish pale persistent margin; hypothecium pale-dusky-brown, subtended by a colourless horny excipulum; paraphyses distinct, apices colourless; spores 8, colourless, excessively slender, elongato-acicular, 7-9-septate, arcuate.

On damp rocks, rare. 1877.

Syn:—Larbalestier in litt. 1877.


Ireland:—Near Lough Feagh! Mr. Larbalestier. (1877.)

Spores .054 mm. long, .002 mm. broad.

340. L. scopulicola, Nyl. greyish-grey, verrucoso-unequal, thinish, effuse; apothecia brownish-flesh-coloured, at first obtusely margined, when old convex; spores 8, colourless, acicular, thin or obsolesly 3-5-septate; paraphyses slender; epithecium colourless; hypothecium colourless, (but tawny brown in the sub-hymeneal stratum); gelatina hymenea I bluish and then tawny-vinous-red.

On maritime rocks. 1874.

Syn:—Nyl. in Flora 1874. 312.

Bot. Prov.:—1.

England:—Near Penzance, Cornwall. Mr. Cornow. (1874.)

"Spores .032—44 mm. long, .002 mm. broad." (Nyl.)

341. L. polypisia, Stirtn. cinereous or pale-cinereo-fuscaceous, thickish, squamulose or squamuloso-concrete, squamules crenulate or sometimes somewhat concave, (K—C—); apothecia fuscous or fuscous-black, sessile, somewhat plane, immarginate, at length convex and prominent; hypothecium luteo-rufescent, thick, or in a thick lamina fuscous or nigro-fuscous, K purple and also the inferior portion of the hymenium; paraphyses distinct, apices colourless, not clavate; spores 8, colourless, acicular or somewhat bacillar, straight, 3-11-septate.
On old dead bark, rare. 1874.

**SYN.**—Stirton in Scott. Naturalist 4 p. 28. (1877.)

**BOT. **PROV.**: Near Ben Brecht, Argyllshire. Mr. Paterson. (1874.)

342. *L. rosella*, (Pers.) cinerascence, thin, unequal or granulose; apothecia rose-coloured or flesh-coloured, subpruinose, moderate, numerous, scattered, sessile, plane, margin thick, obtuse, pale; hypothecium and excipulum colourless or pale-yellow; spores 8, colourless, bacilliform, multisepitate.

On trees, rare. 1806.


**Fig.**—E. Bot. 1651. Hepp Sporen t. 60. f. 522.


**GEOG. DISTRIBUTION:**—Sweden, Germany, Switzerland, Hungary, Bavaria, Austria.

**BOT. **PROV.**: 2...5...10...15.


**SCOTLAND**:—Highlands, Mr. Turner.

"Spores .015 to .018 in long by .00075 to .001 in broad." (Mudd. ) "Spores .065—.09 mm. long, .0045—.005 mm. broad." (Nyl.) "Spores .09—.100 mm. long, .004—.05 mm. broad." (T. M. Fries. ) Paraphyses slender, coherent, apices pale-yellow-brown. Gelatina hymenea I blue. Spores .055 mm. long, .0035 mm. broad. Thallus and apothecia K yellow C yellow.

343. *L. rubella*, (Ehrh.) yellowish or greyish-green, thin, effuse, minutely squamulose-granulate; apothecia luteo-refuse or reddish-flesh-coloured, moderate, numerous, scattered, or congregate, sessile, plane or convex, margin thin, smooth, obtuse; hypothecium pale-yellow; spores 8, colourless, bacilliform, multisepitate.

On trees, especially elm, frequent. 1801.


**Fig.**—E. Bot. 845. Hepp Sporen t. 16. f. 141.


**GEOG. DISTRIBUTION:**—Switzerland, France, Hungary, Austria, Italy, Germany Sweden, Denmark, Norway, Finland.

**BOT. **PROV.**: 1...2...3...4...5...6...7...10...15...19...20...24...28...30. 31.


**SCOTLAND**:—Aberfeldy. *Dr. Holl.*


**CHANNEL ISLANDS**:— Sark ! Rev. T. Saltway.

"Spores .014 to .018 in long, by .00075 in broad. Spermatia very fine and delicate, cylindrical, curved or undulate." (Mudd. ) "Spores .055—100 mm. long, .003—4 mm. broad. Gelatina hymenea I blue then violet or vinous-red." (T. M. Fries. ) "Spores .045—.075 mm. long, .003—.0045 mm. broad." (Nyl.) Thallus K slightly yellow C yellow, but does not affect the apothecia except by manifesting a dark circularly vertical thin line.

Z
344. *L. Bacillifera*, Nyl. evanescent; apothecia black, small, scattered, plane, margin thickish; hypothecium thick, horny, slightly brown; spores 8, colourless, bacilliform, 6-septate.

On trees, rare. 1866.

**Syn.** — Nyl. in Mus. Fenn. 82, (1861.) Scand. 210.

**Exs.** — Fellm. 172, 173.

**Geog. Distrib.** — E. Lapland, Sweden, Finland.

**Bot. Prov.** — 7...24.

**Ireland** — Kilkee and Ross co. Clare. Mr. Carroll.

**Wales** — Penmaen pool! near Dolgelley. (1866.)

"Spores .015—.23 mm. long, .002—.3 mm. broad." (Nyl.) Spores .042 mm. long, .0035 mm. broad.

**Var. Alpina,** (Hepp.) grey, granuloso-concrescent, diffusit; apothecia black, internally white or whitish; hypothecium colourless; spores 3-7-septate, straight.

On mosses and earth among alpine rocks, rare.

**Syn.** — Hepp fide Stizb. Lecid. nadelf. p. 15. (1863.) Nyl. Lapp. Or. 156.

**Fig.** — Stizb. L. c. t. 1. f. 2.

**Geog. Distrib.** — E. Lapland.

**Bot. Prov.** — 15...31.

**Scotland** — Morrorone; Craig Guie, Braemar. Rev. J. M. Crombie.

**Channel Islands** — Herr. Mr. Largless.

345. *L. muscorum*, (Sw.) cinerascent, very thin, albido-granulose, (K—C—); apothecia black, small, numerous, crowded, plane or sub-convex, margin obliterated; hypothecium dark-fuscous; spores 8, colourless, bacilliform, 3-7-multiseptate.

On mosses and earth, rare. 1785.


**Mudd** Man. 184.


**Exs.** — Leight. 190, Mudd 152. Arn. 295.

**Geog. Distrib.** — Sweden, Germany.

**Bot. Prov.** — 4, 5, 6, 7, 8...10...15...19...23...31.


**Scotland** — Blair Athole. Rev. J. M. Crombie.

**Ireland** — Middle road near Cork! Mr. Carroll, Malahide. Dr. Currington.

**Wales** — Tenby!

**Channel Islands** — Quenvais, Jersey. Mr. Largless.

"Spores .006—.007 in. long, by .0005 in. broad." (Mudd.) "Spores .027—.041 mm. long, .0025—.0030 mm. broad. Gelatina hymenea I pale-blue then vinous-red" (Nyl.) Spores .035—.040 mm. long, .0025—.0030 mm. broad.

346. *L. effusa*, (Sm.) yellowish-green, thin, crustaceous, rosse, scurfy; apothecia pale-yellow-flesh-coloured, sessile, small, plane and with thickish margin or plano-convex and immarginate; hypothecium colourless; spores 8, colourless, bacilliform, 7-septate.

On trees, Ulex Europæus, not common. 1808.

**Syn.** — Smith! in E. Bot. 1863, (1808.)

**Fig.** — E. Bot. 1863. (in part.)

**Exs.** — Arn. 231. Zw. 370.

**Geog. Distrib.** — Bavaria, Pyrenees, Germany, Normandy.

**Bot. Prov.** — 2, 3...7...19...26...31.

**England** — New Forest! Hants. Mr. Lyell & Mr. Borror. (1808.) Kelvedon; Braxed, Essex. Mr. Varenne.
Ireland:—Sunday's Well Weirs, Cork. Mr. Carroll. near Letterfrack! Lough Feagh! Mr. Larbalestier.

Wales:—Fen-man-mawr! Gloddaeth! Carnarvonshire.

Channel Islands:—Noirmont, Jersey. Mr. Larbalestier.

Spores .035 mm. long,.003 mm. broad. K and C applied consecutively to the apothecia manifest a thin marginal line around the disk.

Var. fuscella, Fr. apothecia minute, numerous, sessile, convex and conglomerate, fuscose.

On trees, ash, oak, poplar, common.

Syn.:—Fr. S. V. S. p. 112. (1846).


Geog. Distrib.:—Sweden, Germany, Bavaria, France.

Bot. Prov.:—2, 3...5...7, 8...10...24...28...31.


Wales:—Bryn-y-Maengwyn! Conway.

Channel Islands:—Common on all the Islands. Mr. Larbalestier.

Var. cesio-pruinosa, Mudd. apothecia pale-bluish-green colour.

On oaks, elder, rare.


Fig. :—Hepp Sporen t. 32. f. 288.


Geog. Distrib.:—Germany, Hungary, Italy.

Bot. Prov.:—3, 5...8...10.


Var. inundata, (Fries.) tawny-virescent, thin, crustaceous, rimoso-areolate, scurfy; apothecia pale-brown, minute, numerous, sub-innato-sessile, plano-convex, margin thin; hypothecium pale; spores 8, colourless, bacilliform, 7-septate.

On rocks in streams, rare.


Exs.:—Mudd 149. Zw. 235.

Geog. Distrib.:—Europe.

Bot. Prov.:—5, 6...10...19...26...31.


Ireland:—Sunday's Well Weirs, Cork. Mr. Carroll. near Kylemore Castle! Letterfrack! Mullaghglass! Galway. Mr. Larbalestier.

Wales:—Fishguard Harbour! Pembroke.

Channel Islands:—Noirmont, Jersey. Mr. Larbalestier.

K and C applied consecutively manifest a thickish marginal ring around the disk of the apothecia.

Var. delicata, Larbal. apothecia pale-rose, albo-pruinose. Lough Feagh. Mr. Larbalestier. (1877.)

347. L. caligans, Nyl. fuligineo-nigrant, thin, rugose, diffract, indeterminate; apothecia nigrant, plane, with an obtuse margin, internally pallescent; hypothecium colourless, excipulum fuscose.
THE LICHEN-FLORA

upwards; paraphyses indistinct, apices colourless; spores 8, colourless, slenderly aciculare; gelatina hymenea I vinous-red.

On maritime rocks, very rare. 1873.

SYN:—Nyl. in Flora 1874. p. 10.
Bot. Prov:—Stn.
Channel Islands:—On a single block of stone near Fort Essex, Alderney. Mr. Larbalestier. (1873.)

348. L. pulvinata, (Tayl.) pale-greenish-brown or cream-coloured, thickish, pulvinate, granulososquamulose, squamules very minute, congregate and pulvinate; apothecia black, small, concave or plane, margin thick, obtuse, eventually convex and immarginate; hypothecium thick, dark-brownish-black; spores 8, colourless, acicular or sub-clavate, curved, multisepitate; paraphyses conglutinate.

On mosses in alpine places, rare. 1836.

Fig:—Stizb. I. c. t. 2. f. 20.
Exs:—Arn. 290.
Bot. Prov:—Stn.
Channel Islands:—Sark. Mr. Larbalestier. (1873.)

"Gelatina hymenea I blue then dirty-vinous-red. Spores .038—48 mm. long, .0020—.0025 mm. broad." (Nyl.) "Spores .039 mm. long, .0025 mm. broad.

I. Spores muralilocular.

* Hypothecium dark.

351. L. geographica, (L.) citrine or bright-yellow, tartareous, continuous, areolato-rimulose, determinate, nigro-limitate, areole plane or convex and tumid; apothecia black, plane, small, scattered or confluent, innate between or on the areole; hypothecium black; spores 8, nigrescenti-fuscous, oblong, irregularly muralilocular.

On the ground amongst rocks, rare. 1873.

SYN:—Nyl. in Flora 1874. p. 16.
Scotland:—Ben Lawers. Dr. Stirton. (1873.)

"Subspecies sit subincottvptm. Spores .023—40 mm. long, .003—4 mm. broad." (Nyl.)
Of Great Britain.

On mountain rocks, common. 1795;

Fig.:—E. Bot. 245. Schær. En. t. 5. f. 3. Hoffm. Pl. Lich. t. 54. f. 2, excl. b. & c.

Geog. Distrib.:—Switzerland, Italy, Pyrenees, Norway, Scandinavia, Great Bear Lake.

Bot. Prov.:—1...5...7...11...14...18...(19...30)...31.


Scotland:—Garrynahine, Lewis. Dr. Lindsay. Long Island, Prof. Balfour.

Ireland:—Mountainous districts. Mr. Carroll.

Wales:—Common.

Channel Islands:—Common on all the Islands, Mr. Larbaletier.

"Spores .005 to .007 in. long, by .0025 to .003 in. broad. Spermastoma straight, cylindrical." (Mudd.) "Spores .027—40 mm. long, .011—13 mm. broad." (Mudd.) "Spores .022—36 mm. long, .011—13 mm. broad." (T. M. Fries.)

A most protean species, of which the following are the principal British forms:

**forma contigua**, Schær. *citrine-yellow*, tartaraceous, contiguous, areolato-rimulose, plane; apothecia black, scattered or chiefly confluent, and angulato-diformed, arising between the areoles from the black hypothallus, plane, level with the areole, with a very thin sharp margin.

On rocks, common.

Syn.:—Schær. En. 106. Mudd Man. 221.
Fig.:—Hoffm. Pl. Lich. t. 53. f. 6. and t. 54. f. 2. and d. Schær. En. t. 5. f. 3.

Geog. Distrib.:—Switzerland, Italy.

Bot. Prov.:—5...7.

England:—Caer Caradoc! Shropshire.

Wales:—Cader Idris! Cwm Bochlwyd! Cwm Idwal! Aran Mowddwy! Capel Curig! Llyn Cwilyd!

**forma atrivirens**, (L.) *citrine-yellow*, areolæ scattered, more or less distinct and dispersed, tumid, convex; apothecia black, plane or tumid, with a thin margin, arising from the black predominating hypothallus or from the areolæ.

On rocks, not frequent.

Fig.:—Hoffm. Pl. Lich. t. 17. f. 4.
Exs.:—Hepp. 153. Arn. 512. c.

Geog. Distrib.:—Hungary, Germany, Switzerland.

Bot. Prov.:—7...26.

Ireland:—Dawros river! Galway. Mr. Larbaletier.

Wales:—Cwm Ffynnon Llugwy! Moel-y-gest! near Tremadoc.

**forma sphaerica**, Schær. *greenish-yellow*, verrucoso-areolate, areolæ distinct or crowded, tumid, smooth; apothecia black or brownish-black, round, protuberant, elevated above the level of the areolæ, convex, rough, immarginate, arising from the black hypothallus or the areolæ.

On rocks, frequent.
forma urceolata, Scher. citrine-yellow or greenish-yellow, areolae or areolato-rimulose, areola plane or tumid, smooth; apothecia black, round, more or less urceolate, margin thick, smooth, prominent, entire or flexuose, arising either from the black hypothallus or from the areole.

On rocks, common.

forma cyclapica, Nyl. citrine-yellow, areolae more or less scattered, elevato-convex, each ocellate with an apothecium; apothecia blackish-brown, more or less concave and sunken, with a very thin margin, and with a prominent thick thalline margin.

On slate rocks, rare.

forma gerontica, (Ach.) areola albo-sub-pulverulent, plane or tumid, scattered or rimo-lusco-areolate; apothecia black, plane.

On mountain rocks, rare.

532. L. fecunda, (Th. M. Fr.) cinereo-virescent, thickish, effuse, furfuraceo-concrescent, apothecia black, sessile, appressed, concave or plane, naked, margin thickish, flexuose; hypotecium nigro-fuscosus; spores 8, fuscescent, oblong or ellipsoid, muralilocular.

On old posts, &c., rare. 1865.


GEOG. DISTRIB.—Finmark.
353. *L. pessioidea*, Ach. *cinereo-fuscenscent*, thin, *subsquamulosocoarscent*; *apothecia fuscous-black*, elevated, somewhat concave, margin thin, inffexed, entire, paler; *hypotheciwm brownish-black*; spores 1, fuscous, ellipsoid, murali-divided, large.

On mosses in alpine regions, rare. 1861.


**Fig.**—Hepp Sporen t. 56. f. 482.


**Geo. Distr.**—Germany, Lombardy, Hungary, Bavaria, E. Lapland, Norway, Sweden, Finland.

**Bot. Prov.**—15.

**Scotland**—Ben Lawers! *Adm. Jones.* (1861.)

"Spores .019 to .022 in. long, .006 to .009 in. broad." (Mudd.) "Spores .048—120 mm. long, .029—46 mm. broad." (Th. M. Fr.) "Spores .056—80 mm. long, .020—27 mm. broad. Spores .082—98 mm. long, .030—.038 mm. broad." (Nyl.)

354. *L. soreumidia*, Stirtn. *pale or pallido-cinereous*, thickish, rugose or altogether verrucosus-congested, fusco-limitate, (K.—C.—); *apothecia internally cinerascens*, crowded, sessile, small, at first plane, rugose, margined and *casio-pruinose*, at length convex, rugose, immarginate, and often connato-congested; *hypothecium fuscous or fuscenscent*; paraphyses indistinct, somewhat irregular, apices fuscous, granulosusc-impersed; spores 8, fuscous, ellipsoid, *3-septate and generally muralilocalicular*.

On dead wood, rare. 1874.

**SYN.**—Stirton in Scott. Naturalist 4 p. 29. (1877.)

**Bot. Prov.**—16.

**Scotland**—Ben Brecht, Argyleshire. *Mr. Paterson.* (1874.)

"Spores .018—.022 mm. long, and .008—.0095 mm. broad. Gelatina hymenea I intense-blue. Intermediate between L. *fecunda*, (T. M. Fr.), and L. *placidalis*, Leight." (Stirtn.)

355. *L. petraea*, (Wulf.), *griseo-pallenscent* or *cinereo-fuscenscent* or albido-cinerascens, areolate or granulosas-areolate, areolae contiguous or dispersed, *convex or depressed*, hypothallus black, (K. *brownish C pale-tawny*); *apothecia black*, small, *innato-sessile*, plane, marginate; *hypothecium fuscous-black*; spores 8, colourless or fuscous, ellipsoid or oblong, murali-localicular.

On granitic and schistose rocks, frequent. 1811.


**Fig.**—E. Bot. 2336. Hepp Sporen t. 6. f. 36. 37. 38.


**Geo. Distr.**—Switzerland, Germany, France, Hungary, Sweden.

**Bot. Prov.**—1, 2, ... 5, 6, 7... 10, 11... 15, 16... 18, 19... 81.

THE LICHEN-FLORA

SCOTLAND:—Garrynahine, Lewis. Dr. Lindsay. Callander; Coast of Kincardine; near Aberdeen; Braemar; Blair Athole; Breadalbane; Appin, &c. Rev. J. M. Crombie.

IRELAND:—Glengariff! Mr. Carrol.


forma albicans, Fw. whitish, subtartareous, effuse, areolate, areolae crowded, nearly or quite concealing the dark hypothallus.

On rocks, not common. 1854.

SYN:—Korb. Syst. 260. (1855.)

Exs:—Leigh, 159. (in part).

Geog. Distrib:—Germany, Sweden.

Bot. Prov:—5...7...10.


Wales:—Criccieth! Mr. Calcott. Cader Idris!

forma cinerea, Fw. hypothallus black, dendritically effigurate, predominating; areolae cinerascent.

On quartz, chert and hard rocks, frequent. 1800.

SYN:—Korb. Syst. p. 260. (1855.)

Exs:—Leigh: 159. (in part).

Geog. Distrib:—Germany.

Bot. Prov:—2...5, 6, 7...10...

England:—Beechy Head! Mr. Borrer. (1800.) Caer Caradoc! Shropshire.

Ireland:—Glengariff! Mr. Carroll.

Wales:—Drwysnant! Barmouth! Pen Cow! near Fishguard.

forma fuscescens, Leight. hypothallus black, predominating; thallus contiguous or areolate, pale-brown.

On hard rocks, common. 1800.


Geog. Distrib:—Switzerland, Germany, Italy.

Bot. Prov:—2...5, 6, 7...10...20.


Ireland:—Cork! Mr. Carrol.


forma coracina, Fw. areolae diffuse, nigrescent, confused with the black predominating hypothallus.

On subalpine rocks, frequent.

SYN:—Korb. Syst. 260. (1855.)

Exs:—Fellm. 196.

Geog. Distrib:—E. Lapland, Germany.

Bot. Prov:—2...5...7...10.


Wales:—Moel-y-Golfa!

forma dispersa, Leight. areolae pale or whitish-brown, more or less tumid and scattered over the dark predominating hypothallus; apothecia sessile on or arising from the areole.

On hard rocks, not uncommon. 1800.
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OF GREAT BRITAIN.

L. griseo-rufescens, areolate, areolae more or less angular, plane or slightly tumid; hypothallus black; apothecia black, arising from the hypothallus, larger than the areolae, sessile, plane, naked with a thin persistent margin, at length obliterated; hypothecium thick, nigro-fuscous; paraphyses slender, apices fuliginous; spores 1 or 2, at first colourless, then green, ultimately fusco-nigricant, murali-locular.

On alpine rocks, rare. (1871.)


Figs.:—Hepp Sporen t. 5. and 6. f. 28. and 37.


GEOG. DISTRIB.:—Sweden, Norway, Austria, Italy, Switzerland, Germany.

BOT. PROV.:—7...15.

SCOTLAND:—Craig Guile, Braemar! Rev. J. M. Crombie.

WALES:—Cwm Fynnon Llugwy! (1871.)

"Spores .040—.057 mm. long, .025—.32 mm. broad." (Nyl.) "Spores .040—.072 mm. long, .025—.34 mm. broad." (Th. Fries.) Spores .053 mm. long, .023 mm. broad.

L. obscurata, (Ach.) (Körb.) pallido-fuscescent or rufo-fuscescent, thin, subcontiguous, minutely areolate, areolae nearly plane, (K pale-yellow C—); apothecia black, moderate, plane, naked, innato-sessile or adnate, with an obtuse, thick, prominent, paler margin; hypothecium thick, fusco-black; spores 8, colourless, ellipsoid or ellipsoidal-oblong, murali-locular.

On subalpine rocks, frequent. 1866.


GEOG. DISTRIB.:—Sweden, Norway, Finland, Italy, Austria, Switzerland.

BOT. PROV.:—6...7.

WALES:—Dolgelly! Moel-y-gest! Mr. Calcott. Cader Idris! (1866.) Glyn! near Capel Curig, between Fishguard and Llanachar! Pembrokehire. Treffri Falls!

"Spores .024—.050 mm. long, .010—.050 mm. broad. Gelatina hymenae in- tense-blue. Paraphyses gelatinoso-conglutinate, apices subfuliginos or darkly fuscescent." (T. M. Fries.) Spores .033—.034 mm. long, .014—.015 mm. broad.

forma ferrata, Nyl. ferruginous; apothecia slightly ferrugineo-suffused, sometimes slightly umbilicate in the middle; spores 4—8, generally colourless, murali-locular.

On rocks. 1872.


GEOG. DISTRIB.:—Scandinavia.

BOT. PROV.:—15.

SCOTLAND:—Ben Lawers. Rev. J. M. Crombie. (1872.)

"Spores .032—.040 mm. long, .015—.018 mm. broad." (Nyl.)
358. *L. lavata*, Fr. greyish-brown or dirty-subtestaceous, contiguous, smooth, slightly large and coarsely rimulose; apothecia black, or blackish-brown, very large, elevato-adenate, plane, roughish, and frequently umbonate, with an excessively thick, obtuse, prominent, somewhat paler margin; hypothecium thick, black; spores 8, colourless, oblong, or oblongo-ellipsoid, mural-locular.

On water-washed mountain rocks, frequent. 1814.


**Exs.:**—Fr. L. S. 383. (testa Fr. 1. c.)

**Geog. Distrib.:**—Sweden, Germany.

**Bot. Prov.:**—5...7...10...15...20...26.

**England:**—Teesdale: *Mr. L. petraeum*. (1814.) Warpley Hill! Herefordshire.

Bodbury Ring! Long Mynd! near Church Stretton, Shropshire.


Wales:**—Llyn-y-Cae Cader Idris, Pen Maen-mawr! Nant Gwynant! Snowdon.

Paraphyses indistinct. Gelatina hymenea I deep-blue or violet. Spores .031 mm. long, .016 mm. broad.

359. *L. concentrica*, (Dav.) white or greyish-white, very thin, orbicular, determinate, tartaro-farinose, continuous or rimulose, (K—C—); apothecia concentrically arranged, small, appressed or innate, black, plane or depressed, margin albo-suffused; hypothecium central, nigro-fuscous, small; spores 8, colourless, oblong, mural-locular.

On calcareous rocks, frequent. 1794.


**Fig.:**—E. Bot. 246. Hepp Sporens t. 17. f. 149.

**Geog. Distrib.:**—Switzerland, Germany, Hungary, Italy, France, Sweden.

**Bot. Prov.:**—1, 2, 3...5...7...10...14, 15, 16, .19...31.


**Ireland:**—Kilcully! Cork, *Mr. Carroll*


**Channel Islands:**—Jersey; Guernsey. *Mr. Larbalestier.

Different chemical reaction distinguishes this from *L. petraea*. Spores .032—.038 mm. long, .016—.019 mm. broad. Very variable, varying in the following forms:

*form typica*, white or dirty-greyish-whitish, thin, orbicular, contiguous and smooth, or very slightly rimulose, hypothallus black, (K—C—); apothecia black, concentrically arranged, appressed or adnate, plane or slightly concave, with a thick tumid permanent prominent margin, slightly albo-suffused.

On calcareous rocks, common.

**Fig.:**—Hoffm. Pl. Lich. t. 50. f. 2. a. b. c.

**Exs.:**—M. & N. 744. (in part.) Scher. 183. Hepp 149. Anzi It. 310 A.

**Geog. Distrib.:**—Scandinavia, Switzerland, Germany, Italy.

**Bot. Prov.:**—5...7.

**England:**—Whitecliff Rocks! Ludlow.

**Wales:**—Capel Curig! *Mr. Phillips*. Llaogollen! Diganwy! near Conway,
forma impressula, Leight. orbicular; apothecia concentrically arranged, concave, innate, almost urceolate, circumscissed, with an albo-suffused, persistent, very prominent, margin.

On calcareous rocks, common.

Exs:—Reich. and Schub. 148. Leight. 17.

Geo. Distrib:—Germany, Hungary.

Bot. Prov:—2...5...7.

England:—Sussex! Mr. Borrer. Whitecliff Rocks! Ludlow.

Wales:—Llangollen!

forma coarctata, Leight. diffuse, scattered, or very slightly imperfectly orbicular; apothecia scattered, innate, concave, circumscissed, with a thin, upturned, white, coarctate margin.

On calcareous rocks, common.

Exs:—Anzi Ven. 81.

Geo. Distrib:—Italy.

Bot. Prov:—2...6, 7...10...20...26.


Ireland:—Doughruagh Mountain! Galway. Mr. Larbalestier. Kilcully! Cork. Mr. Carroll.

Wales:—Builth! Llwyn Aran! Cadair Idris.

360. L. excentrica, Ach. dirty-white or greyish-white, thin, opaque, rimulose, (K—C—); apothecia black, sessile, plane, with a thickish obtuse naked margin, scattered; spores colourless.

On calcareous rocks, not common. 1800.


Fig:—Hoffm. Pl. Lich. t. 50. f. 1.

Exs:—Arn. 684.

Geo. Distrib:—Sweden, Germany, Italy, Switzerland.

Bot. Prov:—2...6, 7...10...15, 16...19...26...30, 31.

England:—Sussex! Mr. Borrer. (1800.) Carlton Bank! Cleveland. Mr. Mudd.


Wales:—Conway; Crib Coch! Drwsynant! Pen Cow! near Fishguard.

Pembrokeshire! Llangollen! Mr. Calcott.

Channel Islands:—St. Aubin’s Fort! Jersey. Mr. Larbalestier.

361. L. rimosa, (Dicks.) white or bluish-white, tartraceous, orbicular, determinate, anguloso-rimose in the centre, radiato-rimose towards the circumference, which is appressed and minutely crenate, (K—C—); apothecia black, more or less casio-pruinose, rather large, plane, innato-sessile, margin thick, albo-suffused; hypothyseium thickish, nigro-fusaceous; spores 8, colourless, oblong, muralicular.

On calcareous rocks, frequent. 1785.


Fig:—E. Bot. 1736! Hepp Sporen t. 17. f. 147.


Geo. Distrib:—Switzerland, France, Pyrenees, Sweden, Hungary.

Bot. Prov:—5...7...10. 11. 12. 15.

362. *L. plicatilis*, Leight. dirty-white, minutely plicato-verruoso-granulose, areolato-dissolucr, (K yellow C yellow); hypothallus fusose; apothecia nigro-fuscos, large, closely adnate, connato-deformed, undulato-plane, margin obtuse, undulate, more or less attenuate or obliterated in age; hypothecium thick, nigro-fuscos; spores 4-8, colourless, elongato-ellipsoid, 3-4-5-septate, constricted, murali-divided.

On alpine rocks, rare. 1869.

**Hypothecium colourless.**

363. *L. perluta*, Nyl. albido-glaucescent or ochraceo-glaucescent, thin, continuous, rimose, (K—C—); apothecia ferrugineo-rufescent or ferrugineo-fuscescent, plane, with a paler margin, internally sub-concolorous; paraphyses slender, cohaerent, apices luteo-rufescent; hypothecium central, darkly-rufescent, with a lateral luteo-rufescent paler excipulum; spores 8, colourless, ellipsiodeo-oblung, muraliform, sometimes 3-septate, occasionally 1-septate and not muraliform.

On quartzose rocks. 1876.

**Hypothecium colourless.**

364. *L. fuscolutea*, (Dicks.) white or cream-coloured, granuloso-verrucose, effuse, (K yellow, apothecia crimson); apothecia dull-yellow, rather large, elevato-sestile, plane, ochraceo-granuloso-pruinose, margin thick, inflexed, paler, flexuose; hypothecium pale-yellow; spores 1, colourless, oblong or elliptico-oblung, murali-reticulate.

On mosses e&c., in alpine districts, rare. 1782.
matia ellipsoid, excessively minute.” (Mudd.) “Spores .048–100 mm. long, .024–.55 mm. broad. Asc I dirty-blue then intensely-red or fulvescent.” (Th. M. Fries.) Excipulum externally and apices of slender laxly coherent paraphyses fulvescent. Spores .049 mm. long, .017 mm. broad.

365. **L. cupularis,** (Ehrh.) whitish or cinerascent, very thin continuous; apothecia flesh-coloured or yellowish-reddish, superficial, prominent, concave, margin thickish, alabescent, entire or radiate-striate; hypothecium colourless; spores 8, colourless, ellipsoid, multisepitate, murali-locular.

On calcareous rocks, frequent. 1800.


**GEOG. DISTRIBUTION:** —Sweden, Austria, Hungary.

**BOT. PROV.:** —1, 2, 3, 4, 5, 7, 8, 10…35, 16, 19, 27…31.


**SCOTLAND:** —Morton; Appin; on moss, Ben Lawers and Craig Tulloch. Rev. J. M. Crombie.


**WALES:** —Great Orme’s Head! Bryn Maelgwyn! near Conway.

**CHANNEL ISLANDS:** —L’etaquerel! Gorey Castle; L’étary! Jersey; Jersey! Guernsey. Mr. Larbalestier.

“Spores .045 to .0045 in. long. by .002 in. broad. Spermatia short, cylindrical, straight.” (Mudd.) “Spores .015–.16 mm. long. .008–.9 mm. broad. Gelatina hymenes I blue then vinous-red.” (Nyl.) “Spores .017–19 mm. long. .006–9 mm. broad. Paraphyses capillary, laxly coherent.” (Th. M. Fries.) Excipulum thickish, fleshy, colourless, enclosed laterally by a thalline receptacle. Spores .013–.022 mm. long. .008–.009 mm. broad.

366. **L. truncigena,** (Ach.) cinerascent, very thin, sub-leprose or evanescent; apothecia pale-reddish-flesh-coloured, small, urceolate, margin alabescent, thickish, entire; hypothecium colourless; spores 8, colourless, oblongo-fusiform or oblong, 5-7-septate, irregularly longitudinally septate.

On trees, elms, beech, frequent.


**EXS:** —Zw. 90. A. B. Leighton. 147. Arn. 57.

**GEOG. DISTRIBUTION:** —France, Germany, Switzerland, Sweden, Hungary.

**BOT. PROV.:** —1, 2…5, 10…19…24…31.


**CHANNEL ISLANDS:** —St. John’s Road, Jersey. Mr. Larbalestier.
"Spores .004 to .00475 in. long, by .0015 to .00175 in. broad." (Mudd.)
"Spores .017—.03 mm. long, .007—.01 mm. broad." (Nyl.) Spores .019—.021 mm. long, .006—.007 mm. broad.

367. _L. Flotovii, (Körb.)_ cinerascens, very thin, sub-leprose or evanescent; _apothecia_ pale-flesh-coloured, small, urceolate, margin albescent, thick, entire; hypothecium colourless; _spores_ 8, colourless, ellipsoid, irregularly sub-murali-divided, small.

On trees, elms, ash, rare. 1800.

**Syn.:**—Nyl. Scand. 191. (1861.)

**Fig.:**—Leight. Ang. Lich. t. 13. f. 3. Hepp Sporen t. 86. f. 749.

**Exs.:**—Mudd 140. Hepp 749. Zv. 393. Arn. 94. 

**Gog. Distrib.:**—France, Bavaria, Germany.

**Bot. Prov.:**—1, 2...5...10. 21...26. 


"Spores .011—.13 mm. long, .008—.09 mm. broad." (Nyl.) _Excipulum_ pale, fleshy, thin, subtended laterally by a thalline receptacle. Spores .013—.0145 mm. long, .008 mm. broad.

K. _Species polyspora._

368. _L. morio, (Ram.)_ yellowish-copper-coloured or fusco-cinerascens, areolate, _areolae_ plane, somewhat shining, angular, radiotricate at the circumference, (_K_ yellow _C_ red); _hypothallus_ black; _apothecia_ black, small, innate, plane, often umbonate, margin thin, black, flexuose; _hypothecium_ brown; _spores_ innumerable, very minute, colourless, sphaerical or shortly ellipsoid, simple.

On alpine rocks, rare.

**Syn.:**—Ramond in DC. Fl. Franc. 2. 366. (1803.) Nyl. Scand. 290. Mudd Man. 192. (in part.)

**Fig.:**—Hepp Sporen t. 69. f. 608.


**Gog. Distrib.:**—Switzerland, Lombardy, Pyrenees, Norway, Finnmark, Austria.

**Bot. Prov.:**—7...10...15. 

**England:**—Thirsk, Yorkshire. Mr. Baker.

**Scotland:**—Morrone, Braemar. Rev. J. M. Crombie.

**Wales:**—Near Dolgelley. Dr. Holl.

"Spores .00075 in. long, by .00025 to .0005 in. broad." (Mudd.) "Spores .0035—.005 mm. diam." (Nyl.) "Spores .003—.004 mm. long, .002—.003 mm. broad." (Th. M. Fries.)

369. _L. tantilla, Nyl._ cinereo-virescent, tartareous, scurfy; _apothecia_ fuscous or nigro-fuscous, small, scattered, sessile, convex, immarginate; _hypothecium_ colourless; _spores_ innumerable, colourless, sphaerical, simple.

On old palings, rare. 1865.

**Syn.:**—Nyl. Prodr. 117. (1857.) _B. resinae var. rubicundula._ Mudd Man. 191.

**Exs.:**—Leight. inedit. 408, 411. 

**Gog. Distrib.:**—Switzerland, Bavaria. 

**Bot. Prov.:**—3...5...6...10.

Wales: Towyn! Swansea!

370. *L. resinæ*, Fr. *cinereo-virescent*, thin, effuse, scurfy, or granulose; apothecia *pale-yellowish-brown*, small, numerous, innato-sessile, convex, margin thin, pale; hypothecium pale; spores innumerable, colourless, sphaerical, simple.

On old trees, rare. 1854.


Fig.:—Grevillea t. 4. f. 9. a. b. f. d. i. h.

Exs.:—Leight. 277.

Geo. Distrib.:—Scandinavia.

Bot. Prov.:—7...10.


Spores .0025—3 mm. diam. Paraphyses distinct, slender. Spermogonia tuberculæ, pale-yellowish-brown; spormatia small, sphaerical.

forma cicatricicola, Leight. brownish, greenish-brown or purplish; apothecia and spermogonia black; apothecia much more concave, sometimes substipitate; epithecium dark, shining; hypothecium nigro-fuscos; spores slightly smaller.

On pine trees, rare. 1872.

Syn.:—Leight, in Grevillea l. 59.

Fig.:—Grevillea l. c. t. 4. f. 9. c. g. e. k.

Exs.:—Anzi Langob. 267. Rabh. 786.

Geo. Distrib.:—Sweden.


371. *L. ochrophora*, Nyl. obsolete; apothecia ochraceo-suffused, pulverulent, small, convex or at length sub-globose, immarginate, dusky-pallescens within; spores numerous, colourless, sphaerical; paraphyses slender or indistinct, a thin lamina of the apothecia entirely amber-colour; gelatina hymenea cæruleascens with iodine.

On trees in sub-alpine woods, rare. 1865.

Syn.:—Nyl. in Flora 1865. p. 355. Crombie En. 75.

Geo. Distrib.:—France.

Bot. Prov.:—19...31.

Ireland:—Dinis in Killarney. Mr. Carroll.

Channel Islands:—Rozel, Jersey. Mr. Larbalestier.

"Spores .0035—46 mm. diam." (Nyl.)

372. *L. ascaridiella*, Nyl. whitish, thin, opake, rimulose, determinate; apothecia nigricant, innate, most minute, colourless within, margin pseudo-thallodal, crenulate; spores 16-32, colourless, vermi-form, apically acute, once or twice torto-curate, simple; paraphyses very slender, large; epithecium slightly fuscoscent; hypothecium colourless; gelatina hymenea untinged with iodine.

On sandstone rocks in sub-alpine regions, rare. 1868.

Syn.:—Nyl. in Flora 1868. p. 163. Crombie En. 75.

Geo. Distrib.:—Europe.

Bot. Prov.:—19.

Ireland:—Mangerton and adjacent Mountains in Kerry, Mr. Carroll.

"Belonging to the Gyacleæ, near L. leucopsis, (Kphb.) Spores .025—.030 mm. long." (Nyl.)

373. *L. fossarum*, Duf. very thin, obscure or evanescent;
apotheica bright-croceo-rufous, somewhat plane, appressed, immarginate, moderate; hypothecium colourless; thece polysporous; spores colourless, oblong or oblongo-cylindrical, simple.

On mossy rocks. 1868.


Fig:—Dr. and Mont. Alger. t. 19. f. 4.


Geog. Distr:—France, Germany, Algeria.

Bot. Prov:—15.

Scotland:—Ben Lawers! Messrs. Stirton and Galt. (1868.)

"Spores .007—.011 mm. long, .003 mm. broad." (Nyl.) Spores .006—7 mm. long, .003 mm. broad.

374. L. strepsodina, Ach. cinerascence or albo-cinerascence, very thin, almost evanescent, smooth; apotheica black, crowded, subrotundo-difformed, oblong or subrotund, rugose, margin plicate; excipulum carbonaceous, hypothecium pale-nigro-fuscous; paraphyses distinct, cohaerent, apices fuscous; spores innumerable, very minute.

On rocks, rare. 1866.


Bot. Prov:—1...7...26.


Ireland:—Glencorbot! Mr. Larbalestier. (1876.)

Wales:—Festiniog road, Dolgelley! (1866.)

L. Parasitical Species.

375. L. vitellinaria, Nyl. no proper thallus; apotheica parasitic, black, very minute, scattered, sessile, concave, margin elevated, polished; hypothecium brownish; spores 8, colourless, elliptical or oblong, simple, with 1 or 2 nuclei (in size and form exactly like those of Lecidea parasema.)

Parasitic on Lecanora vitellina, not common. 1851.


Exs:—Leight. 182. Arn. 193.

Geog. Distr:—Sweden, Anstria, Germany.

Bot. Prov:—5...10...15.


"Spores .00175 to .002 in. long, by .001 in. broad." (Mudd.) "Spores .010—12 mm. long, .006 mm. broad." (Nyl.) Spores .011—.012 mm. long, .006 mm. broad.

376. L. oxyspora, (Tul.) no proper thallus; apotheica parasitic, black or fuscous-black, minute, plane or sub-convex, immarginate; hypothecium fuscous; spores 8, colourless, elliptical, simple, with 2 nuclei.

Parasitic on various Parmeliei in sub-alpine regions, rare. 1856.


Fig:—Tul. 1. c. t. 16. f. 27. Microsocp. Journ. 5. t. 4. fig. 15. 16.

Exs:—Leight. 281.

Geog. Distr:—Scandinavia.

Bot. Prov:—5...7...15...26.

England:—Worcestershire Beacon! Malvern. Mr. Lees.

Scotland:—Glen Shee! (1856.) Moncrieff Hill! Perth; Strathbran! Dunkeld; Corramulzie, Braemar. Dr. Lindsay.
IRELAND: — Ballynakill ! Letterfrack ! Galway. Mr. Larbalestier.
WALES: — Barmouth ! Cwm Idwall !

"Spores .00825 to .004 in. long, by .001 to .00125 broad." (Mudd.)
"Spores .013—.019 mm. long, .045—.065 mm. broad." (Tul.) "Spores .014—.020 mm. long, .005—.07 mm. broad." (Nyl.) Spores .011 mm. long, .0025 mm. broad.

377. _L. leptostigma_, Nyl. parasitic on a whitish rimulose thallus, apothecia _fuscus-nigricans_, plane, innate, small, gregarious; spores 8, colourless, globose, or globoso-ellipsoid; paraphyses moderate, thickened upwards and dirty-yellow at the apices; hypothecium scarcely lutescent; gelatina hymenea not tinged with iodine.

On micaceo-schistose rocks, rare. 1868.

SYN:—Nyl. in _Flora_ 1863. p. 344. Crombie En. 76.

GEог. DISTRIBUTION:— Europe.

BOT. PROV:— 15.


"Spores .005—9 mm. diam." (Nyl.)

378. _L. imponens_, Leight. thallus obsolete; apothecia black, minute, numerous, scattered, sessile, plane or subconcaee, margin thin, eventually obliterated, pale-bluish-cineraceous within; _hy- menium_ and _hypothecium_ hyaline, pale-bluish-cineraceous; _excipulum_ horny bluish-cineraceous, externally darker; paraphyses thick, coherent, apices nigricant; spores 8, colourless, elliptical, simple; gelatina hymenea I dirty-fuscescent.

Parasitic on *Lecanora polytropa*, (Ehrh.) rare. 1876.

SYN:— Linn. Trans. 2d. ser. 1. 238. (1876.)

FIG:— Linn. Trans. 1. c. t. 32. f. 7. 8.

BOT. PROV:— 6.

WALES: — Fort Hill! near Fishguard, Pembrokeshire. (1876.) Spores .014—.015 mm. long, .0055 mm. broad.

379. _L. episema_, Nyl. no proper thallus; _apothecia_ parasitic, black, aggregate, minute, margin obtuse, entire; _hypothecium_ fusco, spores 8, colourless, ellipsoid or elongato-oblong, 1-septate; paraphyses short and thick, with large globose fuliginous apices; I lutescent.

Parasitic on *Lecanora calcarea*, not common. 1851.


GEог. DISTRIBUTION:— France, Italy, Pyrenees.

BOT. PROV:— 1...7...19...26.

ENGLAND: — Near Yatton! Somerset. Mr. Joshua.

IRELAND: — Kennmare Bay near Dunkerron. Dr. Taylor. Lough Corrib! Mr. Larbalestier.

WALES: — Great Orme's Head! (1851.)

"Spores .010—18 mm. long, .004—5 mm. broad." (Nyl.) Spores .013 mm. long, .005 mm. broad.

380. _L. cristata_, Leight. no proper thallus; _apothecia_ parasitic, black, very minute, solitary or more generally clustered, or in narrow flexuose lines like a hypothallus, concave, margin thick and obtuse; _hypothecium_ black, carbonaceous; spores 8, colourless, lineario-oblong, faintly 1-septate, very minute.

Parasitic on the thallus of *Lecanora sub-carnea*, rare. 1856.

GEог. DISTRIBUTION:— Europe.

BOT. PROV:— 7.
381. *L. arenicola*, Nyl. thallus none; apothecia parasitic on thallus of *Baeomyces rufus* and roseus, minute, black, sessile, solitary, concave or plain, margin thick, obtuse, slightly inflexed and polished; hypothecium dark-brown; spores 4, colourless, slender, elongato-annular, multisepate, cells containing oily globules.

Parasitic as above, rare. 1854.

**SYN.:** Nyl. in litt. 1853. Mudd Man. 186. (1851.)

**EXS.:** Leight. 372.

**GEOG. DISTR.:** France.

**BOT. Prov.:** 5...7, 8...10...15...26.

**ENG.:** Guisbro' Moor! Lounsda! Ingleby Moor, Cleveland. Mr. Mudd. (1854). Goit Lane, Buxton. Dr. Holl. Wapley Hill! Herefordshire; Stiperstones! Shropshire!

**SCOTLAND:** Ben Lawers. Dr. Holl.

**IRELAND:** Near Kylemore! Mr. Larbaestier. (1877.)

**WALES:** Cader Idris. Dr. Holl.

"Spores .014 to .018 in. long by .0075 in. broad." (Mudd.) Spores .075 mm. long,.004 mm. broad.

382. *L. Parmeliarum*, Smrf. thallus none; apothecia parasitic, black or greenish, pruinose or naked, sub-innato-sessile, convex, im-marginate; hypothecium greenish-brown; spores 8, fuscos, oblong, 1-septate.

Parasitic on the thallus of various Parmelie in sub-alpine regions, frequent.


**FIG.:** E. Bot. 1866. Microscope. Journ. 5. t. 4. fig. 1—14.


**GEOG. DISTR.:** Germany, Lombardy, Lapland, Austria, France, Italy.

**BOT. Prov.:** 1...5, 6, 7...10...13...15...19...31.

**ENG.:** Meadfoot! Torquay. Dr. Deakin. Ingleby Park! Cleveland. Mr. Mudd. Pembridge! Herefordshire. Rev. J. F. Crouch, Dartmoor! Malvern Hill; Meadfoot, Torquay, and near Bovey Tracy, S. Devon. Dr. Holl.

**SCOTLAND:** Ben Nevis. Messrs. Turner & Hooker. Craigie Hill! Perth; Craig-y-Barnes; Strathbraan Road, Dunkeld; between Dumfries and Caerlaverock! Dr. Lindsay. Aberdeenshire! Prof. Dickie. Crianlarich. Dr. Holl.

**COUNC. WELLS:** Braemar; Craig Callisch; Trosachs. Rev. J. M. Crombie.

**IRELAND:** Mungerton co. Kerry. Dr. Taylor.

**WALES:** North Wales. Mr. Griffith. (1800.) Cribath Hill near Ystrad Glynais, S. Wales. Mr. Sowerby. Llyn Aran! Cader Idris; Moel-y-Gofa! Barmouth! between Bals and Dolrelley! near Capel Curig! Llyn Cwlyd! Eglwyseg rocks! Llyn Gerionydd! Pistyll Rhaeadr.

**CHANNEL ISLANDS:** Jerbourg Cliffs! Guernsey. Mr. Larbaestier.

"Spores .003 to .0035 in. long by .00125 in. broad." (Mudd.) "Spores .0125—.016 mm. long, .0065 broad." (Tul.)

383. *L. particularis*, Nyl. no proper thallus; apothecia black, plane, marginate, internally sub-concolorous; hypothecium and excipulum nigricant; spores 8, fusco-nigraceous, ellipsoid, 1-septate; paraphyses slender, not well distinct.

Parasitic on thallus of *Baeomyces rufus*. 1876.

**SYN.:** Nyl. in Flora 1877. p. 451.

**BOT. Prov.:** 26.

**IRELAND:** Near Kylemore, Galway. Mr. Larbaestier. (1873.)

"Thalamium in a thin section lutescent and with K somewhat purpuraceous. Spores .006—.010 mm. long,.0035—.0045 mm. broad. Gelatina hymenea I Intense-blue." (Nyl.)
384. *L. parasitica*, (Flk.) no proper thallus; *apothecia* parasitic, black, scattered or aggregate, concave or plane, sessile, margin thin, elevated, entire, polished; *hypothecium* dark-reddish-brown; spores 8, *fuscous*, linear-oblong, 3-septate, small.

Parasitic on the thallus of *Pertussaria communis* and *Lecanora parella*, frequent.


**Fig:** Mudd Man. t. 4. f. 85.

**Exs:** Leight. 183. Nyl. 68.

**Geogr. Distrib.** — France, Switzerland, New Zealand, Great Bear Lake. *Bot. Prov.* — 1, 2...5...7, 8...10...19...24...26...31.


**Wales:** — Barmouth! Rev. T. Salwey. Aber! Mr. W. Phillips.

**Channel Islands:** — La Moye and St. Peter’s Barracks! Jersey. Mr. Lardaleaster.

“Spores .013 mm. long, .0035 mm. broad.” (Tul.) “Spores .009—.015 mm. long, .0035—.0045 mm. broad. Gelahtina hymenae I intense-blue.” (Nyl.) “Spores .005 in. long, by .001 in. broad.” (Mudd.) Spores .01—.011 mm. long, .0035 mm. broad.

385. *L. paretllaria*, Nyl. thallus none; *apothecia* black, opake, small, scattered, single or 2 or 3 together, sessile in or near the cracks of the thallus, plane, margin thickish, prominent, more or less pruinose; *hypothecium* nigrofuscous, thin; paraphyses indistinct, conglutinate, apices clavate, nigricant; spores 8, *fuscous*, linear-oblong, or oblong, generally 1-septate, sometimes 2-septate, and sometimes 3-septate in the same *apothecium*; gelatina hymenae I bluish then fuscecent.

Parasitic on *Lecanora parella*, (L.) not common. 1876.

**Syn:** — Nyl. in Flora 1876. p. 239. Leight. in Linn. Trans. 2d. ser. 1. 238.

**Fig:** — Linn. Trans. 1 c. t. 32. f. 11. 12.

**Exs:** — Larb. 86.

**Geogr. Distrib.** — France, New Zealand.

**Bot. Prov:** — 6, 7...26.

**Ireland:** — Lough Feagh! Doughruagh Mountains! Connewara. Mr. Lardaleaster. (1876.)

**Wales:** — Maneerowen! Road between Fishguard and Llanachar! Pembroke. Digany! near Conway!

Spores .011—.014 mm. long, .005 mm. broad.

386. *L. scapanaria*, Carrington thallus none; *apothecia* parasitic, minute, sparingly scattered, coarctate when young, explanate when mature or old, dull-reddish-black, plane, margin elevated, somewhat tumid; hypothecium thin, dark-yellowish-brown; spores 6–8, fuscous, obtusely fusiform, straight or slightly curved, 3-septate.

Parasitic on *Scapanaria undulata*, rare. 1861.


**Fig:** — Trans. Bot. Soc. Edin. 7. t. 10. f. 4.

**Geogr. Distrib.** — Europe.

**Bot. Prov.** — 10...26.

**Scotland:** — Ben Lawers (1871.) Carlochan (1873.) *Dr. Stirton.*
THE LICHEN-FLORA

IRELAND:—Cromaglown, Killarney. Dr. Carrington. (1861.) N. side of Doughruagh Mountain. Mr. Larbalestier.

"Spores .004—.005 in. long by .001 to .00125 in. broad." (Mudd.)

387. L. Cladoniarum, Nyl. thallus none; apothecia black, minute, opaque, slightly prominent, rugulose, internally dark or concolorous; spores 8, colourless, (or sometimes normally fuscous) oblong, simple; hypothecium somewhat migrantr in the lower portion; paraphyses moderate.

Parasitic on Cladonia uncialis and bellidiflora, rare. 1861.

SYN:—Nyl Enum. Sup. 339. (1857.) Crombie En. 94.

GEOG. DISTRIB.—Europe.

BOT. PROV.:—25.

IRELAND:—Kelly's Glen near Dublin. Dr. Moore. (1861.)

"Spores .010 mm. long, .0035 mm. broad. Gelatina hymenea I blue then dirty." (Nyl.)

388. L. advenula, Leight. thallus obsolete; apothecia nigrofuscous, minute, round, plane, or sub-convex, with a thin margin soon obliterated, brownish within; paraphyses indistinct, conglutinate, apices large, nigro-fuscous; hypothecium thickish, nigrofuscous; spores 8, nigro-fuscous, oblong, 1-septate.

Parasitic on Pertusaria sulphurea (K y C orange-red.)

SYN:—Leight. in Linn. Trans. Bot. ser. 2. vol. 1. p. 146. (1876.)

FIG:—Linn. Trans. 1. c. t. 22. f. 17. 18. 19. 20.

BOT. PROV.:—7...26.

IRELAND:—Mweelan! Twelve Pins! Rocks base of Letter Hill! Connemara, Mr. Larbalestier.

WALES:—Llanbedrog! (Sept. 1874.)

Spores .024 mm. long, .013 mm. broad. Gelatina hymenea I—.

389. L. epiphorbia, Strm. "apothecia resemble, externally and internally, those of L. Parmeliarum, except that the paraphyses are neither thickened nor darker-coloured at their apices, the spores are colourless, or present, in a few instances, a faint tinge of yellow, and the reaction on the gelatina hymenea I deep vinous-red without any preceding cærulescent tint, instead of being negative, as in L. Parmeliarum. This lichen bears the same relationship to L. Parmeliarum that L. Solorinaria does to L. oxyspora."

(Stirt.)

Parasitic on Solorina limbata. 1873.

SYN:—Stirton in Grevillea 2. p. 108.

BOT. PROV.:—15.

SCOTLAND:—Ben Lawers. Dr. Stirton. (1873.)

390. L. Walrothii, (Tul.) thallus obsolete; apothecia pale or denigrate, plane or somewhat convex, small, adnate; hypothecium pale-dirty-tinge; paraphyses conglutinate, apices pale; spores 6-8, colourless, ellipsoid, simple or 1-septate.

Parasitic on Solorina saccata and Peltigera canina.


GEOG. DISTRIB.—Switzerland, France.

BOT. PROV.:—15.

SCOTLAND:—Glen Lyon, Perthshire! Rev. J. M. Crombie.

"Spores .009—.011 mm long, .0065 mm. broad." (Tul.) "Spores .007—.011 mm. long, .003—.005 mm. broad. Gelatina hymenea I blue then vinous-red." (Nyl.) Spores .011—.012 mm. long, .005 mm. broad.
391. *L. persimilis*, Nyl. whitish or whitish-grey, thin, minutely granuloso-areolate; apothecia black, moderate, appressed, plane or slightly convex, naked, slightly margined, internally nigricant, hypothecium fusco-nigrous; hymenium cinerascant; spores fusco-nigrescent, oblongo-or fusiformi-ellipsoid, 3-septate.

Parasitical on Jungermanniæ, rare.

SYN:—Nyl. in Sällsk. pro. F. et Fl. F. Not. n. s. 1. 237. Scand. 236.

GEOG. DISTRIBUTION:—Scandinavia.

BOT. PROV.:—15.

SCOTLAND:—Ben Lawers and Canlochan, Forfarshire. Dr. Stirton.

"Gelatina hymenea I intense-blue. Spores .019—23 mm. long, .008 mm. broad." (Nyl.)

392. *L. glaucomaria*, Nyl. thallus obsolete; merely a small irregular deformed pale nigro-fuscosus patch or discoloration on which are the apothecia; apothecia fusco-nigrous, opake, clustered, sub-innato-sessile, plane, margin thickish, paler, entire, often sub-flexuose; hymenium fuscescent, paraphyses indistinct, coherent, apices incassate, fusco-nigricant; hypothecium nigro-fuscosus, thin; spores 8, colourless, oblongo-ovoid, 3-septate.

Parasitic on *Lecanora glaucoma*, (Hoffm.) rare. 1876.


FIG:—Nyl. Obs. fig. 10. Linn. Trans. i. c. t. 32. f. 9. 10.

GEOG. DISTRIBUTION:—Stockholm, France.

BOT. PROV.:—6.

WALES:—Goodwick Bay! Pembrokeshire. (Sept. 1873.)

"Gelatina hymenea I pale-blue then vinous-red. Spores .021—.025 mm. long, .008—9 mm. broad." (Nyl.) The apothecia sometimes form warty agglomerations. Spores .0235 mm. long, .009 mm. broad. Not to be confused with *Athonia glaucomaria*, Nyl. (A. varins, Dav.) which grows on the apothecia (not on the thallus) of *L. glaucoma*.

393. *L. supernula*, Nyl. apothecia black; 3-6-aggregate, plane, slightly margined or at length convex immarginate, internally concolorous; paraphyses moderate or somewhat thick, apices clavate cærulescenti-nigricant; hypothecium and excipulum cærulescenti-nigricant, rubricoso-rufescens above; spores 8, colourless, oblongo-ovoid, 1-septate.

Parasitic on *Lecanora calcarea* f. Hoffmanni, Ach.

SYN:—Nyl. in Flora 1876. p. 574.

BOT. PROV.:—16.


"Spores .009—.014 mm. long, .004—.05 mm. broad. Gelatina hymenea I vinous-red." (Nyl.)

II. ODONTOTREMA. Nyl.

Thallus indistinct. Apothecia black, thelotremoideo-lecideine or gymnotremoid, naked, at first closed, then dehisbing with denticulato-ruptured proper margin.

1. *O. longius*, Nyl. thallus whitish or albido-cinerascens, effuse; apothecia black, scattered, small, rotundate or oblong, margin thin, flexuose or unequal, eventually obliterated; hypothecium thin, nigro-fuscosus; paraphyses distinct; spores 8, colourless, ellipsoideo-fusiform, obtuse at the apices, 3-septate.
On old rails, rare. 1867.

**SYN.**—Nyl. in latt. 1867. Crombie En. 95.

**FIG.**—Linn. Trans. ser. 2. 1. t. 32. f. 17.

**EXS.**—Leight. 409.

**GEOG. DISTRIBUTION.**—Europe.

**BOT. PROV.**—2...5...7.

**ENGLAND.**—Braydon Forest! Wilts. Mr. Joshua. Brace Meole! (1867.)


**WALES.**—Towyn!

Spores 0.0195—0.021 mm. long, 0.005—0.007 mm. broad.

2. *O. majus,* Leight. whitish or evanescent; apothecia brownish, prominent, scattered, rotundate, suburceolate, margin thickish, prominent, persistent, nearly entire; hypothecium colourless or slightly fulvescent; paraphyses distinct, slender; spores 8, colourless, broadly linear-oblong, 3-septate; I renders the linear asci and spores lutescent.

On drift wood and decorticated willow stumps, rare. 1876.

**SYN.**—Leight. in Linn. Trans. 2d. ser. 1. 239.

**FIG.**—Linn. Trans. 1. c. t. 32. f. 16.

**GEOG. DISTRIBUTION.**—Great Slave Lake.

**BOT. PROV.**—5...6.

**ENGLAND.**—Hencote Pool! near Shrewsbury. Mr. W. Phillips. (1876.)

Oakley Park! Cirencester. Mr. Joshua.

**WALES.**—Goodwick Bay! Pembrokeshire.

Spores double the size of those of *O. minus,* Nyl. (.0115—.014 mm. long, .005 mm. broad. *Linn. Trans.* 2d. ser. 1. t. 32. f. 15), .019—.021 mm. long, .0075—.0085 mm. broad. Spermogonia brownish, oblong, minute; spermatia oblong or linear-oblong .0095 mm. long, .003 mm. broad.

### III. SCHIZOXYLON, Pers.

Thallus evanescent. Apothecia lecideine, elevated, naked, black. Spores numerous.

1. *Schizoxylon corticola,* (Frs.) Nyl. whitish or yellowish-white, thin, continuous, tartaraceous, smoothish; apothecia black, very numerous, round, plano-convex, sub-pulverulent or minutely granulose, immarginate; hypothecium thin, dark-brown; paraphyses slender, distinct; spores innumerable, colourless, very minute, oblong, simple.

On old oaks, rare. 1870.


**EXS.**—Fr. 273. (side Nyl).

**GEOG. DISTRIBUTION.**—Europe.

**BOT. PROV.**—2.

**ENGLAND.**—Near Lyndhurst in New Forest! Rev. J. M. Crombie.

### TRIBE XVI. GRAPHIDEI.

Thallus thin, scarcely visible or hypophlaeodal. Apothecia lirelline.


Apothecia linear, epithecium plane or concave or sulciform, longitudinally plicate. Spores colourless. Paraphyses distinct or indistinct, slender.
1. *X. parallela*, (Ach.) thallus an elongated whitish spot; apothecia black, narrowly lanceolate-linear, erumpent, innate, plane or somewhat concave, parallel, internally cinerascent; spores 8, colourless, ellipsoid, simple; paraphyses distinct, slender.

On old wooden posts, &c. rare.  
**SYN:** = Nyl. Scand. 250. (1861.) Crombie En. 95. Opegrapha parallela, Ach. L. U. 253. (1810.)


**DISTRIB:** = Belgium, Switzerland, Bavaria, Austria, Hungary, Italy, E. Lapland.

**BOT. PROV.:** = 15.

**SCOTLAND:** = Glenfalloch! Dr. Hol. Pass of Killiecrankie; Glen Dee, Braemar. Rev. J. M. Crombie. Brechin! Mr. Cooke.

“Spores .011—16 mm. long, .005—7 mm. broad.” (Nyl.) “Spores .011—17 mm. long, .006—7 mm. broad.” (T. M. Fr.) Spores .012—.014 mm. long, .006 mm. broad.

**var. pallens**, Nyl. apothecia pallescent.  
On old pales. 1872.


**DISTRIB:** = Scandinavia.

**BOT. PROV.:** = 15.

**SCOTLAND:** = Ben Lawers. Pass of Killiecrankie, Blair Athole. Rev. J. M. Crombie. (1872.)

f. elliptica, Nyl. apothecia shorter, oblong, or difformed.

**SYN:** = Nyl. in litt. Crombie 1. c.

**BOT. PROV.:** = 15.

**SCOTLAND:** = Pass of Killiecrankie, Blair Athole. Rev. J. M. Crombie. (1872.)

2. *A. laricicola*, Nyl. greyish-white, very thin, effuse, or evanescent; apothecia black, minute, superficial, oblong or slightly flexuose, irregularly scattered, at length somewhat explanate, with an evanescent margin, internally whitish; hypothecium brown; spores 8, colourless, ellipsoid, simple; paraphyses none; gelatina hymenea I tawny vinous-red.

On larch trees near the base, rare. 1874.

**SYN:** = Nyl. in Flora 1875. p. 13.

**EXS:** = Crombie 97.

**BOT. PROV.:** = 15.

**SCOTLAND:** = On a single tree in Lawers’ Glen! Ben Lawers. Rev. J. M. Crombie. (1874.)

“Spores .0012—15 mm. long, .007—8 mm. broad.” (Nyl.) Spores .013 mm. long, .006 mm. broad.

3. *X. scaphoidea*, Strn. albo-macular or obsolete; apothecia fuscous, prominent, oblong, roundish, or even flexuose, small; hypothecium rimaiform, margin prominent, rounded; hypothecium colourless; spores 8, colourless, ellipsoid, simple, moderate; paraphyses indistinct; gelatina hymenea I obsoletely caeruleuscent, then fulvaceous; gonidia large, green, interspersed amongst the fibres of the wood.

On decorticated alder. 1874.

**SYN:** = Stirton in Grevillea 3. p. 35. (1874.)

**BOT. PROV.:** = 15.

**SCOTLAND:** = Near Dalwhinnie and Grantown. Dr. Stirton. (1874.)

“Spores .012—.016 mm. long, .005—.006 mm. broad.” (Stirto.)
4. X. flexella, (Ach.) whitish; apothecia black, minute, superficial, oblong; epithecium rimaeform or irregularly dilated; hypothecium fuscescent; spores 8, colourless, globoso-ellipsoid, ovoid or ellipsoid, simple, most minute.

On decorticated stumps, not common. 1875.


EXS:—Arn. 525. M. & N. 1094.

GEOG. DISTRIB:—Switzerland, Germany, Sweden, Norway, Lapland, Arctic America.

BOT. PROV:—5.

ENGLAND:—Oakley Park, near Cirencester! Mr Joshua. (1875.)

"Spores .004—5 mm. long, .002—3 mm. broad." (Nyl.) "Spores .004—6 mm. long, .002—3 mm. broad." (T. M. Fr.) Spores .004 mm. long, .002 mm. broad.

II. PTYCHOGKAPHA, Nyl.

Thallus effuse, macular. Apothecia prominent, parallel, with 2 or 4 longitudinal hymenia in each. Spores 8, colourless, simple. Gelatina hymenea I vinose-red.

1. P. xylographoides, Nyl. greyish-white, macular, or nearly obsolete, internally with the gonidia sub-glomerated; apothecia black, lanceolate, somewhat prominent, above plane; epithecium usually longitudinally 1-or 3-plicated, margined, within concolorous; spores 8, colourless, ellipsoid, simple; epithecium nearly colourless; hypothecium and perithecium black; gelatina hymenea I vinous-red.

On decorticated mountain-ash. 1874.


Fig:—Journ. Bot. 1. c. t. 150.

BOT. PROV:—15.

SCOTLAND:—Craig Calliach, Killin. Rev. J. M. Crombie. (1874.) 

"Spores .011—14 mm. long, .006—7 mm. broad." (Crombie.)

III. AGYRIUM. Fr. in part, Nyl.

Thallus scarcely visible. Apothecia oblong or rotundate, epithecium plane or convex. Paraphyses distinct.

1. A. rufum, (Pers.) thallus indicated by a whitish spot; apothecia bright-red, rotundate or oblong, pale or convex, prominent, sub-tuberculose; hypothecium pale; spores 8, colourless or rufescens, ellipsoid, simple.

On old posts, &c., rare.


Fig:—Pers. Obs. Myc. t. 6. f. 6.


GEOG. DISTRIB:—Scandinavia, Switzerland, France.

BOT. PROV:—6, 7...10...19.


WALES:—Gaer Ditches! near Knighton, Radnorshire, Dolgelley!

"Spores .011—14 mm. long, .007—9 mm. broad." (Nyl.) Spores .012 mm. long, .008 mm. broad.
IV. LITHOGRAPHA, Nyl.

Thallus crustaceous or evanescent; apothecia lirellæform, black, tumid, epithecium rimiform, margins thick, convex; hypothecium black, thick, entire; spores 8 or numerous, simple or 1-septate.

1. L. tesserata, (DC.) pale-brownish-grey, crustaceous, tessellato-areolate, areolate plano-convex, (K yellow then red); apothecia fuscous-black, lirellæform, slightly prominent, short, obtuse, simple or slightly divided, solitary or clustered, straight or curved; epithecium rimæform, margin thick, inflexed; hypothecium thick, black; spores 8, colourless, oblong or ellipsoid, simple, minute.

On alpine rocks, rare.


FIG:—E. Bot. Suppl. 2632, fig. 2. Leight. Br. Graph. t. 5. f. 1.


GEOP. DISTRIB:—Sweden, Italy.

BOT. PROV:—1...7...10, 11, 12...15.


SCOTLAND:—Morrone; Ben Lawers; Cairn Gowan. Rev. J. M. Crombie.


"Spores .005 in. long, by .001 in. broad, t. 4. f. 87." (Mudd.) "Spores .005—.011 mm. long, .005—.0065 mm. broad." (Nyl.) "Spores .010—.015 mm. long, .005—.008 mm. broad." (T. M. Fr.) Spores .011 mm. long, .005 mm. broad.

2. L. petraea, (Durieu.) evanescent; apothecia black, lirellæform, thick, linear, simple, somewhat shining, clustered and congregated, flexuose; epithecium rimæform; margin very thick, tumid, inflexed; hypothecium thick, black; spores numerous, colourless, oblongo-cylindrical, simple.

On rocks, rare.


EXS:—Larbal. 40.

GEOP. DISTRIB:—Algeria.

BOT. PROV:—26...31.

IRELAND:—Lettermore and near Kylemore! Mr. Larbalestier.

CHANNEL ISLANDS:—Le Fret Common! Noirmont! Jersey. Mr. Larbalestier.

"Spores .008—.04 mm. long, .001 mm. broad." (Nyl.)

3. L. dendrographa, Nyl. cinerascent, effuse or evanescent, (K—C—); apothecia black, linear or oblong or elliptical, simple or slightly fuscato-divided, erumpent; epithecium black, opaque, narrow, at length applanate, margin prominent, thin, shining, more or less flexuose; hypothecium fuscous-black; spores numerous, colourless, ellipsoid, minute, simple; paraphyses indistinct.

On trees, rare. 1869.

SYN:—Nyl. in Flora 1864. p. 488. Crombie Enum. 95.

GEOP. DISTRIB:—France.

BOT. PROV:—1...2..31.

"Spores .005—8 mm. long, .0083—4 mm. broad." (Nyl.) Spores .0085 mm. long, .004 mm. broad.

4. L. Larbalestieri, Leight. pallido-stramineous, minutely and irregularly granulate, slightly pulverulent, thin, effuse, indeterminate, (K yellow C—); apothecia black, slightly shining, very numerous and minute, rounded, variously angular or subiirelliform by compression, stipitate, coacervate and aggregate and disjunct, in irregular scattered very prominent groups or clusters about the size of mustard-seed; epithecium plane or often compressed and opegraphine or rimose, with an elevated thickish incurved margin; hypothecium pale-brownish, somewhat nigricant; hymenium dusky, paraphyses distinct, slender, apices colourless; spores 8, colourless, oblong or ellipsoid, simple.

On quartzose rocks, very rare. 1877.


IRELAND:—Banks of Kylemore Lake! co. Galway. Mr. Larbalester. (1877.)

Spores .016—.017 mm. long, .008—.009 mm. broad. Iodine tinges these blue then fulvescent. A most remarkable and striking lichen.

5. L. Andrewii, Stirt. white or whitish or when rubbed cinereous, (K—C—) thickish; apothecia black, small, at first alboveinata, at length erumpent, crowded, sessile or innato-sessile, rotundate, oblong, simple or rarely divided; epithecium rimose, at length explanate, fulvescent; proper margin prominent, generally inflexed; paraphyses distinct, colourless at the apices; hypothecium colourless; spores 8, colourless, simple, shortly ellipsoid or often globose, nucelolate.

On granite rocks, rare. 1878.

Syn.:—Stirton in Scottish Naturalist July 1878. p. 300.

Bot. Prov. 15.

SCOTLAND:—New Galloway. Mr. J. M. Andrew. (1878.)

“Spores .005—.011 mm. long, .005—.007 mm. broad. Gelatina hymenae I—.” (Stirt.)

6. L. cerebrina, Scher. chalky-white, tartaraceous, contiguous, (K—C—); apothecia scattered or congregate, sessile, variously plicato-deformed, black; hypothecium black, thick; spores 8, fuliginous or nigricant, linear-oblong, 1-septate.

On calcareous rocks, rare.


Fig.:—E. Bot. Suppl. 2032. fig. 1. (1830.) Leight. Br. Graph. t. 5. f. 2.


Geog. Distri:—Bavaria, Italy, Pyrenees, France.

Bot. Prov. 1. .8. .10. 11. 12.


“Spores .0035 to .004 in. long, by .00125 to .0015 in. broad, t. 4. f. 88.”

(Mudd.) “Spores .015—.021 mm. long, .008—.011 mm. broad.” (Nyl.) Spores .023 mm. long, .012 mm. broad.

7. L. interjecta, Leight. albido-subvirescent, tartaraceous, thin, furfuraceous, almost evanescent; apothecia black, lirelliform, somewhat shining, linear, simple or sometimes branched, solitary or
clustered, flexuose; epithecium very narrow, rimæform; margin tumid, inflaxed; hypothecium black; spores 8, colourless, oblong, 1-septate.

On slaty maritime rocks, very rare. 1856.


Wales: — Barmouth! (1856.) Cwm Cywion!
Spores .021—.023 mm. long, .009 mm. broad.

V. OPEGRAPHA, Ach. Nyl.

Thallus very thin or scarcely any. Apothecia (lirellæ) black, superficial; lineari-lanceolate or sub-rotundate or linear, elongate or flexuose or ramoso-divided, with a proper margin; peritheciun entire; epithecium plane or rimæformi-angustate; spores 8, colourless or fuscescent, lineari-oblong, sub-clavato-fusiform, fusiform or acicular, 1-multi-septate.

* Spores 1-septate.

1. O. lentiginosa, Lyell. cream-coloured, thin, tartarceous, smooth, nigro-fusco-limitate; lirellæ excessively prominent and sessile, very minute, punctiform, oblong or linear, straight, simple; peritheciun entire; epithecium rimæform; proper margin tumid and incurved; spores 8, fuscescent, irregularly obovate, 1-septate, constricted.

On beech and holly and oak, rare.

Fig. — Leight. Br. Graph. t. e. f. 16.
Exs. — Crombie 98.


Bot. Prov. — 1, 2, 19.


Fig. — Leight. Br. Graph. t. e. f. 16.


Glenbower, Kilkeagh. Mr. Carroll.

"Spores .0095 to .003 in. long, by .001 to .00125 in. broad, t. f. 89."

(Mudd.) "Spores .011—16 mm. long, .006—7 mm. broad." (Nyl.) Spores .015—.016 mm. long, .006—7 mm. broad.

2. O. lentiginosula, Nyl. thallus evanescent; lirellæ excessively prominent and sessile, very minute, ellipsoid, straight, simple, rarely divided; peritheciun colourless or deficient at the base; epithecium rimæform; proper margin tumid and incurved; spores 8, fuscosus, obovate, 1-septate, constricted, larger than in lentiginosa; paraphyses indistinct.

On pines in sub-alpine regions, rare. 1864.


Geog. Distr. — Europe.


Scotland: — Glenfalloch! Mr. Carroll. (1864.)
"Spores .020—.023 mm. long, .010—11 mm. broad." (Nyl.)

3. O. diplasiospora, Nyl. albido-glaucescent, thin, smooth, membranaceous, effuse; lirellæ oblong or lanceolato-oblong, small, innato-erumpent, black; epithecium expanded, plane; proper margin thin, elevated, inflaxed; peritheciun nigro-fuscosus, entire at the base; paraphyses none; spores 8, fusco-nigræcent, obovate, 1-septate, constricted, double the size of those of O. lentiginosa.
On holly in mountain ranges, rare. 1867.

SYN:—Nyl. N. Granada ed. 1. 62. (1863.) ed. 2. 92.

Ftc:—Nyl. N. Gran. ed. 1. t. 2. f. 41.

Exs:—Lindig 2787, & 546.

Geog. Distrib.:—N. Granada, Europe.

Bot. Prov.:—19.

IRELAND:—Turk (Mountain! Cromaglown, Killarney. Mr. Carroll. (1867.)

"Spores .027—.032 mm. long, .012—16 mm. broad." (Nyl.) Spores .026—.029 mm. long, .009—.010 mm. broad.

4. O. constrictella, Stirton. whitish or palish, thin; apothecia internally pallido-fuscescent, black, simple, sometimes aggregate; epithecium broad, concave, or also explanate; perithecium lateral; paraphyses crowded, irregular, not well distinct, apices fuscous (K dirty-blue); hypothecium colourless; spores 8, colourless, obovate, 1-septate, constricted.

On old bark. 1874.

SYN:—Stirton in Scott. Naturalist 4. p. 29. (1877.)

Bot. Prov.:—16.

Scotland:—Ben Brecht, Argyleshire. Mr. Paterson. (1874.)

Spores .012—.017 mm. long, .0045—.0065 mm. broad. Gelatina hymenea I—.

**Spores 3-septate.

5. O. herpetica, Ach. dusky-olive, thin, sub-tartareous, more or less cracked or slightly rugose, fusco-limitate, (K reddish); lirellæ small, innate, round, oval, oblong or linear-oblong, obtuse, simple and divided, straight or curved; disk rimæform, expanded in age; proper margin thick, rounded and inflexed; spores 8, colourless, fusiform, 3-septate.

On trees, oak, ash, beech, frequent.

forma vera, Leight. thallus tuberculate, pulvululent; lirellæ imbedded, small, simple, naked.


Fig:—E. Bot. 1789. Leight. Br. Graph. t. 5. f. 12.

Exs:—Nyl. 81. Mudd 213. Hopp 555.

Geog. Distrib.:—Europe, France, Switzerland, Sweden, N. America.

Bot. Prov.:—1...3, 4, 5, 8...11...15...19...28...31.


Channel Islands:—St. Peter's Valley! Jersey. Mr. Larbalestier.

"Spores .0035 to .004 in. long, by .00075 in. broad." Mudd.) "Spores .016—.023 mm. long, .0045 mm. broad." (Nyl.) Spores .018—.024 mm. long, .004 mm. broad.

forma sub-ocellata, Ach. thallus tuberculate, pulvululent, (K reddish); lirellæ imbedded, small, simple or sub-stellate, albocellate.

On trees, frequent.


Fig:—Chevall. Hist. Graph. t. 19. f. 4. & f. 3,
formae elegans, Borr. thallus pulverulent, (K reddish); lirellae larger, simple and divided, prominent, wavy.

On trees, rare.

Exs.:—Leight. 286.

Geog. Distr.:—Europe.
Bot. Prov.:—2, 3...7...10...31.


Wales:—Edderton Wood! Montgomeryshire.

Channel Islands:—Jersey. Mr. Larbalestier.

forma rubella, Pers. thallus smooth, (K reddish); lirellae prominent, simple, immersed only at the base.

On trees, birch, common.


Fig.:—Cheval. Hist. Graphid. t. 17. f. 1. a. f. 2.

Geog. Distr.:—Switzerland, Italy, Pyrenees, France, Germany, Sweden.

Bot. Prov.:—2...3...5...7...10...31.


Wales:—Llandedrog!

Channel Islands:—Grouville, Jersey. Mr. Larbalestier.

forma rufescens, Pers. dark-dingy-olive, (K reddish); lirellae prominent, immersed only at the base, flexuose, sub-stellato-ramose; epithecium plane, more or less canaliculate.

On ash, birch, and holly trees, not common.


Fig.:—Cheval. Hist. Graph. t. 18. f. 1. a. f. 26. f. 3. c.
Exs.:—Mudd 214.

Geog. Distr.:—Normandy, Italy, Sweden, Belgium.
Bot. Prov.:—2, 3...5...7...8...10.


Wales:—Trefriw!

Nylander in Flora 1873. p. 299. says that rufescens differs specifically from herpetica according to the spermogonia.

forma arthonoidea, Scher. lirellae suborbicular, innate, in marginate, plane.

On ash trees, not common.

Syn.:—Scher. Spic. 323. (1823.) En. 156.

Fig.:—Hepp t. f. 47.
6. O. atra, Pers. thallus very thin, forming smooth, pale-yellow or whitish oscellate patches; lirellæ densely crowded towards the centre of the thalloidal spot, sessile, depressed, lying in all directions or sub-parallel, linear, generally simple or confluent, flexuose; epi-thecium narrow, uniform, rimæform, more or less open and canalicate; proper margin thick, elevated, wavy; spores 8, colourless, obovato-fusiform, somewhat pointed at the extremities, 3-septate, very minute.

On trees, common.

**Br.** Graph. p. 18. Mudd Man. 232.
**Fig:** Hoffm. En. t. 3. f. 2. c. Leight. Br. Graph. t. 5. f. 11.
**Geog. DistriB:**—France, Switzerland, Germany, Hungary, Italy, Asia, Africa, America.
**Bot. Prov:**—1, 2, 3...5...7, 8...14, 15...19...30, 31.
**England:**—Sussex! Mr. Borrer. Gopaall! Leicestershire. **Rev. A. Bloxam.**

**Scotland:**—Near Edinburgh! Dr. Greville. near Stirling; Callander; Blair Athole; Lochaber. **Rev. J. M. Crombie.**


**Wales:**—Craig Breidden! Montgomeryshire; Gwydir Woods! Bettws-y-coed, Treffriw!

**Channel Islands:**—Jersey and Guernsey. Mr. Larbalestier.

"Spores .003 to .0035 in. long. .00075 in. broad." **(Mudd.)** "Spores .015—17 mm. long. .004—6 mm. broad." **(Nyl.)** Spores .0145—.020 mm. long. .004 mm. broad.

forma denigrata, (Ach.) lirellæ more or less crowded and numerous, irregularly scattered, simple or branched.

On ash and yewmore trees, common.

**SYN:** —Ach. Meth. 27. (1803.) Syn. 75. Mudd Man. 232.
**Fig:** —E. Bot. 1753. (in part).
**Geog. DistriB:**—France, Switzerland, Sweden, Hungary.
**Bot. Prov:**—1, 2, 3...6...7...10...15...19...30...31.

**Scotland:**—Near Stirling. **Rev. J. M. Crombie.**

**Ireland:**—Frequent. Mr. Carroll.


**Channel Islands:**—Jersey and Guernsey. Mr. Larbalestier.

forma nigrita, Leight. lirellæ densely crowded and confluent into irregular black central masses.

On ivy, yew, ash, sycamore, frequent.

**SYN:**—Leight. Br. Graph. 18. in part. (1853.) Mudd Man. 232.
**Fig:**—Chev. Hist. Graph. t. 3. f. 6. d.
**Geog. DistriB:**—Belgium.
**Bot. Prov:**—1, 2, 3...5...7...10...15...16.
**England:**—Netley Abbey! Hants. **Mr. Lyell. Sussex! Mr. Borrer. East-
OF GREAT BRITAIN. 399


Scotland:—Callander; Appin. Rev. J. M. Crombie.

Wales:—Conway! Bettws-y-coed! Trefriw! Llanrochwyn Churchyard!

forma parallelæ, Leight. lirellæ lineari-elongate, horizontally parallel.

On cherry, hazel, &c., not unfrequent.


Exs:—Chev. Hist. Graph. t. 1. f. 3. & 4. t. 2. f. 1. & 2.

Bot. Distrib:—France, Belgium, Normandy.


Ireland:—Castlebernard. Prof. Hincks. Fermoy! Mr. Carroll. Delphi, Connemara. Mr. Larbalestier.

Wales:—Gwydir woods! Bettws-y-coed.

Channel Islands:—Jersey and Guernsey. Mr. Larbalestier.

forma herbarum, Mont. yellowish or whitish; lirellæ erumpentii-inate, flexuose, simple, lineari-elongate, longitudinally sub-parallel; epithecium rimeform.

On stems of various flowering plants (Teucrium Scorodonia) and ferns, rare.


Exs:—Arch. Bot. t. 15. f. 1.

Bot. Distrib:—France.

Ireland:—Muckross, Killarney. Mr. Carroll.

forma hapalea, Ach. lirellæ confluent, epithecium deplanate.

On various trees, elder, not frequent.


Exs:—Chev. Hist. Graph. t. 6. fig. 1. a.

Bot. Distrib:—Switzerland, Italy, Hungary, Pyrenees.

Wales:—Fishguard! Pembrokeshire.

forma arthoideæ, Leight. lirellæ difformæ, confluent in irregular sub-stellate scattered deplanate spots.

On various trees, ash, holly, poplar, not common.

Syn:—Mudd Man. 232. (1861.)

Exs:—Leight. 338. Schar. 463. 634.

Bot. Distrib:—Switzerland, Italy, Hungary, Pyrenees.

Wales:—Conway! Gwydir woods! Bettws-y-coed! Bulth! Dolgelley! Edderton! Montgomeryshire.
forma ochrocheilla, Nyl. margins of lirellæ ochraceous; epithecium expanded, plane.

On ivy, elm, and grass, rare.

SYN:—Nyl. in Flora 1865. p. 212.

Geog. Distr.:—France.

Bot. Prov.:—3, 6...19...31.

England:—Arkoll Hill! Shropshire.

Ireland:—(Saxicole.) Danish! Killarney. Mr. Hardy.

Wales:—Built! Radnorshire.

Channel Islands:—L’Auroresse Common, Guernsey!; St. Peter’s Valley! Meadow Bank, Jersey. Mr. Larbalestier.

"Spores .014—15 mm. long, .004—5 mm. broad." (Nyl.) Spores .016 mm. long, .003—.004 mm. broad.

forma tenusior, Nyl. lirellæ very slender and narrow, simple or slightly branched, elongate, straight and curved.

On ivy, rare. 1876.


Ireland:—Killery Bay, Galway. Mr. Larbalestier.

7. O. atrula, Nyl. scarcely any thallus; lirellæ black, oblong, short, simple, linearly arranged; epithecium rimæform; spores 8, colourless, fusiformi-oblong, 3-septate.

On dry micaceous schistose stones in shady places, rare. 1877.

SYN:—Nyl. in Flora 1877. p. 565.


Ireland:—Kylemore. Mr. Larbalestier. (1877.)

"Spores .016 mm. long, .0055 mm. broad." (Nyl.)

8. O. atricolor, Strtn. whitish, very thin, indeterminate; lirellæ black, innato-sessile, narrow, generally simple, somewhat acute, internally cinerascence or pallido-fuscescent; epithecium at first rimæform then somewhat concave or even explanate, rugulose; spores 4—8, colourless, oblongo-void, 3-septate; paraphyses indistinct, irregular, apices fuscous; hypotecium fuscous-black.

On decorticated wood. 1875.

SYN:—Stirton in Trans. Glasgow Soc. Nat. p. 89. (1875.)

Bot. Prov.:—17.

Scotland:—Near Altuarharra co. Sutherland. Dr. Stirton. (1875.)

"Spores .015—.021 mm. long, .004—.0055 mm. broad. Hymenium and especially the subhymeneal stratum K purple. Upper part of hymenium I persistently blue, lower part yellow and vinoso-rubescent then vinous-red. Allied to O. atra."

9. O. Turneri, Leight. pale-dirty-yellow, fusco-limitate; lirellæ very prominent, sessile, mostly simple, slender and linear; epithecium very narrow, uniform; proper margin plump, rounded and incurved; spores colourless, lineari-obovate, 3-septate.

On trees, sycamore, poplar, hazel, ash, elder, birch, frequent.

Quite distinct from O. varia f. rimalis.


Fig.:—E. Bot. 2231. Leight. Br. Graph. t. 5. f. 10.

Geog. Distr.:—Europe.

Bot. Prov.:—2, 3, 4, 5...7...10...15...19...29, 30.


Ireland:—North of Ireland! Miss Hutchins, Colin Glen! Brett's Glen! Belfast. Mr. Thompson, Browne's desmesne, Riverstown near Cork! Mr. Carroll.

Wales:—Capel Curig! Edderton! Montgomeryshire; Gwydir Woods! Bettws-y-coed. Trefriw! Craig Breiddon!

Spores .019 mm. long, .005 mm. broad.

10. O. confluens, (Ach.) greyish-green, effuse, very thin, often obsolete; lirellae sessile, simptic, black, opake, thick, cylindrical, straight, or often curvate and contorted, very rarely solitary, scattered, generally crowded or conglobate; epithecium narrow, rimseform, sub-dilate in age; margin at first rotundate, inflexed, presently acute; paraphyses septate, branched; spores 8, colouress, elongate-oval or solaseform, 3-septate.

On sub-alpine rocks, rare.


Fig:—Stizb. Steinh. Opeg. t. 2. f. 1. a—m.


Geog. Distrib:—Switzerland.

Bot. Prov:—1, 2...6...15...19...26.


Scotland:—Craig Tulloch. Rev. J. M. Crombie.

Ireland:—Southern Counties. Mr. Carroll. Lettermore! Mr. Larbalestier.

Wales:—Goodwick Bay! Pembrokeshire.

11. O. saxicola, Ach. dirty-white or rusty-brown; lirellae oblong or ovate, deformed, short, obtuse, variously branched, rounded or triguetrous, wider at one extremity; epithecium rimseform more or less expanded; proper margin tumid, round and incurved; spores 8, colourless, linear-oblong or linear-clavate, rounded at each extremity, 3-septate.

On rocks, frequent.


Fig:—E. Bot. 2345. Leight. Br. Graph. t. 5. f. 5.

Exs:—Scher. 94. Leight. 243. Zw. 145. A. Arn. 104.

Geog. Distrib:—Normandy, Italy, Germany, Pyrenees, Madeira.

Bot. Prov:—1, 2...5, 6, 7...10...19...26...28, 30, 31.


Channel Islands:—Near Aun Port; Boulay Bay; Rozel Meadow; Noirmont, Jersey. Mr. Larbalestier.

"Spores .005 in. long, by .00075 in. broad." (Mudd.) Spores .017—.019 mm. long, .005 mm. broad.

Var. De Candollei, Stizb. whitish or dirty-rusty-brown; lirellae linear, linear-oblong, oblong or ovate, expanded, obtuse at the extremities, chiefly simple and straight, dark-brown; spores 8, colourless, narrow, linear-oblong, round at each extremity, 3-septate.
On rocks, rare.


**Fig:** — Leight. Br. Graph. t. 5. f. 7.


**Geog. Dristrib.** — France, Italy, Hungary.

**Bot. Prov.:** — 1...7...19...24...26...31.

**England:** — Torquay. Mr. Parfitt.


**Wales:** — Nant Gwynant! Mr. Holmes. Trefriw! Llyn Geirionedd! Channel Islands: — Boulay Bay, Jersey. Mr. Larbalestier.

Spores .021...022 mm. long. .005 mm. broad.

Var. Chevallieri, Leight. white or pale-yellow; lirellæ simple, linear, elongated, curved or bent back, flexuose and wavy, black, crowded or conglomerase, shining, obtuse at the extremities; paraphyses distinct, slender; spores 8, colourless, broadly clavate, rounded at each extremity, 3-septate.

On rocks, frequent. 1807.

**Syn:** — Leight. Br. Graph. 10. (1853.) *Op. calcarea*, Turn. in E. Bot. 1790. (1807.)

**Fig:** — Leight. Br. Graph. t. 5. f. 4. E. Bot. t. 1790. Stizb. Opeg. t. 1. f. 5.

**Eks:** — Leight. 67. Larbal. 44. Anzi Etr. 37. Mudd 203.

**Geog. Dristrib.** — Belgium, Italy, Normandy.

**Bot. Prov.:** — 1, 2, 3, 4, 5, 6, 7, ...12...14...23, 24...30, 31.


**Scotland:** — Caroline Park, Edinburgh. Dr. Burchell.


**Channel Islands:** — Guernsey; Noirmont Warren; St. Ouen’s and St. Saviour’s, Jersey! Mr. Larbalestier.

Spermata straight or slightly curved, cylindrical. Spores .017...019 mm. long. .006 mm. broad.

*forma heteromorpha*, Hepp. athalline; lirellæ very long and broad, acuminate at the extremities.

On maritime rocks. 1875.

**Syn:** — Stiznemb. Opeg. p. 21. (1865.)

**Fig:** — Stiznemb. l. c. tab. 5. α—ξ.

**Bot. Prov.:** — 28...26.

**Ireland:** — Killery Bay! Connemara. Mr. Larbalestier. (1875.) Dublin. Dr. Moore.

*forma gyrocarpa*, (Zw.) greyish; apothecia sessile, rotundato-deformed; epithecium gyroso-plicate.

**Syn:** — Flotow in Flora 1825, p. 345. Körb. Syst. 280.

**Fig:** — Stizb Stein. Opeg. t. 2. f. 2 k. α—ο.

**Geog. Dristrib.** — Hungary, Germany.

**Bot. Prov.:** — 2, 3...7...15...19...23.
ENGLAND:—Shanklin, Isle of Wight. Dr. Holl, Maidstone, Kent. Mr. Holmes.

SCOTLAND:—Craig Guie, Grampians. Rev. J. M. Crombie..

IRELAND:—Mangeristem, Killarney. Mr. Carroll. Kylemore Castle! Mr. Larba-lestier.

WALES:—Betws-y-coed! Llyn Geirionydd! Trefriw! Llyn Gwernan!

Channel Islands:—Boulay Bay! Jersey. Mr. Larba-lestier.

Var. Persoonii, Ach. white or albicant, thin, opake, sub-leprose, unequal; lirellae oblong, small; epithecium pliciform or at length subdehiscent, often rugose and deformed; spores 8, colourless, fusiform, 3-septate.

On calcareous rocks, rare.


Excl. Syn. Leight. Br. Graph.)

Geog. Distribe:—Sweden.


Ireland:—Kilkee, co. Clare. Mr. Carroll.

"Spores .021—25 mm. long, .006—7 mm. broad." (Nyl.)

12. O. grumulosa, Duf. white, farinaceous, thick, (K faint yellow, C red); apothecia casio-pruinose, lanceolate or deformed, normally marginate, internally black; spores 8, colourless, oblongo-fusiform, 3-septate.

On rocks, rare.


Fig:—Grevillea 2. t. 26. fig. 2.

Exes:—Zw. 9. 142. 144. Anzi Langob. 404. Anzi Venet. 82. 83. Schar. 580.

Geog. Distribe:—France, Germany, Italy, Algeria.

Bot. Prov:—1...31.

England:—South Devon! Prof. Dickie. Valley of Rocks. Mr. Holmes.

Channel Islands:—La Coupe; Rozel, Jersey. Walls of Old Nunnery, Alderney. Mr. Larba-lestier.

"Spores .011—17 mm. long, .005—4 mm. broad." (Nyl.) Spores .018 mm. long, .005 mm. broad.

13. O. contexta, Strn. rufo-cervine, thin, limited by the brown hypothallus; apothecia black, small, generally aggregate, gyroscopic, almost lecideiform, internally cinereo-fuscous; hypothecium fuscous-black; epithecium rimaform; spores 8, colourless, fusiform, apices blunt, 3-septate, moderate; paraphyses very indistinct; lower half of hymenium I cyanescent then vinous-red.

On elm, rare. 1874.

Syn:—Stirton in Grevillea 3. p. 35. (1874.)

Bot. Prov:—15.

Scotland:—Near Grantown, Inverness. Dr. Stirton. (1874.)

"Spores .017—.025 mm. long, .0045 mm. broad." (Stirt.)

14. O. prosiliens, Strn. white or whitish, very thin, chrysogenic; apothecia black, prominent, ovate or oblong; epithecium rimaform; margins prominent, rounded; spores 8, colourless, fusiform-ellipsoid, 3-septate, generally 4-nucleate, surrounded by a gelatinous halo, rather large; paraphyses distinct, branched, apices fuscescent; gelatina hymenae I slightly-blue then vinous-red.

On dead decorticated trees, rare. 1874.

Syn:—Stirton in Grevillea 3. p. 36. (1874.)

Bot. Prov:—15.

Scotland:—Near Grantown, Inverness. Dr. Stirton. (1874.)

"Spores .02—.028 mm. long, .006—.007 mm. broad." (Stirt.)
15. *O. xanthodes*, Nyl. yellow or flavo-cinerascent, thin, somewhat smooth, rimose; lirellæ black, oblong; epithecium rimæform; spores 8, colourless, fusiform-oblong, 3-septate; hypothecium and peritheciun nigrum.

On quartzose rocks, rare. 1877.

**SYN:** Nyl. in Flora 1878. p. 245.
**BOT. PROV.:** 99.
**IRELAND:** — Kylemore. Mr. Larbalestier. (1877.)
"Spores .015—18 mm. long, .005—6 mm. broad. Gelatina hymeniae f. vinous fulvus-red. Spermata straight, .004 mm. long, scarcely .001 mm. broad."

**Spores 5-septate.**

16. *O. varia*, Pers. thallus white, pulverulent; lirellæ prominent, sessile; round, oblong, elliptical, elongate, attenuated at each end; epithecium canalicate or dilated in the middle, or plane and convex; proper margin prominent, inflexed, sometimes sub-convex; spores 8, colourless, irregularly obovate or obovato-fusiform, 5-septate.

Spores .024—.026 mm. long, .007 mm. broad.

The following are the principal states of this very variable species.

**forma pulicaris**, Lightf. lirellæ oval, oblong or elliptical, minute, simple; epithecium concave, dilated in the middle proper margin persistent, inflexed.

On various trees, common.

**GEOG. DISTRIB.:** — Sweden, Switzerland, France, Italy, Hungary, Normandy, Germany, Belgium, Pyrenees, Algeria.
**BOT. PROV.:** —1, 2, 3...5...15...19...24...31.


**SCOTLAND:** — Near Stirling; Killin; Banchory in Aberdeen. Rev. J. M. Crombie.

**IRELAND:** — Castleconnel near Limerick! co. Clare; Rostellan, Cork. *Mr. Carroll*.

**CHANNEL ISLANDS:** — Common on all the Islands. *Mr. Larbalestier*.

**forma notha**, Ach. lirellæ round or oblong, deformed, large; epithecium plane or convex, obliterating the proper margin.

On oak, common.

**FIG.:** — E. Bot. 1890. Leight. Br. Graph. t. 5. f. 9.

**GEOG. DISTRIB.:** — France, Switzerland, Belgium, Italy, Normandy, Austria, Germany.

**BOT. PROV.:** —1, 2, 3, 4, 5...10, 11...15...26...31.


IRELAND:—Cleghan! Connemara. Mr. Larbalestier.

CHANNEL ISLANDS:—(Saxicole) La Coupe, Jersey! Mr. Larbalestier.

forma diaphora, Ach. lirella elongate, attenuate at both extremities; epitecum plane; proper margin persistent, flexuose.

On oak, ash, sycamore, frequent.


FIG.:=—Leight. Br. Graph. t. 5. f. 9.


GEOG. DISTRIBUTION:—Switzerland, Germany, Italy, Hungary, Belgium, Pyrenees, France, Sweden.

BOT. PROV.:=1—2, 3...6...10, 11...15...19...30...31.


IRELAND:—Frequent. Mr. Carroll.

WALES:—Built! Radnorshire.

CHANNEL ISLANDS:—Jersey and Guernsey. Mr. Larbalestier.

forma tigrina, Ach. lirella linear-oblong, obtuse at the extremities; epitecum canaliculate, nearly uniform; proper margin persistent, rounded and inflexed.

On various trees, elm, oak, beech, not uncommon.


FIG.:=E. Bot. 2280. Leight. Br. Graph. t. 5. f. 9.

EXS.:—Bohl. 52. Leight. 287. Mudd 205.

GEOG. DISTRIBUTION:—Europe.

BOT. PROV.:—2, 3, 4...5...10...26...31.


IRELAND:—Glendalough! Connemara. Mr. Larbalestier.

CHANNEL ISLANDS:—Jersey and Guernsey. Mr. Larbalestier.

forma tridens, Ach. lirella elongate, stellate; epitecum canaliculate; proper margin persistent, rounded and inflexed.

On various trees, beech, elm, rare.


FIG.:=Leight. Br. Graph. t. 5. f. 9.

GEOG. DISTRIBUTION:—Europe.

BOT. PROV.:—2, 3...31.


CHANNEL ISLANDS:—Jersey and Guernsey. Mr. Larbalestier.
forma rimalis, (Fr.) lirellæ linear-elongate, acuminate, sessile, prominent, minute; epithecium canaliculate, margin elevated and inflexed.

On trees, ash, oak, hazel, elder, frequent.

Not to be confounded with O. Turnert.


**Exs.**—Leight. 192. Mudd 207.

**Geog. Distrib.**—Sweden, France.

**Bot. Prog.**—1, 2, 3, 7, 9–10, 12, 15, 19–30, 31.


**Scotland**—Blair Athole. Rev. J. M. Crombie.

**Ireland**—Frequent. Mr. Carroll.

**Channel Islands**—Noirmont; Beleroute Bay, Jersey. Mr. Larbalestier.

forma herbicola, Nyl. lirellæ very slender, spores somewhat smaller.

On dead stems of Osmunda regalis and Calluna vulgaris, rare. 1876.

**Syn.**—Nyl. in Flora 1877. p. 463.

**Bot. Prog.**—6, 14, 25.

**Ireland**—Doughruagh Mountain! Galway. Mr. Larbalestier. (1876.)

**Wales**—Llyn Gwernan! near Cader Idris.

forma ochrocheila, Leight. margins of lirellæ viridi-ochraceous.

On brambles, rare. 1877.

**Bot. Prog.**—26.

**Ireland**—Doughruagh Mountain! Galway. Mr. Larbalestier. (1877.)

17. *O. Cesareensis*, Nyl. white, thin, rimalose, indeterminate; lirellæ black, cylindrical, prominent, simple, sub-flexuose; epithecium rimaformi-constricted; spores 8, colourless, oblong, 5-septate.

On quartzose rocks, rare.

**Syn.**—Nyl. in Flora 1868. p. 477. Crombie En. 99.

**Geog. Distrib.**—Europe.

**Bot. Prog.**—1, 12, 29.

**England**—The Lizard, Cornwall. Mr. Curnow.

**Channel Islands**—Noirmont, Jersey! E. coast of Jersey very near Rozel! Mr. Larbalestier.

"Spores .016—22 mm. long, .004—5 mm. broad." (Nyl.) Spores .017—.021 mm. long, .004 mm. broad.

18. *O. areniseda*, Nyl. thallus scarcely any or most obsolesly externally visible; lirellæ black, linear, subgyrosely conglomerate in difformed pulvinate heaps, epithecium narrow; spores 8, colourless, fusiform, 5-5-septate; hypotecium black; gelatina hymenea I vinoso-rubescent.

In crevices of walls, rare. 1873.

**Syn.**—Nyl. in Flora 1873. p. 446.

**Bot. Prog.**—31.

**Channel Islands**—St. John’s, Jersey. Mr. Larbalestier. (1873.)

"Spermogonia heaped together in small black glomerules; spermatia straight, .0035–45 mm. long, .0010 mm. broad. Spores .014–16 mm. long, .004 mm. broad." (Nyl.)

19. *O vulgata*, Ach. greenish-white, cartilagineo-membranaceous, cracked and scaly, effuse; lirellæ prominent and sessile, variable in size, shorter ones roundish or oblong, longer ones slender
and linear, simple, wavy and shining or greasy; epithecium rimosiform, uniform; proper margin thick, very round and inflexed; spores 8, colourless, fusiform, 5-septate.

forma vulgata, Ach. lirellae small, numerous, but regularly scattered; epithecium rimosiform, more or less expanded.

On various trees, apple, ash, willow, birch, yew, fir, holly, common. 1807.


Fig.: — E. Bot. 1811. Leight. Br. Graph. t. 5. f. 13. a. b.


Geog. Distrib.: — Sweden, Germany, France, Switzerland, Italy, Normandy, Belgium, Calcutta, Amazonas, N. America.

Bot. Prov.: — 1, 2, 3...5...7...10, 11...14, 15...19...20...31.


Ireland: — Near Derrycrimlry! Mr. Carroll. Lough Derryclare! co. Galway. Mr. Larbartester.


Channel Islands: — St. Peter's Valley, Jersey, and on all the Islands. Mr. Larbartester.

"Spores .005 to .006 in. long. by .00075 in. broad." (Mudd.) "Spores .015—20 mm. long. .003—4 mm. broad." (Nyl.) Spores .031 mm. long. .003 mm. broad.

forma stenocarpa, Ach. lirellae long, slender and wavy, densely crowded; epithecium rimosiform, very narrow, closed.

On various trees, oak, beech, elm, ash, fir, common.


Fig.: — Chev. Graph. t. 7. f. 5. c. t. 9. f. 1. Leight. Br. Graph. t. 5. f. 13. a. 1. b. 1.

Exs.: — Zw. 6. 147. Scharr. 93.

Geog. Distrib.: — Sweden, France, Germany, Switzerland, Italy, Bavaria.

Bot. Prov.: — 1, 2...5...7...8...10...19...31.


Ireland: — Near Cork! Mr. Carroll.

Wales: — Penmaen-mawr! Trefriw! Channel Islands: — St. Peter's Valley, Jersey. Mr. Larbartester.

forma subsiderella, Nyl. lirellae radiato-ramose.

On trees, rare.

Syn.: — Nyl. Scand. 255.

Fig.: — Chev. Graph. t. 7. f. 3. a.

Exs.: — Nyl. 78. Mudd 212.

Geog. Distrib.: — France, Belgium.

Bot. Prov.: — 2, 3...5...7...10...19.

IRELAND:—Rockgrove! Cork. Mr. Carroll.
WALES:—Dolgellay!

forma liithyr-ga, Ach. thallus thin, white or whitish, continuous, subfarinaceous, subdeterminate.

On rocks, not common. 1849.

EXS:—Zw. 3. 1. A. & B. Larbal. 43.
GEOG. DISTRIBUTION:—Germany, Italy, Hungary.
BOT. PROV:—5...26...31.
ENGLAND:—Haughmond Hill! Shropshire. (1849.)
IRELAND:—Dawros River! co. Galway. Mr. LarbaLestier.
CHANNEL ISLANDS:—D'Istäq Point; Noirmont, Jersey. Mr. LarbaLestier.

forma steriza, Ach. pallido-ochraceous, very thin or evanescent; lirellae simple, elongated, flexuose.

On rocks, not common. 1865.

GEOG. DISTRIBUTION:—France, Switzerland, Germany, Italy.
BOT. PROV:—7...19...26...31.
IRELAND:—Croghan, Killarney. Mr. Carroll. Doughruagh Mountain! Galway. Mr. LarbaLestier.
WALES:—Moel-y-gest!
CHANNEL ISLANDS:—Noirmont! Rozel, Jersey; Eperquerie! Sark. Mr. LarbaLestier. (1865.)

Opogrypha cinerea, Chev. near Trinity Church, Jersey! Mr. LarbaLestier.
1873, appears to be only a sparse or scattered state of O. vulgata, the spores and spermatia being alike in both.

20. O. hapaleoides, Nyl. cinereo-virescent or olivaceo-virescent, thin, rimulose, subdeterminate; lirellae black, somewhat shining, slender, stellato-ramose, apices obtuse; epithecium rimaëform, narrow, margins thick, inflexed; spores 8, colourless, narrowly fusiform, 5-septate.

On trees, oak. 1869.

BOT. PROV:—1...26.
ENGLAND:—Clifton, Somersetshire. Mr. LarbaLestier. (1869.)
IRELAND:—Doughruagh! Mr. LarbaLestier.
"Spores .016—22 mm. long, .003 mm. broad." (Nyl.) Spores .022 mm. long, .003 mm. broad.

21. O. zonata, Kbr. rufous or rufo-ferruginous, thin, sub-tartareous, smoothish, with numerous dirty pale-whitish-yellow soredia, limited by conspicuous elevated thickish nigro-fusaceous lines resulting from the confluence of the hypothallus of many adjacent thalli; lirellae nigro-fuscous or black, scattered, few, sessile; spores 8, colourless, narrowly or attenuato-fusiform, 5-septate.

On shaded shaly mountain rocks, not common. 1871.

L. Fl. 451.
GEOG. DISTRIBUTION:—Europe.
BOT. PROV:—7...10...31.
ENGLAND:—Loundsdale! Yorkshire. Mr. Mood. (1858.)
WALES:—Wood opposite Tan-y-bwlch Hotel, Capel Curig! Llyn Cwlyd!Trefriw! Betws-y-coed!
CHANNEL ISLANDS:—Boulay Bay! Jersey. Mr. LarbaLestier.
22. *O. Leightonii*, Crombie in litt. chalky-white, pulvcrulent; lirello prominent, rigid, straight or stellato-divergent, tapering towards each extremity; epithecium at first timeform, then dilated; proper margin thin, elevated; spores 8, colourless, fusiform, 7-septate (sometimes 5 and 6.)

On calcareous and sandstone rocks, frequent. 1807.

Mr. Crombie has found in Sowerby's Herb. in Brit. Mus. the identical specimen of *Opegrapha caloxera* from Mr. D. Turner, duly named, localized and marked as drawn in Eng. Bot. On examination and comparison, it proves to be identical with *O. Chevalierii* (Leight. Br. Graph. t. 5, f. 4.) having spores broadly clavate, rounded at each extremity, 3-septate. He proposes therefore to name the *Opog. saxatilis*, Leight. Br. Graph. *Opegrapha Leightonii*, Crombie.


**FIG.** *Leight. Br. Graph. t. 5, f. 3.*

**Geog. Distrib.**—Europe.

**Bot. Prov.**—1, 24, 5, 7...10, 11...19...31.


**Aymestry! Herefordshire.**

**Ireland.**—Killarney! *Mr. Hardy*. 

**Wales.**—Great Orme's Head!

**Channel Islands.**—La Coupe, Jersey, *Mr. Larbalestier*.

Spores .027—.031 mm. long, .005 mm. broad.

23. *O. lynceus*, (Sm.) white, tartaceous, pulvcrulent; lirellae black, immersed, oblong or linear-oblong, rounded at each end, simple, curved; epithecium plane, dilated, cæso-pruinose; proper margin stout, elevated, wavy; spores 8, colourless, fusiform, 7-septate.

On old oaks, not common. 1795.


**Mudd, Man. 239.**

**Fig.** —E. Bot. 809. Leight. Br. Graph. t. 7, f. 25.


**Geog. Distrib.**—Switzerland, France, Germany, Sweden, Italy, Brazil.

**Bot. Prov.**—2, 3, 4, 5...7, 8...10, 11...31.


**Wales.**—Edderton Wood! Montgomeryshire.

**Channel Islands.**—Jersey and Guernsey. *Mr. Larbalestier*.

"Spores .005 to .007 in. long by .0075 in. broad." (Mudd.) "Spores .023—.035 mm. long, .003—.0045 mm. broad." (Nyl.) Spores .023—.025 mm. long, .004—.0045 mm. broad.

24. *O. lithyrjodes*, Nyl. reddish-brown, thin, continuous; lirellae black and shining, minute, scattered, sessile, oblong or linear-oblong, obtuse at the apices; epithecium rimseform, margin thickish, round, inflexed; spores 8, colourless, fusiform, 7-septate.
The Lichen-Flora

Under surface of rocks, rare. 1876.

Syn:—Nyl. in Flora 1875. p. 106.
Exs:—Arn. 418. (fide Nyl.)

Ireland:—Longh Muck! Connemara. Mr. Larbalestier (1876.)
Spores .032 mm. long, .006 mm. broad.

***** Spores multi-septate.

25. O. amphotera, Nyl. pale-dusky-yellow or tawny, thin, sub-tartareous, slightly rimose, somewhat pulverulent; lirellae black, very variable in size and shape, numerous and crowded, round, oblong, lineari-oblong and lineari-elongate, simple, acuminate; epithecium broad, plane; proper margin thin, elevated, prominent, flexuose; spores 8, colourless, acicular, 6-9-septate; paraphyses few, slender, distinct; spermatia shortly cylindrical, slightly curved, different from O. vulgata.

On Scotch fir, rare. 1866.

Exs:—Leight. 381. 312.
Geom. Distrib:—Europe.
Bot Prov:—1...7.

England:—Selant Wood! near Hayle, Penzance. Mr. Curnow.

Wales:—Side of the Bala turnpike road, about 3 mile from Dolgelley! (July 1866).

Spores .029 mm. long, .004 mm. broad.

26. O. prosodea, Ach. dirty-pallido-fuscescent, cartilagine-membranaceous, effuse; lirellae sessile, thick, sub-cylindrical, somewhat shining, straight; epithecium rimaesiform; proper margin convergent, elevated, subarorinate; spores colourless, elongato-fusiform, 11-13 septate; paraphyses distinct, stout; perithecium carbonaceous, thick, entire.

On oaks and beech, rare.

Exs:—Spruce L. Amaz. 67. Larbal. 92.
Geom. Distrib:—Amazons, Brazil.
Bot Prov:—3...31.

England:—Shiere! Surrey, Dr. Capron.

Channel Islands:—Ann Port; St. Peter's Valley, Fliquet Bay; Beleroute Bay, Jersey! Mr. Larbalestier.

"Spores .045—.057 mm. long, .006—7 mm. broad." (Nyl.) Spores .056 mm. long, .006 mm. broad.

27. O. viridis, Pers. pale-dusky-yellow, thin, sub-tartareous, rimose, limitate; lirellae small, innate, rounded, oblong, or linear, straight or curved, chiefly simple; epithecium rimaesiform, uniform; proper margin rounded. inflexed; spores 8, colourless, elongato-fusiformi-acicular, 13-septate.

On trees, beech, holly, rare.


Fig:—Leight. Br. Graph. t. 6. f. 14.


Geom. Distrib:—France, Germany, Sweden, Ceylon.

Bot Prov:—1, 2, 3...7...10...19...31.

England:—New Forest! Hants. Mr. Lyell. Hoggarts Wood; Ingleby
Park, Cleveland. Mr. Mudd. Dunford, Exeter. Mr. Parfitt. Eynsford, Braintree, Otford, Maidstone, Beechborough, Kent. Mr. Holmes.


WALES:—Trefriw! N. Wales.

CHANNEL ISLANDS:—St. Peter's Valley, Jersey. Mr. Larbalestier.

"Spores .009 to .011 in. long, by .001 in. broad. t. 4. f. 90." (Mudd.)

"Spores .035—.055 mm. long, .007—.009 mm. broad." (Nyl.) .049 mm. long, .005 mm. broad.

forma taxicola, Leight. pale-yellowish-grey, pulverulent, effuse; lirellae large, excessively prominent and sessile, oblongo-linear or lineari-elongate, straight or curved, chiefly simple, scattered or congregated; epithecium broadly rimoseform; proper margin rounded, inflexed, rugged; spores 8, colourless, elongato-fusiformi-acicular, 13-septate.

On yew, rare. 1853.

SYN:—Leight. Br. Graph. 25. Mudd Man. 234.

FIG:—Leight. Br. Graph. t. 6. f. 15.

GEOG. DISTRIB:—Europe.

BOT. PROV:—2...7, 8...31.


WALES:—Llanrobchwyn church yard!

CHANNEL ISLANDS:—Jersey. Mr. Larbalestier.

Spores .049 mm. long, .004 mm. broad.

28. O. involuta (Wallr.) viridi-fuscescent, thin, continuous; lirellae black, opaque, abbreviated, emerged, irregularly lirelliform, or rotundato-diformed; epithecium more or less planocarpate; margins thickish, involute; spores 4—6, colourless, fusiform, multisepitate.

On holly, rare. 1874.


GEOG. DISTRIB:—Germany, France.

BOT. PROV:—1...7.

ENGLAND:—Ivy Bridge! Devon. Mr. Holmes.

WALES:—Trefriw! (1874.)

VI. PLATYGRAPHA, Nyl.

Thallus thin or obsolete. Apothecia black, plane, simple, immarginate or surrounded with a shining thalline margin. Spores 8, colourless, fuscous, septate. Spermatia shortly cylindrical, straight or slightly curved.

1. Pl. rimata, (Fw.) white, tartaraceous, thin, rimose, verruculose; apothecia lirelliform, fuscous-black, impressed in the verrucae, simple or branched, straight or wavy, either acute at the extremities or obtuse or rounded, broad and expanded, plano-convex, shining, surrounded with a spurious narrow whitish thalline margin; hypothecium nigro-fuscos, thick; paraphyses distinct; spores 8, colourless, aciculari-fusiform, curved, 3-septate.

On ash and wych-elm, rare.


Ophiocodon graphidioides, Leight. Br. Graph. 51.

Fra:—Leight. Br. Graph. t. 7. f. 29.

Exs:—Welw. Lusit. 89, (in part).
THE LICHEN-FLORA

BOT. PROV.: — 5, 7, 23.
ENGLAND: — Near Sharpstones Hill! Shropshire.
WALES: — Chirk Castle Park! Denbighshire.

"Spores .007 in. long, by .0005 to .00075 in. broad. t. 4, f. 95." (Mudd.)
"Spores .024—.31 mm. long, .003—.4 mm. broad." (Nyl.) Spores .024—.034
mm. long, .003—.0035 mm. broad.

VII. STIGMATIDIUM, Mey.

Thallus distinct, crustaceous, thick. Apothecia punctiform or
elongated, slender, aggregate or single, immersed, internally enti-

1. St. crassum, Dub. greyish-white, olive or brownish-olive,
determinate, decussate with blackish lines, crustaceous, thickish and
turgid, smooth and polished, contiguous or rimulose; apothecia
brownish-black, numerous, very minute, punctiform, slightly convex,
immersed, solitary or confluent in flexuoso radiate lines, deeply
immersed; spores 8, colourless, fusiform, 5-septate.

On trees, ash, holly, oak, not uncommon. 1807.

Fig.: — E. Bot. 1752. Leight. Ang. Licb. t. 8. f. 1.
46. Welw. Lusik. 89. (in part.)

Mr. Parfitt. New Forest and Epping Forest. Rev. J. M. Crombie. near Malvern, Worcesters; S. Devon and Cornwall. Dr. Holt. Stoke Wood, Exeter. Mr. Par-
Great Glenham, Suffolk. Rev. E. N. Bloomfield. Wrotham, Eghtham, Canter-

IRELAND: — On old trees, common. Mr. Carroll. Lough Inagh! Mr. Larba-
estier.

WALES: — Cherriton Church-yard! Pembrokeshire. Rev. T. Salwey. Glod-
aeth! near Conway. Llanbedrog! Fishguard!
CHANNEL ISLANDS: — Ann Port! Jersey. (saxicole) Roza! and La Coupe! and all the Islands. Mr. Larbalestier.

"Spores .006 to .008 in. long, by .001 in. broad." (Mudd.) Spores .031—
.032 mm. long, .005 mm. broad.

2. St. circunscriptum, (Tayl.) glaucous-white, thick, tartaraceous,
sub-determinate or effuse, even, sub-pulverulent, rimulose; apothecia
brownish-black, very minute, punctiform, minute, obvate or clavate,
crowded and congregated, solitary, distinct or linearici-confluent,
plane or slightly convex, pruinose or naked, immarginate, inter-

On shaded rocks, very rare. 1836.

Fig.: — Leight. Ang. Lich. t. 8. f. 3.
Exs.: — Mudd 233.

GEOG. DISTRIBUTION: — France.
3. St. dendriticum, Leight. whitish or cream-coloured, thin, tar-tareous, smooth, diffuse, (K yellow C yellow); apothecia lirella-form, black, innate, irregularly and variously branched in a dendritic or radiate manner, plane, naked, immarginate, internally pale; spores 8, colourless, narrowly obovate or clavate, 3 or 4-septate, upper cell larger.

On micaceous-schistose rocks, rare. 1875.


FIG.—Journ. Bot. l. c. tab. 166.

BOT. PROV.—26.


Thallus sometimes slightly rimulose, consisting internally of innumerable colourless very minute, rounded granular bodies amid which are round or oblong nucleolate gonidia. Paraphyses flocculose, closely packed and en-tangled. The septa confined to the lower portion of the spore. Medulla white I yellowish. Gelatina hymenea I— Analogous to St. circumscrip tum (Tayl.) just as St. venosum (Ach.) is to St. crassum, Dub. Spores .019—.022 mm. long, .006—.007 mm. broad.

4. St. Hutchin siæ, Leight. dull-pale-yellow, thin, crustaceous, nigro-limitate, continuous, minutely rimulose; apothecia lirellaform, dark-brown, each innate in an elevated thalline verruca which forms a spurious narrow paler margin, variable, round and minute, oblong, linear, more or less branched, straight or curved and flexuose, plane, dilated, immarginate; excipulum lateral, brown; spores 8, colourless, fusiform, 5-7-or pluri-septate.

On shaded rocks, not common. 1853.


FIG.—Leight. Br. Graph. t. 7. f. 28.


GEOG. DISTRICT—I—Europe, Germany.

BOT. PROV.—:—17...10...12...19...26...31.


WALES.—:—Edderton Wood! Montgomeryshire; Betws-y-coed! Conway falls! Moel-y-gest!

CHANNEL ISLANDS.—St. Peter’s Valley; Gargate Mill Valley! Jersey. Mr. Larbalestier.

“Spores .006 to .007 in. long, by .001 in. broad, t. 4. f. 94.” (Mudd.)

“Spores .023—28 mm. long, .004—5 mm. broad.” (Nyl.) Spores .025—.030 mm. long, .004 mm. broad.

5. St. venosum, (Ach.) dirty-cream-colour, tartaraceous, nigro-fusco-limitate, smooth, continuous, in turgescent patches; apothecia lirella-form, dark-radiish-brown, innate, slender, variously branched,
flexuose, plano-convex, dilated, naked, immarginate, with a pale spurious narrow thalline margin, internally pale; spores 8, colourless, elongato-acinular, 13-septate.

On old trees, rare.

SYN.—Mudd Man. 244. OPERgrapha, Sm. E. Bot. 2454. (1812) Platygramma elaborata, (Lyell Mss. in herb. Borrer.) Leight. Br. Graph. 50.

FIG.—E. Bot. t. 2454. Leight. Br. Graph. t. 7. f. 27.

GEOG. DISTRIBUTION.—Europe.

BOT. PROV.—2,...25.


IRELAND.—Glenstall co. Tipperary. Mr. Carroll.

"Spores .007 to .009 in. long, by .00075 in. broad." (Mudd.) Spores .038—.044 mm. long, .003 mm. broad.

VIII. ARTHONIA, Ach.

Thallus thin or hypophloeoal and evanescent. Apothecia (ardellæ) roundish or diffused, plane or tumid, innately sessile, immarginate; thalamium sub-gelatinous, without paraphyses; asci pyriform thickened at the apices; spores 4-8, colourless, rarely brown, obovate, septate, upper cell larger. Spermatia cylindrical, straight or curved.

* Spores 1-septate.

1. A. lurida, Ach. pale-dirty-brown or lead-colour, indeterminate, effuse, smooth, obsolete; ardelæ reddish-black, sessile, appressed, irregularly roundish, slightly convex, dull, internally concolorous; spores 8, colourless, broadly-obovate, 1-septate, small.

On trees, fir, holly, oak, not common. 1837.


GEOG. DISTRIBUTION.—France, Switzerland, Germany, Russia, Scandinavia.

BOT. PROV.—2,...5,...7,...8,...10,...19,...31.


CHANNEL ISLANDS.—Rozel, Jersey. Mr. Larbalestier.

"Spores .0015 to .00175 in. long, by .0005 to .00075 in. broad." (Mudd.)

"Spores .011—.015 mm. long, .004—.005 mm. broad. Gelatina hymenenæ vinous-red."

"(Nyl.) Spores .009—.015 mm. long, .004—.006 mm. broad.

2. A. vinosæ, Leight. bright-pale-brown, thin, membranaceous, smooth, sub-determinate; ardelæ deep-vinosæ-red, minute, irregularly roundish, variable in size, single or confluent, sessile, convex, dull, internally concolorous; spores 8, colourless, obovate, 1-septate, double the size of those of A. lurida.

On oak.
SYN:—Leight, in Ann. and Mag. N. Hist. Oct. 1856. Mudd Man. 250, Fig. Leight, l. c. t. II. f. 6. 7. 8. 9. 10.
EXS:—Leight, 224. Mudd 235.
GEOG. DISTRIBUT.:—France.
BOT. PROV.:—2, 3...5, 6, 7...10...19.
ENGLAND:—Newton Wood! Stogdale! Oggeray Gill! Cleveland. Mr. Mudd.
(1866.) Hickmore Fen Wood; Pod's Wood, Messing, Essex. Mr. Varenne.
IRELAND:—Castlebar; Mr. Carroll.

"Spores .003 in. long, by .001 in. broad." (Mudd.) Spores .014—.015 mm. long, .004—.005 mm. broad.

Var. pineti, Körb. glauco-rufescens, very slightly leprous, unequal; arthella reddish-black or black, minute, crowded, deformed, angular or sub-stellate, plane; spores 4-6, colourless, at length fuscous, obovate, 1-septate, as in vinosa.

On trees, holly, in sub-alpine localities, rare
FIG:—Hepp Sporen t. 64. f. 558. Grevillea l. t. 4. f. 5.
GEOG. DISTRIBUT.:—Germany, Scandinavia.
BOT. PROV.:—6, 7...19...22...24, 25, 26.
IRELAND:—Glencar, Kerry; Loughcooter, Galway; Luggala co. Wicklow; Eagle's Nest, Killarney; co. Cork; Mr. Carroll. Clonmel. Mr. Wright, Kylemore! Doughrhaugh! co. Galway. Mr. Larpalaestier.

"Spores .016—.20 mm. long, .007—.8 mm. broad. Gelatina hymenea I vinosa-red." (Nyl.) Spores .013—.015 mm. long, .006—.007 mm. broad. This Arthonia may be readily distinguished from its congeners by a section of the arthella turning vinous-red or purple in K.

3. A. atrofuscella, Nyl. "Similar to A. pineti, Krb. but with smaller spores. Spores .012—.16 mm. long, .005—.6 mm. broad." (Nyl.) Spores .015 mm. long, .007 mm. broad. K renders hymenium dusky atro-fuscescent.

On trees.
SYN:—Nyl. in Flora 1875. p. 363.
BOT. PROV.:—26.
IRELAND:—Doughrhaugh Mountain! Kylemore! Galway. Mr. Larbalaestier.
(1876.)

4. A. aspersella, Leight. pale-yellowish, maculari-effuse; arthella black or nigro-fuscescent, very minute, scattered, punctiform, linear or angulari-confluent; hymenium untinted by K; spores 8, colourless, obovate, 1-septate.

On holly. 1872.
SYN:—Leight. in Grevillea l. 60. (1872.)
FIG:—Grevillea l. c. t. 4. f. 4. a. and b.
BOT. PROV.:—7.
WALES:—Gwydir Woods, Bettws-y-coed! (1872.) Trefriw! Capel Arthog! Dolgelley!

This lichen assimilates in general aspect with A. vinosa var. pineti, but in that the arthella are roundish and the hymenium is tinged red-purple with K; whilst in aspersella the arthella are remarkable for a peculiar sharp angularity, and the hymenium is untinted by K. Spores .014 mm. long, .0055 mm. broad.

5. A. sapineti, Nyl. virescent, macular, effuse; arthella nigro-fuscescent, very minute, punctiform or angulari-confluent; hymenium untinted by K; spores 8, colourless, obovate, 1-septate.
On holly, rare. 1876.

**Syn:**—Nyl. in Flora 1876, p. 239.

**Exs:**—Rabh. 575, (6te Nyl.)

**Geog. Distr.:**—Europe.


**Ireland:**—Killery Bay near the Levant Hotel, Connemara. *Mr. Lorba*

tier. (1876.)

"Spores .011—14 mm. long, .006 mm. broad." (Nyl.) Spores .013—.015 mm. long, .005 mm. broad. "Scarcey different, if at all, from *A. aspersella*, Leight.

6. *A. patellulata*, Nyl. whitish, indeterminate; *ardellæ* black, rotundate, appressed, plane, scattered, *immarginate*, internally nigricant; *spores* 8, colourless, obovate, 1-septate, small; hypothecium obscure at the base.

**On poplars,** rare.


**Fig:**—Felsem. 209, 210. Stenh. 146.

**Geog. Distr.:**—Sweden, Finland, Lapland.

**Bot. Prov.:**—24...28.


"Spores .009—.013 mm. long. .003—.005 mm. broad. *Gelatina hymenea I vinous-red*" (Nyl.) Spores .013 mm. long, .005 mm. broad.

7. *A. melaspermella*, Nyl. pallescent, effuse or evanescent; *ardellæ* black or fuscous-black, rotundate, lecideiform, plane, small, margined, *margin sub-crenulate*, at length evanescent; *spores* 8, fusco-nigrrescent, oblongo-ovoid, 1-septate.

**On old wood,** rare. 1866.

**Syn:**—Nyl in Flora 1855. Crombie En. 105.

**Geog. Distr.:**—Europe.

**Bot. Prov.:**—2.


This plant is, in the opinion of Mr. Currey and Mr. W. Phillips, identical with *Patellaria lignyota*, Fr.

8. *A. excipienda*, Nyl. cinerascent, whitish, determinate; *ardellæ* slender, oblong punctiform or *flexuoso-irregular*, plane; *spores* 8, colourless, minute, obovate, 1-septate.

**On trees,** hazel, very rare. 1867.


**Geog. Distr.:**—Aland, Finland.

**Bot. Prov.:**—19.

**Ireland:**—Base of Mangerton! (1867.) Turk, Mangerton, Killarney. *Mr. Carroll.*

"Spores .011—.17 mm. long, .006—.0065 mm. broad. *Gelatina hymenea I vinous-red.*" (Nyl.)

9. *A. lapidicola*, (Tayl.) fusco-olivaceous, thin, furfuraceous; *apothecia black, rotundate or rotundato-difformed*, appressed, plane, *immarginate*, internally nigricant; *spores* 6-8, colourless, obovate 1-septate.

**On calcareous rocks and stones,** rare. 1836.


**Fig:**—Hepp Sporen t. 62. f. 534.

**Exs:**—Leight. 393. Hepp 534. Anzi Venet. 36.
10. *A. spadicea*, Leight. *pale-red-brown*, obsolete, smooth, shining; indeterminate; *ardellæ dull-brownish-black*, flat or tumid, smooth, sessile, variable in size, larger ones roundish or oblong, smaller round and punctiform; spores 8, colourless, slenderly claviform, or linearly-ovovate, small, 1-septate, cells nucleolate, the lower cell frequently elongated and containing two round nucleoli, which give the spore the appearance of being 2-septate or 3-locular.

On hazel, hawthorn, holly, &c., rare. 1852.

**SYN:**—Leight. Br. Graph. 57. (1854.) Mudd Man. 251.

**FIG.:**—Leight. Br. Graph. 57. t. 8. f. 39.

**EXX.:**—Leight. Nyl. 36.

**GEOG. DISTRIBUT.:**—France.

**BOT. PROV.:**—1...8...7...8...10...19...26...31.


*Newton Wood! Cleveland. Mr. Mudd.* Leigh Woods, Clifton. *Mr. Larbaletier.*


*Shelton Rough! near Shrewsbury, Shropshire. (1852.)


*Lord Shigo’s demesne, Westport, co. Mayo. Mr. Larbaletier.*

**WALES:**—Trefriw!

**CHANNEL ISLANDS:**—Rozel, Jersey. *Mr Larbaletier.*

"Spores .002 in. long, by .00075 in. broad." (Mudd.) Spores .011—.012 mm. long, .004—.005 mm. broad.

11. *A. proximella*, Nyl. *silvery-grey*, effuse, hypophloëdal; *ardellæ nigro-fuscous or black*, minute, round, lecideoid, opake, plane, internally nigrescent; spores 8, fuscous, obovate, 1 septate.

On holly and oak, rare. 1872.

**SYN.:**—Nyl. Scand. 262. (1861.) Leight. in Grevillea 1. 60.

**FIG.:**—Grevillea t. 4. f. 3. a. b. c.

**EXS.:**—Fellm. 208.

**GEOG. DISTRIBUT.:**—Lapland.

**BOT. PROV.:**—2...3...5...7.

**ENGLAND:**—Woolwich Wood, near Sibertswold, Dover, Kent. *Mr. Holmes.*

*Harley Wood, Cirencester; Braydon Forest, Wilts; Sandrocks, Ardingley,*

*Sussex. Mr. Joshua.*


**WALES:**—Gwydir Woods, Bettws-y-coed! (1872.) Tremadoc!

"Spores .016—.20 mm. long, .008—.010 mm. broad." (Nyl.) Spores .019—.020 mm. long, .008 mm. broad.

12. *A. punctilliformis*, Leight. thallus a mere film; *ardellæ nigro-fuscous, excessively minute*, not larger than a pin’s point, irregularly roundish, convex, scattered, internally brown; ascii pyriform, paraphyses none; spores 8, *pale-fuscescent, oblongo-clavate, 1-septate, large.*

On holly, very rare. 1874.

**SYN.:**—Leight. in Linn. Trans. 2d. ser. 1. 146. (1876.)

**FIG.:**—Linn. Trans. 1. c. t. 22. f. 26. 27. 28.

**BOT. PROV.:**—7.
Wales:—Trefriw! (1874.)
Spores .029 mm. long, .015 mm. broad.

13. A. Hibernica, Nyl. “probably a sub-species of A. excipienda, Nyl, from which it chiefly and constantly differs in the larger spores” (Nyl.)
On smooth bark, rare. 1876.

Syn:—Nyl in Flora 1876. p. 237.
Bot. Prov:—Wales.

Ireland:—Killarney Bay! Connenara. Mr. Lavardestier. (1876.)
“Spores .016—21 mm. long, .006—8 mm. broad.” (Nyl.)
Spores .019—.020 mm. long, .007—.009 mm. broad.

** Spores 3-septate.

14. A. ochracea, (Duf.) pallescent, very thin; ardellea darkly-ochraceous, depressed, lobato-difformed or substellate; spores 8, colourless, obovate, 3-septate.
On trees, rare. 1864.

Fig:—Mass. Ric. fig. 83.
Geog. Distri.—France, Switzerland, Italy, Germany.
Bot. Prov:—7—19.
Ireland:—Glencar, Kerry. Mr. Carroll. (1864.)
Wales:—Trefriw!
“Spores .012 mm. long, .006 mm. broad.” (Nyl.)
Spores .017 mm. long, .006 mm. broad.

15. A. Cascarilla, (Fée,) pallido-glaucenscent, very thin; ardellea blackish or fuscous-black, minute, simple, oblong or linear-ovalong or irregularly difformed by confluence, plane; spores 8, colourless, obovate, 3-septate.
On trees, rare. 1864.

Syn:—Coniocarpon, Fée Ess. 99. (1824.) Suppl. 94.
Fig:—Fée Ess. t. 7. f. 4. & 4. a. Suppl. t. 42. f. 3.
Geog. Distri.—Central America.
Ireland:—Glencar! Kerry. Mr. Carroll. (1864.) Kylemore! co. Galway.
Mr. Lavardestier.
Wales:—Knighton! Radnorshire.
The specimen, I have seen do not resemble Fée's figures of the plant itself, nor of the spores which he figures as having 4-5 septa, and describes as with "quatre cloisons!" The spores in the Irish plant were obovate, 3-septate, in size and form precisely as in A. ochracea, Duf. The Irish specimens were so named by Nylander. Spores .018 mm. long, .006 mm. broad.

16. A. myriocarpella, Nyl. pale-ashy-grey, thin, opake, sub-areolate, sub-pulverulent, effuse or evanescent; ardellea fuscous-black or black, rotundate, lecideiform, superficial, minute, plane or convex, immarginate, internally nigrictant; spores 8, colourless, oblong-oval, 3-septate.
On micaceous-schistose rocks, rare.

Syn:—Nyl. N. Gran. 2. 107. (1864.) Crombie En. 104.
Geog. Distri.—N. Granada.
Bot. Prov:—15.
“Spores .010—12 mm. long, .0030—.0035 mm. broad.” (Nyl.)

17. A. aspersa, Leight. pale-opake, greyish-green, thin, mem- branaceous, smooth, indeterminate; ardellea dull-black, minute,
copiously sprinkled, sessile, various in form, punctiform, roundish, oblong, ovate, angular or irregular, depressed or convex, internally fusceous; spores 8, colourless, obovate, 3-septate, small, upper cell largest, occupying nearly half of the spore, the septa in the lower portion.

On holly, rare. 1854.


EXS:—Leight. 248.

GEOG. DISTRIB:—Normandy.

BOT. PROV:—5...7...10...13.

ENGLAND:—Farndale; Baysdale! Hobhole! Cleveland. Mr. Mudd. (1854.)

LYD HOLE! Pontesford, Shropshire.

IRELAND:—Cromaglow Mountain, Killarney. Mr. Carroll.

WALES:—Trefriw!

“Spores .003 in. long, by .001 in. broad, t. 4. f. 97.” (Mudd.) Spores .012—.014 mm. long. .004—.0045 mm. broad.

18. A. punctiformis, Ach. copper-coloured, thin, membranaceous, smooth, shining, indeterminate; ardellae dark-brown, plane or slightly convex, rough, sub-innate, scattered, roundish or broadly oblong, simple, internally pale; spores 8, colourless, linear-clavate, or obovate, obtusely pointed, 3-septate.

On trees, oak, hazel, thorn, rare.


FIG:—Leight. Br. Graph. t. 7. f. 3L.


GEOG. DISTRIB:—Scandinavia, Italy, Hungary.

BOT. PROV:—1, 2, 3...10...19...31.


IRELAND:—Lermount! near Cork. Mr. Carroll.

CHANNEL ISLANDS:—Common on all the Islands. Mr. Labaste tiers.

“If spores .004 to .0045 in. long, by .0015 in. broad.” (Mudd.) Spores .020—.022 mm. long, .007—.0075 mm. broad.

forma galactina, Ach. thallus pale-yellow or cream-colour.

On young oaks, rare.


FIG:—Leight. Br. Graph. t. 7. f. 3L.

GEOG. DISTRIB:—Europe.

BOT. PROV:—1, 2, 4...19...31.


IRELAND:—Dunscombe's Wood! Cork. Mr. Carroll.

CHANNEL ISLANDS:—St. John's, Jersey. Mr. Labaste tiers.

Var. melantera, Ach. fusco-nigricant or copper-coloured; ardellae immersed, oblong, elongate and deformed, somewhat concave.

On trees, rare. 1867.

SYN:—Arthonia obscura var. melantera, Ach. Syn. 7. (1817.)

GEOG. DISTRIB:—Sweden.

BOT. PROV:—3L.

CHANNEL ISLANDS:—Noirmont Manor, Jersey! Mr. Labaste tiers. (1867.)

Spores .017 mm. long, .005 mm. broad.

19. A. astroidea, Ach. white, cream-colour or olive, thin, membranaceous, smooth, scaly, determinate; ardellae blackish or
dark-brown, plane, rough, innate, clustered, substellate or radiate, internally pale; spores 8, colourless, lineari-clavate, roundish at the extremities, 3-septate.

On trees, sycamore, ash, mountain-ash, frequent.


SCOTLAND. — Woods opposite Birnam, Dunkeld! Glen Shee ! Perthshire; Glen Nevis! Invernesshire! Kinnoull Hill! Perth. Dr. Lindsay.

IRELAND. — Cromaglown! Killarney. Mr. Carroll. Lough Muck! co. Galway. Mr. Larbalestier.


var. simulans, Leight. ardeliae brown, scattered, innate, not distinctly stellate or radiate, appearing as if rubbed down, and resembling those of A. aspersa, but differing in spores.


(1875.)

20. A. epipasta, (Ach.) grey or copper-coloured, thin, membranaceous, smooth, shining, irregularly circumscribed; ardeliae dark-brown, plane, roughish, innate, scattered, oblong or elongato-oblong, simple or branched, internally pale; spores 8, colourless, lineari-clavate, 3-septate, double the size of those of A. astroidea.

On trees, oak, alder, beech, not common. 1807.


ENG. — E. Bot. 1911. Leighton Br. Graph. t. 7. f. 30.

Ireland. — Common on all the Islands. Mr. Larbalestier.

"Spores .003 to .004 in. long, by .001 to .0015 in. broad." (Mudd.) "Spores .015—.018 mm. long, .005—.007 mm. broad." (Nyl.) Spores .018—.009 mm. long, .005 mm. broad.

var. simulans, Leight. ardeliae brown, scattered, innate, not distinctly stellate or radiate, appearing as if rubbed down, and resembling those of A. aspersa, but differing in spores.

21. A. Swartziana, Ach. pale-yellow, cream-colour or ashy-grey, thin, cartilagineo-membranaceous, scaly, subdeterminate; ardeliae black, plane, irregularly cracked, sub-sessile, clustered into irregular
angular or sub-radiate shapes, internally brownish; spores 8, colourless, very broadly obovate, 3-septate.

On trees, holly, mountain-ash, oak, poplar, ivy, alder, beech frequent. 1809.


WALES:—Moel-y-Golfa! Montgomeryshire. Festiniog road, Dolgelley Treffriw! Beddgelert! Tremadoc! Diganwy!

Spores .004—.0165 mm. long, .005—.007 mm. broad.

22. A. trachylioides, Nyl. cream-colour, more or less tinged with rose, rather thick, contiguous, smooth, subsequently leprosopulverulent, effuse or sub-determinate; ardellae black, small, very numerous, sessile, rounded, solitary, rarely confluent, plano-convex, immarginate, nigro-pulverulent and rugose when old; spores 6-8, colourless, obovate, or linear-clavate, the extremities rounded, 3-septate.

On sub-alpine rocks, very rare. 1861.


ENG:—Mudd Man. t. 4. f. 98.

IRE:—Mudd 237.

GEORG. DISTRIB:—Europe.

BOT. PROV:—1...7...10.

WALES:—Great Orme's Head! Mr. Holmes.

"Spores .003 to .0035 in. long, by .001 in. broad, t. 4. f. 98." (Mudd.)

23. A. paralia, Nyl. fusco-cinerascent, thin, continuous, smoothish, rimose; ardellae fuscos, rotundate, nearly plane, lecideoliform; internally concolorous; hypothecium colourless; epithecium rufescens; spores 8, fuscos, oviform or subconstricted in the middle, 3-4-septate.

On exposed maritime rocks, rare. 1877.

SYN:—Nyl. in Flora 1877. p. 566.


IRELAND:—Cleghan near Kylemore. Mr. Lárbailestr. (1877.)

"The thallus contains simple eugonidia. Gelatina hymenea and spores I vinous-red. Spores .015—.025 mm. long, .007 mm. broad." (Nyl.)

*** Spores 4-septate.

24. A. cinnabarina, (Wallr.) greyish, filmy, thin, determinate; ardellae lurid and pruinose, or powdery and of a bright vermillion, sessile, clustered, difform, solid, plane, depressed; spores 8, pale-red, obovato-clavate, rounded at the extremities, 4-septate, upper cell largest.
On old trees, frequent.


gen. distrib.:—Normandy, Germany, Italy, Portugal, Switzerland, Pyrenees, France, Ceylon, Calcuta, Amazonas, S. America.

bot. prov.:—1, 2, 3...5...10, 11...19...24...31.

"spores .004 to .005 in. long, by .002 in. broad." (mudd.) "spores .020—
23 mm. long, .006—8 mm. broad." (nyl.) spores .020—.023 mm. long, .007—
008 mm. broad.

A very variable lichen of which the chief varieties and forms may be distribu-
ted as follows:

var. hermesina, Nyl. ardellæ and thallus vermilion-coloured, Nyl. Scand. 257.

f. cinnabarina, T. & B. ardellæ somewhat convex, pulverulent, vermilion-coloured. Leight. l. c. 59.


Anzi It. S. 318. Hepp 162.


bot. prov.:—1, 2, 3, 4, 6...10, 11...31.

england:—sussex! Mr. Borrer. New Forest. Rev. J. M. Crombie. Airy-
holme wood! yorkshire. Mr. Mudd. Haldon, exeter. Mr. Payitt. Easthorpe;
Rivenhall; Woodham Walter, essex. Mr. varenne. Plymouth. Mr. Holmes.


scotland:—Pens Bridge; Berwickshire. Dr. G. Johnston.

channel islands:—Common on all the islands. Mr. larbarestier.

f. rosacea, T. & B. ardellæ collected into clusters, lobate, pulveru-
ient, vermilion-coloured. Leight. l. c. 59.

England:—Poyning's common, sussex. Mr. Borrer.

f. marginata, T. & B. ardellæ somewhat convex, parti-coloured, chiefly powdery on the margins. Leight. l. c. 59.


England:—Sussex! Mr. Borrer. Ingleby Park! near ayton! yorkshire. Mr.
Abdon! Shropshire.

ireland:—Dunscombe's wood! cork. Mr. Carroll. Lough Derryclare! co.
Galway. Mr. Larbarestier.

Wales:—Edderton! Montgomeryshire.


f. concolor, T. & B. ardellæ convex, of the same colour with the
thallus, albo-pruinose. Leight. l. c. 60.

exs.:—Leight. 251.

England:—Sussex! Mr. Borrer. New Forest, Hants. Mr. Lyell. near
Dorking. Mr. Joshua. paradise, Eastbourne. Mr. Roper.

f. dubia, T. & B. ardellæ rather convex, lurid, dark-purple, pruinose.


f. microstigma, T. & B. ardellæ minute, solitary, depressed, albo-
pruinose. Leight. l. c. 60.

England:—Sussex! Mr. Borrer.

Ireland:—Glanmon! Blarney! cork; Ballynegarde co. Limerick. Mr.
Carroll.
Var. anerythrea, Nyl. ardellæ fuscos, prominent, naked, without any vermillion powder.


f. detrada, T. & B. ardellæ depressed, lurid, dark-purplish, naked more or less stellate. Leight. l.c. 60.


England:—Sussex! Mr. Borrer.

Wales:—Gwydir Woods! Bettws-y-coed.

f. astroidea, Leight. ardellæ rather large, in depressed, naked, radiate or stellate clusters, sub-immersed or very slightly raised, dark-reddish-black or full-brown-black. Leight. l.c. 60.

Exs:—Mudd 234.


Oakley Park, Cirencester. Mr. Joshua.

Ireland:—Castlebernard! O’Sullivan’s Cascade! Killarney. Mr. Carroll.

forms cuspidans, Nyl. distinguished from the type by the ardellæ being scarcely erythrinose, slenderer, the apices of the divisions acuminate.

On holly, rare. 1876.

Syn:—Nyl. in Flora 1876, p. 310.

Exs:—Wright’s Cuba 123. a. and b.

Ireland:—Doughrugh Mountain. Mr. Larbalestier. (1876.)

Spores .016—19 mm. long, .006—7 mm. broad.

Var. opegraphina, Ach. ardellæ depressed, linear, simple or crowded, substellato-difformed, rough; spores 3-4-septate.

On trees.


Fig:—Grevillea l. c. t. 4. f. 7.

Geog. Distrib:—Sweden.

Bot. Prov:—7...19.

Ireland:—Glenbower Wood! co. Cork. Mr. Carroll.

Wales:—Gwydir Woods! Bettws-y-coed.

Var. epipastoides, Nyl. ardellæ minute, irregularly flexuose, slender, oblong, or punctiform; spores 3-4-septate.

On ivy, rare. 1869.


Fig:—Grevillea l. c. 1. t. 4. f. 8.

Geog. Distrib:—France.

Bot. Prov:—19...26...31.


Channel Islands:—Noirmont Warren, Jersey! Mr. Larbalestier.

25. A. insinuata, Strtn. whitish or pale, subsquamulose, very thin; ardellæ fuscos or fuscos-black, adnate, round or oblong or somewhat irregular, at first veiled, generally with a somewhat squamulose thalline margin, internally pale; spores 4-8, colourless, sometimes slightly fuscescent, oblong, crenulate at the margin, spuriously 4-septate or rather 5-celled, the cells equal in size; gelatina hymenea I bright-blue.

On trees. 1875,
THE LICHEN-FLORA


BOT. PROT.:—15.

SCOTLAND:—Near Killicrankie. Dr. Stirton. (1875.)

Spores .014—.021 mm. long. .006—.008 mm. broad.

26. **A. pruinosa**, Ach. *whitish* or pale-yellow, thin, tartaraceous, cracked and uneven, somewhat *puberulent*, indeterminate; *ardeliae* brownish or lead-coloured, rough, albo-pruinose, immersed, roundish or irregularly oblong or difformed, plane or slightly convex, internally pale; spores 8, colourless, linearly-ovobate, rounded at the extremities, generally 4-septate, (sometimes 5, sometimes 3-septate.)

On old oaks, *ivy, elm, yew* and old timber, frequent. 1831.


FIG.:—E. Bot. Suppl. 2692. f, 1. Leight. Br. Graph. t. 8. f. 35.


GEOG. DISTR.:—Germany, Switzerland, France, Italy, Sweden, Nornandy, N. America.

BOT. PROT.:—1, 2, 3, 4, 5... 7, 8...10, 11...19...24...31.


IRELAND:—Cledaneanure, Kerry. *Dr. Taylor*. Adare Abbey near Limerick, *Mr. Carroll*.

WALES:—Rettws-y-coed Churchyard! Gwydir!

CHANNEL ISLANDS:—St. Ouen's, Jersey. *Mr. Larbalestier*.

"Spores .003 to .0025 in. long, by .001 in. broad." (Mudd.) "Spores .013—.017 mm. long, .005—.007 mm. broad." (Nyl.) Spores .016 mm. long, .005 mm. broad.

27. **A. astroidestera**, Nyl. nearly similar to *A. astroidea*, but having the *apothecia more distinctly astroid*, brownish; spores 3-5-septate, usually 4-septate. .0021—.026 mm. long, .007—.08 mm. broad.

On holly and beech. 1873.

SYN.:—Nyl in Flora 1874. p. 13.

BOT. PROT.:—2...7.

ENGLAND:—Viney ridge, New Forest near Lyndhurst! *Mr. Larbalestier*. (1873.)

WALES:—Trefriw!

This appears to me to be only a more diffuse or scattered state of *A. astroidea*. Although I do not find this identical state in the herbarium of the late Mr. Borre, yet I do find three specimens which are intermediate between the typical state of *astroidea* and *astroidea*.

**** Spores 6-septate.

28. **A. ilicin**, Tayl. *cream-colour*, thin, membranaceous, smooth, shining, scaly, limitate; *ardeliae* brownish-black, plane, shining, sub-immersed, scattered, irregularly rounded or oblong, internally pale; spores 8, colourless, *very large*, obovato-clavate, 6-septate, upper cell largest; *gelatina hymenea* persistently-blue with iodine.
On holly, frequent. 1836.

**Syn:** Tayl. Fl. Hdb. 2. 105. (1836.) Leight. Br. Graph. 56. Mudd Man 248.  
**Fig:** Leight, L. c. t. 8. f. 36.  
**Geog. Distr:**—Europe.  
**Bot. Prov:**—2...19.  


**Ireland:**—Glengariff! Miss Hutchins. Cromaglown! Dr. Taylor. (1836.) Killarney; Old Dromore and Glencarn, Kerry; Glenbower Wood, Killeagh. Mr. Carroll. Derryclare! co. Galway. Mr. Larbalestier.

"Spores .007 in. long, by .002 in. broad at the apex, and by .001 in. at the base." (Mudd.) Spores .030 mm. long, .009—.010 mm. broad.

29. *A. ilicinella,* Nyl. similar to *A. ilicina,* Tayl. but generally smaller and with smaller spores, 3-5-6-septate; *gelatina hymenea vinoso-rubescent with iodine.*

On holly, rare. 1866.

**Syn:**—Nyl. in Flora 1867. p. 179. Crombie En. 102.  
**Geog. Distr:**—Europe.  
**Bot. Prov:**—19...26.  

**Ireland:**—Turk Mountain! Killarney. Mr. Carroll. (1866.) Doughruagh Mountain! co. Galway. Mr. Larbalestier.

"Spores .021—.36 mm. long, .008—.012 mm. broad." (Nyl.) Spores .037 mm. long, .013 mm. broad.

****** Spores murali-locular.

30. *A. spectabilis,* Flot. white, thin, indeterminate, opake, rimose and unequal; *ardellce black or fuscos-black,* opake, large, *anguloso-diformed or ramoso-incised,* often surrounded with a spurious thalline margin, internally concolorous; *spores 8,* colourless, oblong, *murali-locular,* (11 series) large.

On trees, rare.

**Syn:**—Flot. in litt. ad Scher. *A. diformis,* Nyl. Enum. 144. Crombie En. 103.  
**Fig:**—Hepp Sporen t. 62. f. 536.  
**Exs:**—Hepp 536. Anzi Langob. 206.  
**Geog. Distr:**—Bavaria, Belgium, Hungary, Normandy, Germany, Italy, France, N. America.  
**Bot. Prov:**—19.  

**Ireland:**—Crogham Mountain, Killarney. Mr. Carroll.  
Spores .040 mm. long, .017 mm. broad.

31. *A. anastomosans,* Ach. greyish-white or cream-colour, thin, smooth, contiguous; *ardellae minute, erumpent, simple or radiato-congregate,* scattered, brownish-black, plane; *spores 8,* colourless, oblong, *murali-locular,* (6 or 7 series) small.

On trees, rare. 1860.

**Syn:**—Ach. L. U. 146. (1810.) *Abrothelium dispersum,* Mudd Man. 252.  
Crombie En. 103.  
**Fig:**—Mudd Man. t. 4. f. 99.  
**Geog. Distr:**—Belgium, Pyrenees.  
**Bot. Prov:**—19...31.  

**Ireland:**—Near Bantry. Miss Hutchins. Old Dromore! Glencarn and near Killarney, Kerry. Mr. Carroll.  
**Channel Islands:**—Jersey. Mr. Larbalestier.  
"Spores .004 to .006 in. long, by .002 in. broad t. 4 f. 99." (Mudd.) Spores .022 mm. long, .009 mm. broad.
32. *A. varians*, (Dav.) thallus none; ardeliae parasitic, hymenicolar, rotundate, single or confluent, dull-black, sessile, plane or more or less convex, roughish, internally pale-brown; spores 8, colourless, oblong, normally 3-septate (sometimes 2, sometimes 1-septate).

Parasitic on the apothecia of *Lecanora glaucoma*, frequent. 1793.


**Fig.**:—Linn. Trans. 2. t. 28. f. 3. Ann. & Mag. Nat. Hist. 1856. t. 11. f. 1. 2, 3, 4, 5.


**GEOG. DISTRIB**:—Sweden, Finland, Norway, France, Bavaria, Austria.

**BOT. PROV**:—5, 6, 7...10...15...23...30, 31.


**Lambay Island. Mr. Carroll.**


**CHANNEL ISLANDS**:—Petit Fort! La Moye; Noirmont! Jersey. *Mr. Larbalestier.*

“Spores .003 in. long, by .001 in. broad.” (*Mudd.*) “Spores .012—18 mm. long, .005—7 mm. broad.” (*Nyl.*) Spores .016—.017 mm. long, .0065—.007 mm. broad.

33. *A. punctella*, Nyl. thallus none; ardeliae parasitic, innato-sub sessile, punctiform, solitary, scattered; spores 6-8, colourless, obovato-clavate, 1-septate.

Parasitic on thallus of *Lecidea albo-atra*, (Hoffm.) rare. 1859.

**SYN**:—Nyl. MS. in Carroll’s Contrib. to Irish Lichenol. p. 10. (1859.) Mudd Man. 252.

**GEOG. DISTRIB**:—Europe.

**BOT. PROV**:—20.

**IRELAND**:—Shore below Queenstown! *Mr. Carroll.* (1859.)

“Spores .0025 in. long, by .001 in. broad.” (*Mudd.*)

34. *A. galactinaria*, Leight. thallus none; ardeliae parasitic, hymenicolar, rotundato-difformed, single or confluent, nigro-fuscous, more or less convex; spores 8, colourless, oblongo-ovoid, 1-septate.

Parasitic on the apothecia of *Lecanora galactina f. dispersa*, rare. 1876.

**BOT. PROV**:—5.

**ENGLAND**:—Old walls Barnsley Park! Gloucestershire. *Mr. Joshua.* (1876.)

I renders the gelatina hymena of the matrix-aphotecium blue, but tinges that of the Arthonia of a dark dingy-brown, except the spores in the asc, which are yellow-brown. *The* spores are frequently nucleolate with a tendency to form an additional septum, when old they become fuscos. Spores .011—.013 mm. long, .004—.005 mm. broad.

**IX. GRAPHIS, Ach. Nyl.**

Thallus thin, epiphloal or hypophloal. Apothecia (lirellae) black, linear, variously divided or simple, innate or immersed at the base. Perithecium black, lateral or entire. Spores colourless or fuscos, pluri-locular, coloured blue by iodine. Gelatina hymena, untinged by iodine. Paraphyses slender, distinct.
A. Spores linear-elongate or cylindrical, with many transversely oval cells.

1. *G. elegans*, (Sm.) pale-cream-colour or greyish-white, thin, membranaceous, granulate or rugose; *lirellae* erumpent, prominent, sessile, oblong or linear-elongate, simple, straight or curved; perithecium dimidiate or lateral, palmatifid; epithecium rimaform, closed; proper margin thick, tumid, prominent, longitudinally furrowed; spores 8, colourless, enveloped in a hyaline membrane, linear-elongate or cylindrical, with 11-13 transversely oval cells.

On trees, myrica gale, stone-pine, oak, birch, finest on holly. common. 1807.


Fig. E. Bot. t. 1812. Leight. Br. Graph. t. 7, f. 26.


GEOG. DISTRIB.—Europe, France, Switzerland, Germany, Asia, America.

Bot. Prov.—1, 2, 3, 5...7, 8...10...13...19...26.


Scotland.—West Highlands near Inverary; in Lorn at Bunawe. Rev. J. M. Crombie.


WALES.—Abertywyn, Dolgelley. Dr. Holt. Gloddaeth! near Conway; Torro Walk! near Dolgelley. Woods opposite Tanybwlch Hotel! near Capel Curig; Gwydr Woods! Bettws-y-coed! Trefriw! Edederton! (Mudd.) "Spores .009 to .012 in. long, by .002 to .00225 in. broad, t. 4. f. 9."

(form.) "Spores .040—.54 mm. long, .007—.010 mm. broad." (Nyl.) Spores .055 mm. long, .013 mm. broad.

forma concaevata, Leight. lirellae heaped one over another in small scattered clusters.


forma stellata, Leight. lirellae stellate, distant, scattered, On birch. Sussex! Mr. Borrer.

forma paralela, Scher. lirellae straight, parallel.

On cherry. Raglith! Shropshire. (1875.)

2. *G. petrina*, Nyl. thallus scarcely any visible; lirellae black, linear, simple, subflexuose; epithecium rimaform, narrow, margin tumid, longitudinally furrowed, the furrows often white suffused; perithecium black; spores 8, brownish, 8-12 locular.

On very wet micaceous rocks, extremely rare. 1876.

SYN.—Nyl. in Flora 1876, p. 310.


IRELAND.—Base of Letter Hill, Connemara. Mr. Larbalestier. (1876.) Spores .036—.50 mm. long, .007—.011 mm. broad. Resembling *G. elegans.*
3. *G. scripta*, Ach. cream-coloured or greyish-white, thin, membranaceous or sub-tartaraceous, continuous, even or rugose; *lirellæ immersed*, slender, of the same width throughout, extremities obtuse, proper margin narrow, elevated, wavy and crisped; thalloidal margin elevated, tumid; *epithecium canaliculate*, naked or pruinose; perithegium dimidiate or lateral; spores 8, colourless, elongate-linear or cylindrical, apically rounded, containing 8-10 transversely oval margined cells.

On trees, oak, ash, alder, beech, elm, cherry, plum, frequent and very variable.


**Fig.:** Leight. Br. Graph. t. 6. f. 19.

**Geog. Distrib.:** Throughout the World.

**Bot. Prov.:**—2, 3...5...7, 8...10...15...16...19...30, 31.

**forma minuta**, Leight. thallus fusco-nigro-limitate; *lirellæ very short and simple*, straight; *epithecium rimeform or slightly canaliculate*, naked or slightly pruinose; proper margin thickish, flexuose, uniform. (Leight. Br. Graph. p. 32.)


**forma diffusa**, Leight. pale-olive, fusco-nigro-limitate or sub-effuse; *lirellæ elongated*, simple, curved, distantly scattered; *epithecium rimeform*, plane, naked; proper margin narrow, curved, flexuose, crisped. (Leight. Br. Graph. p. 33.)


**Ireland:**—Derriquin! Dr. Taylor. Colin Glen, Belfast! Mr. Thompson.

**Wales:**—Woods near Capel Curig! Gwydir Woods! Bettws-y-coed.

**forma varia**, Leight. pale-yellow, fusco-nigro-limitate; *lirellæ elongated*, immersed, very various in shape, size, and disposition, rather crowded, simple or branched or furcate, straight or wavy; *epithecium rimeform* or slightly canaliculate, sub-pruinose; proper margin thin, flexuose and crisped. (Leight. Br. Graph. p. 83.)


**Wales:**—Woods near Capel Curig! Gwydir Woods! Bettws-y-coed.

**Channel Islands:**—St. Ouen’s Manor Avenue! St. Peter’s Valley! and Beaumont! Jersey. Mr. Larbalestier.

**forma flexuosa**, Leight. pale-yellow, fusco-nigro-limitate; *lirellæ very elongated and slender*, flexuose, simple, immersed; *epithecium rimeform*, very narrow, pruinose; proper margin thin, elevated, flexuose and crisped. (Leight. Br. Graph. p. 34. Zw. 304.)


**Ireland:**—Castlebernard Park! Cork. Prof. Hincks.

**Wales:**—Woods near Capel Curig! Gwydir Woods! Bettws-y-coed.

**Channel Islands:**—Common on all the larger Islands. Mr. Larbalestier.

**forma horizontalis**, Leight. whitish-yellow, fusco-nigro-limitate; *lirellæ crowded*, very long and slender, disposed horizontally, wavy, simple or furcate or crooked, immersed; *epithecium rimeform,*
exceedingly narrow, naked; proper margin slender, elevated, flexuose and crisped. (Leight. Br. Graph. 34. Exs. 244, Anzi It. S. 344. Mudd 217.)


**Scotland:**—Near Stirling. Rev. J. M. Crombie.

**Ireland:**—Derrycclare! co. Galway. Mr. Larvalestier.

**Wales:**—Edderton Wood! Montgomeryshire.

**forma divoricata,** Leight. pale-yellow, effuse; *lirello* short and straight, with a central branch *divaricata* or at right angles; epithecium narrow and canaliculate, pruinose; proper margin thickish, entire, flexuose. (Leight. Br. Graph. 35. Exs. 21. 19. Hepp 535. Larbal. 88. Anzi It. S. 341.)


**Scotland:**—Knockdolian! Ayrshire; Rammerscales! Dumfriesshire. Mr. Thompson.

**Ireland:**—Colin Glen, Belfast! Bangor! Tallamore Park! co Down. Mr. Thompson.


**Channel Islands:**—St. Lawrence Road! Beaumont! Rozel! Jersey. Mr. Larvalestier.

**forma recta,** (Humb.) pale-yellow or straw-colour, in horizontally elongated patches, nigro-limitate; *lirello* very numerous, elongated, narrow, simple, horizontal and parallel, acuminate and sharply pointed at the extremities; epithecium canaliculate, naked or sub-pruinose; proper margin thick, elevated, uniform. (Leight. Br. Graph. 38. t. 6. f. 20. Zw. 306. E. Bot. t. 2301. Hepp 46. 888. Anzi Ital. S. 343.)


**Scotland:**—Near Stirling. Rev. J. M. Crombie.

**Spores.** 0.07 mm. long. 0.07 mm. broad.

**forma stellata,** Leight. pale-olive, fusco-nigro-limitate; *lirello* stellate, distant, few, scattered, rays simple, acute; epithecium canaliculate, naked; proper margin thick, uniform. (Leight. Br. Graph. 36.)


**Wales:**—Edderton!

**Var. serpentina,** Ach. white and cinereous, thickish, tartareous, puverulent, cracked, determinate; *lirello* immersed, elongated, crowded, flexuose, simple or branched, obtuse, casio-pruinose; epithecium at length plane; proper margin thin, elevated; thal-odal margin lateral, incassate; spores as above.

On trees, oak, beech, ash, sweet-chestnut, frequent.


**Fig.**—Leight. Br. Graph. t. 6. f. 21.

**Exs.**—Mudd 221. 222.

**Geog. Distrib.**—Europe, America.

**England:**—Tilgate Forest! Sussex. Mr. Borrer. near Little Malvern!
THE LICHEN-FLORA


IRELAND:—Duncombe’s Wood! Cork. Mr. Carroll.


CHANNEL ISLANDS:—Roxel Woods! Jersey. Mr. Larbalestier.

Varies with a larger and smaller form of lirellæ, and with radiate and flexuose ones.

forma eutypa, Ach. pale-yellow or greyish-white, pulverulent; lirellæ crowded, flexuose, prominent, simple or branched; epithecium very wide, canaliculate, plane or concave, cæsio-pruinose; proper margin thick, elevated, curved and wavy. (Leight. Br. Graph. 37. Mudd 220. Schær. 91.)


IRELAND:—Cultra! co. Down; Knocknagoney! Belfast. Mr. Thompson.

Ballynahinch. Mr. Larbalestier.

WALES:—Builth!

CHANNEL ISLANDS:—Roxel! Jersey. Mr. Larbalestier.

Spores .027—.033 mm. long. .007—.010 mm. broad.

forma spatheæ, Ach. pale-yellow, fusco-nigro-limitate; lirellæ moderately long, simple, curved, numerous, scattered in all directions, approximate, sub-immersed; epithecium rimeform, nearly closed; proper margin thick, incurved, flexuose. (Leight Br. Graph. 36.)

ENGLAND:—St. Leonard’s Forest! Sussex. Mr. Borrer.


forma tremulans, Leight. pale-ashy-yellow or ash-grey; lirellæ elongated, simple, peculiarly tremulous and wavy; prominent; epithecium canaliculate, pruinose; proper margin narrow, excessively flexuose and crisped. (Leight Br. Graph. 37. Exs. 22. Mudd 219.)


IRELAND:—Killarney! Mr. Thompson.


CHANNEL ISLANDS:—Common on all the larger Islands. Mr. Larbalestier.

forma radiata, Leight. whitish-yellow; effuse; lirellæ sub-immersed, crowded, centrally radiate; epithecium widely canaliculate, cæsio-pruinose; proper margin stout, elevated, unequal, singularly flexuose and crisped. (Leight. Br. Graph. 35. Exs. 340. Mudd 218.)


Var. pulverulenta, Ach. whitish, effuse; apothecia emergent, flexuose; epithecium canaliculate, dehiscent, cæsio-pruinose; thallo-dal margin elevated, tumid.

On trees, ash, rare.
OF GREAT BRITAIN.

431

Exs.—Nyl. 70.

Geog. Distrib.—Europe.


Scotland.—Falls of Clyde; near Stirling; Callander, &c. Rev. J. M. Crombie.

Ireland.—Blarney! Cork. Mr. Carroll. near Lough Muck! co. Galway. Mr. Larbalestier.

Wales.—Edderton! Montgomeryshire. Gwydir Woods! Bettws-y-coed! Treffri!

Channel Islands.—Common on all the larger Islands and Jethou. Mr. Larbalestier.

4. G. dendritica, (Ach.) cream-coloured or yellowish-white, thin, tartaceous, pulverulent; lirellæ brownish-black, immersed, branched in a pedato-radiate manner; perithecia a very thin black cartilaginous entire membrane; epithecium broad, plane, dilated, costoprunose; proper margin very thin; thallodal margin prominent, rugose; spores 8, colourless, elongato-linear, apically rounded, containing 6-8 transversely oval margined cells.

On trees, beech, rare. 1807.

forma Smithii, Leight. lirellæ ramifying at an obtuse angle, extremities acute, thallodal margin prominent. (Leight. Br. Graph. 43.)


Fig.—E. Bot. 1736. Leight. Br. Graph. t. 7. f. 23.
Exs.—Rahh. 826. Arn. 334. in part.

Geog. Distrib.—Germany, France, Prussia, Pyrenees, America.

Bot. Prov. :—1, 2, 3, 5, 6, 7...19...31.

England.—Sussex! Mr. Borrer. (1807.) New Forest! Hants. Mr. Lyell.


Channel Islands.—Jersey and Guernsey. Mr. Larbalestier.

"Spores .008 to .011 in. long, by .0015 to .002 in. broad." (Mudd.)

forma acuta, Leight. lirellæ ramifying at a very acute angle, nearly parallel, extremities simple, acuminate; thallodal margin prominent. (Leight. Br. Graph. 44. Scherr. Exs. 585. Larbal 41.)

England.—St. Leonard's Forest! Sussex. Mr. Borrer.

Ireland.—Castlebernard Park! Cork. Mr. Carroll.


Channel Islands.—Beaumont! and Rosel! Jersey. Mr. Larbalestier.

Spores .042 mm. long, .009 mm. broad.

forma obtusa, Leight. lirellæ ramifying at an obtuse angle in a furcate manner, extremities very obtuse, frequently furcate; thallodal margin nearly obliterated. (Leight. Br. Graph. 44.)

England.—St. Leonard's Forest! Sussex. Mr. Borrer. Tunbridge Wells!


Ireland.—Castlebernard Park! Cork. Mr. Carroll.

Wales.—Pembrokehire! Rev. T. Salway. Dolgelley!

5. G. inusta, Ach. pale-yellowish-white, thin, membraneous,
THE LICHEN-FLORA

even or rugose; lirellæ black, immersed, broad, simple or branched in a sub-radiate sub-parallel manner; peritheciwm lateral; epithecium plane, naked or pruinose; proper margin very narrow; thal-lobal margin thin and membranous; spores 8, fuscescent, linear or elongato-linear, apically rounded, containing 6-8 transversely oval marginated cells.

On trees, oak, hazel, thorn, beech, sycamore, frequent. 1807.

Forma vera, Leight. lirellæ radiate, like Chinese characters.


Fig.—E. Bot. t. 1813. Leight. Br. Graph. t. 6. f. 22.

EXS.—Larbal. 89.

PRODR.—Europe, France, Prussia, Asia, America.

Bot. PROB.:—1, 2, 3 5, 7, 8...19...30, 31.


CHANNEL ISLANDS:—Guernsey; Beaumont, St. Lawrence! St. Peter's Valley! Rozel Manor! Jersey. Mr. Larbalestier.

Spores .028—.035 mm. long, .009 mm. broad.

forma elongata, Leight. lirellæ much more simple, slightly branched, lineari-oblong or lanceolate, extremities acute. (Leight. Br. Graph. 42.)

ENGLAND:—Sussex! Mr. Borrer. Pod's Wood! Messing, Essex. Mr. Varenne.


CHANNEL ISLANDS:—St. Lawrence! Jersey. Mr. Larbalestier.

forma divaricata, Leight. lirellæ with a simple branch at right angles. (Leight. Br. Graph. 42.)


IRELAND:—Dunscombe's Wood! Cork. Mr. Carroll.

WALES:—Dolgelley!

CHANNEL ISLANDS:—Beaumont! Jersey. Mr. Larbalestier.

forma simpliciuscula. Leight. lirellæ smaller, simple, scattered. (Leight. Br. Graph. 42. Larbal. 90.)

ENGLAND:—Sussex! Mr. Borrer. Marks Hall Wood; Pod's Wood, Messing, Essex. Mr. Varenne.

IRELAND:—Castlebernard Park! Cork. Prof. Hincks.

WALES:—Gwydir Woods! Bettws-y-coed.

CHANNEL ISLANDS:—Rozel! Jersey. Mr. Larbalestier.

forma macularis. Leight. lirellæ small, numerous, crowded, rounded or oblong. (Leight. Br. Graph. 42. EXS. 285.)


WALES:—Ynysfaig! near Barmouth; Dolgelley!

CHANNEL ISLANDS:—St. Peter's Valley! Jersey. Mr. Larbalestier.

6. G. Lyellii, Sm. pale-olive, thin, ceraceo-membranaceous, smooth; lirellæ brownish-black, prominent, sessile, oblong or lineari-oblong, simple, curved; peritheciwm carbonaceous, entire;
epithecidium plane, broad, pruinose; proper margin narrow, prominent; thallodal margin elevated, white, pulverulent; spores 8, fuscessent, linear-elongate, apically obtuse, containing 7-8 transversely oval margined cells.

On trees, rare. 1808.


GEOG. DISTRIB:—France.

Bot. Prov.:—1, 2...19...31.


IRELAND:—Castlebearn Park! co. Cork. Mr. Carroll. Mr. Carroll in this locality has detected several curious forms, viz.: radiata, Carr. 1 in which the lirellae are stellately arranged, their apices more or less acute; fastigata, Carr. 1 where the lirellae are obtuse at the apices and subdendritically arranged; maculata, Carr. 1 in which the lirellae are smaller, round or oblong, confluent into obtusely crenate groups.

CHANNEL ISLANDS:—Roxel, Jersey. Mr. Larbarestier.

"Spores .008 to .007 in. long, by .00125 to .00175 in. broad." (Mudd.) Spores .028—.033 mm. long, .006—.008 mm. broad.

7. G. ramipectans, Nyl. whitish or creamy-white, very thin, subruguose, effuse, (K yellow then orange); lirellae black, naked, striatulate, slightly prominent, dendroideo-ramose; epithecium narrow, slightly expanded; perithecidium lateral; proper margin thin, wavy and crisped; paraphyses thick, oleoso-articulate, apices globular; spores 8, colourless, at length pale-rufescent, elongate-linear or cylindrical, apically rounded, with 10-12 transversely oval margined cells.

On Ilex, very rare. 1876.

SYN:—Nyl. in Flora 1876. p. 578.

Bot. Prov.:—29.

IRELAND:—Holly Island! Lough Inagh. Mr. Larbarestier. (1876.)

Spores .032—.045 mm. long, .008—.010 mm. broad. Thece lutescent.

B. Spores murali-locular.

8. G. Ruiziana, (Fée:) greyish-cream-coloured, thin, membranaceous, smooth, nigro-limitate; lirellae excessively prominent and sessile, large, lineari-oblung, obtuse at the extremities, straight or wavy, simple, occasionally tripartite; epithecium rimeform, more or less expanded; perithecidium thick, carbonaceous, entire; proper margin tumid and convinit; spores 8, colourless, oblong or elliptical, murali-locular, large.

On holly, hawthorn, gorse, rare. 1857.


GEOG. DISTRIB:—N. Granada, Europe.

Bot. Prov.:—1...6...19.

ENGLAND:—Ivybridge, Devon; Wilhiel near Bodmin. Mr. Tellam.


WALES:—Fort Hill! Llanachar Road! near Fishguard, Pembrokeshire.

Spores .044 mm. long, .018 mm. broad.

AD
9. *G. sophistica*, Nyl. pale-whitish-yellow or cream-colour, thin, membranaceous, continuous, smooth or slightly uneven; lirellæ black, emergent, slender, contracted here and there, simple or branched, wavy and scattered, extremities acuminatæ; perithecium lateral; epithecium rimæform, naked; proper margin thin, elevated, wavy and crispæd; thallodal margin membranaceous; spores 8, colourless, oblong or ellipsoidal, murali-multiloculæ.

On trees, oak, frequenter.


**Fig.** — Leight. Br. Graph. t. 6. f. 17.

**Exs.** — Lindig 71.


**Bot. Prov.** — 2, 3...5...7, 8...11...13, 14, 15...19...33.

The following forms are noticeable.

**forma diffusa**, Leight. lirellæ rather long, simple or with a single branch, variously curved and wavy, *lying in all directions.* (Leight. Br. Graph. p. 27. Bohl. 28.)


**Ireland.** — Cultra! co. Down; Colin Glen! Belfast. Mr. Thompson.

**Wales.** — Edderton! Montgomeryshire. Bettws-y-coed!

Spores .087—.040 mm. long, .015—.025 mm. broad.


**England.** — Sussex! Mr. Borrer. New Forest! Hants. Mr. Lyell. Oswestry!


**Scotland.** — Loch Tay Woods! Dr. Greville.

**Ireland.** — Ballinahinch! Galway. Mr. Jarvalesier.

**Wales.** — Gloddaeth! near Conway.

**forma radiata**, Leight. lirellæ *dendritically radiatæ.* (Leight. Br. Graph. p. 29. Mudd 215.)

**England.** — Sussex! Mr. Borrer.

**Scotland.** — Rammerscales! Dumfriesshire. Mr. Thompson.

**Ireland.** — Cultra! co. Down. Mr. Thompson.

**Wales.** — Gwydir Woods! Bettws-y-coed.


**Scotland.** — Rae Hill Woods! Dr. Greville.


**Var. pulverulenta**, (Sm.) pale-dull-ashy-yellow or cream-colour, thin or tartaraceous and pulverulent, continuous, rugulose; lirellæ sub-sessilæ, broadish, extremities cuspidatæ; perithecium lateral; epithecium broadly canaliculate pruinose; proper margin thick, elevated, uniform; thallodal margin elevated, tumid; spores 8, colourless, oblong or ellipsoidal, murali-multiloculæ.

**Syn.** — Sm. E. Bot. 1754. (1807.) Leight. Br. Graph. p. 31.


**Exs.** — Leight. 20.
OF GREAT BRITAIN.

435

GEORG, DISTRIB:—Europe.

BOT. PROV:—2, 3...5, 7, 8...19...26...30...31.


CHANNEL ISLANDS:—St. Peter's Valley! Jersey. Mr. Larbalestier.

Spores .037 mm. long. .017 mm. broad.

var. dendriticoides. Leight. lirello immersed, branched in a pedato-radiate manner; epithecium dilated cassis-pruinose.

On holly. (1875.)

Holly Park near Stokesay, Shropshire!

10. G. inustula, Nyl. milk-white, subrimulose, (K-yellow); lirello immersed, with 2-3 cuspidate branches; epithecium cassis-pruinose, plane; spores 8, colourless, oblong, murali-locular.

On holly, rare. 1877.

SYN:—Nyl. in Flora 1877. p. 566.

BOT. PROV:—26.

IRELAND:—Lord Sligo's Demesne! Westport! co. Mayo. Mr. Larbalestier. (1877.)

"Like G. inusta, but with different spores .038—48 mm. long. .015—20 mm. broad." (Nyl.) Spores .034 mm. long. .015 mm. broad.

X. CHIODECTON. Ach.


1. C. albicum, (Tayl.) whitish, sub-squamoso-areolate, dispersed, pulverulent; thallodal verrucose, scattered, elevated, sub-rotund, depressed; apothecia pale-brown, naked or pruinose, sub-stellato-radiate; spores 8, colourless, broadly linear-fusiform, 3-septate.

On shaded rocks, very rare.


FIG:—Leight. loc. t. 8. f. t. 9. f. 1.

GEORG, DISTRIB:—Europe.

BOT. PROV:—19...30.

IRELAND:—Between Dunkerron and Killarney! Kerry! Dr. Taylor. (1836.) co. Antrim. Dr. Moore.

Spores .030—.040 mm. long. .005—.006 mm. broad.

Var. Sarniense, Salw. white or cream-coloured, thick, tartarceus, colliculoso-verrucose; apothecia albo-pruinose.

On maritime rocks, rare. 1847.

SYN:—Chiodecton Sarniense, Salw. in litt. 1859. Mudd Man. 245. Chiodecto petreum, Del.

GEORG, DISTRIB:—Europe.
XI. GLYPHIS, Ach.

Thallus often hypophlaeodal or obsolete, bearing scattered, white, rotundato-irregular, plano-depressed, large verrucae. Apothecia numerous, immersed in the verrucae, black, elongato-flexuose and intricate, impressed or canalicate. Spores colourless or fuscous, containing 4-10 transverse, ellipsoid-lenticular cells.

1. G. labyrinthica, Ach. fuscescenti-subolivaceous; verrucae white, plano-convex, pulverulent, subreticulate with the sub-anastomosing black canalicate rims of the elongated apothecia; spores 8, colourless, ultimately slightly fuscescent, lineari-oblong, rounded at the extremities, 4-6 celled; paraphyses crowded, indistinct; gelatina hymenea untinged with iodine.

On trees, very rare.

SYN:—Ach. Syn. 107. (1817.)

Fig:—Linn. Trans. 13. t. 2. f. 1. Fée Ess. Crypt. t. 16. f. 3. Fée Mem. Lich. t. 1. f. 2. Linn. Trans. 27. t. 36. f. 68.


GEOG. DISTRIBUTION:—Guyana, Amazons, Ceylon.

BOT. PROV:—13.


Spores .021 mm. long, .0065 mm. broad.

XII. MELASPILEA, Nyl.

Thallus very thin or obsolete. Apothecia arthonoid, black, superficial. Paraphyses distinct. Spores 8, generally colourless, 1-septate. Spermaticia straight. Gelatina hymenea only yellow with iodine.

1. M. amota, Nyl. whitish, macular, indeterminate; apothecia black, innate, rotundate or rotundato-difformed, proper margin thin, unequal; hypothecium slightly darkened; spores 4-8, colourless, rotundo-oblong, 1-septate, constricted.

On old trees, usually on oak, rare. 1866.

SYN:—Nyl. in Flora 1867, p. 178. Crombie En. 105.

GEOG. DISTRIBUTION:—Europe.

BOT. PROV:—19.

IRELAND:—Turk Mountain! Killarney! Mr. Carroll.

"Spores .016—22 mm. long, .007—.010 mm. broad." (Nyl.) Spores .017 mm. long, .008 mm. broad.

2. M. ochrothalamia, Nyl. very thin, dirty-virescent, indeterminate; apothecia black or fuscous, opake, patellulate, minute, adnate, plane, obsoletely margined, internally luteoochraceous; spores 8, fusco-nigrescent, lineari-oblong, 1-septate, constricted.

On willow, rare. 1869.

SYN:—Nyl. in Flora 1865, p. 355. Crombie En. 106.

GEOG. DISTRIBUTION:—France.

BOT. PROV:—19.
IRELAND:—Enniskeam! co. Cork; Mangerton, Killarney; Glenbower Wood Killeagh co. Cork. Mr. Carroll. (1869.)

"Spores .017—21 mm. long, .007—.010 mm. broad." (Nyl.) Spores .0115—
.0135 mm. long, .004 mm. broad.

3. M. vermiciform, Leight. thallus obsolete; apothecia black, very
minute, irregularly angulari-oblong, imbedded in the cortical
layer, when dry plane and surrounded by a minute upraised jagged
margin of the cortical layer, when wet plano-convex, the margin
obliterated; hymenium pale; paraphyses very delicate and slender,
apices pale; ascis linearoi-ovate; spores innumerable, colourless,
arranged spirally in the ascus, cylindric-fusiform, pointed and
arcuate at each end, vermiciform, 1-septate.

Parasitic on thallus and apothecia of Variolaria discoidea,
T. & B. (Pertusaria globulifera, Turn.) very sparingly.

Syn.:—Leight. in Linn. Trans. 2nd ser. 1. 146.

Fig.:—Linn. Trans. 1. c. t. 22. f. 21. 22. 23, 24.


Wales:—Treffin! (1874.)

Gelatina hymenea 1—. Spores .032 mm. long, .002 mm. broad.

4. M. Patersoni, Stirnm. whitish or pale, thin or evanescent;
apothecia black, plane, or somewhat convex, small; hypothecium
fuscous or pale; paraphyses filiform, somewhat branched, apices
interwoven, dark; spores 4 or 5, colourless, aciculari-cylindrical,
pluriseptate or 10-septate, breaking up at the septa.

On dead bark. 1874.

Syn.:—Stirtn. in Scott. Naturalist 4. p. 29. (1877.)

Bot. Prov.:—16.

Scotland:—Ben Brecht, Argyleshire. Mr. Paterson. (1874.)

"Spores .04—.06 mm. long, .0025—.003 mm. broad. Hypothecium I slightly
blue, hymenium I,— these thallus evanescent." (Stirt.)

TRIBE XVII. PERIDIEI.

Hymenia covered by a black rimuloso-dehiscent peridium.

I. MYCOPORUM, Flot.

Thallus thin or obsolete. Apothecia fuscous-black or black,
rotundato-difformed or linear, containing many hymenia conjoined
as in a common excipulum, but without peritheciun. Paraphyses
indistinct. Spores 8, oblong, variously septate, septa irregular.

1. M. sparselium, Nyl. white, very thin, determinate, or indi-
cated by a dilated darkly-limitate white or whitish spot; apothecia
black, rotundate, prominent, rugose, somewhat irregular, internally
pale and colourless; hypothecium colourless; paraphyses indis-
tinct; spores 8, colourless, ovoid, 1-septate; gelatina hymenea un-
tinged with iodine.

On holly, very rare.


Exs.:—Lindig 62.

Geog. Distribe:—N. Granada.

Bot. Prov.:—19.

IRELAND:—Cromaglown, Killarney. Mr. Carroll.

"Spores .018—21 mm. long, .007—.010 mm. broad." (Nyl.)
2. *M. miserrimum*, Nyl. thallus indicated by a pale spot or obsolete; apothecia minute, deformed, black, macular, 2-6-nodulose (nodules convex, resembling the conceptaculad of a Verrucaria, but without any impressed epithecium), internally and basally whitish, depressed between the nodules; asci spherosoid or oblongo-spherosoid; spores 8, colourless, oblong, 3-5-septate (often variously and longitudinally sparingly divided); paraphyses none; thalamium colourless, laxly indistinctly cellulose; conceptaculum nigricant, conspicuously fusco-cellulose; gelatina hymenea untinged with iodine, but the protoplasm of the asci vinous-red.

On trees in sub-alpine regions, frequent.

Syn.:—Nyl. Enum. 145. (1858.) Crombie En. 106.
Exs.:—Mudd 231.
Geo. Distrib.:—France.
Bot. Prov.:—2...5...7...10.
Eng.:—Hoggarth's Wood! Ingleby, Cleveland. Mr. Mudd. Harley Wood! Cirencester, Mr. Joshua, between Polegate and Westham, Sussex! Mr. Roper. Lyd Hole, Pontesford! Shropshire! Huglith! near Church Stretton.
Wales!—Edderton-Wood! Montgomeryshire.
"Spores .015 mm. long, .005 mm. broad." (Nyl.) Spores .018 mm. long, .008 mm. broad.

3. *M. petelxodes*, Nyl. pale-dirty, macular, more or less diffuse; apothecia black, minute, rotundate, somewhat convex; verrucaroid, simple, crowded; spores 8, colourless, ovoid or ovoideo-ellipsoid, 3-septate, generally with a single longitudinal septum between the transverse ones.

On trees, alder, rare. 1875.

Exs.:—Nyl. Pyren. Orient. 78.
Geo. Distrib.:—France, Pyrenees.
Bot. Prov.:—5.
Eng.:—Cleve Hill! Cheltenham. Mr. Joshua.
"Spores .012—.16 mm. long, .006—.8 mm. broad." (Nyl.) Spores .016 mm. long, .006 mm. broad.

II. RIMULARIA, Nyl.

Thallus thin, crustaceous. Apothecia black, rotundate, depressed in the centre, dehiscing by a subradiate fissure. Paraphyses slender, often branched. Spores 8, colourless or fuscescent, ellipsoid, simple.

1. *R. limborina*, Nyl, cinereous, thin, rimulose or sub-areolate; apothecia black or fuscescent-black, opake, rugulose, depressed, somewhat convex, rotundate or oblongo-rotundate, depressed in the centre and fissured by a thin sub-radiate chink, internally cinerescent; spores 8, colourless, at length fuscescent or fuscos, ellipsoid, simple; paraphyses slender, irregular and generally branched; peritheciun (peridium) black in upper part, below (hypothe cuium) fusco-nigrigant; gelatina hymenea slightly-blue with iodine and then fulvous-red.

On calcareous mountain rocks, rare. 1865.

Series VI. Pyrenodei.

Fructification in closed receptacle.

Tribe XVIII. Pyrenocarpeii.

Thallus various, peltate, squamulose, areolate, continuous, hypophysodial or evanescent. Apothecia pyrenodine, hymenium enclosed in an entire or dimidiate black perithecium with an apical poriform epithecium.

I. Thelocarpon, Nyl.


1. *T. Laurerii*, (Flot.) brownish-grey, crustaceous, somewhat furfuraceous, thin or evanescent; apothecia scattered, minute, granuloso-verrucose, of a citrine-yellow-colour, ostiolum slightly depressed, inconspicuous; spores numerous, minute, colourless, ellipsoid, obsoletely polari-nucleolate.

On larch rails, rare. 1864.


Fig.:—Ann. and Mag. Nat. Hist. 1864. t. 9. f. 1. 2. 3. 4. 5.

Exs.:—Leight. 351.

Geog. Distrib.:—Europe.

Bot. Prov.:—5.


Spores .006 mm. long, .003 mm. broad.

2. *T. epithallinum*, Leight. parasitic on the thallus of Beomycyes rufus; apothecia scattered, minute, granuloso-verrucose, flavo-virescent; spores numerous, minute, colourless, oblong or cylindraceo-oblong.

Parasitic on Beomycyes rufus, very rare. 1864.


Geog. Distrib.:—Europe.

Bot. Prov.:—5.

England:—Stiperstones Hill! Shropshire. (1864.)

Spores .006—7 mm. long, .0020—.0025 mm. broad.

3. *T. intermediellum*, Nyl. yellowish-green, thin, often evanescent; apothecia yellowish-green, small, scattered or crowded, globoso-depressed and umbilicate; spores innumerable, very minute,
colourless, oblong, obtuse and incrassate at the apices; paraphyses none; filamenta ostiolaria minute, ramose, or fasciculate; gelatina hymenea I vinoso-fulvescent.

On old wood, leather, &c., rare. 1873.


FIG:—Grevillea l. c. t. 21.

GEOG. DISTRIB:—Finland, England.

BOT. PROV:—5.

ENGLAND:—On an old leathern shoe, Hancott Pool near Shrewsbury!

Berrington. Mr. W. Phillips. (1873.)

“Spores .0085—.0060 mm. long, .0020 mm. broad.” (Nyl.)

4. T. superellum, Nyl. externally similar to the preceding species, but apothecia much larger; spores innumerable, colourless, ellipsoid; paraphyses slender, elongate, straight; gelatina hymenea I,—but the thecae bright-blue.

On decaying Jungermanniæ, rare. 1874.

SYN:—Nyl. in Flora 1865. p. 261.

GEOG. DISTRIB:—E. Lapland.

BOT. PROV:—7.

WALES:—Trefriw! Mr. W. Phillips. (1874.)

“Spores .009—.012 mm. long, .0043 mm. broad.” (Nyl.)

II. NORMANDINA, Nyl.

Thallus squamose or squamulose, squamulæ thin, rotundate. Apothecia black, immersed.

1. N. lutevirens, Turn. & Borr. lute-virescent, squamulose, membranaceous, squamules orbicular, sinuate and rotundato-lobate, imbricated, adnate, regularly and deeply concave, margins upturned and thickened or inflexed, naked and whitish beneath; apothecia unknown.

On moist earth frequent. 1810.


FIG:—E. Bot. Suppl. 2658.


GEOG. DISTRIB:—Europe, Lapland, N. America.

BOT. PROV:—1, 2, 3, ..., 7, ..., 10, ..., 15, ..., 19, ..., 30, 31.


SCOTLAND:—Ben Lawers. Dr. Maingay.

IRELAND:—Doneraile Mountains; Mangerton, Kerry, Mr. Carroll, near Belfast. Mr. Templeton, near Bantry. Miss Hutchins. Carig Mountain and Dunkerron. Dr. Taylor.


CHANNEL ISLANDS:—Quenvais, Jersey. Mr. Lorvalesier.

2. N. pulchella, Borr. glaucous or greenish-grey, membranous, squamulose, squamules orbicular, concave, rotundate or rotundatolobate, adnate, concentrically wrinkled, margin upturned, thickened or inflexed, frequently sorediate, pale-brown and tomentose beneath;
apothecia immersed in thalline tubercles, perithecium entire, black; spores 8, colourless, lineari-cylindrical, 7-septate.

On mossy trees, not common.


BOT. PROV.—1, 2, 7,...15...19...30, 31.


CHANNEL ISLANDS.—Guernsey; St. Peter's Valley, Rozel! La Moye! Jersey. Mr. Larbalestier.

"Spores .026—.40 mm. long,.006—.7 mm. broad." (Nyl.) Spores .034—.035 mm. long,.008 mm. broad.

III. ENDOCARPON, Hedw. Nyl.

Thallus peltate or squamiform or areolate. Apothecia with a pale rarely infusorate perithecium. Paraphyses none. Spores 8, colourless, oblongo-ellipsoid, simple.

1. E. miniatum, (L.) cinereous or cinereous-white, simple, firm, coriaceous, peltate, umbilicato-affixed, large, expanded, rotundato-or undulato-cretato-lobate, smooth or minutely albo-granulis-pruinose, under surface smooth or rugulose, fulvous; apothecia minute, very numerous, imbedded; epithecium slightly elevated, brown; spores 8, colourless, oblong or ellipsoid, simple.

On sub-alpine rocks, frequent. 1741.


GEOG. DISTR.—France, Pyrenees, Portugal, Sweden, Hungary, Italy, Germany, Austria, Algeria, N. America.

BOT. PROV.—1,...5, 6, 7, 8,...10, 11,...17, 18,...(19—30)...31.


IRELAND.—On dry limestone rocks, frequent. Mr. Carroll.

CHIANNEL ISLANDS:—I’Etacq; La Moie; Beaumont; Rosel Tower, Jersey! Jerbourg, Guernsey. Mr. Larbalester.

“Spores .00275 to .00355 in. long, by .00125 in. broad. Spermatia cylindrical, straight.” (Mudd.) “Spores .015—.18 mm. long, .006—.010 mm. broad.” (NyL.) Spores .011—.013 mm. long, .006—.007 mm. broad.

Var. complicatum, (Sw.) densely cespitose, polyphyllous, lobes ascending, umbonate and complicate, sub-pruinose, greyish, marjays roundate, erect, blackish.

On moist and wet rocks, frequent. 1741.


SCOTLAND:—Craig Guie, Glen Lochay. Rev. J. M. Crombie.

IRELAND:—On rocks in streams, frequent. Mr. Carroll.

WALES:—Near Perfeddgoed House, Bangor. Mr. Brewer. (1741.) Ffynnon Cwm y Gof, Radnorshire. Mr. Littleton Brown; Gimlet Rock! Pwlheii; Cwm Ffynon Llugwy!

Spores .0135—.015 mm. long, .006—.007 mm. broad.

Var. leptophyllum, Ach. dark-brown, small, peltate, rounded, lobed and wavy, smooth, nigro-fusceous beneath.

On alpine rocks, rare.


ENGLAND:—Rocks by Bassenthwaite Water, Cumberland. Mr. Robertson.

SCOTLAND:—Shores of Loch Lomond near Tarbet! Mr. Borrer.

IRELAND:—Near Bantry. Miss Hutchins, frequent in the northern counties.

Dr. Moore.


“Spores .0025 to .003 in. long, by .0015 in. broad.” (Mudd.) Spores .016 mm. long, .006 mm. broad.

2. E. fluviatilis, (D.C.) lurido-fuscecent, polyphyllous, cespitose, lobes tumid and bullate, crenate or inciso-crenate, strongly recurved, smooth or albo-granuloso-pruinose above, nigro-fusceous beneath.

On rocks in sub-alpine streams and lakes, rare. 1799.

SYN.—D. C. Fl. Fr. 2. 413. (1803.) Nyl. Scand. 265. Mudd Man. 266.


OF GREAT BRITAIN.


CHANNEL ISLANDS:—Boulay Bay; East Coast of Jersey! Saints Bay, Guernsey. Mr. Larbalestier.

"Spores .0025 to .003 in. long, by .00125 in. broad." (Mudd.) Spores .015—.017 mm. long, .007 mm. broad.

Var. euplocum, Ach. greyish-brown, minute, monophyllous, umbilicate, deeply laciniato-lobate, margins crisped and recurved.

On maritime rocks, rare.


Fig:—E. Bot. Suppl. 2602. f. 2. Leight. Ang. Lich. t. 2. f. 3.

GEOG. DISTRIB:—Sweden.

BOT. PROV:—11.

ENGLAND:—On the shore of the Tyne! near Newcastle. Mr. Robertson.

Spores .010—.012 mm. long, .006—.007 mm. broad.

3. E. rufescens, Ach. rufescent, squamose, squamulæ rotundate, incised, undulato-flexuose, adnate, sub-imbricate and complicate, margins thickened, repando-lobulate; spores 8, colourless, oblong, simple.

On the earth among mountain rocks, rare.


Fig:—Hepp Sporen t. 24. f. 219.


GEOG. DISTRIB:—Germany, France, Switzerland, Italy, Norway, Austria, Hungary, New Zealand, Africa.

BOT. PROV:—1. 2...5...7. 8...14, 15...19...30.

ENGLAND:—Horsham Church! Sussex. Mr. Borrer. Charnwood Forest.


Ben Lead; Craig Tulloch; Craig Gwis. Rev. J. M. Crombie.


Wales:—Arthur’s Table, Anglesea. Rev. A. Bloxam. Eglwysag rocks!

"Spores .0035 to .004 in. long, by .00135 to .0015 in. broad." (Mudd.)

"Spores .015—18 mm. long, .008 mm. broad." (Nyl.)

f. lachneum, Ach. fusco-virescent, squamose, squamulæ rotundate, sub-incumbent, flexuose, slightly tumid, margin sub-crenate, free.

On earth in mountain regions, rare.


Fig:—E. Bot. 1893 & 2012. f. 1. Leight. t. 1. a. t. 3. f. 2.


GEOG. DISTRIB:—Sweden, Russia, France, Switzerland, Italy, Swan River.

BOT. PROV:—3, 6, 7...15.


Wales:—Tenby Castle! Pembrokeshire. Mr. Mudd, Llandudno! Carnarvonshire.

Spores .010—.0115 mm. long, .006 mm. broad.

4. E. hepaticum, Ach. rufo-fuscescent or fuscos, squamose, squamulæ round or angular, simple, more or less dispersed, adnate, plane, margin entire, elevated and nigrificent; spores 8, colourless, oblong, simple.
On earth and on walls, rare. 1794.


Fig:—E. Bot. 595. Leight. l. c. t. 3. f. 3.


GEOG. DISTRIBUTION:—France, Italy, Switzerland, Germany, Africa, N. America.

BOT. PROV:—1, 2, 4, 5, 6, 7...11...15...16...19.


IRELAND:—Dunkerron, Kerry. Dr. Taylor. Lota, Cork. Mr. Carroll.

WALES:—Dolgelley. Dr. Holl. between Barmouth and Borthwen, and Cader Idris. Mr. Rolfs. Tenby!

“Spores .011—14 mm. long, .006—7 mm. broad.” (Nyl.) Spores .012—.015 mm. long, .006—.008 mm. broad.

f. exiguum, Nyl. pale or pale-yellowish, squamose, squamulose small, closely adnate, very thin, rotundate, scattered.

On earth, rare.

SYN:—Nyl. Prodr. 176.


GEOGRAPHICAL DISTRIBUTION:—France, Germany, Switzerland, Italy.

BOTANICAL PROVINCES:—10...31.

ENGLAND:—Sutton Bank! near Thirsk, Yorkshire. Mr. Baker.

CHANNEL ISLANDS:—Beauport Bay! Jersey. Mr. Larbalestier.

“Spores .010—13 mm. long, .0055 mm. broad.” (Nyl.)


Thallus mucoso-gelatinous, or continuous and smooth, or rimuloso-arcoalate, or arcoalato-diffract, or pulverulent, or squamulose, or evanescent. Apothecia pyrenodine, peritheccium black, rarely pale or coloured, entire or dimidiate, semi-immersed or sessile. Spores 2, 4, 8, or numerous, simple or variously septate, or locular, colourless or fuscous.

A. Spores simple.

* Thallus mucoso-gelatinous.

1. V. mucosa, Whlnb. olivaceo-or nigro-virescent, mucoso-gelatinous, smooth, continuous, thickish, diffuse or frequently in orbicular zonate patches; apothecia black, very minute, punctiform, innate and immersed, scarcely prominent above the thallus; ostiolum appearing only as a thin, circular black ring surrounding the large depressed, umbilicate epithecium; peritheccium dimidiate; paraphyses none; spores 8, colourless, minute, lineari-ellipsoid, simple, frequently polari-nucleolate; gelatina hymenea yellowish-red with iodine.

On maritime rocks, not frequent.


EXS:—Th. M. Fries 75.

GEOGRAPHICAL DISTRIBUTION:—Sweden, Lapland, Norway.

BOTANICAL PROVINCES:—13, 14...16...19...23...26...30, 31,
II.

2. **V. halophila**, Nyl. olivaceo-virescent or migricanti-virescent, mucoso-gelatinous, thin, continuous, smooth, effuse or macular; apothecia black and shining, numerous, crowded, moderate, hemisphero-globose, somewhat truncate, sessile, immersed only at the base; epithecium regularly poriform, or more or less dilated and depressed; perithecium dimidiate; paraphyses none; spores 8, colourless, very minute, ellipsoid, simple, generally with 2 nuclei; gelatina hymenea red with iodine.

On maritime rocks, frequent. 1851.


**Exs:**—Larbal. 100. Mudd 270. 271. Leight. 33. in part.

**Geog. Distribr.—**France, Normandy, Chil.

**Bot. Prov:**—6, 7, 10...14...30, 31.

**England:**—Near Ayton! Cleveland! Black Rocks! near Harblepool. Mr. Mudd.

**Scotland:**—Newhaven! near Leith. Edinburgh. **Dr. Greville.** (1851.)

**Ireland:**—Woburn, co. Down. **Dr. Adm. Jones.**

**Wales:**—Black Stones! Conway Bay! Manorbeer! Goodwick Bay! Tenby!

**Channel Islands:**—St. Aubin's Bay; Greve-au-Lançon! Jerbourg! Guernsey. **Mr. Larbalestier.**

Spores .006—.009 mm. long, .003 mm. broad. **V. leptoteca**, Nyl. in Flora 1865, p. 212, according to specimens from Mr. Larbalestier is only a state of **V. halophila.**

3. **V. striatula**, Whlb. black or nigro-virescent, mucoso-gelatinous, thin, effuse, effigurato-dendritico. consisting of small elevated difform, distinct, convex, branched, dendritico-radiant lines; apothecia black and polished, minute, sessile, sub-globose, truncate; epithecium large, depressed, umbilicate; perithecium dimidiate; paraphyses none; spores 8, colourless, very minute, ellipsoid or oblong, simple; gelatina hymenea vinous-red with iodine.

On maritime rocks, rare. 1865.


**Geog. Distribr.—**Norway, Lapland.

**Bot. Prov:**—31.

**Channel Islands:**—Caves at Grève-au-Lançon!; Plémont!; Noirmont, Jersey; under Fort Essex, Alderney! **Mr. Larbalestier.** (1865.)

"Spores .008 mm. long,.004 mm. broad." (Nyl.) Spores .008—.0095 mm. long,.004—.005 mm. broad.

4. **V. microsporoides**, Nyl. similar to **V. mucosa** but with larger spores; perithecium nearly entire or dimidiate.

On wave-washed maritime rocks, rare. 1865.


**Geog. Distribr.—**France.

**Bot. Prov:**—24...30, 31.

**Ireland:**—Glenarm and Garron Point, co. Antrim. **Adm. Jones.** (1865.)

**Kilkee,** co. Clare. **Mr. Carroll.**

**Channel Islands:**—Coast of Alderney! **Mr. Larbalestier.**

Spores .014—.015 mm. long,.008—.0085 mm. broad.
5. *V. epigaea*, (Pers.) pale-brown, grey or yellowish-green, mucous-gelatinous when moist, subleprose when dry, thin, sub-effuse; apothecia black, immersed, globose or subampulliform, minute; ostiolum nearly flat, slightly dilated; epithecium poriform; perithecium entire, upper portion thicker; spores 8, colourless, irregularly obovate or oblong or oblongo-ellipsoid, simple.

On the earth, frequent. 1806.


Fig.:—E. Bot. t. 1831. Leight. Ang. Lich. t. 27. f. 4.


GEOG. DISTRIBUTION.:—Sweden, Switzerland, Scandinavia, Lapland, Italy, France.

BOT. PROV.:—2...4...6...7...8...11...19...23...24...30.


WALES.:—Dolgelley. Dr. Holt.

“Spores .004—.005 in. long, by .0015 in. broad.” (Mudd.) “Spores .020—.27 mm. long, .007—.011 mm. broad.” (Nyl.) Spores .022—.025 mm. long, .085—.010 mm. broad.

**Thallus continuous, smooth.**

6. *V. Dufouriei*, D.C. grey or smoky-brownish-grey, thin, tartaraceous, continuous, smooth, determinate; apothecia black, and more or less polished, numerous, scattered or confluent; hemispherical, prominent, truncate; epithecium large, depressed, open or umbilicate; perithecium dimidiate, much incurved, inner tunic very thin, black; paraphyses none; spores 8, colourless, oblong, simple; gelatina hymenea red with iodine.

On calcareous rocks, frequent. 1830.


Fig.:—E. Bot. Suppl. t. 2623. f. 1. Leight. Ang. Lich. t. 22. f. 3.


GEOG. DISTRIBUTION.:—France, Switzerland, Pyrenees, Italy, Hungary.

BOT. PROV.:—2...5...7...9...10...11...12...19...30.

ENGLAND.:—Durnam. Mr. Robertson. (1830.) near Eglestone! Durham; Sussex Downs. Mr. Borrer. Maze Beck! Westmoreland! Mr. Robertson.


WALES.:—Eglwysg rocks! near Llangollen.

“Spores .003 to .0045 in. long, by .00125—.002 in. broad.” (Mudd.) Spores .017—.019 mm. long, .0085 mm. broad.

7. *V. margareta*, Whlnb. olive-brown or cinereo-fuscescent, crustaceous, sub-membranaceous, thin, smooth, somewhat shining, continuous or sub-rimulose, effuse or determinate; apothecia concolorous, covered by, and immersed in thalline elevations, minute black apices or ostiola only visible; epithecium poriform; perithecium black, dimidiate; paraphyses none; spores 8, colourless, ellipsoid or oblong, simple, large; gelatina hymenea vinous-red with iodine.
On wet rocks, frequent. 1833.


**Fig:** E. Bot. Suppl. t. 2768. Hepp Sporen t. 12. f. 95.


**Geog. Distrib.:** Sweden, Switzerland, Bavaria, Germany, Italy.

**Bot. Prov.:** 1, 2, 3...6, 7...11...14...19...24—26...30, 31.

**England:** Hind Head; near Abinger, Surrey; above Rundhurst at foot of Black Down; in Harting Comb; and Edburton, Sussex. Mr. Borrer. (1833.) North of England. Mr. Woods. near Dartmouth. Devon. Mr. Parfitt. Symonds Yatt. Mr. W. Joshua. Long mynd! Shropshire.

**Scotland:** Habishow near Edinburgh. Dr. Mainay. Morrone; Glen Tilt. Rev. J. M. Crowbie.


**Wales:** Trefriw falls! Capel Arthog!

**Channel Islands:**—Noirmont and St. Ouen's, Jersey! Jerbourg, Guernsey. Mr. Larbalestier.

"Spores .024—35 mm. long. .010—.016 mm. broad." (Nyl.) Spores .026 mm. long. .014 mm. broad.

Var. *æthiobola*, Whlnb. similar to the type, but the ostiola of the apothecia are more denuded, black; the apothecia prominent, and only immersed at the base; epithecium larger, depressed, umbilicate; spores much smaller.

On wet rocks, frequent.


**Geog. Distrib.:** France, Switzerland, Germany, Hungary, Italy, Bavaria, Switzerland.

**Bot. Prov.:** 2...5...7...10...19...26...31.


**Wales:** Pen Trwyn! Great Orme's Head.

**Channel Islands:**—Rozel Bay! Jersey. Mr. Larbalestier.

It is often difficult to separate this variety from the type, and its differences seem to consist principally, so far as external character, in the ostiola of the prominent apothecia being more denudied. *V. hydrela* seems identical. There are two states, one in which the thallus is pale-brown like the type, the other in which it is fuscescent or rufo-fuscescent. Paler thallus:—Spores .017—.027 mm. long. .006—.013 mm. broad. Rufo-fuscescent thallus:—Spores .016—.031 mm. long. .009—.015 mm. broad. "Spores .014—24 mm. long. .007—.010 mm. broad." (Nyl.)

Var. *papillosa*, Ach. pale-greyish-brown, subtartarceous, rugulose, continuous or rimulose; apothecia large, hemispherical, truncate, semi-immersed in thalline elevations; ostiolum black, denuded; epithecium poriform, large, impressed; spores larger than in var. *æthiobola*.

On rocks, rare.


**Fig:**—Leight. Ang. Lich. t. 24. f. 1.

**Exs:**—Zw. 361.

**Geog. Distrib.:**—Switzerland, Germany.
Bot. Prov:—I...3...11...19.
Ireland:—Dunkerron Mountain! Dr. Taylor.
Spores .022—.035 mm. long, .011—.013 mm. broad.

Var. acrotella, Ach. pale-brown or greyish-brown or blackish, thin, continuous or evanescent; apothecia black, minute, prominent, hemispherical; perithecium dimidiate; spores of the same size as those of æthiobola.

On stones, not common.

Exs:—Arn. 53. 102.
Geog. Distrib:—Sweden, Germany.
Bot. Prov:—I, 2...10, 11...19...30.
Ireland:—Near Bantry. Miss Hutchins. near Belfast. Mr. Templeton. Carig and Dunkerron, Kerry, Dr. Taylor. Ballinhassig, Cork. Mr. Carroll.
Spores .017—.019 mm. long, .0085—.0095 mm. broad.

8. V. devergescens, Nyl. "Allied to V. æthiobola. Spores linear-oblong, .019—29 mm. long, .007—.010 mm. broad."
(Nyl.)

On maritime rocks, 1877.

Syn:—Nyl. in Flora 1877 p. 462.
Ireland:—Near Letter! co. Galway. Mr. Larbalestier. (1877.)
Spores .016—.018 mm. long, .008—.009 mm.

9. V. latebrosa, Körb. reddish-smoke-colour, effuse, thinly tar-tarceous; rimuloso-areolate; apothecia nigro-fuscesc, large, globose, sessile, more or less covered at the base by the thallus; epithecium poriform; spores 2, colourless, at length slightly brown, large, ellipsoid, simple.

On rocks, rare. 1877.

Syn:—Körb. Syst. 349. (1855.) Par. 377.
Exs:—Arn. 607.
Geog. Distrib:—Germany.
Ireland:—Kylemore Lake! Mr. Larbalestier. (1877.)
Spores .0256 mm. long, .011 mm. broad. Korber says "spores 2." I found 8 in Mr. Larbalestier's specimen.

10. V. mutabilis, Borr. warm-umber-coloured, like a dark-brown oily stain, thin, filmy, membranaceous, continuous, smooth, sub-determinate or effuse, often nearly evanescent; apothecia brownish-black, minute, scattered, numerous, prominent, hemispherical, opake, sometimes polished and shining, internally pale; epithecium minutely poriform; perithecium dimidiate; paraphyses none; spores 8, colourless, oblong, simple, very minute, half the size of those of V. acrotella.

On stones, rocks, and pebbles, not common. 1807.

Fig:—Leight. 1. c. t. 24. f. 3.
Geog. Distrib:—Europe.
11. *V. levata*, Ach. *dirty-whitish or pale-greyish-brown*, thickish, tartaraceous-cartilaginous, smooth, continuous or eventually rimulose or rimuloso-areolate; apothecia immersed in and covered by the thallus, small, partially emerging; *ostiolum* black and polished, conical, more or less denuded; epithecium poriform, impressed; *perithecium* thickish, black, *entire*; spores 8, colourless, elliptical, simple, moderately large; paraphyses none; gelatina hymenea vinous-red with iodine.

Rocky beds of mountain streams, not common. 1830.


**Fig.:**—E. Bot. Suppl. t. 2683. f. 2. Leight. Ang. Lich. t. 19. f. 1 & 2.


**Geog. Distrib.:**—Germany.

**Bot. Prov.:**—5°...7°...10. 11. 19.


**Wales:**—Between Llangollen and Corwen! Barmouth!

"Spores .004 to .0045 in. long, by .0015 to .002 in. broad." (Mudd.) Spores .020 mm. long, .011 mm. broad.

**Var. nigra*, Leight. *umbrino-nigricant*, covering the numerous, crowded, rather large apothecia.

On stones in running water, rare. 1876.

**England:**—Chedworth! Gloucestershire. Mr. Joshua. (1876.)

12. *V. prominula*, Nyl. *greyish-white or pale-brown*, thin, tartaraceous, continuous, rugulose, effuse; apothecia black, large, prominent, subglobose, scattered; epithecium very slightly depressed, poriform; *perithecium* entire; spores 8, colourless, broadly oblong or elliptical, simple, granular.

On maritime rocks, rare.


**Geog. Distrib.:**—Europe.

**Bot. Prov.:**—1...19...22.

**England:**—Exmouth. Mr. Parfitt.

**Ireland:**—Derryquin, Kerry. Dr. Taylor. In a cave at the Diamond rocks, Kilkee. Clare. Mr. Carroll.

"Spores .0026 in. long, by .0015 to .00175 in. broad." (Mudd.)

***Thallus rimuloso-areolate.***

13. *V. mauro*, Whlb. *coal-black or dark-reddish-black*, thick, smooth, minutely coarsely rimuloso-areolate, somewhat polished and shining, areola either smooth or covered with very minute papillae or
elevated points, their margin slightly raised into a sharp elevated rim; apothecia entirely immersed in, and covered by the thallus, moderate, hemispherical, scattered; ostiolum more or less elevated and denuded; epithecium large, poriform; _perithecium dimidiate_, spreading widely at the base, inner tunic black; paraphyses none; spores $8$, colourless, oblong, simple; gelatina hymenea vinous-red with iodine.

On maritime rocks, not common. 1812.


**Fig.:** — E. Bot. t. 1699. Leight. Ang. Lich. t. 23. f. 2.

**Exs.:** — Leight. 101.

**Geog. Distr.:** — Switzerland, Italy.

**Bot. Prov.:** — 1. 2—4. 5...7...10...12.

**England:** — Guernsey Church, Suffolk! Mr. _Taylor_. (1805.) Sussex! _M. Borrer_.

On rocks and walls, frequent. 1805.


**Fig.:** — E. Bot. t. 1699. Leight. Ang. Lich. t. 23. f. 2.

**Exs.:** — Leight. 101.

**Geog. Distr.:** — Switzerland, Italy.

**Bot. Prov.:** — 1. 2—4. 5...7...10...12.

**England:** — Gorleston Church, Suffolk! Mr. _Turner_. (1805.) Sussex! _M. Borrer_.

On rocks and walls, frequent. 1805.
into low warty elevations around the apothecia, sub-determinate; apothecia dull-black, large, more or less numerous and crowded, hemispherical, thin, apices generally visible, though sometimes covered by the thallus, their basal circumference surrounded by the scaly elevations of the thallus; perithecium dimidiate, spreading at the base; paraphyses none; spores 8, colourless, oblong, simple; gelatina hymenae vinous-red with iodine.

On calcareous rocks, frequent.


**Fig:** - Leight. Ang. Lich. t. 27. f. 1.


**Geog. Distr.** - Sweden, Germany, Switzerland, France, Austria, Italy, Algeria, Africa, N. America.

**Bot. Prov.** - I, 2, 3...6, 7, 8..10...15...17...(19-30)...31.


**Scotland:** - Near Aberdeen, Stirling; Craig Guie; Morrone; Craig Tulloch. Rev. J. M. Crombie.

**Ireland:** - On calcareous rocks. Mr. Carroll. Mullaghglass! Galway. Mr. Larbalestier.

**Wales:** - Penmaenmawr! Trefriw! Nevin! Gilmot Rock! Pwihelli; Y Fillefawr! near Barmouth; Fishguard Bay! Harlech Castle!

**Channel Islands:** - Common on all the Islands. Mr. Larbalestier.

"Spores .005 to .0055 in. long, by .002 to .00275 in. broad." (Mudd.)

Spores .019-.022 mm. long, .008 mm. broad.

16. **V. fuscosinigrascens**, Nyl. dark-brown or reddish-brown, thin, crustaceous, minutely rimuloso-arclate, uneven, raised into low warty elevations around the base of the apothecia; apothecia dull-black, large, scattered, hemispherical, apices visible; perithecium dimidiate; paraphyses none; spores 8, colourless, oblong, simple, often binucleolate or spuriously 1-septate.

On micaceous schistose rocks, rare. 1875.

**Syn:** - Nyl. in Flora 1876. p. 310.


**Ireland:** - Dawros River! Connemara. Mr. Larbalestier. (1875.)

"Allied to V. fuscognigrescens, (Nyl.) Spores .022--.027 mm. long, .008--.10 mm. broad." (Nyl.) Spores .0225 mm. long, .011 mm. broad. Apparently only a state or form of **V. nigrescens**, (Pers.)

17. **V. aquilella**, Nyl. lurido-fuscous or somewhat duu colour, minutely areolate or areolato-granulate, thin; apothecia black, naked, rugulose; perithecium dimidiate; spores 8, colourless, ellipsoid, simple; paraphyses none.

On micaceous-schistose rocks, rare. 1876.

**Syn:** - Nyl. in Flora 1876. p. 237.

**Bot. Prov.** - 5, 6, 7...26.

**England:** - Artington, Gloucestershire. Mr. Joshua.

**Ireland:** - Lough Inagh! Connemara. Mr. Larbalestier. (1875.)

**Wales:** - Tenby, north cliff! (1871.) Nevin! Penmaenmawr! Dolgelley!

"Spores .018--.22 mm. long, .007--.9 mm. broad. Compare with **V. umbrina**, Nyl. in Flora 1870, p. 37, from which it differs in the firmer and not subleprose thallus." (Nyl.) Surely only a var. or state of **V. nigrescens**. Spores .021--.024 mm. long, .010 mm. broad.
18. **V. plumbea**, Ach. *plumbea-cinerascens* or *lead-coloured or greyish-brown*, thickish, determinate, smooth, *rimulose* or *rimuloso-areolate*; *apothecia* black, small, *immersed*, *slightly prominent*, *ostiolum* depressed; *epithecium* poriform; *perithecium* thick, *entire*; spores 8, colourless, ellipsoid or oblong, simple, small; *paraphyses* none; *gelatina hymenea* vinous-red with iodine.

On calcareous rocks, not common. 1813.


**GEOG. DISTRIBUT.** —Switzerland, Austria, Italy, Germany, Bavaria.

**BOT. PROV.** —215...26. 285...30.


**SCOTLAND.** —Appin. **Rev. J. M. Cromptie.**


“Spores .0025 to .003 in. long, by .001 in. broad.” (Mudd.) “Spores .015—19 mm. long, .007—8 mm. broad.” (Nyl.) Spores .014—.016 mm. long, .007 mm. broad.

19. **V. pelocita**, Nyl. *grey or cinereo-fuscescent*, thin, smooth, *areolato-rimulose*; *apothecia* black, somewhat prominent; *perithecium* dimidiate, black; *ostiolum impressed*; spores 8, colourless, oblong, simple, small.

On shady rocks, rare. 1876.

**SYN.** —Nyl. in Flora 1877. p. 461.

**BOT. PROV.** —26.

**IRELAND.** —Twelve Pins, Connemara. Mr. Larbaletier. (1876.)

“Allied to *V. truncatula*, but with different thallus and spores. Spores .011—15 mm. long, .005—6 mm. broad.” (Nyl.) In general appearance very jike *V. plumbea*, but with smaller spores.

20. **V. thelostoma**, Harrim. *cinereo-rufous*, tartareous, thin, continuous, minutely *rimuloso-areolate*, determinate; *apothecia* *rufous-brown*, *verruceform*, elevated, sessile, *hemispherical*, *depressed* and *umbonate* in the centre; *perithecium* entire, pale below, *rufous-brown* above; *paraphyses* distinct; spores 8, colourless, ellipsoid, simple.

On whinstone rocks, very rare. 1807.


**FIG.** —E. Bot. t. 2153. Leight. Ang. Lich. t. 15. f. 2.

**GEOG. DISTRIBUT.** —Europe.

**BOT. PROV.** —11.

**ENGLAND.** —Near Eglestone, Durham! **Rev. J. Harriman.** (1807.)

“Spores .004—.0045 in. long, by .002 in. broad.” (Mudd.) Spores .017—.018 mm. long, .009—.010 mm. broad.

21. **V. thromboides**, Bagliet. *cervino-rufescent*, cartilaginous, effuse, *shining, contiguous*, at length *rimuloso-areolate*; *apothecia* black, large, *immersed*, then emersed, and prominent at the *depressed apex*; *paraphyses* none; *perithecium* dimidiate, thick and black, inner tunic thin, membranaceous and black; spores 8, colourless, broadly oblong or oblongo-ellipsoid, simple, granulose, very large.
22. _V. fuscella_, Turn. _dark-greyish-brown_, crustaceous, thickish, areolato-diffract, nigro-limitate, areola smooth, intersected with minute dark lines from the predominant hypothallus; apothecia minute, immersed in the areola; ostiolum nearly plane, depressed; epithecium poriform; _perithecium entire_, pale; paraphyses none; spores 8, colourless, narrow-oblong, simple. On walls &c., rare. 1804.


FIG:—E. Bot. t. 1500. Leight. Ang. Lich. t. 7. f. 2.

EXS:—Arn. 388. Hepp 90. Mudd 276.

_GEOG. DISTRIB._—Germany, Switzerland, Hungary, Bavaria.

BOT. _PROV._—1, 2, 3, 4...11...13, 14, 15...19...31.


SCOTLAND:—Central parts. _Rev. J. M. Crombie._

IRELAND:—Dunkerron Castle, co. Kerry. Dr. Taylor. 

WALES:—Bangor. Mr. Holmes.

CHANNEL ISLANDS:—Jersey. Mr. Larbalestier.

"Spores .003 to .0035 in. long, by .001 to .00125 in. broad." (Mudd.) Spores .014—.0155 mm. long, .006—.007 mm. broad.

23. _V. polysticta_, Borr. _creamy-white_, somewhat glaucous, crustaceous, thin, areolato-diffract, nigro-limitate, areola smooth, plane, with a somewhat elevated thin black edge from the predominant hypothallus; apothecia black, small, immersed in the areola; _ostiolum prominent_, sub-convex; _perithecium entire_, black; spores 8, colourless, narrow-oblong, simple, of the same size as those of _fuscella_.

On walls &c., rare. 1832.


EXS:—Anzi S. 363. Nyl. 147.

_GEOG. DISTRIB._—Italy, Bavaria, Germany, France.

BOT. _PROV._—1, 2, 4...10...23—31.


IRELAND:—Eastern Counties. Dr. Moore.

CHANNEL ISLANDS:—Hill above Fort Essex, Alderney! Mr. Larbalestier.

"Spores .00275 to .003 in. long, by .001 in. broad." (Mudd.) Spores .016 mm. long, .006 mm. broad.

This and _fuscella_ may be only states of the same lichen.

24. _V. glaucina_, (Aech.) _glaucous or leaden-grey_, thickish, crustaceous, areolato-diffract, nigro-fusco-limitate, areola smooth, plane or plano-convex, edged with the predominant nigro-fuscosus hypothallus; apothecia blackish, immersed, two or more on each areola, to
which by their confluence, they often give a blotchy appearance; ostiolum plane, flat; perithecium entire, black; spores 8, colourless, elliptical, simple, double the size of those of fuscella and polysticta.

On calcareous rocks and walls, frequent.

EXS. — Anzi Ital. S. 362.
GEOG. DISTRIBUT. — Italy, Hungary.
BOT. PROV. — 1...3...5...7...11...19...28.
Dawtor's river! Galway. Mr. Larbalestier.
WALES: — Bangor. Mr. Holmes. Eglwyseg Rocks! near Llangollen; Great Orme's Head!
Spores .015...—.024 mm. long, .0085—.011 mm. broad.

25. V. elachistophora, Nyl. white, unequal, rimoso-diffract, (K yellow); apothecia (possibly parasitic) black, only slightly emersed; perithecium black, entire; epithecium slightly impressed; paraphyses moderate; spores 8, colourless, oblongo-ellipsoid, simple (or sometimes spuriously 1-septate.)

On quartzose rocks, rare. 1877.

SYN. — Nyl. in Flora 1878. p. 246.
BOT. PROV. — 26.
IRELAND: — Kylemore. Mr. Larbalestier.
"Spores .007—.009 mm. long, .0033 mm. broad. Gelatina hymenea I.—." (Nyl.)

26. V. macrostoma, (Duf.) olive-tawny, thick, crustaceous, areolato-diffract, areole rather large, somewhat rugged, or raised into small irregular warts or scaly elevations; apothecia black, tolerably large, one or several immersed in each areola; ostiolum more or less prominent, black; perithecium entire, black; spores 8, colourless, elliptical, simple.

On walls and mortar, rare. 1851.

GEOG. DISTRIBUT. — France, Spain, Italy, Germany.
BOT. PROV. — 1, 2, 3...5 7, 8...10...15...26...31.
IRELAND: — Twelve Pins! Connemara. Mr. Larbalestier.
WALES: — Llanaber! near Barmouth; Criccieth Castle!
CHANNEL ISLANDS: — St. Aubin's! Jersey, and on all the Islands. Mr. Larbalestier.
"Spores .005 to .0055 in long, by .00225 to .00275 in. broad." (Mudd.) Spores .019—.020 mm. long, .011 mm. broad.

27. V. ochrostoma, Borr. dusky-cream or grey or olivaceous or brownish-black or umber, moderately thick, crustaceous, verrucoso-rugose, areolato-diffract; apothecia black, numerous, minute, entirely
immersed; ostiolum black, slightly elevated, hemispherico-conoid; epithecium poriform; perithecium entire, thin, black; spores 8,colourless, elliptical, simple.

On plastered walls, rare. 1851.


**FIG.** — Leight. Ang. Lich. t. 7. f. 4.

**GEOG. DISTRIBUT.** — Europe.

**BOT. PROV.** — 2.

**ENGLAND.** — Sussex! **Mr. Borrer.** (1851.) Midweald Mid-Sussex! **Mr. G. Davies.**

“Spores .004 in. long, by .00175 to .002 in. broad.” (Mudd.) Spores .020—.021 mm. long; .010 mm. broad.

28. *V. viridula,* (Schrad.) pale-brown or greenish-olive-brown, thickish, tartareous, areolate-dissipract, areola polygonal, granulato-crenate, smooth or rugose or verruculose, effuse; apothecia black, large, semi-immersed, conical; perithecium dimidiate, very thick and black, inner thallus thin, membranaceous and black; spores 8, colourless, broadly elliptical, simple, granular, very large.

On mortar, old walls, rocks, &c., frequent. 1798.


**FIG.** — B. Bot. t. 533. (bad) Leight. Ang. Lich. t. 7. f. 3.


**GEOG. DISTRIBUT.** — Germany, Bavaria, Italy, Hungary, Africa, N. America.

**BOT. PROV.** — 1, 2, 3, 4, 5, 6, 7, 8...10...11...15...19...26...27...31.

**ENGLAND.** — Yarmouth. **Mr. Turner.** (1798.) Sussex! **Mr. Borrer.** Hartlepool, Durham; near Ayton! Guisboro! Airyholme! Stokesley! Cleveland. **Mr. Mudd.** Twy crosses! Breedon Hill! Leicestershire. **Rev. A. Bloxam.** Norton and Bevere! Worcester. **Dr. Holl.** Torquay! **Dr. Deakin.** Shanklin Church, Isle of Wight! **Rev. T. Salvey.** Bathestead! **Mr. Brome.** Countess Weir Bridge; Westleigh! Exeter. **Mr. Parfitt.** Kelvedon, Essex. **Mr. Varene.** Tetsworth! Oxfordshire. **Mr. Larbalestier.** Shifnal! Comley! Wenlock! High Rock near Bridgnorth! Hope Valley! all in Shropshire! Aymestrey! Herefordshire.

**SCOTLAND.** — Spittal of Glenshee, Perthshire. **Dr. Lindsay.** near Aberdeen; Cove, Kincardine. **Rev. J. M. Crambie.**

**IRELAND.** — Castle Taylor, Galway. **Dr. Moore.** Great Island and Rosscarberry, Cork. **Mr. Carroll.** Ballynakill! Galway. **Mr. Larbalestier.**

**WALES.** — Between Llangollen and Corwen! near Dolgelley! Fishguard Harbour! Pembroke.

**CHANNEL ISLANDS.** — Common on all the Islands. **Mr. Larbalestier.**

“Spores .066 to .095 in. long, by .003 to .008 in. broad.” (Mudd.) Spores .031—.033 mm. long; .010—.017 mm. broad.

****** Thallus pulverulent. "

† Apothecia semi-immersed, prominent.

29. *V. murina,* Leight. mouse-coloured, or cinereo-griseous, thin, tartareous, pulverulent, effuse; apothecia dark-brownish-black, prominent, semi-immersed, hemispherico-convex; perithecium thick, black, entire; epithecium poriform, umbilicate; spores 8, colourless, elliptical, simple; paraphyses indistinct; gelatina hymenea vinous-red with iodine.

On calcareous rocks, rare. 1836,
30. *V. myriocarpa*, Hepp. cinereous or fumose, pulverulent; apothecia black, numerous, scattered, very minute, globose, semi-immersed; perithecia entire, black; paraphyses none; spores 8, colourless, lineari-oblong, simple.

On moist rocks, rare. 1876.

31. *V. rupestris*, Schrad. white, greyish-white or pale-brown, thin, tartaraceous, pulverulent or sub-furfuraceous, effuse; apothecia black, moderate, numerous, semi-immersed, prominent, hemispherical; perithecia dimidiate, more or less spreading at the base, inner tunic very thin, pale-brown; spores 8, colourless, elliptico-oblong, simple.

On flints, chalk, sandstone, &c., frequent.
OF GREAT BRITAIN.


Fig. — Leight. Ang. Lich. t. 26. f. 1.


Geog. Distrib. — Sweden, Bavaria, Switzerland, Italy, Austria, Hungary.

Bot. Prov. — 1, 2, 3, ..., 8, 23, 31.


Channel Islands: — Jersey. Mr. Larbalestier.

"Spores 0.18—28 mm. long, 0.01—14 mm. broad." (Nyl.) Spores 0.19—0.21 mm. long, 0.01—0.013 mm. broad.

Var. subalbicans, Leight. grevish-white, very thin, continuous and crumbling, effuse or evanescent; apothecia black, numerous and crowded, large, prominent, semi-immersed, conical or hemispherical, more or less rugged and pruinose; epithecium poriform, dilated; perithecium dimidiate, spreading at the base, inner tunic thin, black; spores as in the type.

On mortar, plastered walls, rocks, &c., frequent. 1851.


Fig. — Leight. 1. c. t. 26. f. 1.

Exs. — Leight. 200.

Geog. Distrib. — Europe.

Bot. Prov. — 1, 2—7, 10.


Spores 0.17—0.20 mm. long, 0.011 mm. broad.

32. V. integra, Nyl. white or slightly greyish-white, thin, subcrustaceous, continuous, tartaro-sub-farinose; apothecia black, numerous and crowded, moderate, semi-immersed, depressed-hemispherical; epithecium poriform, often dilated; perithecium dimidiate, very thick, black, inner tunic black and tough; paraphyses none; spores 8, colourless, broadly elliptico-oblong, simple, granular, large, double the size of those of V. rupestris.

On sandstone, rare.


Scotland: — Aulin; Craig Tulloch. Rev. J. M. Crombie.

Ireland: — Near Cork. Mr. Carroll.

"Spores 0.23—30 mm. long, 0.009—0.015 mm. broad." (Nyl.) Spores 0.087 mm. long, 0.020 mm. broad.

33. V. pulposa, Leight. thallus chroolepid or evanescent; apothecia nigricant, sub-spherical, pulpose, polished, prominent; epithecium indistinct; perithecium dimidiate, nigricant; spores numerous, fuscent, oblong or irregularly globose, simple; paraphyses very short, crowded; gelatina hymenea untinged with iodine.

On old rails, rare. 1870,
†† Apothecia insculpted.

34. *V. calciseda*, D.C. white or greyish-white, thin, tarteraceous, pulverulent, effuse or evanescent; apothecia black, minute, very numerous, deeply immersed and insculpted in the thallus and rock; ostiolum depresso-hemispherical; epithecium poriform, often irregularly fissured; peritheceum dimidiate, black, inner tunic black; paraphyses none; spores 8, colourless, elliptico-oblong, simple, granular; gelatina hymenea vinous-red with iodine.

On calcareous rocks, frequent.

**Syn:**—DC. Fl. Fr. 1. 317 (1806.) Mudd Man. 292. Limboria sphinctrina, Nyl. Pyren. 62.


**Geo. Distrib:**—Switzerland, Bavaria, Italy, France.

**Bot. Prov.**—1...4, 5, 6, 7...10...15...19—30.


**Scotland:**—Craig Guie; Craig Tulloch. Rev. J. M. *Crombie*. Ireland—On limestone, common. Mr. *Carroll*.

**Wales:**—Great Orme’s Head! Eglwyseg rocks! Giltar Point! Tenby.

"Spores .0035 in. long, by .0015 to .002 in. broad." (Mudd.) Spores .020—.021 mm. long, .010 mm. broad.

**Var. purpurascens,** (Hffm.) thallus of a pale-rose or rosy-purple tinge; apothecia larger.

On calcareous rocks, rare. 1861.


**Fig:**—Hoffm. Fl. Lich. t. 15. f. 1. & t. 19. f. 3.


**Geo. Distrib.**—France, Switzerland, Pyrenees, Italy, Bavaria.

**Bot. Prov.**—1...11.


Spores .022—.023 mm. long, .012—.013 mm. broad.

***** Thallus squamulose.

35. *V. tephroides*, (Ach.) cinereous or albido-cinereous or cinereo-fuscescent, squamulose, squamulæ adnate, smooth, tessellato-areolate, undulato-lobate; apothecia black, minute, immersed; ostiolum sub-hemispherical, slightly prominent; epithecium poriform, dilated; peritheceum entire, thin, membranaceous, black; spores 8, colourless, narrow-oblong, simple, sometimes pseudo-bifocular; paraphyses indistinct; gelatina hymenea vinous-red with iodine.

On the earth in alpine regions, rare. 1808.


**Fig:**—E. Bot. t. 2013. Hepp Sporen t. 24. f. 221. f. 1.


**Geo. Distrib.**—Germany, Sweden, E. Lapland, Hungary, Switzerland, N. America.

**Bot. Prov.**—1...10...15...18...31.
ENGLAND:—Malham, Yorkshire. Dr. Carrington. Land’s End. Mr. Holmes.
IRELAND:—Cleghan, Connemara. Mr. L. Carbohydrate.
CHANNEL ISLANDS:—Grosnez Common, Jersey. Mr. L. Carbohydrate.
“Spores .003 to .004 in. long, by .0015 to .00175 in. broad.” (Mudd.)
“Spores .016—23 mm. long, .007—.010 mm. broad.” (Nyl.) Spores .020—.0225 mm. long, .009—.011 mm. broad.
Var. cartilaginea, Nyl. cinereo-palaceous or fusaceous, squamae firmer, sub-imbricate, sub-lobate, like the thalline leaflets of Cladonia pyxidata v. pocillum; perithecia colourless.
On the earth, rare. 1866.
Seem. Journ. Bot. 4. 34.
EXS:—Körb. 97. Arn. 78.
GEOG. DISTRIB:—Germany, Pyrenees, Sweden, Bavaria.
BOT. PROV:—15.
SCOTLAND:—Summit of Ben Lawers. Mr. Carroll. (1866.)

B. Spores 1-septate.

* Perithecia dimidiate.

36. V. cataracatum, (Mudd.) greyish-green, very thin, sub-leprose or evanescent; apothecia nigro-fuscous, minute, nearly sessile, sub-globose, internally pale; perithecia dimidiate; paraphyses none; spores 8, colourless, elliptico-oblong, 1-septate, moderate; gelatina hymenea vinous-red with iodine.
On rocks in streams, rare.
SYN:—Mudd Man. 294. excl. syn. (1861.)
EXS:—Mudd 281.
GEOG. DISTRIB:—Europe
BOT. PROV:—6...10...19...23.
ENGLAND:—Near Ayton! Cleveland. Mr. Mudd.
IRELAND:—Rosscarbery, Cork; Connor Cliffs and Blackwater Bridge, Kerry.
Mr. Carroll. Portran. Dr. Moore.
WALES:—Moel-y-gest!
“Spores .005 to .008 in. long, by .002 to .00275 in. broad.” (Mudd.) Spores .021 mm. long, .015 mm. broad.

37. V. mesotropa, Nyl. pale, thin, unequal; apothecia black, somewhat turgid; perithecia convex, dimidiate, black; epithecia indistinct; spores 8, colourless, ovoid or ovoideo-oblong, 1-septate, very small; paraphyses none; gelatina hymenea vinous-red with iodine.
On sub-alpine rocks, rare. 1866.
GEOG. DISTRIB:—Europe.
BOT. PROV:—6...7.
ENGLAND:—Llandynanech Hill! Shropshire.
WALES:—Llyn Aran! Cadair Idris. (1866.) Treffriw!
“Spores .012—17 mm. long, .005—6 mm. broad.” (Nyl.) Spores .014—.017 mm. long, .004— .006 mm. broad.

38. V. Borreri, Leight. smoky-grey, somewhat pruinose, tartaraceous, continuous or rimulose, nigro-fusco-limitate; apothecia black, hemispherical, truncate, prominent, basally immersed, rather
large, internally pale-brown; epithecium depresso-concave, surrounded by a narrow edge and central papilla; perithecium very thick, black, diminidiate, inner tunic brown; paraphyses distinct; filamenta ostioraria distinct, short, minute; spores 8, colourless, broadly or rotundo-oblong or elliptical, 1-septate, coarsely granular.

On calcareous rocks, rare. 1833.


GEOG. DISTRIBUTION.—Europe.

ENGLAND.—Cheddar! Mr. Borrer.


"Spores .006 to .006 in. long, by .002 to .0025 in. broad." (Mudd.) Spores .030—.034 mm. long, .017—.020 mm. broad.

39. V. conoides, Fries. greyish, more or less tinged with rose, tartarose, thin, somewhat powdery, continuous or rimulose, indeterminate; apothecia dull-brownish-black, pruinose, large, prominent, hemispharico-conical, slightly basally immersed, internally white; ostiolum rugulose; epithecium papillate, minutely poriform, irregularly deliquescing; perithecium black, thinnish, dimidiate, spreading considerably at the base, inner tunic pale; paraphyses distinct, slender; spores 8, colourless, oblong or broadly ellipsoid, 1-septate, yellow or brownish with iodine.

On calcareous rocks, frequent.


Fig.—E. Bot. Suppl. t. 2647. f. 3. Leight. Ang. Lich. t. 26. f. 2.


GEOG. DISTRIBUTION.—Europe, Italy, Sweden, Hungary, Bavaria, Austria, Germany, Switzerland, France, Algeria.


WALES.—Great Orme's Head! Eglynysg rocks!

"Spores .004 to .006 in. long, by .0015 to .0025 in. broad." (Mudd.) "Spores .011—.01 mm. long, .008—.016 mm. broad." (Nyl.) Spores .015—.018 mm. long, .005 mm. broad.

40. V. imersa, Leight. white or pale-dirty-yellow or grey-ashy-white, very thin, tartaro-farinose; apothecia black, deeply incurvato-immersed in the rock, moderate, internally brownish; ostiolum depressed; epithecium poriform; perithecium diminidiate, thick, carbonaceous, flattened, inner tunic black; paraphyses none; spores 8, colourless, lineari-oblong, constantly 1-septate, large; gelatina hymenia red with iodine.

On calcareous rocks, frequent.


Fig.—Leight. Ang. Lich. t. 25, f. 2.
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EXS:—Mudd 283. Scher. 103.

Geo. Discrib:—Switzerland, Pyrenees, N. Zealand.

Bot. Prov:—1, 2, . . . 10, 11, . . . 19, . . . 30.


“Spores .005—.007 in. long, .002 to .00275 in. broad. t. 5. f. 123.” (Mudd.)

Spores .023—.032 mm. long, .011—.012 mm. broad.

41. V. saxicola, Mass. grey-ashy-white, effuse, pulverulent, thin, apothecia black and shining, very minute, semi-immersed; ostiolum conico-hemispherical, papillate; epithecium poriform, minute; perithecia dimidiate, carbonaceous; paraphyses none; spores 8, colourless, elongato-linear-oblong, 1-septate, slightly constricted, cells binucleolate.

On calcareous and oolitic rocks, probably frequent. 1876.

Syn:—Mass. Symm. 107. (1855.)

Geo. Discrib:—Italy.

Bot. Prov:—5.

England:—near Sapperton! Duntisborne! Gloucestershire. Mr. Joshua. (1876.)

Gelatina hymenea I lutescent, ascid and spores fuscos. Spores .02—.021 mm. long, .005—.0055 mm. broad.

42. V. sublitoralis, Leight. thallus evanescent; apothecia black and shining, minute, hemispherical, scattered; epithecium poriform; perithecia dimidiate, black; paraphyses few, distinct; spores 8, colourless, linear-ovoid or oblong, obtuse, 1-septate, constricted, minute.

On limpet shells (Chthamalus stellatus) on submerged maritime rocks, rare. 1857.

Geo. Discrib:—Europe.

Bot. Prov:—1, 3, . . . 6.

England:—Sandgate! near Folkestone. Mr. Currey. (1857.) between Seaton and Beer! on south coast of Devon. Mr. Parfitt.

Wales:—Caswell Bay! Mumbles. Goodwick Bay! Manorbeer! and Giltar Point! near Tenby.

Spores .016 mm. long, .007 mm. broad.

43. V. halizoa, Leight. nigricanti-macular, thin, almost evanescent, effuse; apothecia black and shining, minute, hemispheric-conoid, scattered; epithecium poriform, often irregularly chunky; perithecia black, dimidiate, incurved, nearly entire; paraphyses none; spores 8, colourless, very minute, lineari-ellipsoid or oblong, imperfectly and faintly 1-septate, binucleolate; gelatina hymenea yellow with iodine.

On submerged maritime rocks, rare. 1851.

Geo. Discrib:—Europe.

Bot. Prov:—6, 14.

Scotland:—Joppa! near Portobello! Newhaven! near Leith, Edinburgh. Dr. Greville. (1851.)

Wales:—Caswell Bay! Mumbles. Giltar Point! Manorbeer!

Spores .010 mm. long, .005 mm. broad.
44. V. elegina, Borr. greenish-olive, very thin, tartareous, smooth or rimulose; apothecia innate and covered by the thallus, eventually erumpent, innato-sessile, hemisphæricoco-nical; ostiolum black, more or less denuded; epithecium rather large, poriform, umbilicate; perithecium dimidiate, spreading and acutely incurved as the base; spores 8, colourless, linear-oblong, 1-septate.

On maritime slaty rocks, rare. 1812.


Fig. 2. E. Bot. t. 2435. Leight. Ang. Lich. t. 27. f. 2.

Geog. Distr.:—Europe.

Bot. Prov.:—7...24...26.

Ireland:—Western parts! Miss Hutchins. (1812.)


Spores .017—.019 mm. long, .006—.007 mm. broad.

45. V. fluctigena, Nyl. fuscosus, sub-opake, thin, continuous or rimose; apothecia scarcely prominent, depressed; epithecium black, dimidiate; spores 8, colourless, oviform, 1-septate; paraphyses moderate, irregular, (not crowded); gelatina hymenea 1—.

On maritime calcareous rocks washed by the waves. 1874.


Geog. Distr.:—Western France.


"Spores .013—.15 mm. long, .006—.007 mm. broad. Distinct by the smaller spores and paraphyses from V. consequens, Nyl. of which, however, it may be a subspecies." (Nyl.) Spores .016 mm. long, .007 mm. broad. Ascus lineari-oblong, suddenly contracted and curved into a short narrow base. Paraphyses few, floccose or branched.

46. V. gemmata, Ach. white or whitish, thin, continuous, nearly smooth, sometimes rimulose; apothecia black, large, slightly immersed at the base, very prominent, hemispherical, convex, rugged, internally whitish; epithecium minute, poriform; perithecium thickish, black, dimidiate, inner tunic pale-brown; paraphyses distinct, long and slender; spores 8, colourless, very broadly oblong, 1-septate, large; spores and contents of asci yellow with a vinous tinge with iodine.

On trees, ash, sycamore, elm, holly, common. 1829.


Fig. 2. E. Bot. Suppl. t. 2617. Fig. 2. Leight. Ang. Lich. t. 18. f. 4. & 5.


Geog. Distr.:—Germany, France, Switzerland, Scandinavia, Hungary, Italy, N. America, Algeria, Brazil.

Bot. Prov.:—1, 2, 3...5...7...11...19...31.


Ireland:—Gosport Island! Dyke! Dunkettle! Cork. Mr. Carroll.

Wales:—Near Dolgelley! Glodesaeth! Carnarvonshire. Llanbedrog! Channel Islands:—Jersey and Guernsey. Mr. Larbalester.
V. conformis, Nyl. albido-virescent, thin, effuse; apothecia black, small, semi-immersed; ostiolum hemispherical; epithecium poriform, minute; perithecium dimidiate; paraphyses very long, slender, distinct; asci lineari-clavate; spores 8, colourless, lineari-ellipsoid, 1-septate, constricted in the middle.

On trees, oak, gorse, elder, poplar, in sub-alpine regions, very rare. 1864.

SYN:—Nyl. in Flora 1864. p. 257. Crombie En. 119.

47. V. epidermidis, Ach. pale-yellow, very thin, smooth and shining; apothecia black, minute, sub-innate, sessile, hemispherico-conoid; perithecium dimidiate, depressed and spreading at the base; paraphyses more or less indistinct; spores 8, colourless, lineari-ohlong, 1-septate, constricted, moderate.

On birch, common.


48. V. epidermidis, Ach. pale-yellow, very thin, smooth and shining; apothecia black, minute, sub-innate, sessile, hemispherico-conoid; perithecium dimidiate, depressed and spreading at the base; paraphyses more or less indistinct; spores 8, colourless, lineari-ohlong, 1-septate, constricted, moderate.

On birch, common.
forma *fallax*, Nyl. similar to *analepta*, but with very distinct paraphyses.

On oak, mountain-ash, crab, birch, sweet-chestnut, &c., common.


**Geog. Distribe.** — Europe, Scandinavia.

**Bot. Prov.:** — 1, 2, 3, 5, 7, 10, 31.


**Wales:** — Moel-y-Golfa! Montgomeryshire; *Capel Curig!* Gwydir woods! Bettws-y-coed. Trefriw! Beddgelert! Dolgelley!

**Channel Islands:** — Jersey. *Mr. Larbalestier.*

"Spores .005 to .006 in. long, by .00175 to .002 in. broad. t. 5. f. 126."

(Mudd.) Spores .020—.022 mm. long, .007 mm. broad.

**Var. cinereo-pruinosa**, Schar. cinereo-rafescent or cream-coloured, thin, effuse; *apothecia* hemispherical, minute, *innate*; thinly covered with the thallus, giving them a cinereo-pruinose appearance, sometimes naked; *perithecium* dimidiate; paraphyses slender, distinct; spores 8, colourless, in form and size as in *V. epidermidis*.

On various trees, elder, holly, not common.

**Syn:** — Schar. Spicil. 342. (1836.) Enum. 221. Mudd Man. 305.

**Fig.** — Hepp Sporen t. 13. f. 103. 106. 107.


**Venet. 129. Zw. 420. Leight. 197.**

**Geog. Distribe.** — Switzerland, France, Pyrenees, Italy, Germany.

**Bot. Prov.:** — 1...5...7...10...19...30.)


**Ireland:** — Frequent. *Mr. Carroll.*

**Wales:** — Near Dolgelley! Trefriw!

Spores .020—.022 mm. long, .006 mm. broad.

49. *V. analeptella*, Nyl. Similar to *V. epidermidis* f. *analepta*, but with the paraphyses soft, distinct, though but slightly evolute. Distinguished from *V. fallax* by the smaller apothecia and different thecae and spermatia.

On trees, frequent.

**Syn:** — Nylander in Flora 1872. p. 363.

**Exs.** — *Sagadia venen*, Anzi L. min. r. 395.

**Ireland:** — *Mr. Carroll.*

50. *V. analeptica*, Nyl. very similar externally to *analepta*; spores 1-or spuriously 3-5-septate; paraphyses lax.

On trees, rare. 1867.


**Geog. Distribe.** — Europe.

**Bot. Prov.:** — 19...26...27.

**Ireland:** — Turk Mount, Killarney; *Loughcooter*, co. Galway. *Mr. Carroll.* (1867.) Doughruagh Mountain! *Mr. Larbalestier.*

"Spores .036—.050 mm. long, .009—.010 mm. broad." *(Nyl.)*

51. *V. cinerea*, (Pers.) greyish-olive, thin, continuous, smooth; *apothecia* black, small, numerous, *innato-sessile*, hemispheric-convex; *perithecium* dimidiate, incurved at the base; paraphyses dis.
tinct; *spores* 8, colourless, elongato-oblong, slightly tapered towards each extremity, 1-septate, constricted, large, 4 times the size of those of *V. epidermidis*.

On trees, holly, elm, ash, not frequent. 1808.


**Fig.:** E. Bot. t. 1891. *Leight. Ang. Lich.* t. 17. f. 2.


**Geog. Distrib.:** Europe.

**Bot. Prov.:** 1, 2, 3...5...7...10...19.


**Mr. Parfitt.** near Ramble! Glosstershire. *Mr. Joshua.* Haugund Hill! Shropshire.

**Ireland:** —Glengariff! Casquiny Goat Island! Old Court! near Cork. *Mr. Carroll.*

**Wales:** —Torrey Walk! Dolgelley. Moel-y Gest!

"*Spores* .005 in. long, by .001 in. broad." *Mudd.* *Spores* .030—.0335 mm. long, .010 mm. broad.

52. *V. Laburni,* Leight. *Brown or brownish-black,* thin, smooth, effuse; apothecia black and shining, minute, semi-immersed, hemispherical; perithecium dimidiate; epithecium minute, poriform; paraphyses indistinct; *spores* 8, colourless, linear, 1-septate, constricted, cells binucleolate; gelatina hymenoea yellow with iodine.

*On laburnum, oak and alders, rare.* 1854.

**Syn.:** *Leight.* *Exs.* 254. (1856.)

**Exs.:** *Leight.* 254.

**Geog. Distrib.:** Europe.

**Bot. Prov.:** 5...7...10...19.

**England:** —Aytten! Cleveland. *Mr. Mudd.* (1854.) Stableford! near Bridgnorth, Downton Castle woods! Shropshire.

**Ireland:** —Dromore! Kerry. *Mr. Carroll.*

**Wales:** —Craig Bredden! Montgomeryshire. Treflwi! Capel Arthog!

*Spores* .020—.025 mm. long, .005 mm. broad.

53. *V. antecellens,* Nyl. *Albido-cinerascent,* thin, smooth and shining, effuse; apothecia black, numerous, minute, crowded, hemispherical, surrounded at the base with the thallus; ostiolium more or less naked; perithecium dimidiate; paraphyses none; *spores* 8, colourless, elongato-lineari-oblong, 1-septate, large; asci and spores red with iodine.

*On trees, oak, sycamore, beech, ivy, holly, rare.* 1865.

**Syn.:** Nyl. in *Flora* 1866. p. 86. *Crombie En.* 119.

**Fig.:** *Grevillea* l. t. 4. f. 2.

**Exs.:** *Zw.* 363. A. *Hepp* 954.

**Geog. Distrib.:** Europe.

**Bot. Prov.:** 1, 2...7...19...26.


**Ireland:** —Between Clifden and Roundstone! Doughruagh! co. Galway.

**Mr. Larbalestier.**

**Wales:** —Gwydir woods! Bettwe-y-coed. *Llyn Gwerman.*

"*Spores* .032—.035 mm. long, .009—.011 mm. broad." (Nyl.) *Spores* .0275—.028 mm. long, .0075 mm. broad.

54. *V. cinerella,* Flot. *Pale-whitish-brown or albido-cinerascent,* thin, smooth, effuse; apothecia black, minute, sub-innato-sessile, hemispherico-conoid; perithecium dimidiate, black; epithecium a
depressed pore; paraphyses indistinct; spores 8, fuscous, oblong, 1-septate, constricted; gelatina hymenea brownish with iodine.

On trees, holly, beech, birch, rare. 1864.


**Fig:** — Hepp Sporen t. 13. f. 108.


**Geog. Distrib:** — Germany, Italy, Switzerland, France, Lapland, Amazons.

**Bot. Prov:** — 2...5...7... 19...26.


**Ireland:** — Glengariff, Cork; Glencar; Loch Inchiquin! Kerry; Dinis, Killarney; Glenbowen Wood. Killeagh; Eagle's Nest. Mr. Carroll. (1864.) Ballinahinch! Kylemore! co. Galway. Mr. Larbalestier.

**Wales:** — Chirk Castle Park!

"Spores .015—25 mm. long, .007—9 mm. broad." (Nyl.) Spores .020—.021 mm. long, .0065 mm. broad.

**Var. megaspora**, Nyl. spores double the size of those of the type; paraphyses branched.

On trees, beech, holly, rare. 1868.

**Syn:** — Nyl. in Flora 1868. p. 348. Crombie En. 121.

**Geog. Distrib:** — France.

**Bot. Prov:** — 2...7... England.


**Wales:** — Trefriw!

"Spores .023—36 mm. long, .009—.013 mm. broad." (Nyl.) Spores .035—.038 mm. long, .010 mm. broad.

55. *V. punctiformis*, Ach. *dark-olive or brown*, very thin, effuse; apothecia black and shining, minute, innato- sessile, hemispheric-conoid, spreading at the base; perithecium dimidiate, incurved; epithecidium a rather large impressed pore; paraphyses none; spores 8, colourless, lineari-obloug, 1-septate, very minute.

On trees, oak, ash, hazel, alder, not common. 1812.


**Fig:** — E. Bot. 2412. Leight. Ang. Lich. t. 17. f. 5.

**Exs:** — Mudd 296. Leight. 344.

**Geog. Distrib:** — Sweden, Germany, Switzerland, France.

**Bot. Prov:** — 1...2...5...7... 10, 11...19...21.

**England:** — Sussex! Mr. Botter. (1812.) Clifferigg! Hoggarts Wood! Ingleby, Cleveland. Mr. Mudd! Exeter. Mr. Parkitt! Eastbourne. Mr. Roper! Northumberland and Durham. Mr. Winch! Meole! near Shrewsbury! Hay Park! Herefordshire.

**Ireland:** — White Point! near Queenstown; Cromaglown and Crogham, Killarney. Mr. Carroll! Armagh! Glengariff! *Adm. Jones*.

**Wales:** — Gwydir woods! Bettws-y-coed.

Spores .013—.015 mm. long, .004—.005 mm. broad.

**forma tremula**, Ach. albo-cinerascens, unequal, slightly rimulose; apothecia most minute, much crowded, sub-confluent, scarcely protuberant and surrounded at the base with the thallus. On poplar, rare.

**Syn:** — Ach. L. U. 277. (1810.)

**Geog. Distrib:** — Sweden, France, Spain, Switzerland, N. America.

**Bot. Prov:** — 19.

**Ireland:** — Old Dromore, Kerry. *Adm. Jones*.

**forma elongatula**, Nyl. like *V. punctiformis*, or atomaria, Ach. but with longer clavato-fusiform, 1-septate, spores; apothecia most minute; perithecium colourless in the lower part, paraphyses none.
On trees, rare. 1867.
SYN:—Nyl. in Flora 1868, p. 164, Crombie En. 120.
GEOG. DISTRIBUTION:—Europe.
BOTANICAL REPORTS:—19.
IRELAND:—Dinis, Killarney. Mr. Carroll, (1867.)
"Spores .023—33 mm. long, .005—6 mm. broad." (Nyl.)
forma diminutula, Nyl. apothecia most minute; spores oblong, 1-septate.
On trees, rare.
SYN:—Nyl. in Flora 1868, p. 164, Crombie En. 120.
GEOG. DISTRIBUTION:—Europe.
BOTANICAL REPORTS:—120.
IRELAND:—Turk Mountain, Killarney. Mr. Carroll. (1867.)
"Spores .016—22 mm. long, .003—4 mm. broad." (Nyl.)
V. nitescens, Salw. pale-brownish-white, thin, shining, smooth or subrimulose, subdeterminate; apothecia black, very minute, numerous, semi-immersed, hemispherico-globose; perithecium dimidiate, incurved at the base; epithecium minute, poriform; paraphyses indistinct; spores 8, colourless, linear, 1-septate, constricted, cells with 2 nuclei; gelatina hymenea yellow with iodeine.
On holly, rare. 1853.
GEOG. DISTRIBUTION:—Europe.
BOTANICAL REPORTS:—1, 2—10.
ENGLAND:—Trevayler, Cornwall; New Forest. Rev. T. Salwey. (1853.)
Hoggarta Wood; Ingleby; Westerdale, Cleveland. Mr. Mudda.
"Spores .004 to .005 in. long, by .001 to .00125 in. broad." (Mudd.) Spores .020 mm. long, .006 mm. broad.
V. aphoriscosa, Strn. fuscous-black, macular, determinate; apothecia black, almost innate and hemispherical, congregate and crowded; perithecium dimidiate; spores 4-8, colourless, at length fuscous, oblong, 1-septate, rather large; paraphyses not very distinct, divaricato-ramose; gelatina hymenea I slightly blue or violet.
On bark and elm. 1874.
SYN:—Stirton in Grevillea 3, p. 36. (1874.)
BOTANICAL REPORTS:—15.
SCOTLAND:—Near Grantown, Inverness. Dr. Stirton. (1874.)
"Spores .020—.028 mm. long, .005—.007 mm. broad." (Stirtn.)
V. atomaria, D.C. cinerascent, thin; apothecia very minute, subglobose, emerse-sessile, somewhat shining; epithecium umbilicate; perithecium dimidiate; spores 8, fuscous, broadly-oblong, 1-septate.
On hazel, probably not uncommon. 1876.
EXS:—Arn. 147. Hepp 719.
GEOG. DISTRIBUTION:—France, Germany, Switzerland.
BOTANICAL REPORTS:—26.
IRELAND:—Kylemore. Mr. Larbalestier. (1876.)
Spores .0135 mm. long, .006 mm. broad.

** Perithecium entire.**

V. Taylori, Carroll. olivaceo-fuscescent, thin, continuous or rimulose, rugulose, macular; apothecia black, minute and very numerous, semi-immersed, acutely conical, internally pale; epithe-
cium *papillate*, poriform; perithecium entire, black; paraphyses distinct, slender; spores 8, colourless; *fusiform*, 1-septate, constricted, the cells very acute at the apices, with 2 or 3 nuclei, and having a tendency to break up or separate; gelatina hymenea yellow with iodine, the spores brown.

On ash trees, rare. 1856.

**Syn.**—Nyl. Pyren. 82. (1858.) *Arthopyrenia*, Mudd Man. 302.

**Exs.**—Anzi. Venet. 137.

**Geo. Distribs.**—Dalmatia, Austria.

**Bot. Prov.**—19...25.

**Ireland.**—Dunscombe’s Wood! Cork; Clare Glen, Tipperary! Mr. Carroll. (1856.)

“Spores .005 to .006 in. long, by .001 in. broad.” *(Mudd.)*

“Spores .025 mm. long, .004 mm. broad.” *(Nyl.)

“Spores .030 mm. long, .005 mm. broad.” *(Stirt.)

60. *V. colletta*, Strn. black, thin, continuous; *apothecia* black, small, spherical, sometimes almost aggregate; perithecium entire; epithecium poriform; spores 8, colourless, fusiform, often constricted at the middle, 1-septate, large; paraphyses very indistinct, almost conglutinate; gelatina hymenea within the asci, I vinous-red, the rest untinged.

On *Gymnomitrium concinnatum*, rare. 1874.

**Syn.**—Stirton in Grevillea 3. p. 37. (1874.)

**Bot. Prov.**—15.

**Scotland.**—Ben Lawers. Dr. Stirton. (1874.)

“Spores .025—.045 mm. long, .01—.013 mm. broad.” *(Stirt.)

61. *V. capnodes*, Nyl. dull-black, tinged with grey or olive, roughish, mucular, filmy, continuous; *apothecia* black, concolorous, roughish, encrusted by the thallus, minute, prominent, hemispherical, internally greyish; epithecium slightly papillose or umbilicate, poriform; *perithecium* entire, black; spores 8, colourless, linear-ooblong, 1-septate, small.

On trees, rare. 1829.


**Fig.**—E. Bot. Suppl. t. 2597. fig. 2. Leight. Ang. Lich. t. 16. fig. 1.

**Geo. Distribs.**—Europe.

**Bot. Prov.**—2...10...13.

**England.**—New Forest, Hants. Mr. Lyell. (1829.) Sussex! Mr. Borrer.

Malham. Dr. Carrington. Hoggarts Wood and Easby Wood, Cleveland. Mr. Mudd.

**Ireland.**—Castlebernard Park, Bandon. Mr. Carroll.

“Spores .003 to .004 in. long, by .00075 to .001 in. broad.” *(Mudd.)

Spores .014—.015 mm. long, .005 mm. broad.

Var. rhypontella, Nyl. spores 1-septate, smaller.

On trees, very rare.

**Syn.**—Nyl. in Flora 1867. p. 374.

**Exs.**—Fries 253.

**Geo. Distribs.**—Europe.

**Bot. Prov.**—19.

**Ireland.**—Glenbower Wood, co. Cork. Mr. Carroll.

“Spores .014—20 mm. long, .004—5 mm. broad.” *(Nyl.)

62. *V. biforis*, Borr. whitish or albido-cinerascent, thin, continuous or rimulose, slightly rugose or smooth, somewhat pulverulent, indeterminate; *apothecia* black or brownish-black, small,
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numerous, semi-immersed, prominent, internally pale; ostiolum hemispherical, dull or polished, rugulose; epithecium poriform, minute, impressed, ultimately lacero-dehiscent; perithecium thickish, black, entire; paraphyses very long, slender, distinct; spores 8, colourless, lineari-ellipsoid, 1-septate, cells with one or two nuclei; gelatina hymenea red with iodine.

On trees, ash, gorse, elm, oak, willow, common. 1829.


Fig.:—E. Bot. Suppl. t. 2617. f. 1. Leight. Ang. Lieh. t. 16. f. 2 & 3.


Bot. Prov.:—I, 2, 3, 4, 5, 6, 7, 8...10...19...31.


Ireland:—Ardrath! co. Kerry. Dr. Taylor.


Channel Islands:—Jersey and Guernsey. Mr. Larpalestier.

"Spores .0025 to .00325 in. long, by .001 to .0015 in. broad." (Mudd.)

"Spores .010—16 mm. long, .005—7 mm. broad." (Nyl.) Spores .012—.016 mm. long, .005—.006 mm. broad.

63. V. Salweii, Leight. white or greyish-white, thin, tartaro-farinose, nearly evanescent; apothecia black, very large and prominent, hemispheroico-conical, sessile; ostiolum rugulose; epithecium very large and open; perithecium entire; paraphyses distinct, long, slender, flocculose; asci linear; spores 8, colourless, broadly and obtusely oblong, 1-septate, in size and form similar to those of V. gemmata.

On calcareous rocks, mortar, &c., not common. 1851.


Geog. Distriß:—France.

Bot. Prov.:—2...5...7...19...26.


Wales:—Harlech Castle! Rev. T. Salwey.

"Spores .005 to .006 in. long, by .002 to .0025 in. broad." (Mudd.) Spores .0235 mm. long, .011 mm. broad.

64. V. spilobola, Nyl. black, thin, evanescent; apothecia black, small, somewhat prominent, crowded or submaculari-aggregate, perithecium entire, black; spores 8, colourless, oviform or oblongo-oviform, slightly 1-septate; paraphyses none; gelatina hymenea not tinged with iodine.

On calcareous stones. 1871.

Syn.:—Nylander in Flora 1872, p. 368.


Scotland:—Craig Tulloch. Rev. J. M. Crombie. (1871.)

"The green gonidia are often 4-connate. Spores .015—.020 mm. long, .007—8 mm. broad." (Nyl.)
65. *V. litoralis*, Tayl. pale-greenish-grey, thin, tartareous, continuous; apothecia black and shining, numerous, crowded, sessile, the base only immersed in very slightly elevated portions of the thallus, very prominent, sub-globose, truncato-conical; epithecium large, depressed, umbilicate; perithecium thick, entire; paraphyses distinct; spores 8, colourless, oblong, 1-septate.

On maritime rocks, rare.

**Syn:** — *V. muralis var.* Tayl. Fl. Hib. 2. 92. (1836.) *V. litoralis*, Leight. Ang. Lich. 46.

**Fig:** Leight. Ang. Lich. t. 20. f. 2.

**Bot. Distr.** — Europe.


**Wales:** — Aber-Ty-Gwyn near Dolgelly; Aberhamfre, Barmouth. Rev. T. Salwey.

**Channel Islands:** — St. Aubins Fort, Jersey. Mr. Larbalestier.

Spores .021 mm. long, .008 mm. broad.

66. *V. bryosilpa*, Nyl. fuscos-black, thin, opake; apothecia black, prominent, sub-conical; epithecium impressed; perithecium entire, black; paraphyses slender; spores 8, 4 or 2, colourless, oblongo-ovoid, 1-septate; gelatina hymenea untinged with iodine.

On schistose earth, very rare. 1864.

**Syn:** — Nyl. in Flora 1864. p. 257.

**Geog. Distr.** — Norway.

**Bot. Prov.** — 15.

**Scotland:** — Ben Lawers. Mr. Carroll. (1864.)

"Spores .080—44 mm. long, .011—12 mm. broad." (Nyl.)

67. *V. arenicola*, Leight. gelatinous when wet, dusky-olive-green, evanescent when dry; apothecia black, opake, hemispherical, semi-immersed, internally colourless; ostiole hemispherical, slightly depressed; epithecium a minute depressed pore, perithecium black, entire; paraphyses few, slender; spores 8, colourless, oblongo-ovoid, 1-septate, cells filled with minute spherical granules.

On wet sand-banks, rare. 1877.

**Bot. Prov.** — 5.

**England:** — Shelton Rough! near Shrewsbury. (1877.)

Spores .021—.022 mm. long, .008 mm. broad. Thece and spores I pale-fuscous.

68. *V. rugulosa*, (Borr.) apothecia small, crowded, prominent, semi-immersed, hemispherico-conical, brownish-black; epithecium round, simple; perithecium entire; spores 8, dark-brown, oblong, 1-septate, minute.

On old walls, rare. 1850.


**Fig:** Leight. Ang. Lich. t. 21. f. 1.

**Exs:** — Arn. 250.

**Geog. Distr.:** — Pyrenees, Bavaria.

**Bot. Prov.** — 1, 2, 7.

**England:** — Near Lewes! Sussex. Mr. Borrer. (1850.) Star Cross, Devon. Mr. Parritt.

**Wales:** — Barmouth!

"Spores .00225 to .003 in. long, by .001 in. broad." (Mudd.) "Spores .007—.011 mm. long, .004—6 mm. broad." (Nyl.) Spores .011 mm. long, .006 mm. broad,
69. **V. Larbalestieri**, Leight. *albidus-glaucens*, thin, tar-
tarceous, effuse, minutely rimuloso-diffract, areola plane, smooth,
somewhat shining, bearing 1 or 2 apothecia in the centre of each
areola, (K yellow C—or); apothecia black, moderately large, semi-
immersed, internally nigro-fuscous; ostiolum hemispherical, pro-
minent, shining; epithecium a minute depressed pore; perithecium
black, entire; paraphyses none; spores 8, fusco-nigrant, oblong,
1-septate, minute.

On granitic rocks. rare. 1877.

**SYN.**.—Leight. in Linn. Trans. 2d. ser. 1. 242.
**FIG.**.—Linn. Trans. 1. c. t. 33. f. 15, 16, & 17.
**BOT. PROV.**.—26.
**IRELAND.**—Near Kylemore! Galway. Mr. Larbalestier. (1877.)

Gelatina hymenea I.—Spores .016 mm. long, .008—.0085 mm. broad.

**C. Spores 3-septate.**

*Perithecium dimidiate.*

70. **V. rhyponta**, Ach. *fusco-nigrant or fuliginous*, very thin-
white, macular, sub-effuse; apothecia minute, sessile, hemispherie-
ical; perithecium dimidiate, black; epithecium a minute pore;
paraphyses none; spores 8, colourless, linear-oblong, 3-septate,
minute; gelatina hymenea red or yellow-brown with iodine.

On smooth barks of poplar; alder, &c., rare.

**Cr. Germ.** 1. 298.
**GEOG. DISTRIB.**.—Germany, France, Switzerland, Italy, Sweden.
**ENGLAND.**.—Near Ayton! Cleveland. Mr. Madd.
"Spores .018—.22 mm. long, .006—.008 mm. broad." (Nyl.) Spores .015—.020
mm. long, .003 mm. broad.

71. **V. Corasi**, Ach. *pale-yellow, fuscecent or fusceous*, thin,
membranous, more or less shining, maculari-determinate; apothecia
very numerous and crowded, minute, oblong or rounded, convex,
shining; perithecium dimidiate, fuscos-black; paraphyses none;
spores 8, colourless, linear-oblong, 3-septate.

On young oaks, not common. 1871.

**GEOG. DISTRIB.**.—Germany, Italy, Pyrenees, Hungary, Liguria, Switzerland,
Scandinavia.
**BOT. PROV.**.—5.
**ENGLAND.**.—Cowcombe! Gloucestershire. Mr. Joshua.
Well marked by the peculiar horizontal disposition of the apothecia and
their singular elongato-horizontal form. Spores .019 mm. long, .006 mm. broad.
"Spores .023—.24 mm. long, .009 mm. broad." (Nyl.)

72. **V. submicans**, Nyl. *pale-rufous-brown*, thin, effuse; apothecia
black, hemispherical, convex, shining, numerous, small, scattered;
perithecium dimidiate; epithecium minutely poriform; paraphyses
none; spores 8, colourless, linear-oblong, 3-septate.

On trees, oak, birch, holly, cherry, common. (1871.)
73. V. rubella, Nyl. thallus none; apothecia pale-reddish or rufescent, *tuberculoso-spherical*, prominent; *perithecium dimidiate*, colourless in lower portion; spores 100 or more, colourless, elliptoid, 3-septate; paraphyses slender, elongate, articulate; filamenta ostiolaria distinct; gelatina hymenea vinous-red with iodine.

On trees, rare. 1866.


Fig:—Hepp Sporen t. 80. f. 707.


GEOG. DISTRIBUT:—France, Germany.

BOT. PROV:—15...19.

SCOTLAND:—Lanrick Castle! near Doune, Perthshire, Dr. A. McKinlay.

(1866.)

IRLAND:—Dinns Island, Killarney. Mr. Carroll.

"Spores .010—17 mm. long, .006—8 mm. broad. (Nyl.) Spores .015 mm. long, .006 mm. broad.

74. V. affinis, Mass. *cinereo-albescent*, effuse, smooth, or rugulose; *apothecia black, minute, at first immersed then prominent, hemispherical; perithecium dimidiate*; paraphyses distinct, slender; spores 6—8, colourless, *fusiform*, 3-septate.

On birch, walnut, holly. 1876.


Fig:—Mass. Mem. t. 25. f. 169.


GEOG. DISTRIBUT:—Italy, Hungary, Germany.

BOT. PROV:—26.

IRLAND:—Near Letterfrack! Doughruagh Mountain! Connemara. Mr. Larbalestier. (1867.)

"Spores .0122—0183 mm. long, .00244 to .00366 mm. broad." (Mass.) Spores .014—.021 mm. long, .004—.0045 mm. broad.

75. V. submiserrima, Nyl. *glaucescent*, thin, effuse; *apothecia black, minute, hemispherical, convex, clustered on a small black patch*; *perithecium dimidiate*; paraphyses none; spores 8, colourless, *lineari-oblong*, 3-septate.

On holly, rare. 1875.

SYN:—Nyl. in Flora 1877. p. 291.

BOT. PROV:—5...26.

ENGLAND:—Downton Castle Woods! Shropshire. (1875.)

IRLAND:—Kylemore! Mr. Larbalestier. (1876.)

WALES:—Llyn Gwernan! Cader Idris!

"Spores .016—19 mm. long, .004—5 mm. broad." (Nyl.) Spores .018 mm. long, .005 mm. broad. Similar externally to *Mycoporum miserrimum*.

76. V. chlorotica, (Ach.) *olivaceo-fuscous* or cinerascents, thin, *continuous*, smooth, somewhat varnished or mucoso-gelatinous; *apothecia black*, minute, sessile, sub-hemispherical, *convex*, polished and shining, *internally pale*; *perithecium dimidiate*; epithecium a minute depressed pore; paraphyses distinct; spores 8, colourless, *fusiform*, 3-septate; gelatina hymenea yellow or untinged by iodine.
On rocks and trees, frequent.


GEOG. DISTRIBUTION:—Germany, Italy, Scandinavia, America, Polynesia.

BOT. PROV.:—6...7...10...26...31.

ENGLAND:—Near Ayton! Ingleby! Cleveland, Mr. Mudd.

IRELAND:—Cleghan! and Dawros Bridge! co. Galway. Mr. Larbalestier.

WALES:—Between Corwen and Bala! Festiniog road! near Dolgelley.

Bettws-y-coed! Conway falls! Fishguard Harbour! Moel-y-gest!

CHANNEL ISLANDS:—The Warren! Noirmont, Jersey; Jerbourg! Guernsey.

Mr. Larbalestier.

"Spores .018—23 mm. long, .005—6 mm. broad." (Nyl.) Spores .018 mm. long, .005 mm. broad.

forma trachona, (Tayl.), olive-green or cinerescent, tartareous, thin, continuous or rimulose, sometimes subpulverulent; apothecia internally nigro-fuscous.

On sandstone rocks, frequent.


FIG:—Leight. Ang. Licb. t. 22. f. 1, 2.


GEOG. DISTRIBUTION:—Bavaria, France, Pyrenees.

BOT. PROV.:—1...8...10.

ENGLAND:—Torquay! Dr. Deakin. near Buxton! Dr. Holl. Batheaston!

Mr. Broome. Penzance! Rev. T. Salwey.

IRELAND:—Derriquin! Askew Wood! Dr. Taylor.

Spores .021—.023 mm. long, .003 mm. broad.

forma subintegrata, Nyl. pale-cinereovirescent, thin, tartareous, rimulose, indeterminate; apothecia moderate, somewhat convex and prominent, internally pale; perithecium dimidiate, much incurved at the base; spores 8, colourless, fusiform, 3-septate.

On granitic maritime rocks, rare.

SYN:—V. subintegrata, Nyl. in Flora 1865. p. 212.

GEOG. DISTRIBUTION:—Europe.

BOT. PROV.:—6...26...31.

IRELAND:—Near Tully! co. Galway. Mr. Larbalestier.

WALES:—Manoerowen! near Fishguard, Pembrokeshire.

CHANNEL ISLANDS:—Rozel; Noirmont! La Coupe! Jersey. Mr. Larbalestier.

"Spores .020—27 mm. long, .006—7 mm. broad." (Nyl.) Spores .020 mm. long, .0045 mm. broad.

Var. codonoidea, Leight. virescenti-olivaceous, thin, tartareous, rimulose; apothecia minute, black, polished, hemispherical, depresso-conical, papillate; perithecium thin, dimidiate, inner tunic black, internally pale; paraphyses distinct; spores linear, narrowed and rounded at each extremity, colourless, 3-septate.

On rocks, rare. 1850.

SYN:—Leight. Ang. Licb. 53. (1850.) Mudd Man. 301.

FIG:—Leight. Ang. Licb. t. 23. f. 3.

GEOG. DISTRIBUTION:—Italy.

BOT. PROV.:—2...5...7...8...10.


WALES:—Craig Bridden! Treffriw! Nevin!

Spores .018—.0195 mm. long, .005 mm. broad.

forma carpinea, Scher, dark-opake-olive-green or brown, thin, continuous, effuse; apothecia minute, black, polished and shining,
sessile, internally pale; perithecia dimidiate; spores 8, colourless, fusiform, 3-septate.

On trees, mountain-ash, sweet chestnut, holly, calluna vulgaris, frequent.

SYN:—Scher. Spicil. 342. (1833) V. fusiformis, Leight. Ang. Lich. 42. (1851.)
Mudd Man. 301.

FIG:—Leight. Ang. Lich. t. 18 f. 2.


GEOG. DISTRIBUTION:—Germany, Bavaria, Switzerland, Sweden, France, Pyrenees.

BOTTLED PROV:—1, 2, 3...5, 6, 7, 8...19...36...28...31.

ENGLAND:—Sowerdale! Artyholme Wood! Newton Wood! Chiffriog! Cleveland.
Mr. Parfitt. Colee Engaine, Essex. Mr. Varene. Sussex! Mr. Borrer. Shelton
Rough! near Shrewsbury. Norton Camp! Holly Park! near Stokesay. Castle
Hill Plantation! near Acton Scott.

IRELAND:—Castlebernd Park! Bandon; Douglas near Cork; Dunscorm's
Kylemore Lake! Tullywee Bridge co. Galway. Mr. Larbalestier.

WALES:—Barmouth! Gloddaeth! Carnarvonshire. Bettws-y-coed! Trefriw!
Built! Pen Cow! near Fishguard, Pembrokehire.

CHANNEL ISLANDS:—Belcroute Bay, Jersey. Mr. Larbalestier.
Spores. 018—020 mm. long. .0045 mm. broad.

77. V. pyrenophora. Ach. mouse-coloured, very thin, tartaraceous,
continuous or rimulose, effuse, determinate; apothecia black, large,
very prominent, sessile, conoideo-sub-truncate, internally pale;
perithecia dimidiate; epithecium depressed, umbilicate; paraphyses none;
spores 8, colourless, broadly lineari-oblong, 3-septate;
gelatina hymenea vinous-red with iodine.

On alpine rocks, borders of lakes, and in running streams, rare.


FIG:—Leight. Ang. Lich. t. 23. fig. 4. 5. 6.


GEORG. DISTRIBUTION:—Switzerland, Sweden, Pyrenees, Austria, Hungary.

BOTTLED PROV:—1...5...7...11, 12...15...19...24...26...28.

ENGLAND:—Nent Force! Cumberland. Mr. Robertson. Hartlepool, Durham.
Mr. Mudd. Starcross, Devon. Mr. Parfitt. Oakskey, near Clereonster. Mr. Joshua
Craighorda! Shropshire.


IRELAND:—Barnaghee Mountain! Dr. Taylor. Armagh. Adm. Jones. Ross-
carbery. Cork; Dromoland, Clare; Ballaghebega Gap! Kerry. Mr. Carroll.
Ballymakill churchyard walls! Longh Muck! Longh Feagh! Galway. Mr.
Larbalestier.

WALES:—Llyn Aran! Cader Idris. (simple, 1 & 3-septate) Trefriw
falls!

“Spores .008 to .009 in. long, by .003 to .004 in. broad.” (Mudd.) Spores
.029—.043 mm. long. .016 mm. broad.

78. V. microcarpa. Dav. whitish, farinose or evanescent;
apothecia black, very minute, solitary or congregated, hemispheric-
ical, sessile; perithecia dimidiate, black; epithecium poriform;
paraphyses none; spores 8, colourless, broadly elliptico-oblong,
3-septate, % less than those of pyrenophora; gelatina hymenea
vinous-red with iodine.

On chalk, rare.

SYN:—G. Davies MS. in Herb. Borrer.

GEORG. DISTRIBUTION:—Europe.

BOTTLED PROV:—2.
ENGLAND:—Horton Downs! Sussex. Mr. Davies. Spores .0265-.0255 mm. long, .013—.014 mm. broad.

79. V. linearis, Leight. greyish-white, thin, tartaraceous, effuse; apothecia very minute, black, hemispherical, slightly immersed, internally pale; perithecium very thick, dimidiate, incurved at the base, inner tunic pale; epithecium depressed, umbilicate; paraphyses distinct; spores 8, colourless, linear, rounded at the extremities, 3-septate.

On calcareous rocks, rare.


GEOG. DISTRIBUTION:—Europe.

BOT. PROV:—L. England:—Cheddar! Mr. Borrer.

Spores .018-.021 mm. long, .0035—.004 mm. broad.

80. V. leucotis, (Fr.) pale-olive or cineraceous-olive or rufous, thin, continuous or rimulose, sub-tartaraceous, effuse; apothecia pale-rufous or rufescent, immersed in prominent thalline verrucar, hemispherical, papillose; ostiolum more or less denuded; epithecium a rather large depressed pore; perithecium dimidiate, rufous; spores 8, colourless, fusiform, 3-septate; paraphyses distinct, slender; gelatina hymenaea untinged with iodine.

On moist sub-alpine rocks, not frequent. 1836.


BOT. PROV:—1. 7...16...18, 19...22 26...31.


CHANNEL ISLANDS:—Kozel Valley! Noirmout! Jersey. Mr. Larvalester.

"Spores .005 in. long, by .00075 in. broad, t. 5. f. 120." (Mudd.) "Spores .023—.27 mm. long, .0045—.0065 mm. broad." (Nyl.) Spores .026—.032 mm. long, .0055—.006 mm. broad.

Var. leptalea, (DR. & Mnt.) “apothecii rufis, admixtis aliiis infuscatis.”

On trees, rare. 1864.


GEOG. DISTRIBUTION:—Algeria, Aland, Norway.

BOT. PROV:—2.7 19...26, 27.


WALES:—Wood opposite Tanybwlch Hotel, Capel Curig! Capel Arthog!

81. *V. holochrodes*, Nyl. ochraceo-reddish, thin, continuous, indeterminate; apothecium hemispherico-conical, covered by the thallus; perithecium pale-brown, dimidiate; epithecium minute, periform; paraphyses distinct, very slender and delicate; spores 8, colourless, fusiform, 3-septate.

On shady slaty rocks, rare. 1876.

Syn.:—Nyl. in Flora 1876. p. 311.

Ireland:—Killery Bay! Connemara. Mr. Larbalestier. (1876.)

"Similar to *V. lec(tissima)* and probably a sub-species of it, differing especially in the colour of the thallus. Spores 0.23—0.24 mm. long, .005—.006 mm. broad." (Nyl.)

82. *V. Harrimanni*, Körb. cinereo-rufescent, tartaraceous, sub-prose; apothecia black, minute, globose, at first immersed, then half-immersed; perithecium dimidiate; epithecium papillate; paraphyses slender; spores 8, colourless, broadly and shortly fusiform, 3-septate.

On rocks, rare. 1876.

Syn.:—Körb. Syst. 362.
Geog. Distri.:—Germany.

Ireland:—Twelve Pines! Connemara. Mr. Larbalestier. (1876.)

Spores .021 mm. long, .006 mm. broad. Gelatina hymenea 1.−

83. *V. teniifera*, Nyl. cinerascent, thin, rimulose; apothecia black, convex; small; perithecium dimidiate; spores 8, colourless, ("bacilliform" Nyl.) acicular, 3-septate; paraphyses long and slender; asci lineari-acuminate.

On granite walls, rare. 1873.

Syn.:—Nyl. in Flora 1876. p. 237.

Channel Islands:—St. John's, Jersey. Mr. Larbalestier. (1873.)

"Spores .029—.033 mm. long, .0035 mm. broad. Like *V. chlorotica* with which the concatenate (sub-chroolepidea) goniadis also correspond." (Nyl.)

84. *V. pertennis*, Leight. cinereo-nigricant, thin, filmy, continuous, opaque, furfuraceous; apothecia black, opake, minute, numerous, hemispherical, sessile; perithecium dimidiate, black; epithecium a minute pore; paraphyses distinct, long, thickish; spores 8, colourless, elongato-acicular; slender, 3-septate.

On slaty rocks, rare. 1876.

Syn.:—Leight. in Trans. Linn. Soc. 2nd. ser. 1. p. 239.
Fig.:—Linn. Trans. 1. c. t. 32. p. 20.

Wales:—Goodwick Bay! Pembrokeshire (Sept. 1876.)

Differing altogether from *V. chlorotica*, (Ach.) in the attenuated acicular spores and other characters as above. Gelatina hymenea 1 lutescent, especially asci & spores. Spores .034—.083 mm. long, .004 mm. broad. Spermogonia numerous, minute, verrucarioid, spermata excessively minute, oblong or linear-oblong, straight.

** Perithecium entire.**

§ Spores colourless.

85. *V. incavata*, Nyl. greyish-white, thin, tartareo-farinose, con-
tiguous, smooth, sub-determinate; apothecia black, deeply immersed in the thallus and rock beneath, hemispheric-globose; peritheciun entire; epithecium depressed with a large pore; paraphyses none; spores 8, colourless, elliptico-oblong or oblong, 3-septate, constricted.

On calcareous rocks, rare. 1859.

Resembling V. immersa in its habit and general external aspect.

**Syn:** Thelidiun, Mudd Man. 295. (1861.)

**Fig:** Mudd Man. t. 5. f. 122.

**Exs:** Mudd 282.

**Geog. DistriB:** Europe.

**Bot. Prov.:** 6...10, 11...26.

**England:**—Ingleborough. Dr. Carrington. Bilsdale, Yorkshire; Castle Eden Dean, Durham. Mr. Mudd.

**Ireland:**—Near Letterfrack, Co. Galway. Mr. Larbalestier.

**Wales:**—Walls of Criccieth Castle!

“Spores .008 to .011 in. long, by .0035 to .0045 in. broad. t. 5. f. 122.” (Mudd.)

Spores .039—.053 mm. long. 014—.0215 mm. broad. Gelaflina hymenoea I red.

86. V. marina, (Deak.) dark-greenish-black, sub-gelatinous, smooth, continuous, effuse, nigro-limitate; apothecia black, immersed in the thallus, excessively minute and numerous; ostiolum slightly elevated; peritheciun large, impressed, umbilicate; peritheciun entire, black, thin; paraphyses none; spores 8, colourless, lineari-oblong, 1- or 3-septate, very minute; gelatina hymenoea rubescent with iodine.

On submerged maritime rocks, rare. 1854.


**Fig:** Ann. and Mag. Nat. Hist. l. c. t. 4. f. 13.

**Geog. DistriB:** Europe.

**Bot. Prov.:**—1.

**England:**—Meadfoot; near Torquay, Devon. Dr. Deakin. (1854.)

Spores .015 mm. long. .004 mm. broad.

87. V. dubiella, Nyl. cinerascent, cartilaginous, granulato-unequal, sub-crenate (“an proprius” i); apothecia black, small; peritheciun entire, black; paraphyses none; spores 8, colourless, oblong or ovovideo-oblong, 3-septate, small; gelatina hymenoea vinous-red with iodine.

On mosses amongst mountains, probably parasitic, rare. 1864.


**Geog. DistriB:** Europe.

**Bot. Prov.:**—15.

**Scotland:**—Loch-na-Cat, north Side of Ben Lawers. Mr. Carroll. (1864.)

“Spores .015—21 mm. long. .005—7 mm. broad.” (Nyl.)

88. V. epigaeoides, Nyl. pallido-virescent, macular; apothecia black, chiefly immersed; peritheciun black in the upper portion, fuscescent in the immersed part; paraphyses slender; spores 8, colourless, oblong, 3-septate.

On the earth in sub-alpine localities, rare. 1865.


**Geog. DistriB:** Europe.


**Ireland:**—Cliffs of Moher co. Clare. Mr. Carroll. (1865.)
"Similar to V. epigaea, but smaller. Spores .018—27 mm. long, .005—8 mm. broad." (Nyl.)

89. V. melathelia, (Nyl.) thallus scarcely any, chroolepoid; apothecia black, tuberculose, prominent, rugoso-irregular; epithecium not always distinct; peritheciun ellipsoid, nigricant or rufescent, entire; spores innumerable, ellipsoid or oblong, indistinctly 3-septate; paraphyses slender; filamenta ostiolaria slender; gelatina hymenea blue then dark-violet with iodine.

On mosses amongst alpine schistose rocks, rare. 1864.


Geog. Distrib:—Europe.

Bot. Prov:—15.


"Spores .014—17 mm. long, .006—7 mm. broad." (Nyl.)

90. V. sparsula, Nyl. dark-olivaceous or olivaceo-fuscous, most minutely granulose; apothecia black, sub-globose, depressed; peritheciun entire, black; spores 8, colourless, ellipsoid, 3-septate; paraphyses none.

On chalk, rare. 1876.

Syn:—Nyl. in Flora 1877. p. 291.

Bot. Prov:—3.

England:—Dorking, Surrey. Mr. Joshua.

"Spores .023—27 mm. long, .010—13 mm. broad. Gelatina hymenea I vinous red." (Nyl.)

91. V. humicolor, Nyl. castaneo-fuscescent, or castaneo-umbrine, opake, very thin, continuous; apothecia globose prominent, somewhat darker or umbrino-fuscescent, crowded; peritheciun entire, in thin section luteo-fuscescent or with K aurantiaco-rufescent, internally white; spores 8, colourless, fusiform, 3-septate.

On peat-earth and on rocks among Jungermanniae, rare. 1876.

Syn:—Nyl. in Flora 1877. p. 462.


Ireland:—Mweelan! near Kylemore, Galway. Mr. Larbalestier. (1876.)

"Belonging to the Stirps of V. chlorotica. Thallus has chroolepoid gonidia. Spores .024—33 mm. long, .004—5 mm. broad." (Nyl.) Spores .026 mm. long, .005 mm. broad.

§§ Spores fuscosae.

92. V. nitida, (Weig.) pale-yellow or olive or olive-brown, waxy, continuous, smooth, more or less polished, with scattered whitish minute protuberances; apothecia black, large, immersed in, or invested by the thallus, hemispherico-globose; ostiolum black, more or less demuted; peritheciun entire, black; epithecium large, depressed, umbilicate; paraphyses distinct; spores 8, brown, elliptical or oblong, slightly tapering towards each apex, 3-septate, cells angulatae-nucleolate; gelatina hymenea untinged by iodine.

On trees, frequent. 1783.

**OF GREAT BRITAIN**

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**Geog. Distrib.**—Switzerland, Germany, Italy, Portugal, Pyrenees, Sweden, Hungary, Himalaya, N. Zealand, Cuba.

Bot. Prov:—1, 2, 3, 4, 5...7, 8...10, 11...14, 15, 16...30, 31.


Channel Islands:— Jersey! Guernsey; Sark. Mr. Larbaliester.

"Spores .005 to .007 in long. by 092 to .0025 in. broad. t. 5. f. 124." (Mudd)

"Spores .022—25 mm. long. .007—8 mm. broad." (Nyl.) Spores .023—.027 mm. long. .010—.011 mm. broad.

forma *clevedes*, Leight. thallus nigro-fuscus, resembling an indeterminate, diffuse, dark-brown, oily stain.

On old laurel and other trees. 1872.

Syn:—Leight. in Grevillea 1. 60.

Wales:—Gwydir woods! Bettws-y-coed. Egwyseg Rocks!

Var. *nitidella*, Flk. pale-yellow, very thin; apothecia one half the size of those of *nitida*.

On trees, frequent.


Geog. Distrib:—Germany, Portugal, Italy, Switzerland, Belgium, Cuba, Ceylon.

Bot. Prov:—1. 3...5...7...10...19—30...31.


Ireland:—On trees, frequent. Mr. Carroll.

Wales:—Gloddaeth! near Conway.

Channel Islands:— Guernsey; Sark; Rozel, St. Peter's and St. Lawrence, Jersey! Mr. Larbaliester.

Spores .028 mm. long. .009 mm. broad.

93. *V. glabrata*, Ach. whitish, pale-yellow or greyish, thin, membranaceous, opaque; apothecia black, moderate, semi-immersed, hemispherical; *ostiolum* denuded; *perithecium* entire, black; *epithecium* a minute pore; paraphyses distinct; spores 8, fuscous, ellipsoid, 3-septate or 4-locular, smaller than in *nitida*; gelatina hymenea yellowish with iodine.

On smooth barks, rare.

Syn:—Ach. Syn. 91. (1867.) Nyl. Pyren. 47. Prod. 188.

Fig:—Hepp Sporent t. 25. f. 227.

Exs:—Scher. 110. M. & N. 950. Zw. 34.

Geog. Distrib:—Switzerland, Germany; France, Italy, Hungary, N. America, New Zealand.
THE LICHEN-FLORA

Ireland: Glengariff; Lough Inchiquin; Glencar co. Kerry; Killarney.
Mr. Carroll.
Wales: Capel Arthog!
Spores .021—.022 mm. long, .009 mm. broad.

Var. dermatodes, Borr. cream-coloured, very thin, determinate; apothecia half the size of those of glabrata.
On smooth barks, rare.

Fig.: E. Bot. Suppl. t. 2607. f. 2. Leight. Ang. Lich. t. 15. f. 4.
Geog. Distrib.: New Zealand.
Bot. Prov.: 1...3...19.
"Spores .003 to .00375 in. long, by .0015 to .00175 in. broad." (Mudd.)
Spores .016—.018 mm. long, .007 mm. broad.

94. V. peripherica, (Tayl.) apothecia small, prominent, semi-immersed, conoid, black; perithecium entire; spores 8, fuscous, constricted in the middle, formed of 2 short obtuse cones set base to base, each cell septate.
On mountain barks, rare. 1836.

Fig.:—Leight. Ang. Lich. t. 21. f. 2.
Geog. Distrib.: Europe.
Bot. Prov.: 7...19.
Ireland:—Carig Mountain! co. Kerry. Dr. Taylor. (1836.)
Wales:—Barmouth! Rev. T. Salwey. Trefriw falls!
"Spores .0035 to .004 in. long, by .00125 to .0015 in. broad." (Mudd.)
Spores .017—.018 mm. long, .0065 mm. broad.

95. V. dissepta, Nyl. albido-cinerascent, tartaceous, thin, sub-determinate, rimuloso-areolate; apothecia black, hemispherical, prominent, numerous; ostiolum denuded; epithecium a minute depressed pore; perithecium entire, black; paraphyses indistinct; spores 8, fuscous or fusco-migricant, ellipsoid, 3-septate.
On micaceo-schistose rocks, rare. 1876.

Syn.:—Nyl. in Flora 1876, p. 576.
Ireland:—Doughruagh Mountain! co. Galway. Mr. Larbalestier. (1876.)
"Spores .018—.023 mm. long, .007—.010 mm. broad. I.—." (Nyl.)
Spores .024 mm. long, .01 mm. broad.

96. V. leptaleella, Nyl. "greenish, very thin, subleprose, somewhat similar to V. leptalea, (Mut.) but with narrower spores .016—20 mm. long, .0025—.0030 mm. broad." (Nyl.) Perithecium entire; paraphyses thick, floccose; spores 8, fuscous, ellipsoid, 3-septate, .033 mm. long, .012 mm. broad, the two central cells nucleolate.
On bark of trees, rare. 1876.

Syn.:—Nyl. in Flora 1876, p. 237.
Ireland:—Doughruagh, Connemara. Mr. Larbalestier. (1876.)
D. Spores 3-5-septate.

* Perithecium dimidiate.

97. *V. albissima*, (Ach.) creamy-white, very thin, membranous, effuse, smooth; apothecia black, elliptical, hemispherico-conoid, sessile; *perithecium dimidiate*, black; epithecium poriform; paraphyses indistinct; spores 8, colourless, acicular, more or less curved, 3 or 5-septate.

On birches, &c., rare. 1850.


**GeoG. Distrib.**—Sweden, Austria, Hungary, France, Switzerland. E. Lapland.

**Bot. Prov:**—3...5...7...10...19...26.


**Ireland:**—Killarney; Little Island, Cork. *Mr. Carroll*. Kylemore Castle! Mr. Larbalestier.

**Wales:**—Dolgelly! "Spores .005 to .006 in. long, by .0006 in. broad. t. 5. f. 127." (Mudd.) "Spores .020—34 mm. long, .008—4 mm. broad." (Nyl.) Spores .028 mm. long, .003 mm. broad.

98. *V. platypyrenia*, Nyl. effuse; apothecia plane, at first hypophlasodal, opake; paraphyses soft, irregular or indistinct; spores colourless or in age fuscescent, oblong, 3-5-septate.

On trees, rare. 1865.


**GeoG. Distrib.**—Europe.

**Bot. Prov:**—19.

**Ireland:**—Ballyedmond co. Cork; Old Dromore, Kerry; Glenbower, Killeagh. *Mr. Carroll*. (1865.) "Spores .023—30 mm. long, .009—.011 mm. broad." (Nyl.)

**Perithecium entire.**

99. *V. furvescens*, Nyl. fuscescent or olivaceo-fuscescent, granulato-unequal, thin, opake, effuse, not continuous; apothecia innate, moderate, the conical apex emersed; *perithecium entire*, black; paraphyses slender, crowded; spores 8, colourless, fusiform, 3-5-septate.

On minute mosses on schistose earth in alpine localities, very rare. 1864.


**GeoG. Distrib.**—Europe.

**Bot. Prov.**—15.

**Scotland:**—Summit of Ben Lawers. *Adm. Jones*. (1864.) "Spores .031—33 mm. long, .006 mm. broad." (Nyl.)

100. *V. desistens*, Nyl. evanescent; apothecium minute; *perithecium entire*, upper portion convex, fusiform, prominent; paraphyses none; spores 8, colourless, fusiform, 3-5-septate, straight; gelatina hymenea vinous-red with iodine.

On old trees, very rare. 1867.
E. Spores 5-septate.

101. *V. perminuta*, Deak. dark-olive-green, thin, continuous, uneven, rugose and warty, indeterminate; apothecia brownish-black, scattered or confluent, minute, prominent, hemispherico-globose, internally pale; perithecium dimidiate, incurved at the base; inner tunic thin, black; epitheicum a minute pore; spores 8, colourless, fusiform, 5-septate.

On maritime rocks, rare. 1854.

Closely allied to *V. chlorotica* var. *trachona*, TayL


GEOG. DISTRIBUTION:—Europe.

BOT. PROV:—7.

ENGLAND:—Torquay! Dr. Deakin. (1854.) Penzance, Cornwall. Rev. J. Salwey.

102. *V. horisiica*, Leight. rufous or rufo-ferruginous, thin, subtartaceous, smoothish, with numerous dirty pale-whitish-yellow soredia, limited by conspicuous elevated thickish nigro-fuscos lines resulting from the confluence of the hypothallus of many adjacent thalli; apothecia nigro-fuscous or black, scattered, few, hemispherical, depressed, umbilicate, sessile; perithecium nigro-fuscous, dimidiate; paraphyses distinct; spores 8, colourless, narrowly or attenuato-fusiform, 5-septate.

On shaded shaly mountain rocks, not common. 1871.

FIG:—Grevillea l. t. 4. f. 1.

GEOG. DISTRIBUTION:—Europe.

BOT. PROV:—7.

WALES:—Wood opposite Tal-y-blwch Hotel, Capel Curig! Llyn Cwlyd! (1871.) Bettws-y-coed! Trefriw!

Spores .029 mm. long, .004 mm. broad.

F. Spores 7-septate.

* Perithecium dimidiate.*

108. *V. lucens*, TayL. olivaceo-fuscescent or cinereo-fuscescent, thin, tartaceous, minutely rimulose or continuous, nigro-limitate; apothecia black, prominent, shining, conico-hemispherical, solitary or clustered, internally pale; perithecium dimidiate, black, thick, inner tunic pale-brown; epitheicum depressed, umbilicate; paraphyses very slender, filiform, numerous; spores 8, colourless, broadly elongato-fusiform, 7-septate, at least 4 times the size of those of *V. chlorotica*.

On siliceous slate and basalt, rare. 1836.


GEOG. DISTRIBUTION:—Europe.

BOT. PROV:—7...19...26.

IRELAND:—Lough Finnehy; Blackwater Bridge! co. Kerry. Dr. Taylor. Croghane; Killarney. Mr. Carroll. Doughruagh! Galway. Mr. Larbalestier.
V. lactea, (Körb.) cream-coloured, thin, effuse; apothecia black, minute, sub-innato-sessile, hemispherical; peritheciun dimidiate, incurved at the base, black; epithecium poriform; paraphyses distinct; spores 8, colourless, broadly lanceolato-fusiform, 5-7-septate; galatina hymenea brownish or yellow with ioeine.

On trees, very rare.

SYN:—Sagedia lactea, Körb. Syst. Lich. 366. (1855.)
EKS:—Zw. 44.
EGEO. DISTRIB:—Germany, Hungary, Switzerland.
BOT. PROV:—2.
ENGLAND:—Sussex! Herb. Hooker.

V. olivacea, Borr. nigrescenti-olivaceo-virescent, sub-tartaraceous, continuous or rimose, indeterminate; apothecia duff-black, opake, rugose, invested by the thallus, hemispherico-globose, internall pale; peritheciun dimidiate, black; epithecium a minute pore; spores 8, colourless, singularly elongato-clavato-fusiform, 7-septate, large.

On trees, sycamore, ash, rare. 1829.


EKS:—Leight. 199. Mudd 290.
EGEO. DISTRIB:—Europe.
BOT. PROV:—2, 3...5, 6...8...10, 11...19...24...26, 27.


Wales:—River Gwaine! Fishguard, Pembrokeshire.

"Spores .006 to .008 in. long, by .001 in. broad." (Mudd.) Spores .030—.040 mm. long, .004—.005 mm. broad.

V. succina, Leight. thallas fuscescent; thin, effuse, scarcely, if at all, surrounding the base of the apothecia; apothecia numerous, large, amber-colour, hemispherico-conical, papillate; peritheciun amber-colour throughout, dimidiate, spreading at the base; epithecium minute, poriform; paraphyses very delicate and slender; asci lineari-clavate; spores 8; colourless, broadly fusiform, 7-septate, large.

On rocks, very rare. 1875.

SYN:—Leight. in Grevillea 4. p. 78. Linn. Trans. 2nd ser. 1. 145.

FIG:—Linn. Trans. L. c. t. 22. f. 8. 9. 10. 11. 12.

Ireland:—Near the lake, Kylemore! co. Galway. Mr. Larbalester, (1875.)

The apothecia when wet become of a beautiful transparent amber-colour. Iodine has very slight, if any, reaction on the asci and spores. Its nearest ally would seem to be V. illinina, Nyl., but that species differs in having a whitish thallus, nigricant apothecia, the peritheciun colourless in lower part and fuscesce in the upper part, and iodine turning the asci and spores of a dirty deep-brown, and is also a corticcular lichen. Our lichen differs also in the size
and colour of the apothecia from *V. chlorotica*, (Ach.) which is associated on the same rock, and which has also smaller 3-septate fusiform spores. Spores .046 mm. long, .008 mm. broad. No spermogonia detected.

107. *V. insiliens*, Larbal. dirty-pale-whity-brown, tartareous, thievish, subareolato-diffract, areolae plane, subfurfuraceous, (K—C—); apothecia large, imbedded in rather large, hemispherical thalline tubercles, which either entirely or partially cover the black papillate ostiolum; epithecium a minute pore; perithecium dimidiate, nigro-fuscous; inner tunic pale-brown; paraphyses slender, distinct; spores 8, colourless, broadly fusiform, obtuse at the apices, 5-7-septate; gelatina hymenea I colourless.

Damp recesses of caves, very rare. 1877.

**Perithecium entire.**

108. *V. leptospora*, Nyl. fuscescent, very thin or obsolete; perithecium entire, black; spores 8, colourless, fusiform, elongate, 7-septate.

On holly, very rare. 1864.

**Perithecium dimidiate.**

109. *V. chlorococca*, Leight. green, thickish, granulate, somewhat areolato-diffract; apothecia black, innate, minute; ostiolum black, convex or depressed; epithecium poriform; perithecium entire, black; paraphyses none; asci short, rotundate; spores 8, colourless, broadly cylindrico-fusiform, obtuse at the apices, 7-septate.

On ash, rare. 1878.

**Spores murali-locular.**

* Perithecium dimidiate.

§ Spores fuscos.

110. *V. umbrina*, Wlhb. fuscescent or fuscous-black, thin, opaque, smoothish or granuloso-unequal, rimulose or sub-areolato-rimulose, diffuse; apothecia innate in prominent mastoid thalline tubercles; perithecium dimidiate, black; inner tunic pale-brown; paraphyses none; spores 2, dull-green or fuscous, lineari-oblung, rounded at each extremity, murali-locular, large.

On rocks in rivers and sub-alpine lakes, not common.

FIG:—Leight. Ang. Lich. t. 6. f. 1. 2. 3.


GEOG. DISTRIBUT:—Germany, Italy, Hungary, Europe, Pyrenees, Scandinavia, Himalaya, N. America.

Bot. Prov.:—7...11...15...19...30.


WALES:—Rocky bed of river Dee at Llangollen! Denbighshire. Trefriw falls!

“Spores .045—.55 mm. long. .018—.22 mm. broad.” (Nyl.) Spores .033—.048 mm. long. .014—.018 mm. broad.

111. V. clopina, Whlnb. olivaceo-fuscescent, tartarceous, thickish, verrucoso-areolate, areolae tumid, diffuse; apothecia immersed in the thalline verruce; peritheciun dimidiate, black; epithecium umbilicato-depressed; paraphyses none; spores 2, fuscus, linari-oblong, murali-locular, large.

On rocks in rivers, not common. 1875.


FIG:—Hepp Sporen t. 12. f. 101.


GEOG. DISTRIBUT:—Germany, Italy, Switzerland, Sweden.


IRELAND:—Dawros river! Galway. Mr. Larbalestier. (1875.)

“Spores .032—.34 mm. long. .012—.23 mm. broad.” (Nyl.) Spores .041—.053 mm. long. .018—.021 mm. broad. Gelatina hymenea I reddish-blue.

112. V. subumbrina, Nyl. pale-dusky-brown, thin, subsurfuraceous, effuse; apothecia scattered, surrounded at the base by the encircling thallus; ostiolum black, convex; epithecium a conspicuous pore; peritheciun dimidiate, black, inner tunic pale-brownish; paraphyses none, filamenta ostiolaria slender; spores 6, fuscus, broadly-oblong, murali-locular, very large; gelatina hymenea I vinous-red.

On stones in mountain torrents, very rare. 1864.

SYN:—Nyl. Scand. 269.

GEOG. DISTRIBUT:—Norway.

Bot. Prov.:—15...22...26.

SCOTLAND:—Ben Lawers. Adm. Jones. (1864.) Gorchlochan, shores of Perth or Inverness. Mr. Larbalestier.

IRELAND:—Near Kylemore co. Galway! Mr. Larbalestier. Tonlagee, co. Wicklow. Mr. Archer.

“Spores .046—.55 mm. long. .023—.24 mm. broad.” (Nyl.) Spores .052 mm. long. .029 mm. broad. This approaches V. hymenea, Wallr. (Anzi Catal. p. 111. Anzi Langob. 243!) in general characters, size and colour of the spores, but differs in the number of the spores.

113. V. scotinospora, Nyl. whitish, scarcely any, or evanescent; apothecia large, prominent, sessile, convexo-conical, black; epithecium large, conspicuous, umbilicato-depressed; peritheciun dimidiate, very thick, nearly entire, inner tunic black; paraphyses none; spores 8, fuscous, oblong, murali-locular, cells irregular; moderate; gelatina hymenea vinous-red with iodine.

On alpine micaceous-schistose rocks, very rare. 1860.

Geog. Distr.:—Europe.


Scotland:—Ben Lawers! Head of Loch-na-Cat. Adm. Jones. (1860.) Summit of Craig-na-Calliaich. Dr. Mainay.

Ireland:—Kylemore Castle! Co. Galway. Mr. Labiasteier.


"Spores .030—.34 mm. long, .013—.16 mm. broad." (NyL) "Spores .026—.40 mm. long, .018—.21 mm. broad." (T. M. Fr.) "Spores .007 to .008 in. long, by .004 to .0045 in. broad." (Mudd.) Spores .030 mm. long, .020 mm. broad.

114. V. isideroides, Borr. yellowish-brown, crustaceous, rimoso-areolate, areola verrucose, convex, protuberant, crowded and dif- formed, smooth, opake; apothecia dark-brown, immersed in the depressed apex of the thallodial verrucae; ostiolum plano-convex, denuded, dark-brown; epithecium a simple pore; perithecium dimidiate, dark-brown, inner tunic pale-brown; paraphyses con-glutinate; spores 8, colourless, linear-oblong, tapering towards each obtuse apex, 7-septate when young, ultimately fuscous and muri-locular, large; gelatina hymenea untinged with iodine.

On subalpine rocks, very rare. 1830.


Fig.:—E. Bot. Suppl. t. 2622 f. 1. Leight. Ang. Lich. t. 6 f. 4.

Geog. Distr.:—Europe.

Bot. Prov.:—19.

Ireland:—Glengariff! near Bantry. Miss Hutchins. (1830.)

"Spores .007 to .009 in. long, by .008 to .004 in. broad." (Mudd.) Spores .046 mm. long, .016 mm. broad.

115. V. subpyrenophora, Leight. tawny-cinereous, crustaceous, thin, rimulose, minutely granulato-areolate, (K.—C.—); apothecia large and conspicuous, black, conical or conico-hemispherical, the base only enveloped by the thallus, papillate or with a small pore; perithecium dimidiate, black; paraphyses very slender, distinct; spores 8, at first colourless, ultimately fuscous, elliptico-oblong, muri-locular, large.

On subalpine rocks, rare. 1871.

Geog. Distr.:—Europe.


Scotland:—Ben Lawers. Dr. Holl.

Ireland:—Kylemore Castle! Co. Galway. Mr. Larbalestier.

Wales:—Snowdon! Mr. Holmes. Cwm Cywion, ! Glyder fach. (1871.)

Somewhat externally like V. verrucoso-areolata, but distinct in having para- phrases and in the spores being two-thirds less in size. Spores .066 mm. long, .033 mm. broad. "Spores .018—.57 mm. long, .028—.39 mm. broad." (T. M. Fr.)

116. V. pettrophora, Strn. squamulose, squamulæ green, thin, smooth, approximate or scattered, recurved at the margins; apothecia black, large, prominent; perithecium dimidiate; spores 8, fuscous, ellipsoid, muraliform, rather large; paraphyses few, slender, interspersed with oily globules; filamenta ostiolaria numerous; gelatina hymenea I vinous-red.

On the earth. 1874.

Syn:—Stirton in Grevillea p. 37. (1874.)

Bot. Prov.:—15.

Scotland:—Ben Lawers. Dr. Stirton. (1874.)

"Spores .045—.038 mm. long, .02—.03 mm. broad." (Stir.)
§§ Spores colourless.

117. V. intercedens, Nyl. cinerascent or cinereo-fuscescent, tartaraceous, thin, contiguous or rimulose; apothecia large, convexo-conical, prominent, basally immersed, black; epithecium large, conspicuous, umbilicato-depressed; peritheciun dimidiate; paraphyses none; spores 8, colourless, elliptical, murali-locular, cells irregular, moderate; gelatina hymenia vinous-red with iodine.

On alpine schistose rocks, rare. 1864.


Fig. :—Hepp Spore t. 51. f. 445. central spore.


Geog. Distrib. :— Sweden, Switzerland, Pyrenees, Germany.

Bot. Prov. :— 2. 15.

England:— Downs, Sussex. Mr. Larbalestier.

Scotland:— Ben Lawers, Messrs. Jones & Carroll. (1864.)

"Spores .024—42 mm. long, .015—21 mm. broad." (T. M. Fr.) "Spores .018—23 mm. long, .011—13 mm. broad." (Nyl.) Spores .034 mm. long, .016—.017 mm. broad.

118. V. fusco-argillacea, (Anz.) fusco-cinerascent or albido-cinerascent, thin, effuse, minutely rimulose or verrucoso-subareolate, unequal, at length farinaceous; apothecia black, moderate, numerous and crowded, sessile, innate at the base, hemispherical; peritheciun dimidiate, thickish, black, inner tunic very thin, black; epithecium poriform, depressed or umbilicate; paraphyses none; spores 8, colourless, rotundato-ellipsoidal, murali-locular, rather small; gelatina hymenia reddish with iodine.

On calcareous rocks, rare. 1870.

SYN:—Polyblastia, Anz. Symbola 26. (1864.)

Exs. :— Anz. Langob. 368.

Geog. Distrib. :— Italy, Scandinavia.


England:— Hyde, Gloucestershire. Mr. W. Joshua.

Scotland:— Craig Tulloch, ! and at base of Ben-y-gloe, Blair Athole. Rev. J. M. Crombie. (1870.)

Ireland:—Doughraugh Mountain! co. Galway, Mr. Larbalestier.

"Spores .018—.28 mm. long, .011—.16 mm. broad." (T. M. Fr.) Spores .026—.029 mm. long, .015—.018 mm. broad.

119. V. Carrollii, (Mudd.) greyish-white or cream-colour, thin, determinate, membranaceous-cartilaginous, smooth, contiguous, or slightly rimulose; apothecia minute, innate in elevated thalline protuberances, solitary, hemispherico-subdepressed; ostiolum somewhat rugulose, rounded or slightly depressed; epithecium obsolete; peritheciun dimidiate, brownish-black, inner tunic pale; paraphyses distinct, capillary, flexuose; spores 6-8, pale-yellow, elliptico-oblong or obovate, irregularly murali-locular, very variable in size.

On young ash trees, and sandstone, very rare. 1861.

SYN:—Spheromphale, Mudd Man. 233 (1861.)

Fig. :— Mudd Man. t. 5. f. 113.

Geog. Distrib. :— Europe.


Ireland:— Rostellai, Cork Harbour; and Castleconnel, Limerick; Ballaghbeama Gap, Kerry; Dinis, Killarney. Mr. Carroll. (1861.) Armagh. Demesne, Adm Jones.

"Spores .0035 to .007 in. long, by .0015 to .003 in. broad." (Mudd.)
120. *V. subviridicans*, Nyl. albido-virescent, thin, ruguloso-conti-
nuous; apothecia black, imbedded in large hemispherical thalline
tubercles; ostiolum black, small, depressed; epithecia a minute
depressed pore; perithecium black, thin, papillate, dimidiate;
paraphyses none; spores 2 or 4, colourless, oblong, large, murali-
locular.

On stones in torrents, very rare. 1877.

**Perithecia entire.**

§ Spores fuscous.

121. *V. tristieula*, Nyl. fuscous, slightly granulose, effuse;
apothecia black; perithecium ellipsoid, entire, black, firm, rugulose,
subconically prominent; epithecia punctiformi-impressed; para-
physes none; spores 1, fuscous, oblong, murali-locular; gelatina
hymenae vinous-red with iodine.

On mosses, very rare. 1864.

On calcareous mountain rocks, rare.

**Spores fuscous.**

122. *V. terebrata*, (Mudd.) dirty-white or smoky-brown, tart-
areous, thin, contiguous or evanescent; apothecia deeply immersed
in the rock, small, plane or sub-convex; perithecium entire, black,
inner tunic dark-brown; paraphyses none; spores 4-8, fuscescent
or fuscous, oblong or ovate, murali-locular.

On calcareous mountain rocks, rare.

**Spores fuscous.**
V. nigra, Nyl. fuscous-black, thin, areolate-unequal, sub-granulose, effuse; apothecia black, immersed, small; ostiolum black, somewhat prominent, plano-convex; epithecium impressed; perithegium entire; paraphyses distinct, short, dissolving; spores 8, fuscous, ellipsoid, irregularly murali-locular, small; gelatina hymenea dull-blue-green, then vinous-red-yellow with iodine.

On mossy earth in alpine places, very rare. (1860.)


V. Henscheliana, (Körb.) cinereo-fuscous or nigro-fuscous, effuse, thin, tartarous, unequal; apothecia black, large, sub-globoso-tuberculiform, somewhat conical, sessile; epithecium papillate with a simple conspicuous pore; perithegium entire, nigro-fuscous; paraphyses slender, diffusent; filamenta ostialaria distinct; spores 8, large, oblongo-ellipsoid, irregularly murali-locular, at first colourless or fuscescent, ultimately fuscous; gelatina hymenea pale-vinous with iodine.

On micaceo-schistose alpine rocks, not unfrequent. 1869.


V. theleodes, Smurt. creamy-white, thick, tartarous, ruguloso-areolate, with large, scattered, rugose, prominent verrucae; apothecia very large, inclosed in the thalline verruca; ostiolum black, more or less denuded, depresso-convex; epithecium perforate, simple; perithegium entire, black, very thick; paraphyses none; filamenta ostialaria very large and distinct; spores 8, dark-brown, broadly-ellipsoid, murali-locular, very large; gelatina hymenea vinous-red with iodine.

On micaceo-schistose alpine rocks, rare. 1860.


V. paraphyses theleodes, (Schaer.) similar to the type, but with a dimidiate perithegium and spores so dark in an old state as to make the muriform divisions almost invisible.
On micaceo-schistose alpine rocks, rare. 1860.

SYN.:—Lecanora atva var. verrucoso-areolata, Scher.: Enum. 37. (1850)

FIG.:—Mudd Man. t. 5. f. 119.

EXS.:—Scher. 535. Anzi Langob. 236.

SCOTLAND.—Ben Lawers! Adm. Jones. (1860.)
IRELAND.—Doughraugh Mountain! co. Galway. Mr. Larbalestier.

WALES:—Cwm Clyd !

“Spores .015 to .017 in. long, by .008 to .009 in. broad. t. 5. f. 119.” (Mudd.)
“Spores .064—82 mm. long, .088—45 mm. broad.” (Nyl.) Spores .080 mm. long, .041 mm. broad.


127. V. gothica, (T. M. Fr.) evanescent; apothecia black, moderate, scattered, hemispherico-conoid, sessile, prominent; peritheium entire, black; paraphyses indistinct; spores 8, fuscos, elliptico-oblong, 5-septate, murali-locular; gelatina hymenea vinous-red with iodine.

On larch poles, rare. 1861.


DISTRIBUT:—Europe.

EXS.:—Shrewsbury, Shropshire. (1861.)

“Spores .018—28 mm. long, .007—9 mm. broad.” (T. M. Fr.) Spores .025—.026 mm. long, .008—.010 mm. broad.

128. V. pyrenuloides, (Mut.) var. Hibernica, Nyl. similar to V. nitida, but with aggregate apothecia and multilocular fuscos spores 4—8, cells in 12 or more plurilocular series; gelatina hymenea and asci slightly vinous-red with iodine.

On hazel, very rare. 1867.

SYN.:—Nyl. in Flora 1868. p. 163. Crombie En. 118.

DISTRIBUT:—Europe.

EXS.:—Turk Mountain and Eagle’s Nest, Killarney. Mr. Carroll, (1867.)

“Spores .070—.110 mm. long, .025—.038 mm. broad.” (Nyl.)

129. V. Sendtneri, (Kphbr.) albido-cinereous, cartilaginous, incrusting, contiguous, squamuloso-effigurate, smooth and unequal; apothecia black, minute, globose, immersed, then emergent; epithecium umbilicate; peritheium black, entire; spores 8, pallido-fuscos, ovoid, murali-locular; paraphyses none; gelatina hymenea vinous-red with iodine.

On mossy earth in alpine regions, rare. 1865.


FIG.:—Hepp Spores t. 51. f. 447.


DISTRIBUT:—Switzerland, Bavaria, Italy, Scandinavia.

EXS.:—Summit of Ben Lawers, Messrs. Jones & Carroll. (1865.)

“Spores .015—.30 mm. long, .009—14 mm. broad.” (T. M. Fr.) “Spores .027—.32 mm. long, .012—13 mm. broad.” (Nyl.) Spores .028 mm. long, .013 mm. broad.
130. *V. pallida*, (Ach.) *pallido-rufescens* or fuscescent, *squamous*, *squameae* imbricate, flexuose, lobate, sub-crenate; *apothecia* minute, *immerged*; *ostiolum* protruded, prominent, brownish-black; *epithecium* a simple pore; *peritheciun* entire, dark-brown; *spores* 2, pale-yellow, *lineari-oblong*, 1-septate, muriar-locular, large.

On earth-covered rocks, very rare. 1818.


**Fig**: — E. Bot. t. 2641. Leight. Ang. Lich. t. 5. f. 3.

**Geog. Distrib**: — Europe, Sweden, Algeria, N. America.

**Bot. Prov**: — 19.

**IRELAND**: — Southern portion! Sir T. Gage. (1813.)

"Spores .008 to .009 in. long, by .0025 to .003 in. broad." (Mudd.) "Spores .034—.06 mm. long, .014—.018 mm. broad." (Nyl.)

131. *V. Garovaglilii*, Mnt. fuscescent, *crustaceo-concrescent*, *squamous*, *squamoses* small, closely adnate, slightly elevated, lobed and crenate at the circumference; *apothecia* minute, *immerged*; *ostiolum* prominent, naked, black; *epithecium* a simple pore; *peritheciun* entire, black; paraphyses none; *filamenta* ostiaria minute, slender, crowded; *spores* 2, green or pale-yellowish-brown, *lineari-oblong*, 1-septate, muriar-locular, large.

On earth-covered maritime rocks, very rare. 1809.


**Fig**: — E. Bot. Suppl. t. 2612. f. 2. Leight. Ang. Lich. t. 5. f. 2.


**Geog. Distrib**: — France, Switzerland, Germany, Bavaria, Sweden, Hungary.

**Bot. Prov**: — 2. 4.

**ENGLAND**: — Thetford. Mr. Turner. (1809.) Rottingdean Cliffs! Sussex. Mr. Borrer.

"Spores .008 to .011 in. long, by .0025 to .0035 in. broad. t. 5. f. 111." (Mudd.)

132. *V. diminuta*, Arn. *cinereo-albescens*, thin, tartaraceous; *apothecia* black, entirely *immerged*, very minute; *ostiolum* slightly prominent; *epithecium* minutely poriform; *peritheciun* entire, *globose*; paraphyses none; *spores* 8, colourless, then fuscose, ellipsoid, or broadly oblong, muriar-locular.

On moist rocks, rare. 1876.


**Exs**: — Antar. 200. & 200. b.

**Geog. Distrib**: — Germany.


**IRELAND**: — Recess Road! Conmemara. Mr. Larbalestier. (1876.)

"Spores .022—.026 mm. long, .013 mm. broad." (Kplbr.)

**§§ Spores colourless.**

133. *V. hymenogonia*, Nyl. *whitish* or pale-grey, very thin, *leprous-tartaceous* or evanescent; *apothecia* moderate, prominent, *semi-immerged*, *convex*; *peritheciun* entire, black; paraphyses none; *spores* 8, colourless, *lineari-oblong*, muriar-locular, often 1-septate; *gonidia* *hymenea* oblong, green; *gelatina* *hymenea* vinous-red with *iodine*. 
On mortar and calcareous rocks, not common. 1830.


**Fig.**—E. Bot. Suppl. t. 2647. f. 2. Leight. Ang. Lich. t. 20. f. 1.

**Geog. Distrib.**—France, Belgium, Italy.

**Bot. Prog.**—1, 2, 3...5...7...15...19.


**Ireland**—Glannuir! near Riverstown, Cork. Mr. Carroll.


"Spores .005 to .007 in long, by .002 to .0035 in. broad." (Mudd.) "Spores .018—34 mm. long, .011—17 mm. broad." (Nyl.) Spores .03—.033 mm. long, .011 mm. broad.

134. *V. inumbrata*, Nyl. fuscescent or darkly-cinereo-fuscescent or dark-tawny, thin, effuse, unequal, often dispersed; apothecia moderate, covered with the thallus; ostiolum naked; epithecium most minute, generally impressed; perithecium entire, black; spores 8, colourless, oblongo-ellipsoid or ellipsoid, murali-divided; gelatina hymenea vinous-red with iodine.

On alpine micaceo-chistose rocks, very rare. 1864.


**Geog. Distrib.**—Europe.

**Bot. Prog.**—15.

**Scotland**—Ben Lawers. Adm. Jones. (1864.)

"Spores .033—50 mm. long, .017—25 mm. broad." (Nyl.)

135. *V. subinumbrata*, Nyl. cinerascent, very thin or sub-evanescent; apothecia in fuscescent, thalline verrucula; similar to *V. inumbrata*, Nyl. in Flora 1864. p. 355, but differs (perhaps only as a subspecies) in the smaller spores .022—30 mm. long, .015—18 mm. broad.

On micaceo-ichistose rocks, rare. 1877.

**Syn.**—Nyl. in Flora 1878. p. 246.

**Bot. Prog.**—26.

**Ireland**—Kylemore. Mr. Lorblestier. (1877.)

136. *V. modesta*, Nyl. whitish, thin, continuous or rimose, unequal, with small protuberances, in which are included the apothecia; perithecium colourless, fuscescent upwards, ostiolum a fuscous point; spores 8, colourless, ellipsoid, murali-divided.

On trees, poplar, birch, &c., rare. 1876.

**Syn.**—Nyl. Coll. Gall. mer. Pyren. 16. (1853); Pyren. 63.

**Exs.**—Nyl. Par. 97.

**Geog. Distrib.**—France.

**Bot. Prog.**—5.

**England**—Barnsley Park! Gloustershire, Mr. Joshua. (1876.)

"Spores .019—38 mm. long, .011—18 mm. broad." (Nyl.)

**H. Parasitic species.**

* Perithecium dimidiate.

§ Spores colourless.

137. *V. allogena*, Nyl. apothecia black, at length prominent; perithecium black, dimidiate, the immersed or lower portion nearly
colourless or slightly fuscous; paraphyses distinct; spores 8, colourless, oblong, 1-septate, in form and size like those of *V. epidermidis*.

Parasitic on thallus of *Lecidea excentrica*, on micaceo-schistose alpine rocks, very rare. 1864.

**GEOG. DISTRIB:** Europe.  
**BOT. PROV.:**—15...26.  
**SCOTLAND:**—Near summit of Ben Lawers. Mr. Carroll. (1864.)  
**IRELAND:**—Near Kylemore Castle! co. Galway. Mr. Larbalestier.  
“Spores .0023—27 mm. long. .008—9 mm. broad.” (Nyl.)

138. *V. endococoides*, Nyl. apothecia black, minute, endococoid; immersed portion of the peritheciun thin and fuscous, upper visible portion somewhat convex; paraphyses none; spores 8, colourless, oblongo-ellipsoid, 3-septate, pale-blue with iodine; gelatina hymenae vinous-red with iodine.  

Parasitic on thallus of *Lecidea excentrica*, (Ach.) in alpine localities, very rare. 1865.

**GEOG. DISTRIB:** Europe.  
**BOT. PROV.:**—15.  
**SCOTLAND:**—Near summit of Ben Lawers. Mr. Carroll. (1865.)  
“Spores .016—18 mm. long. .006—7 mm. broad.” (Nyl.)

**§§ Spores fuscous.**

139. *V. microstictic*, (Leight.) apothecia black, very minute; immersed or semi-immersed; ostiolum black, plano-convex; epithecium a minute pore; *perithecium dimidiate*, brown; paraphyses distinct, flocculose, branched, entangled; spores 8, fuscous, oblong, 1-septate, minute.  

Parasitic on thallus of *Lecanora cervina*, rare. 1856.  
Possibly only a *fungillus*.  
**SYN:** Endocarpus, Leight. Exs. 317. (1858.)  
**EXS:**—Leight. Exs. 317.  
**GEOG. DISTRIB:** Europe.  
**BOT. PROV.:**—7.  
**WALES:**—Borthwen ! Barmouth. (1856.)

140. *V. hetairizans*, Leight. apothecia black, minute; immersed; *perithecium black*, *dimidiate*; ostiolum minute, denuded, black; epithecium minute, impressed; paraphyses indistinct; spores 8, fuscous, linear, rounded at each extremity, 3-septate, constricted.  

**FIG:**—Leight. Ang. Lich. t. 26. fig. 3. E.  
**GEOG. DISTRIB:** Europe.  
**BOT. PROV.:**—2.  
**ENGLAND:**—Sussex! Mr. Borrer.  
In my Ang. Lich. I must have taken this for the mature state of the spores of *V. submersa*, which are as represented in E. Bot. Suppl. 1. c. Recent re-examination shows me that there are two lichens consociated on the same thallus. Possibly the present one may be only a *fungillus*. Spores .019—.025 mm. long. .006—.008 mm. broad.

141. *V. fumosaria*, Leight. apothecia black, minute, hemi-
spherico-depressed, semi-immersed; epithecium poriform; perithecium
dimidiate, much incurved at the base; paraphyses none; spores 8;
fuscous, oblong, 1-septate.
Parasitic on the thallus of 
Lecidea fuscoatra f. fumosa, Ach., rare. 1876.

SYN:—Leight. in Linn. Trans. 2d. ser. 1. 239.
FIG:—Linn. Trans. 1. c. t, 32, f. 19.
BOT. PROV:—6.
WALES:—Pen Cow! near Fishguard, Pembrokeshire. (Sept. 1876.)
Spores .0155—.016 mm. long, .007—.011 mm. broad.

** Perithecium entire.

§ Spores colourless.

142. V. superposita, Nyl. apothecia black, turgid; perithecium
entire, black; epithecium impressed; paraphyses none; spores 8,
colourless, ovoid, 1-septate; gelatina hymenea vinous-red with
iodine.
Parasitic on Verrucaria theleodes, Smrft. very rare. 1865.


Geog. Distr:—Europe.

BOT. PROV:—15.

SCOTLAND:—Near the summit of Ben Lawers. Mr. Carroll. (1865.)
"Not unlike V. Borreri, in miniature. Spores .017—19 mm. long, .007—8
mm. broad." (Nyl.)

143. V. innata, Nyl. apothecia innate, minute; perithecium
entire, black; paraphyses few, irregular or scarcely any; spores 8,
colourless, ovoid, 1-septate; gelatina hymenea untinged or lute-
scent with iodine.
Parasitic on thallus of Lecidea Hookeri, Schær. in alpine locali-
ties, very rare. 1865.


Geog. Distr:—Europe.

BOT. PROV:—15.

"Spores .018—23 mm. long, .008—.011 mm. broad." (Nyl.)

144. V. epipolytropa, (Mudd.) apothecia black, very minute,
numerous, irregularly scattered, immersed or semi-immersed, glo-
bose, internally pale; ostiolum denuded, plano-convex, slightly
shining; epithecium minutely poriform; perithecium entire, of a
bluish-green hue; paraphyses distinct, slender, branched; spores
4, 6 or 8, colourless, oblongo-subclavate, 1-septate, constricted, minute,
very similar in form to those of V. epidermidis; gelatina hymenea
rubescent with iodine.
Parasitic on Lecanora polytropa and intricata and Squamaria
saxicola, rare. 1861.

SYN:—Thelidiurn, Mudd Man. 298. (1861.)

ENGLAND:—Cliffrigg! Ayton Moor, Cleveland. Mr. Mudd. (1861.)


WALES:—Cwm Glas! Snowdon. Moel-y-Golfa!
"Spores .003 to .0035 in. long, by .00075 to .001 in. broad." (Mudd.)
§§ Spores fuscos.

145. *V. haplotella*, (Nyl.) apothecia minute, convex, prominent, aggregate, black; perithecium entire; spores numerous, pallidonigrescent, ellipsoid or oblong, simple.  
Parasitic on *Opegrapha varia* f. *diaphora*, very rare.  
**SYN:** *Endococcus*, Nyl. in Flora 1867. p. 180. Crombie En. 122.  
**GEOG. DISTRIB.:** Denmark, Madeira.  
**BOT. PROV.:** 19.  
**IRELAND:** Muckross Demesne, Killarney. *Mr. Carroll.*

"Spores .004—.010 mm. long, .002—.003 mm. broad. Paraphyses indistinct. Gelatinose hymenea and thecae I vinous-red."  

146. *V. ventrosicola*, (Mudd.) apothecia minute, semi-immersed in minute thallodal verruca, globose, black; perithecium entire; spores 30—50, fuscos, elliptical or oblong, 1-septate.  
Parasitic on *Lecanora ventosa*, very rare.  
**SYN:** *Microthelia*, Mudd Man. 307. (1861.)  
**EXS.:** Mudd 300. on Leight. 9.  
**GEOG. DISTRIB.:** Europe.  
**BOT. PROV.:** 1—7...10.  
**ENGLAND:** Kildale Moor, Cleveland. *Mr. Mudd.* Dartmoor. *Mr. W. Joshua.*  
**WALES:** Penmaenmawr! Carnarvonshire.  
"Spores .0015 in. long, by .0005 to .00075 in. broad."  

**(Mudd.)** Spores .008—.009 mm. long, .005 mm. broad.  

147. *V. calcaricola*, (Mudd.) apothecia of medium size, sessile or slightly immersed, globose, black; perithecium entire; spores 8, fuscosent, ellipictico-oblong, 1-septate, large.  
Parasitic on *Lecanora cinerea*, calcarea and gibbosa, rare.  
**SYN:** *Microthelia*, Mudd Man. 306. (1861.)  
**FIG.:** Mudd Man. t. 5. f. 128.  
**GEOG. DISTRIB.:** Europe.  
**BOT. PROV.:** 2—5...15...23.  
**ENGLAND:** Near Lewes, Sussex. *Mr. Unwin.* Spout Valley, Long Mynd! Shropshire.  

**SCOTLAND:** Near Ben Lawers and Morrone. *Rev. J. M. Crombie.*  
**IRELAND:** Killiney. *Adm. Jones.*

"Spores .003 to .004 in. long, by .001 in. broad. t. 5. f. 128."  

**(Mudd.)** Spores .019—.020 mm. long, .006 mm. broad. Paraphyses gelatinose, I vinous-brown.  

148. *V. gemmifera*, Tayl. apothecia minute, semi-immersed, sub-hemispherico-globose, black; perithecium entire; epithecium depressed; spores 8, fuscos, broadly oblong, 1-septate, minute.  
Parasitic on *Lecidea contigua*, frequent. 1836.  
**SYN:** *Verrucaria*, Tayl. Fl. Hib. 2. 35. (1836) Leight. Aug Lich. 47.  
**FIG.:** Leight. Aug. Lich. t. 29. f. 3.  
**EXS.:** Leight. 137.  
**GEOG. DISTRIB.:** Europe.  
**BOT. PROV.:** 1—5. 6. 7...10...15...19.  
**ENGLAND:** Craigfords! near Oswestry, Shropshire; Penzance, Cornwall.  

**IRELAND:** Dunkerron! *Dr. Taylor.* (1836.)  
"Spores .002 in. long, by .001 in. broad."  

**(Mudd.)** "Spores .008—.011 mm. long, .006—7 mm. broad."  

**(Nyl.)** Spores .010—.012 mm. long, .006—.007 mm. broad.
149. *V. perpusilla*, (Nyl.) apothecia very minute, immersed, globose-depressed, black; epithecium large; perithecium entire; spores 8, fuscous, oblong, 1-septate.

Parasitic on *Lecanora cinerea*, rare. 1869.

**Syn.**—*Endococcus*, Nyl. Prodr. 193. (1851.) Crombie En. 123.

**Geog. Distr.**—France.

**Bot. Prov.**—5...7...15...26.

**England**—Bisley, Gloucestershire. Mr. Joshua.

**Scotland**—Ben Cruachan. Rev. J. M. Crombie.

**Ireland**—Summit of Kylemore Mountain, co. Galway! Mr. Larbalestier.

**Wales**—Llyn-y-Cae! Cader Idris. (1893.) Craig Aderyn!

“Spores .014—19 mm. long; .005—7 mm. broad. Spermatia oblong-cylindrical.” (Nyl.)

150. *V. erratica*, (Mass.) apothecia minute, semi-immersed or sub-emerged, globose, black; perithecium entire; spores numerous, fuscous, broadly-elliptical, half the size of those of *V. gemmifera*.


**Fig.**—Leight. Ang. Lich. t. 20. f. 4.


**Geog. Distr.**—France, Italy, Pyrenees, Germany, Bavaria, Asia Minor.

**Bot. Prov.**—5, 6, 7...10, 11...15...18, 19...26...28.


**Ireland**—Sheep walk, Armagh; Killiney; Dublin; Cusquiny; Cork Harbour. Adm. Jones. Mangerton. Mr. Carroll. Twelve Pins! Galway. Mr. Larbalestier.

**Wales**—Crib Coch! Snowdon; Corwen! very summit of Snowdon! Barmouth! Cader Idris north side! Trecriw falls! Llanbedrog! Fort Hill! near Fishguard, Pembrokehire, Great Orme’s Head!

“Spores .001 in. long. by .005 in. broad.” (Mudd.) “Spores .007—.010 mm. long. .004—6 mm. broad.” (Nyl.) Spores .007—.008 mm. long. .004—.005 mm. broad.

151. *V. rimosicola*, Leight. thallus none; apothecia black, minute, sessile, hemispherical, somewhat shining; perithecium entire, black; epithecium a very minute pore; paraphyses none; filamenta ostiolaria none; spores 8, fuscous, oblong or lineari-oblong, 3-septate, constricted, minute; gelatina hymenea vinous-red with iodine.

Parasitic on *Lecidea excentrica*, frequent. 1856.


**Fig.**—Ann. and Mag. Nat. Hist. ser. 2. vol. 13. t. 3. f. 10.


**Geog. Distr.**—Germany, Italy, Russia.

**Bot. Prov.**—5...10...15...18...19...26...27.


“Spores .0035 to .004 in. long, by .00125 to .0015 in. broad. t. 5. f. 129.” (Mudd.) “Spores .015—20 mm. long. .006—8 mm. broad.” (Nyl.)
152. *V. nigritella,* 'Nyl. black, magmoid (probably not the proper thallus but only algae); apothecia black, small; perithecium entire, black, somewhat prominent; epithecium scarcely impressed; paraphyses none; spores 8, fuscous, ellipsoid or oblongo-ellipsoid, variously or murali-locular, small, (like those of *Urecularia scruposa.* 

On the thalline squamae of *Verrucaria tephroides,* very rare. 1864.


**Fig.**—Leight. *Ang. Lich.* t. 11. f. 3. B.

**GeoG. Distrib.**—Europe.

**Bot. Prov.:**—15.

**Scotland:**—Summit of Ben Lawers. *Mr. Carroll.* (1861.)

"Spores .021—.36 mm. long, .009—.014 mm. broad. *Gelatina hymenea I vinous-red or fulvescent." (Nyl.)

153. *V. triphractoides,* (Nyl.) apothecia black, minute, hemispherical; perithecium entire; spores 8, colourless or pale-brownish, oblongo-fusiform, 3-septate.

Parasitical on dealbated portions of thallus of *Lecidea Scotinodes,* Nyl. 1874.

**Syn.**—Crombie *in Grevillea* 3. p. 24. (1874.)


**Scotland:**—Craig Tulloch, Blair Athole. *Rev. J. M. Crombie.* (1874.)

"Spores .014—.18 mm. long, .006—.007 mm. broad." (Cromb.)

154. *V. neottizans,* Leight. apothecia black, minute, clustered, hemispheric-conical; perithecium carbonaceous, entire; paraphyses distinct, slender; spores 4, fuscous, lineari-oblung, 3-septate, constricted.

Parasitic on *Beomyces rufus,* D.C. very rare. 1876.

**Syn.**—Leight. *in Linn. Trans.* 2d. ser. 1. p. 239.

**Fig.**—Linn. Trans. 1. c. t. 32. f. 13.


**Wales:**—Llanachar Bridge! near Fishguard, Pembrokeshire. (1876.)

*Gelatina hymenea I—. Spores .0245—.025 mm. long, .0085—.009 mm. broad.

155. *V. corniculata,* (Wallr.) apothecia very minute, immersed, tuberculate, endocarpoid, scattered; paraphyses none; spores 8, colourless, shortly fusiform, corniculate at each apex, absolutely 7-septate.

Parasitic on thallus of *Leptogium microscopticum.*


**Fig.**—*Nyl. Syn.* t. 2. f. 9.

**Exs.**—Mass. 138.

**GeoG. Distrib.**—France.

**Bot. Prov.:**—5.

**England:**—Weston-super-Mare, Mr. Joshua.

156. *V. dolichotera,* (Nyl.) Similar to *V. corniculata,* but with spores longer, 3–5-septate, cylindrico-oblung.

Parasitic on lobes of *Collema auriculatum,* var. pinguescens, Nyl. 1870.

**Syn.**—*Nylander in Flora* 1872. p. 358.

**Bot. Prov.:**—15.

**Scotland:**—Craig Tulloch, Blair Athole. (1870.) *Rev. J. M. Crombie.*
V. STRIGULA, Friès.

Thallus hypophysal. Apothecia solitary, sub-inuate; peritheci um sub-globose, collapsing, at length dehiscent by an irregular fissure or pore; nucleus gelatinous when moist, black and rigid when dry; paraphyses indistinct. Spores colourless, 3-septate.

1. *S. Babingtonii*, Berk. greyish, thin, filmy; apothecia dark-brown or nearly black, minute, scattered, depressed; spores 8, colourless, sub-cymbiform, 3-septate.

Parasitic on coriaceous perennial leaves, as laurel, box, arbutus, rare.


Exs.:—Leight. 35.

Geog. Distri.:—Europe.

Bot. Prov.:—2...4, 5...7, 8...10, 11.


“Spores .0035 to .004 in. long, by .001 in. broad. t. 3. f. 130.” (Mudd.)

Spores .018—.023 mm. long, .005—.007 mm. broad.

VI. MELANOTHECA, Fée.

Thallus scarcely any. Apothecia verrucaroid, not simple but numerous, 3-10 or more confluent, hymenia scarcely distinct; peritheci um black. Spores 8, variously internally divided.

1. *M. gelatinosa*, (Chev.) pallescent, macular, determinate; apothecia round or oblong, opaque, depressed, unequal, internally white; peritheci um numerous, minute; spores 8, colourless, oblong-ovoid, 3-septate, small; paraphyses none; hypothecium colourless.

On young trees, frequent.


Geog. Distri.:—Switzerland, France.

Bot. Prov.:—1, 2...5...7...10...15...(19—26—30)...31.


Ireland:—Not frequent. Mr. Carroll. Lough Derrycclare! Kylemore! co. Galway. Mr. Larbalestier.

Wales:—Woods at Glyn! and opposite Tanybwlch Hotel, Capel Curig! Dolgelly!

Channel Islands:—Rozel, Jersey. Mr. Larbalestier.

“Spores .023—.27 mm. long, .007—.010 mm. broad.” (Nyl.)

2. *M. diffusa*, Leight. pallido-glaucescent or pallido-cinerascent, diffuso-macular, indeterminate; apothecia large, irregularly round, or linear-oblung, numerous, diffuse and sub-confuent, opaque, depressed, unequal, internally colourless; peritheci um numerous, prominent and large; spores 8, fuscous, linear-oblung, 1-septate, constricted in the middle, large.

On young trees, rare. 1865.
OF GREAT BRITAIN.

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GEOG. DISTRIBUT: ...Europe.

Bot. Prov:—7.

Wales:—Nant-Gwynant! Snowdon, (1865.) wood opposite Tanybwlch Hotel, Capel Curig!

Spores .022—.026 mm. long, .005 mm. broad.

3. M. ischnobela, Nyl. glaucescent, whitish; apothecia black, somewhat convex; rotundate or suboblong; perithecia black, dimidiate; hymenea 2-4 in each apothecium, contiguous, oblique, and confluent at the apex; ostioliun scarcely any; spores 8, colourless, excessively slender and acicular, oleoso-spuriously multisepitate; gelatina hymenea I—.

On holly, rare. 1876.

Syn:—Nyl. in Flora 1876. p. 238. Verrucaria myriospora, Linn. Trans. 2. s. I. 145.

Fig:—Linn. Trans. 1. c. t. 22. f. 1. 2. 3. excl. f. 4. 5. which are erroneous.


Ireland:—Doughruagh Mountain! Mrs. Larbalestier. (1876.) Dolgelley!

"Gonidia subchroolepoideo-concatenate. Thece cylindrical, elongate, Paraphyses very slender, crowded. Spores .060—.115 mm. long, .001 mm. broad." (Nyl.)

VII. ASTROTHELIUM, Eschw.

Peritheciam several, stellato-congregate, their ostioli converging into one common central poriform epithecium.

1. A. parmularia, (Berk.) pale-yellow, thin, membranous, continuous, smoothish and shining; apothecia enclosed in upraised prominent thallodal verruca; perithecium entire, black; paraphyses indistinct; spores 8, fuscous, broadly lineari-oblong, 1-septate, large.

On young oaks, very rare. 1851.


GEOG. DISTRIBUT:—South of France.

Bot. Prov:—2.


Spores .087 mm. long, .015—.016 mm. broad.

"Quanquam multas observaverim plantas et sedulo quidem, tamen non confido me semper veritatem invenisse."

Linn.
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Anzi Langob. Anzi, Lichenes rariores Langobardi.
Anzi Etr. Anzi, Lichenes rariores Etruriae.
Arn. Arnold, Lichenes Exsiccati Juræ et al.
Bour. Bourgeau, Plantæ Canarienses.
Desmaz. Desmazières, Cryptogames de France.
Dicks. Dickson, Exsiccati.
Fallm. Fallman, Lichenes Lapponie orientalis.
Fries. Fries (E.) Lichenes exsiccati Suecæ.
Hepp. Hepp, Die Flechten Europas.
Larbalest. Larbalestier, Lichenes Casarienses et Sargienses.
Leight. Leighton, Lichenes Britannici Exsiccati.
Lindig. Lindig, Lichenes Novæ Granæ.
Lojka. Transylvanian Lichens.
M. & N. Mougeot et Nestler, Stirpes Cryptogamæ Vogeso-Rhenanae.
Mudd. Mudd, Lichenes Britannici Exsiccati.
Maudon. Maudon, Madere.
Nyl. Nylander, Herbarium Lichenum Parisiensium.
Schar. Schærer, Lichenes Helvetici Exsiccati.
Somfl. Sommerfelt, Plantarum Cryptogamicarum Norvegicarum centurie II. 1826—1830.
Spruce Amaz. Spruce Lichenes Amazonicæ et Andinæ.
Stenh. Stenhammar, Lichenes exsiccati Suecæ.
Tuck. Tuckerman, Lichenes Americæ Septentrionalis.
Wright. Wright, Lichenes Cubæ.
Zw. Zwackh, Lichenes Germanici Exsiccati.
GLOSSARY OF TERMS
USED IN
LICHENOLOGY.

Abbreviated, suddenly shortened.
Abraded, roughly rubbed off.
Acervulier little heaps or clusters.
Acicular, needle-shaped.
Aciculari-bacciform, needle-like and somewhat club-shaped.
Aciculari-cylindrical, a needle-like cylinder-shape.
Aciculari-fusiform, of an acicular or very slender spindle-shape.
Acuminate, coming gradually to a point.
Adnate, adhering to anything.
Adnato-appressed, adnate and closely pressed to a surface.
Adnato-squamulose, with adnate scales.
Adpresso-tomentellose, with appressed close down.
Adpresso-tomentellose, crowded together and ascending.
Eruptinose, verdigris-green.
Affixed, fixed to.
Agglomerated, clustered.
Aggregate, crowded together.
Aggregato-acervululate, in crowded heaps.
Aggregato-confuent, flowing together in crowded portions.
Aggregato-conglomerate, in crowded clusters.
Aggregato-deformed, deformed by being crowded together.
Albescens, growing white.
Albicant, growing whitish.
Albido-appresso-tomentellose, with whitish appressed down.
Albido-bullate, whitely bullate.
Albido-cinerous, whitish-ashy-grey.
Albido-ciraescent, whitish becoming ashy.
Albido-flavescens, whitish-yellow.
Albido-glaucens, whitish glaucescent.
Albido-granulose, with whitish granules.
Albido-palerens, pale and whitish.
Albido-papillate, with whitish papillae.
Albido-pruinose, with white pruina.
Albido-radiate, in whitish radiations.
Albido-stramineous, whitish-straw-coloured.
Albido-tomentellose, covered with whitish down.
Albo-castio-pruinose, with white bluish grey Pruins.
Albo-canescens, with a white hoariness.
Albo-carneous, pale-flesh-colour.
Albo-cinerous, white-ashy-grey.
Albo-depresso-granulote, covered with white flattened granules.
Albo-fibrillos-citiate, ciliate with white fibrilliæ.
Albo-flavescens, pale-yellow.
Albo-flosculose, with white woolly down.
Albo-furfurocos, with white scurf.
Albo-pruinose, white-brownish hue.
Albo-granulato-pulverulent, with white granular powder.
Albo-granulato-pruinose, with pruina consisting of white granules.
Albo-guttate, spotted with white.
Albo-liminate, bounded by a white hypothallus.
Albo-maculate, having white spots or dots.
Albo-maculatus, consisting of a white spot or patch.
Albo-ocellatus, surrounded with a white thalline margin, giving an eye-like appearance.
Albo-pruinosis, with white pruina.
Albo-pulverulentus, having white powder.
Albo-sorediatus, with white soredia.
Albo-suffusus, covered with white powder or pruina.
Albo-tomentosus, with white tomentum.
Albo-verrucosus, having white warts.
Albo-virescentus, whitish-green.

Angularis, having 

Angulari-nucleolatus, with angular nuclei.
Angulari-areolato-verrucosus, having many sharp-cut straight sides.
Angulato-areolato-verrucosus, consisting of angular warty areolae.
Angulato-nucleolatus, with angular shaped nuclei.
Anguloso-deformatus, angular and deformed by crowding.
Anguloso-rimosus, broken into angular portions by chinks.

Areolari-truncatus, divided into the very narrowest areolae.
Annulato-tomentosus, having a ring of down.
Apex, the end or point.
Apicatus, at the apex.
Apiculatus, terminating abruptly in a little point.
Apiculatus, minute points.
Areolari, the entire female fructification of a lichen.
Appendiculatus, an apothecium subtended by the apex of a branch or lacinia extending beyond it.
Applanatus, flattened out or horizontally expanded.
Applanato-dilatus, broad and flattened out.
Appressus, pressed closely to anything.
Appresso-furfuraceus, having appressed scurf.
Appresso-innate, closely pressed to, and partially innate or sunken.
Appresso-spongioso-tomentosus, having a close-pressed spongy tomentum.
Appresso-tomentosus, with appressed tomentum.
Approximatus, approaching.
Arachnoideus, cobwebbed.
Arachnoideo-tomentosus, having a loose tomentum or down hanging about like a cobweb.
Areolatus, curved like a bow.
Arco-rugulosus, wrinkled in an arcuate or curved manner.
Arco-areolatus, the peculiar apothecia in the genus Arthonia resembling burnt or cauterised spots.
Arco-areolato-crustaceus, with overlapping areolae almost crusty.
Arco-areolato-pressus, impressed in the areolae.
Arco-areolato-papillatus, divided into papillate areolae.
Arco-areolato-rimatus, divided into areolae by chinks.
Arco-areolato-squamulosus, consisting of flattened scaly areolae.
Arco-tomentosus, consisting of wart-like areolae.
Arthrodios, of the form and consistence of the apothecia in the genus Arthonia.
Articulatus, jointed.
Articulato-constrictus, having contracted joints.
Arthrosterigmata, jointed sterigmata.
Ascending, bending upwards in an upward direction.
Ascendenti-imbricate, ascending and overlapping.
Ascetum, small hyaline bladders containing the spores.
Ascyclus, without scyphi or cups.
Astro-cirratus, black or dark-soby-grey.
Astro-rimatus, having black rhizines.
Astro-rufus, dark and blackish-red.
Attenuatus, tapering upwards and becoming thin.
Attenuato-fusiform, slenderly spindle-shaped.
Attenuato-subulatus, tapering upwards into an awlshaped form.
Aurantiaceo-ochraceus, of an orange-ochrey colour.
Axil, the fork of a branch.
Bacillarius, 
Bacilliform, club-shaped.
Badius, dull-brown.
Badius, club-shaped.
Badius-castaneus, dull-dark-chestnut.
Radiog-fuscous, dull-dark-brownish colour.
Biatora, from Fries's genus Biatora, in which the apothecium had a proper
margin of a different colour from the epithecium or was convex without
visible margin, and internally with a pale or colourless hypothecium.
Biatorina-lecideine, an apothecium becoming convex and destitute of margin
either proper or thalline.
Bifurcate, twice forked.
Bilocular, having two cells cut as it were out of a solid spore in contradistinction
to 1-septate.
Binucleolate, with two nuclei.
Branched, in contradistinction to simple or unbranched
Brunneo-fuscous, dull-brown.
Brunneo-infuscate, dull-dark-brown.
Bullate, with unequal convex projections on the under surface of a scrobiculate
thallus, corresponding to the concave scrobiculations on the upper surface.
Bullato-plicate, plaited into swollen masses.
Bullato-reticulato-tomentose, bullate in a reticulate manner, the reticulations
being downy.
Bysoid, of a finely filamentous structure like the genus Byssus.
Carrulescent, of a blue colour, variable in intensity.
Carrulescent-fuscous, bluish-brown.
Carruleo-cinerascens, blue-ashy-grey.
Carruleo-fuscous, bluish-brown.
Carruleo-nigrant, of a bluish-black colour.
Carruleo-pruinose, with blue pruina.
Carruleo-virescent, bluish-green.
Casious, bluish-grey.
Casious-cinerascens, blue-grey passing into ashy-grey.
Casio-nigrant, greyish-black.
Casio-pruinose, having bluish-grey pruina.
Casio-pulverulento-sorediose, having greyish powdery soredia.
Casio-sorediate, with greyish soredia.
Casio-suffusae, covered with grey pruina.
Casious-white, greyish-white.
Caspietellosae, of a minute clustered branched conglomerate form.
Caspitose, in clustered branched agglomerations.
Caspitoso-congested, in crowded tufts.
Caspitoso-fruticulose, in shrub-like tufts.
Caspitose-pulvinar, in dense tufted cushion-like masses.
Culcivorous, eating into the lime rock.
Canaliculato, longitudinally channelled or furrowed.
Canaliculato-laciniate, channelled and laciniate.
Canaliculato-patulato, channelled but still spreading outwards.
Cancellato-incrusted, sculptured in a kind of reticulation.
Cancellato, hoary.
Capillarv, delicately filiform or like hairs.
Capitate, formed into a head.
Capitulum, the portion of the apothecium in the genus Calicium which is on
the top of the stipes.
Capituliform, having a capitulum or head.
Carbonaceous, black like charcoal.
Carino-cancellate, decayed in a network manner.
Carino-cinerascens, greyish-flesh-coloured.
Carino-fuscous, tawny-flesh-coloured.
Carino-fuscatus, brownish-flesh-colour.
Carino-patid, pale-flesh-coloured.
Carino-fuscous, pale-reddish-flesh-colour.
Carino-rufous, reddish-flesh-coloured.
Carino-testaceus, yellowish-brown-flesh-coloured.
Cartilaginous, hard or tough like a cartilage or sinew.
Cartilagino-corticate, having the cortical layer of a cartilaginous consistence.
Cartilagineo-membranaceous, of a consistence intermediate between cartilaginous and membranous.

Cartilagineo-squamose, the squamae of a thallus being of a tough cartilaginous consistence.

Castaneo-fuscescent, pale chestnut-brown.

Castaneo-fuscous, of a dark-chestnut-brown.

Castaneo-oliveaceous, of a chestnut-brown-olive-colour.

Castaneo-nigrirncnt, chestnut-black.

Castaneo-rufescent, chestnut-brown with a reddish tinge.

Cellulose, consisting of cellules.

Cephalodia, granular concretions of an orbicular form occurring on the thallus composed internally of granula gonima.

Cephalodine, forming a head.

Ceraceo-gelatinose, waxy and gelatinous.

Ceraceo-membranaceous, consisting of a waxy membrane.

Cerasino-rufescent, cherry-red.

Cervine, dark-tawny.

Cervino-castaneous, dark-tawny-chestnut-brown.

Cervino-lutescent, tawny-yellowish.

Chroolepoid, consisting of minute yellow scales.

Ciliato-dentate, toothed with ciliate or hairs.

Ciliato-dissected, cut into ciliate or hair-like laciniae.

Cinerascent, approaching an ash-grey colour.

Cinero-fuscescent, of an ash-grey-brownish hue.

Cinerous, ash-grey.

Cinero-olbescent, ash-grey becoming whitish.

Cinero-carneous, of an ash-grey-flesh-colour.

Cinerea-cervulaceous, ash-grey varying towards blue.

Cinerea-ferruginous, ash-rust colour.

Cinerea-flavescent, ash-grey yellow.

Cinerea-fuscescent, ash-grey.

Cinerea-olivaceous, ash-grey.

Cinerea-olivaceous, ash-grey-glaucous hue.

Cinerea-nigrigent, ash-blackish.

Cinerea-pallid, pale-ashy.

Cinerea-pruinosum with ash-grey pruina.

Cinerea-rufescent, ash-grey.

Cinerea-suffused, covered with ash-grey powder or pruina.

Cinerea-virescent, ash-grey.

Cinereum-cinerascens, cinnamon-greyish.

Circumcised, applied to an apothecium which is separated from the thallus by a distinct ring or chink.

Circumference, the exterior edge or margin of a thallus.

Circumscribed, defined.

Citrine, yellow-green.

Citrinoflavescent, yellow like a lemon.

Citrinopulverulent, having powder of a citrine colour.

Citrinoseudaria, having citrine soredia.

Citrino-suffused, covered with citrine powder.

Citrino-virescent, yellow-green as in a lemon.

Clavate, club-shaped.

Clavato-bulbous, with a head or apex of a club-shaped or wedge-shaped form.

Clavato-cylindrical, elongated club-shaped.

Clavato-pyriform, of club-shaped or elongate pear-shape.

Coercate, closely pressed.

Colliculose-verrucose, in hilly or elevated verrucae.

Coloured, without colour, pale and hyaline, in contradistinction to brown.

Compact, closely united together.

Complicate, folded or plaited together.

Complicato-compound, apothecia becoming compound by close confluence or by complications of the margin.
Compressed, laterally flattened.
Concentrate, united in a chain-like manner.
Concave, with a more or less depressed or sunken rounded surface.
Concentric, ring within ring having a common centre.
Concentrically-gyruse, whirled or gyruse, ring within ring.
Conceptacle, receptacle.
Concolorous, similar in colour.
Concrescenti-areolate, the areolae growing together in a somewhat clustered form.
Concrete, growing together.
Confuent, merging into each other.
Confluento-effuse, spread out in a conjoined or confused condition.
Conglobate, in rounded clusters.
Conglomerate, clustered.
Conglomerations, clusters.
Conglomerato-deformed, becoming deformed by being clustered or crowded.
Conglomerato-granuloso, of clustered granules.
Conspunctuated, glued together.
Connate, arranged together.
Connato-deformed, deformed by growing in close contact.
Connive, shaped like a horn.
Corneous, of horny consistence.
Corneo-hyaline, transparent like horn.
Corrugate, roughened with wrinkles.
Cortex, the cortical layer.
Corticate, covered with a cortical layer.
Crenate, having shallow rounded divisions on the margin.
Crenato-denticulate, with crenate teeth.
Crenato-granulose, having shallow rounded marginal divisions composed of granules.
Crenato-lobulate, with minute crenal lobes.
Crenato-rugose, crenate and wrinkled.
Crenato-undulate, crenate and wavy.
Crenulate, having very minute shallow rounded marginal divisions.
Crenulato-denticulate, with minute crenulate teeth.
Crenulato-granulose, having minute shallow rounded marginal divisions composed of granules.
Crenulato-lobate, lobed in minute rounded marginal divisions.
Creteous, chalky-white.
Crispate, crisped.
Crisped, irregularly curled and twisted.
Cristate-ramose, crested and branched.
Crocoo-fulvous, tawny saffron-coloured.
Crowded, clustered, or many together.
Crustaceous, hard, thin, and brittle.
Crustaceous, applied to a thallus which is closely appressed to the substance on which it grows in contradistinction to membranaceous.  
Cristacea-cartilaginous, between crustaceous and cartilaginous.  
Crustacea-concrescent, growing together into a crust.  
Crustacea-granulose, a crustaceous thallus composed of distinct granules.  
Crustacea-imbricate, squame of a crustaceous consistence overlapping each other.  
Crustose, forming a crust.  
Cupulato-revolvte, rolled back into a cowl shape.  
Cupular, cup-shaped.  
Cupuliform, like a little cup.  
Cuspidate, abruptly pointed.  
Cyathoid, like a cup or a reversed cone.  
Cylindrical, having a true cylindrical figure like a pipe.  
Cylindrico-achicular, cylindrically needle-shaped.  
Cylindraceo-fusiform, a cylindrical form tapering to a point at both ends.  
Cylindraceo-oblong, narrow oblong.  
Cyphellate, minute sunken roundish cup-like spots on the under surface of the thallus of the Stictæ.  
Cyphellae, minute urceolate excavations on the under surface of the thallus.  
Dactylino-papilate, consisting of papillæ which are divided like fingers.  
Decorticate, deprived of the cortical layer.  
Decumbent, reclinng on the earth and rising again from it at the apex.  
Decussate, alternately crossing each other.  
Dehiscent, ruptured or split open.  
Dehiscing, rupturing.  
Deliquote, dissolving.  
Dendritical, branched like a tree.  
Dentate, blackened.  
Dentate, toothed.  
Dentato-radiate, with minute teeth spreading in a ray-like manner.  
Denticulate, with minute teeth.  
Denticulato-cristate, crested with minute teeth.  
Denticulato-dilatate, expanded at the toothed margin.  
Denticulato-laciniate, laciniate or cut into minute teeth.  
Denticulato-ruptured, ruptured in tooth-like fashion.  
Denticulato-stellate, minute teeth spreading in a star-like manner.  
Deplanate, flattened or expanded.  
Depressed, pressed down or flattened.  
Depresso-adnate, depressed and closely adhering.  
Depresso-arreteate, divided into flattened areolæ.  
Depresso-concave, depressed into a concave hollow.  
Depresso-convex, flattened convex.  
Depresso-granulofate, covered with flattish granules.  
Depresso-hemisphericæ, hemispherical and depressed or flattened on the apex.  
Depresso-implied, entangled in a depressed or flattened manner.  
Depresso-pulviform, composed of depressed or flattened cushion-like masses.  
Depresso-verrucarioid, like depressed warts.  
Determinate, definite in contradistinction to effuse.  
Dichotomous, having the division always in pairs.  
Diffusent, dissolving.  
Diffusent, deformed.  
Diffusiform, lobed in an irregular or deformed manner.  
Diffract, broken into distinct areolæ separated by chinks.  
Diffracto-in-esculpt, a surface broken up and sculptured.  
Diffracto-unequal, unequally broken up.  
Diffuse, spreading in an indeterminate way.  
Diffus-type-macular, consisting of a diffuse or expanded irregular spot or patch.  
Digitate, divided like the fingers of the human hand.  
Digitato-dentate, with finger-like teeth.  
Digitato-laciniate, like finger-like lobes.  
Digitato-laciniate-subdilatate, cut into numerous finger-shaped laciniae.  
Digitato-partite, divided into finger-like divisions.  
Dilated, expanded or spread out horizontally.  
Dilatato-compressed, dilated and compressed.  
Diluto-miscromont, pale-washy-blackish.
Dimidiate, applied to a perithecium which covers only the upper half of the apothecium as in some species of *Verrucaria*.

Dirinoid, like the apothecium in the genus *Dirina*; see *tuberculoso-lecanorine*.

Disciform-dilated, dilated or expanded into a disk-like form.

Discoid, disk-like.

Discolorous, of a different colour.

Discrete, separate and distinct.

Dispersed, scattered.

Disperso-areolate, consisting of scattered areoles.

Disperso-glebulose, in dispersed portions like crumbs.

Disperso-granulate, with scattered granules.

Disperso-verrucoso-areolate, consisting of scattered verrucose areoles.

Dissected, cut.

Dissecto-limbriate, cut into a fringed margin.

Disticho-ramose, branched on opposite sides or margins.

Distinct, easily discernible as applied to the paraphyses.

Divaricate spreading in opposite directions.

Divaricato-bifid, cut into two parts and each of those parts spreading in opposite directions.

Divaricato-fibrillosus, fibres spreading divaricately.

Divaricato-lobate, lobes spreading in a divaricate manner.

Divaricato-multifid, cut into many divaricate laciniae.

Divaricato-ramose, branched in a divaricate manner.

Divaricato-spinulosus, minutely spiny, the spines spreading in opposite directions.

Disciform, spreading outwards from a common centre.

Divergenti-furcate, forked, the parts being divergent.

Eccrustaceus, destitute of thallus.

Ecphyllate, without cyphellae.

Efigurate, having a distinct form or figure.

Efigurate-dendritic, in tree-like branchlets or forms.

Effuse, spread out in an indeterminate way.

Efoliolose, without leaflike scales or squamae.

Egranulose, without granules.

Euphrasia-fuscescent, amber-coloured-brownish.

Elevated, raised above a surface.

Elevato-convex, convex and uplifted.

Elevato-sessile, upraised and sessile.

Ellipsoidal, approaching the form of an ellipse.

Elongate, lengthened in a longitudinal direction.

Elongato-accicular, lengthened needle-shaped.

Elongato-cylindroide, like a lengthened cylinder.

Elongato-fusiform, lengthened spindly shape.

Elongato-granulate, composed of elongate granules.

Elongato-laciniate, with very long laciniae.

Elongato-lobate, having lengthened lobes.

Elongato-pendulous, hanging downwards in a lengthened state.

Elongato-ramose, with lengthened branches.

Emergent, protruded through the cortical layer.

Emerged, protruded upwards.

Emergo-adiante, protruded upwards and closely pressed to.

Endocarpoide, applied to apothecia which are sunk or innate in the substance of the thallus, similar to those in the genus *Endocarpon*.

Endococcoid, internal contents becoming red with iodine; or from the minute globular apothecia like those of the genus *Endococcus*, Nyl.

Entire, as applied to an apothecium in which the perithecium or hypothecium wholly subtends the hymenium, or to the margin of an apothecium which is continuous and unbroken.

Epiphyllode, existing superficially on the epidermis of bark.

Epithegium, the outer coat of the spores.

Epithallus, cortical layer.

Epitheciun, the expanded coloured disk of the apothecium in most genera, or the terminal pore in the perithecium of the genera *Verrucaria*, *Thelotrema*, and *Astrostemon*.

Epruinose, without pruina.

Erosso-crenate, crenate as if gnawed.

Erosso-laciniate, as it were gnawed into laciniae.

Erosso-lacunose, with lacunae formed as it were by gnawing.
Erumpent, bursting upwards from beneath the cortical layer.
Erumpent-inнатe, sunk in and bursting forth.
Evanescent, deficient or disappearing.
Even, smooth.
Evernioid, of similar substance and form to the thallus in the genus Evernia.
Excipulum, receptacle.
Excluded, obliterated.
Expanded, spread out.
Explandate, spread out in the same plane.
Furinaceous, chaffy.
Furinose, mealy.
Fasciculate, collected into small bundles.
Fasciculato-ramose, branched in bundles.
Fascicate, rising upwards together to the same plane or level.
Ferruginous, rust-colour.
Ferruginous-red, rust-coloured-red.
Fertile, bearing fructification.
Fibrillose, minute fibre-like branches.
Fibrillose, consisting of small fibres.
Fibrillosa-risine, of a fibrous or filamentose nature.
Fibrillosa-ciliata, ciliated with minute fibres.
Fibrillosa-ramulosa, with small slender fibrous-like branches.
Fibrillosa-ramuncule, with small fibrous branchlets.
Filamentous, ostiolaria, delicate colourless filaments which line the internal portion of the perithecium of Verrucaria immediately around the pore-like epithecium.
Filamentose, consisting of thin thread-like filaments or divisions.
Filiform, thread-like or filamentous.
Filiform-terete, very slender or thread-like and rounded in a longitudinal direction.
Fimbriate, fringed.
Firm, almost rigid.
Fissure, a crack or ruptured opening.
Fissured, split.
Fistulose, hollow like a pipe.
Filamentous-lobate, lobed in a fan-shaped mode.
Filaceous, flabby.
Flavescent, growing yellow.
Flaviscant, yellow.
Flaviscant-sulphureous, yellowish passing into sulphur-colour.
Flavido-cinerascant, yellowish-ashy-grey.
Flavido-fuscescent, yellowish-brown.
Flavido-ochraceous, ochrey-yellow.
Flavido-rufescence, yellowish-red.
Flavo-albicant, yellowish-white.
Flavo-cinerascant, yellow-ashy-green.
Flavo-fuscescent, yellow growing brown.
Flavo-pallidescant, pallish-yellow.
Flavo-pulverulent, covered with yellow powder.
Flavo-sorediate, with yellow soredia.
Flavo-virencant, yellow-green.
Flavo-viremata-pruinose, covered with a yellowish-green pruina.
Flavo-viremata-rufescent, covered with a yellow-green powder.
Flexuose, wavy.
Floculose, like wool.
Floculoso-pulverulent, covered with powdery wool-like tufts.
Follicaceous, like an expanded leaf or membrane.
Foliaceous, squamulose, with leafy squamules.
Foliolous, growing on the leaves of a tree.
Foliolate, consisting of minute leaf-like squamae or scales.
Foreign, applied to a lichen growing parasitically on another (or foreign) thallus not its own.
Fornicate, arched.
Fovolute, having deep pits or depressions.
Foveolato-immersed, in sunken pits or small depressions.
Fragile, easily broken off.
Frondose, foliaceous or in leaf-like expansions.
Frondoso-dilatate, dilated foliaceous.
Fructification, the apothecium and its contents, viz., asci containing spores and paraphyses.
Fruticose, shrub-like.
Fruticulose, minutely shrub-like.
Fruticoloso-imbricate, shrub-like, the branches overlapping.
Fruticoloso-ramose, branched like a little shrub.
Fusiformi-branched, with flattened branches like a fucus or sea-weed.
Fusoid, of the nature or similitude of a fucus or sea-weed.
Fuliginous, sooty or brown verging on black.
Fuligineo-fuscous, having chaff of a dark-smoke-black hue.
Fuligineo-fuscous, blackish-brown.
Fuligineo-granulose, like scurf.
Fusco-fuscous, brownish-black.
Fusco-obscurate, clouded with fuscous colour.
Fusco-olivaceous, brown-olive.
Fusco-rufescent, dark-brownish-red.
Fusco-virescent, brownish-green.
Fusiform, spindle-shaped.
Fusiformi-bacillar, fusiform at one end, club-shaped at the other.
Fusiformi-cylindrical, a cylindrical form tapering to, and more or less pointed at each end.
Fusiformi-ellipsoid, broadly fusiform.
Fusiformi-increasate, thickened into a spindle-shape.
Fusiformi-oblong, very broadly fusiform.
Fusiformi-turgid, swollen into a spindle-shaped form.
Gelatina hymenea, a gelatinous substance surrounding the asci and paraphyses, which becomes tinged blue or vinous-red or without reaction on the application of an aqueous solution of iodine.
Gelatinoso-conglutinate, glued together by gelatine.
Gibboso-convex, unequally tumid or convex.
Gonidia, simple spherical cells containing green granular matter, situate immediately under the cortical layer of the thallus.
Gonidial stratum, the stratum consisting of gonidia or granula gonima, immediately underneath the cortical layer of the thallus.
Glabrous, smooth.
Glanescent, greyish-blue or glaucous-green.
Glaucous-green, green like the sea or like a carnation leaf.
Glaucio-albescent, glaucous growing white.
Glauco-caeruleus, glaucous-blue.
Glauco-cinerascens, glaucous-ashy-grey.
Glauco-flavescent, glaucous-yellow.
Glauco-fuscascens, glaucous-brown.
Glauco-olivaceous, of a glaucous-olive colour.
Glauco-pallescens, pale-glaucous.
Glauco-pruinose, having glaucous pruina.
Glauco-rufescens, glaucous-reddish.
Glauco-virescent, bluish-green.
Globose, crumb-like masses.
Globo-lobulate, having lobes.
Globo-pallens, pale-globular.
Globo-verrucose, wartlike.
Globo-turbinate, turbinate.
Globo-lenticular, lens-shaped.
Globo-ovate, egg-shaped.
Globo-ovoid, ovoid.
Globo-ovoid, ovoid-shaped.
Globo-squamule, squamule.
Globo-squamiform, squamiform.
Globo-squamose, squamose.
Globo-sub-pulverulents, sub-powdery.
Glomerules, clusters.
Glomeratus, clusters.
Glomeruliferous, bearing clusters of minutely branched coral-like excrescences.
Glomerulose, minutely clustered.
Glypholecine, impressed or canaliculate in an elongate wavy and labyrinthine mode like the genus Glyphis.
Graniform, like granules.
Granoso-crenate, crenate.
Granulato-deformed, deformed by being crowded in clusters.
Granules, clusters.
Granulose, crustaceous.
Granuloso-concrete, concrete.
Granuloso-congested, congested.
Granuloso-concrete, concrete.
Granuloso-placate squamulose, consisting of minute granular plaited squamules.
Granuloso-verrucose, powdery with minute granules.
Granuloso-pulverulents, powdery with minute granules.
Granuloso-leprous, with granular scurf.
Granuloso-turbulents, powdery with minute granules.
Granuloso-squamulose, squamulose.
Granuloso-subpulverulent, sub-powdery.
Granuloso-unequal, unequal.
Granuloso-verrucose, verrucose.
Granuloso-squamulose, squamulose.
Granuloso-verrucose, verrucose.
Granuloso-squamulose, squamulose.
Granuloso-subpulverulent, sub-powdery.
Granuloso-unequal, unequal.
Granuloso-squamulose, squamulose.
Granuloso-verrucose, verrucose.
Granuloso-turbinate, turbinate.
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Granuloso-turbinate, turbinate.
Granuloso-tur...
Gyroleloid, see Gyrolelina.
Gymnotremoid, a naked open spot or space.
Gyrose, concentrically twisted or plaited.
Gyrose, as applied to the peculiar and complicated flexuosities of the margin of
the apothecia in the genus Umbilicaria.
Gyroso-complicate, plaited in a gyrose way.
Gyroso-plicate, plaited in a gyrose manner.
Hemisphericco-conoid, hemispherical with a conical apex.
Hemisphericco-tuberculose, consisting of hemispherical minute tubercles.
Hispidopinnulose-denticulate, bristled with very minute spine-like teeth.
Horizontal, in contradistinction to erect.
Horny, of a horn-like consistence.
Hyline, transparent like glass.
Hymenium, the whole internal portion of the apothecium, consisting of paraphyses, asci and spores and gelatinous hymenea.
Hymenicolar, inhabiting the hymenium.
Hypophleoidal, existing beneath the epidermis of bark.
Hypothallus, the coloured mycelium-like stratum immediately underneath and
upon which the thallus grows.
Hypothecium, the internal portion of the apothecium immediately under the
hymenium.
Imbedded, sunk somewhat in the thallus.
Imbricate, overlapping each other.
Imbricato-congested, crowded together and overlapping.
Imbricato-crustaceous, so closely imbricated as to become crustaceous.
Imbricato-decurrent, decumbent and overlapping.
Imbricato-intricate, overlapping and entangled.
Imbricato-lobate, lobes overlapping each other.
Imbricato-squamose, having overlapping scales.
Immarginate, applied to apothecia in which the proper margin is obliterated.
Immersed, sunk or plunged in the thallus.
Imperforate, entire without perforation.
Implexo-ramose, branches interwoven.
Impressed, pressed into.
Incavo-granulose-pulvulente, having a hoary granular powder.
Incavo-lomentellose, with a hoary down.
Incavato-immersed, sunk in excavations of the rock.
Incised, cut into.
Inciso-crenate, having deeply-cut crenations.
Inciso-crenulato, deeply cut into minute crenate lobes.
Inciso-lobate, with deeply cut lobes.
Incassate, thickened.
Incrustating, forming a crust over a thing.
Incurved, curved inwards.
Indeterminate, unlimited or indefinite.
Indistinct, as applied to paraphyses not separated or easily discernible.
Infated, puffed out.
Inflexed, bent inwards.
Infundibuliform, funnel-shaped.
Infuscate, of a brown colour.
Innate, sunk or imbedded in the thallus.
Innato-appressed, innate and closely pressed to.
Innato-emergent, innate and protruded upwards.
Innato-erumpent, innate and bursting forth.
Innato-granulato, a surface minutely sunken or impressed so as to produce
granules.
Innato-impressato, pressed and sunken in.
Innato-sessile, sessile and partially innate.
Innately-sessile, partially imbedded.
Inner tunic, a membrane more or less coloured which surrounds the nucleus or
hymenium in the genus Verrucaria situated immediately beneath the
peritheciurn.
Isidiferous, bearing isidiose excrescences.
Isidiose, having powdery coral-like excrescences.
Isidioso-furfuraceours, covered thickly with chaffy isidia or papillate excrescences.
Isidioso-scorbrous, roughened with isidiose excrescences.
Insulpct, imbedded in the rock.
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Interstitial, intervening.

Intricate, entangled together.

Intricate-ccespitose, in entangled tufts.

Intricate-flexuose, wavy like a labyrinth.

Intricate-ramose, branched in an entangled fashion.

Iterato-proliferous, repeatedly proliferous.

Lacerate, torn.

Lacerno-dissected, gaping or opening in a torn or lacerate manner.

Lacerno-dissected, cut in a torn manner.

Lacero-laciniate, lacinia irregularly divided or torn.

Lacero-lobate, torn into lobes.

Lacune, depressions.

Laciniate, cut into narrow linear portions.

Laciniiato-effigurate, arranged in conspicuous laciniae.

Laciniiato-fibrillose, consisting of fibre-like laciniae.

Laciniiato-foliolose, resembling laciniae.

Laciniiate, very minute lacinia.

Laciniose, split into laciniae.

Lacunose, having shallow depressions or excavations.

Lacunoso-canaliculate, channelled in interrupted depressions.

Lacunoso-corrugate, wrinkled and lacunose.

Lacunoso-impressed, impressed with sunken depressions.

Lacuno-rupeose, wrinkled into lacune.

Lecane, bright-green.

Laminae, membranous strata.

Lancelate, narrowly elliptical, tapering to each end.

Lancelate-linear, narrowly and parallelly lance-shaped.

Lateral, on the side or margin of a thallus or apothecium.

Lecanorine, resembling the apothecium of the genus Lecanora which has a paler margin composed of or arising from the thallus.

Lecidea, like the apothecium of a Lecidea, same as lecideine.

Lecideine, resembling the apothecium of the genus Lecidea, which has a proper margin of the same colour with the disk or epithecium.

Lenticular, like a small lens.

Leprose, scurf-like.

Leproso-gelatinous, scurfy and gelatinous.

Leproso-granulatus, granules of a scurf-like nature.

Leproso-granulose, with scurfy granules.

Leproso-sclerulent, having scurfy powder.

Leproso-scarce, scurfy, rough and crumbling.

Ligulate, strap-shaped, narrow with the two opposite margins parallel.

Limitate, limited or bounded by a distinct line of hypothallus.

Linear, narrow, with the two opposite margins parallel.

Linear-confluent, becoming confluent in linear shapes, or running into continuous lines.

Linear-insecto-fimbriate, cut into a linear fringed margin.

Linear-elongate, an extended linear form.

Linear-laciniate, cut into linear laciniae.

Linear-multipartite, divided into numerous linear segments.

Linear-oblata, an elongated oblong with the opposite sides nearly parallel.

Linear-radiate, with ray-like linear laciniae or lobes.

Lireliform, shaped like a lirella.

Lirelline, oblong apothecia elongated into a furrow-like form, simple or branched, sessile or immersed in the thallus, termed a lirella, from its shape.

Livid, pale and clouded.

Livido-carmneo-fuscaceous, clouded-flesh-coloured growing brown.

Livido-castaneous, of a livid-chestnut hue.

Livido-cinencescent, of a pale-ashy-grey.

Livido-fuscaceous, clouded-brownish.

Livido-fuscescent, of a pale or livid-brown.

Livido-glaucescent, of a coloured glaucous hue.

Livido-nigrans, clouded-blackish.
Livido-rufous, clouded with pruina.
Livido-rufescent, clouded-red.
Livido-testaceens, clouded-brownish-yellow.
Livido-virecent, clouded-green.
Lobate, consisting of many lobes or divisions, in contradistinction to simple.
Lobate-crenate, having crenate lobes.
Lobate-deformed, having deformed lobes.
Lobato-dilated, with broad expanded lobes.
Lobato-divided, divided into lobes.
Lobato-incised, deeply cut into lobes.
Lobato-laciniate, lobed in a laciniate manner.
Lobato-partite, parted into lobes.
Lobe, a division of the thallus, various in size and shape.
Lobed, consisting of many lobes or divisions.
Lobule, very minute lobes.
Lobulato-granulose, minute granular lobes.
Longitudinal, parallel to the longer axis of a figure.
Larid, dull.
Lurido-cinerascent, dull-ashy-grey.
Lurido-olivaceus, a dull-olive-hue.
Lurido-rufescence, dull-reddish.
Luto-fuscescent, yellow-tawny.
Luto-fuscascend, of a yellow-brownish colour.
Luto-ochraceous, yellow-ochrey colour.
Luto-rufescence, yellow-reddish.
Luto-virecent, yellow-greenish.
Lutescenti-fuscescent, yellowish-brown.
Lutescenti-ochraceous, of a yellowish-ochrey colour.
Lycoperdoid, like a tubercular fungus called Lycoperdon.
Macrophylline, consisting of elongated extended leaflets.
Macular, spot-like or patchy.
Maculari-determinate, a limited or defined spot or patch.
Mamilliform, like an alga, consisting of spherical green cells.
Marginal, situate on a margin or edge.
Marginate, having a margin.
Margined, an apothecium surrounded with a distinct border or elevated margin.
Mastoideo-prominent, in test-like prominences.
Medio-depressed, depressed or sunken in the centre.
Medio-perforate, perforated in the centre.
Medullary axis, the same as medullary layer, the innermost stratum of the thallus.
Membranaceous, thin, and spread out like a membrane in contradistinction to crustaceous.
Membranaceo-corticate, having a cortical layer thin like a membrane.
Membranaceo-dilatate, a membranaceous thallus, horizontally dilated or spread out.
Membranaceo-laciniosa, a membrane cut into laciniae.
Membranaceo-lobata, lobes of a thin membrane-like texture.
Membranaceo-papryraceous, of a membrane-like consistence like paper.
Microphylline, composed of minute scaly granules.
Microphyllina, composed of minute leaflets or scales.
Miniato-fuscescent, vermilion colour growing tawny.
Moderate, of a size intermediate between large and small.
Moniliform, spherical granules arranged together in a necklace-like form.
Monophyllous, of one leaf or membrane.
Monophylo-tobata, a lobed one-leaved thallus.
Mucaceous, of a gelatinous mucous consistence.
Mucronate, with a mucro or point.
Multifid, cut into many laciniae.
Multifido-laciniate, cut into many laciniae.
Multi-laciniate, divided into many laciniae.
Multilocular, many-celled.
Multi-nucleolate, having many nuclei.
Multiseperate, as applied to spores having numerous septa or divisions.
Murali-divided, spores whose internal contents are arranged or divided like the masonry of a stone wall.
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Murali-locular, see murali-divided.

Murali-locular, marked with muriform reticulations.

Muriformi-locular, same as murali-locular.

Naked, without covering or mark.

Nerveless, destitute of nerves.

Nigrescent, approaching a black colour.

Nigrescenti-olivaceo-virescent, blackish-olive-green.

Nigricant, black.

Nigricant-errulescent, of a blackish-blue colour.

Nigricant-cinereous, blackish-ashy-grey.

Nigricant-fusiform, of a blackish-blue colour.

Nigricanti-cinereous, blackish-ashy-grey.

Nigricanti-fusiform, covered with a blackish scurf.

Nigricanti-limitate, thallus defined or limited by a blackish line of hypothallus.

Nigromati-macular, forming a black spot or patch.

Nigro-cossious, blackish-blue-grey.

Nigro-ciliate, with black orile hairs.

Nigro-determinate, defined by a black line of hypothallus.

Nigro-fibrillose, with black fibres.

Nigro-fuscous, of a dark or blackish-brown colour.

Nigro-marginate, having black margins.

Nigro-olivaceo, black-olive.

Nigro-piceous, pitch-black.

Nigro-rhisinose, having black rhizinse.

Nigro-rufous, black-red.

Nigro-tomentose, having black tomentum.

Nigro-virescent, black or dark-green.

Nodules, knot-like bodies.

Noduliform, like a knot.

Noduloso-confuent, knot-like tubercles flowing together or conjoined.

Noduloso-pulvinate, in knot-like cushiony patches.

Normal, of the ordinary structure or form or size.

Nucleus, an internal knot-like substance or contents.

Nucleiform, a knot-like tubercle containing a nucleus.

Nucleolate, having nuclei.

Obconico-turbinate, inversely conical and topshaped.

Oblique, slanting.

Obliterated, evanescent.

Obliterato-squamulose, having scales somewhat obliterated or changed.

Oblong, elliptical, obtuse at each end.

Oblongo-cylindricus, a wide cylindrical form.

Oblongo-ellipsoideus, broadly and obtusely elliptical.

Oblongo-fusiform, broadly fusiform.

Oblongo-lobate, in oblong lobes.

Oblongo-ovoid, shape between oblong and eggshape.

Obsolete, reversely ovate, the broad end uppermost.

Obscure, darkened.

Obscured, darkened.

Obsolete, evanescent.

Obtuse, not pointed, with a rounded or blunt termination.

Occulata, imbedded in and margined like a little eye.

Ochraceo-ferruginus, of an ochrey-rust-colour.

Ochraceo-granuloso-pruinose, with an ochrey granular pruina.

Ochraceo-luteus, ochrey-yellow.

Ochraceo-pulverulent, with white or pale-ochrey powder.

Ochraceo-rufescus, covered with ochrey pruina.

Ochroleucus, pale-ochrey-colour.

Oleoso-locular, spores with cells like drops of oil.

Olivaceo-cervine, olive-tawny.

Olivaceo-cinereous, of an olive-ashy-grey.

Olivaceo-fuscescent, olive-brownish.

Olivaceo-fuscous, dark-olive-brown.

Olivaceo-virescent, olive-green.

Opake, dull, not polished or shining.
Orbicular, of an expanded circular form.
Orbiculari-radiose, passing from an orbicular form into a radiate one.
Orbiculari-squamose, squamae spreading in an orbicular space.
Orbiculate, same as orbicular.
Ostiolum, the portion of the perithecium of a Verrucaria, or that portion of the thalline verruca in Pertusaria, protruded above the surface of the thallus.
Oval, broadly elliptical obtuse at each end.
Oviformi-oblong, an oblong slightly broader at one end and so approaching to the shape of an egg.
Ovato-oblong, oblong broader at one end.
Ovato-subpyriform, an ovate form verging towards a pear-shape.
Ovato-unequal, uneven with papilla.
Papille, small nipple-like projections.
Papilliform, like small nipple-like prominences.
Papillato-dactyloid, in finger-shaped papillae.
Papillato-exasperate, roughened with minute papille or points.
Papillato-sorediate, with sorediate papille.
Papilloso-granulate, having granular papillae.
Papillato-verrucose, consisting of papillate warts.
Papilloso-subglobose, of a somewhat globular papillate aspect.
Parallel, lines maintaining an equal distance from each other.
Paraphyses, minute hyaline thread-like filaments accompanying the asci, having rounded or clavate coloured apices which by their juxta-position give the peculiar colour to the epithecium.
Parasitic, growing on some other lichen.
Paries, wall.
Patellaroid, like a little dish.
Patelliform, dish-shaped.
Patellulate, like a little dish.
Pauci-articulate, with few joints.
Plano-convex, of flattened convexity.
Pedato-radiate, radiate like the foot of a bird.
Pediculate, stalked.
Patelliform, shield-like.
Peltate, placed like a pelta or shield horizontally on the apex of a division of the thallus or on a stipes.
Perforated, having round holes.
Pulvinulo-conglomerate, in cushion-like clusters.
Punctiform, like dots or points.
Punctiformi-contracted, contracted into a mere point or dot.
Punctiformi-impressed, impressed like minute points or dots.
Pyrenocarpous, having fructification like that of a Verrucaria.
Pyrenodeous, wart-like.
Pyrenoidine, globular and nuclear.
Pyriform, pear-shaped.
Radiate, spreading outwards on all sides from a centre.
Radiato-congregare, in radiate clusters.
Radiato-coronate, with a ray-like corona or margin of minute lobes.
Radiato-crenulata, with radiating crenulations.
Radiato-cristate, with crest-like projections spreading in a radiate way.
Radiato-cymose, a cyme spreading ray-like.
Radiato-fimbriate, radiately fringed.
Radiato-fissured, fissured in a radiate manner.
Radiato-incised, deeply cut and radiate.
Radiato-lobata, lobed, the lobes spreading in a ray-like way.
Radiato-plicato-lobata, lobes spreading in a plaited ray-like fashion.
Radiato-plicato-rugose, radiate, plaited and wrinkled.
Radiato-rinose, having chinks spreading outwards in a radiate manner.
Radiato-rugose, wrinkled in a radiate direction.
Radiato-rugoso-pliculata, wrinkled and plaited in a radiated direction.
Radiato-sulcate, furrowed in rays.
Radiato-simbriata, having a radiate fringe.
Radiato-laciniate, the separate laciniae of a thallus spreading in a ray-like mode.
Radiato-rumosae, with ray-like chinks.
Ramosa, branched.
Ramosa-divided, branched in many divisions.
Ramosa-fimbriata, branched in a fringed manner.
Ramosa-incised, branched and incised.
Ramusii, branchlets or secondary branches.
Ramulose, with secondary branches.
Ramulose-ciliata, fringed with branching cilia.
Ramulose-spinulose, having minute spine-like branches.
Receptacles, the portions of the thallus in which the apothecia are imbedded or inclosed.
Recurred, curved backwards.
Reniform, kidney-shaped.
Repand-crenate, sinuously crenate.
Repando-lacinulata, with repand or sinuous lobes.
Reticulata, like network.
Reticulato-lacunose, having deep depressions separated by raised reticulations or network.
Reticulato-nigricant-nervose, reticulated with blackish nerves.
Reticulato-rinulose, having very minute rima or chinks arranged in a reticulate manner.
Reticulato-rugose, wrinkled in a net-like manner.
Reticulato-rugulose, minutely wrinkled with elevated reticulations.
Reticulato-sulciata, having sulciate elevated reticulations.
Reticulato-tomentose, having downy reticulations.
Retuse, having the centre depressed.
Retuso-truncate, cut off abruptly and having the centre depressed.
Rhagadio-disfract, broken up in a deeply cleft mode.
Rhisinae, root-like filaments.
Rhisinose, having rhizinae or root-like filaments on the under surface of the thallus.
Rigescence, approaching a rigid or stiff consistence.
Rigid, stiff.
Rimiform, having a longitudinal chink or furrow.
Rimiform-angustate, having a narrow chink or furrow.
Rimiform-constricted, having a contracted chink or furrow.
Rimoso-areolate, divided into areoles by chinks.
Rimoso-diffract, broken into areolae by wide chinks.
Rimoso-insculpted, having rimae or chinks sculptured out or cut out of a surface.
Rimoso-squamulose, with squamules separated by chinks.
Rimulose, broken by minute rimae or chinks.
Rimuloso-dehiscent, ruptured in an irregular radiate chinky manner.
Rotundate, rounded.
Rotundato-difformed, of a deformed round shape.
Rotundato-lobate, with round lobes.
Rotundato-pulvinular, in round cushion-like masses.
Rotundato-undulato-crenate, rounded, wavy and crenate.
Rotundo-abh-eviato-laciniate, cut into short rounded laciniae.
Rotundo-crenate, rounded and crenate.
Rotundo-difformis, deformed.
Rotundo-lobulate, minutely lobed and spreading in a rose-like or stellate manner.
Rugose-cinerascent, reddish-ashy-grey.
Rugose, wrinkled.
Rugoso-coneae, wrinkled and convex.
Rugoso-crenate, wrinkled into crenations.
Rugoso-crenulate, with wrinkled minute crenations.
Rugoso-granulate, wrinkled and granular.
Rugoso-nodulose, wrinkled and knotty.
Rugoso-plicate, wrinkled and plaited.
Rugoso-pustulate, wrinkled and pustuled.
Rugoso-subrimose, wrinkled and somewhat chinky.
Rugoso-unequal, with an uneven wrinkled surface.
Rugulose, slightly wrinkled.
Rugulosa-areolate, with wrinkled areoles.
Sanguineo-black, blood-red-black.
Scabrid, scabrous or rough.
Scabrous, rough with minute elevations.
Scattered, dispersed.
Scrobiculate, having numerous small shallow depressions or excavations.
Scyphose, bearing thalline cups as in Cladonia.
Semi-immersed, partially immersed.
Septate, having divisions.
Septato-articulate, jointed and septate.
Septato-murati-divided, septate and with muriform cellules.
Septula, minute septa.
Septum, the partition dividing the spores internally into two or more portions.
Sessile, without any stipes or stalk.
Sessiliform, thread-like.
Simple, as applied to spores having no septum or division.
Sinuate, margin uneven with alternate concavities and convexities.
Sinuato-incised, deeply cut into a sinuate or wavy manner.
Sinuato-flexuose, sinuate and wavy.
Sinuato-laciniate, cut into sinuate laciniae.
Sinuato-lobata, lobed in a sinuate manner.
Sinuato-multifid, divided into many sinuate laciniae.
Sinuato-pinnatifid, deeply cut into lateral segments which have sinuate margins.
Stemus, the concavity in a sinuate lobe or lacinia.
Solenaform, slipper-shaped.
Soredia, heaps of powdery granules.
Sorediato-lacerate, torn and sorediate.
Sorediato-tuberculose, having tubercles more or less sorediate.
Sorediferous, bearing soredia.
Spadiceous, bright-clear-brown.
Spadiceo-fuscous, bright-dark-brown.
Spadiceo-pallid, a bright-brown growing paler.
Spadiceo-rufescent, reddish-brown.
Spadiceo-rufous, bright-brownish-red.
Spherical, globose.
Spheroido-cellulose, formed of globular cellules.
Spermatia, minute cylindrical or rod-shaped bodies contained in the spermogonia and conjectured to be the male fertilizing organs.
Spermogonia, minute tubercles of the thallus various in colour, and conjectured to contain the male organs of fertilization.
Spermogoniferous, bearing spermogonia.
Spinose, spiny.
Spinulose, having minute spines.
Spinulose-ciliated, fringed with minute spine-like cilia.
Spongiosa-tomentose, downy.
Spores, bodies various in shape and size, either simple or sepalate or locular contained in the asc.
Spreading, expanding.
Spurious, apparently but not really.
Squameform, scale-like.
Squamigerous, bearing squame or scales.
Squamose, consisting of scale-like leaflets or squames.
Squamo-s-locular, the cortical layer peeling off in scales.
Squamo-s-foliolose, leaf-like squame.
Squamose-lobata, with lobe-like squame.
Squama, a leaf-like scale.
Squamaceous, scaly.
Squamulate, very minute scales or squames.
Squamulose, consisting of very minute leaflike scales or squames.
Squamuloso-areolate, with areolate minute scales.
Squamuloso-crenate, having minute crenate scales.
Squamuloso-effigurate, fashioned into scales.
Squamuloso-globulose, consisting of small scaly crumb-like masses.
Squamuloso-granulatae, consisting of granular squamules.
Squamuloso-imbricate, with overlapping squamæ.
Sstellato-appressed, closely pressed in a stellate manner.
Sstellato-congregate, clustered in a stellate arrangement.
Sstellato-dehiscent, dehiscing in a stellate manner.
Sstellato-divided, divided in a stellate or star-like form.
Sstellato-laciniate, lacinial spreading in a stellate manner.
Sstellato-obvolute, as applied to a thallus whose laciniae or lobes radiate from a centre in a star-like manner within a rounded space.
Sstellato-radiate, radiating in a star-like form.
Stenophtylous, narrow-leaved.
Sterigmatà, minute filaments either simple or articulate, within the spermogonia, which bear the spermatia.
Stipite, crowded.
Stipes, a stalk or elevated support.
Stipitate, having a stipes or stalk.
Stramineous, straw-coloured.
OF GREAT BRITAIN.

Straturn-gonidiale, the layer immediately beneath the cortical layer containing the gonidia.

Striated, marked by longitudinal lines or furrows.

Striated-renate, striated and renate.

Striated-nervous, striated with prominent nerves.

Striated-rugose, wrinkled with striae.

Stipitous, woolly.

Suberuginose, somewhat of a verdigris-green.

Subampulliform, somewhat flask-like shape.

Subarculate, nearly areolate.

Subbiatorine, nearly bitorine.

Subbaricolate, nearly areolate.

Subbiastroid, nearly byssoid or fibrous nature.

Subcarinate, somewhat keel-shaped.

Subciliate, somewhat ciliate.

Subclavato-fusiform, of a somewhat club-shaped spindle-shape.

Subcoeno-areolate, having areolae of somewhat hilly projections.

Subcompressed, slightly compressed.

Subconcolorous, nearly of the same colour.

Subconglomerate, somewhat clustered.

Subconfluent, somewhat glued together.

Subcontinuous, having a nearly unbroken surface.

Subcorticaceous, somewhat leathery.

Subcortical, beneath the cortical layer.

Subcostate, somewhat ribbed.

Subcorynose, somewhat of a corymb.

Subcrenulate, somewhat crenulate.

Subcrustaceo-leprous-granulate, somewhat crustaceous, leprous and granular.

Subcylindrical, nearly cylindrical.

Subcriniform, somewhat of a boat-shape.

Subcymoso-proliferous, proliferous from the centre like a cyme.

Subdecorticata, nearly destitute of the cortical layer.

Subdeterminate, somewhat limited or defined.

Subdiffract, somewhat broken up into areolae.

Subdisciform, somewhat of a disk-like appearance.

Subdissepimentate, somewhat of a defined form.

Subdissepimentata, having areolae scattered or dispersed in an indefinite manner.

Subfasciculatus, somewhat leaf-like.

Subfastigiato-fruticulose, approaching the same level.

Subfastigiato-fruticulosus, like a little shrub whose branches all rise to nearly the same level.

Subfibrillatus, somewhat minutely fibrous.

Subfilamentose, somewhat filamentose.

Subfimbriatate, somewhat fringed.

Subfoliaceous, becoming leafy.

Subfusiform, nearly fusiform.

Subgelatinosus, somewhat gelatinous.

Subgranulatus, almost globose.

Subgloboso-deformed, globes deformed by close contact or crowding.

Subgloboso-increscente, thickened into a somewhat globose form.

Subgloboso-tuberculosifera, like globular tubercles.

Subgranulato-unequal, approaching an uneven somewhat granulose surface.

Subgranulosus, nearly granulose.

Subgranulososo-rugosus, somewhat wrinkled with granules.

Subgyrose, somewhat gyrose.

Subgyroso-verrucosus, having somewhat whirled verrucous or warts.

Subhymenidus, under the hymenium.

Subimbricate, nearly overlapping each other.

Subimmersus, somewhat immersed.

Subincurrent, somewhat bending downwards.

Subincrustata-sectile, superficial but somewhat immersed in the thallus.

Sublacunosus, somewhat lacunosus.

Sublixivatus, somewhat smoothed.

Sublecanorinum, nearly lecanorinum.

Sublecanorideum, apothecia nearly like those of the genus Lecidea.
Subleprose, somewhat scurfy.
Sublimitate, somewhat limited or with a definite boundary.
Sublobato-plicate, somewhat lobed and plaited.
Sublobulate, somewhat lobed.
Sublobulato-concrescent, growing together in minute lobes.
Submembranaceous, almost membranaceous.
Submonophyllus, almost formed of one leaf.
Submurali-divided, nearly murali-divided.
Suborbiculari-determinate, having a limited or defined somewhat orbicular form.
Suborbiculari-stellate, radiating in a somewhat orbicular space.
Subpalmato-nervose, having nerves spreading in a palmate manner.
Subpeltate, somewhat peltate.
Subplicato-contiguous, lying close together in somewhat plaited manner.
Subpodicellate, somewhat stalked or stipitate.
Subpyrenoid, nearly like a Verrucaria.
Subpyreneo-lecanorine, an apothecium nearly like the fructification of a Verrucaria but surrounded with a thalline margin.
Subradiate, approaching a radiate shape.
Subradiato-lobate, consisting of somewhat ray-like lobes.
Subramoso-papillato-granulato, with branched papillate granules.
Subrubriceo-fuscous, somewhat brick-red-brown.
Subrugose, somewhat wrinkled.
Subrugulose, somewhat minutely wrinkled.
Subsquamuloso-concrescent, growing together in a somewhat scaly manner.
Subsessile, nearly or almost sessile.
Subsquamulose, of a somewhat bright-brown.
Subsquamuloso-granulate, nearly spherical.
Subsquamoso-plicato-verruculose, nearly spongy.
Subsquamosa, somewhat scaly.
Subsquamosa-granulato, granules becoming nearly like squamae.
Subsquamoso-plicato-verruculose, with plaited warty scales.
Subsquamulose, almost squamulose.
Subsquamuloso-concrescent, growing together in a somewhat scaly manner.
Subsquamosulato-granulato, the granules merging into scales.
Substellato-deformed, deformed in a somewhat stellate manner.
Substellato-radiate, nearly stellato-radiate.
Subsubpellate, with a slight stipes or stalk.
Subtomentose, somewhat straw-coloured.
Subtomentose, nearly tartareous.
Subtomentose, somewhat tomentose or downy.
Subulate, awl-shaped.
Subulato-spinose, with awl-shaped spines.
Subuliform, awl-shaped.
Suburceolate, somewhat urceolate.
Subverruculato-cornute, having a swollen horn-shaped form.
Subverrucosae, somewhat warty.
Subverrucosae-tomentosa, somewhat warty and downy.
Subverruca-pulverulenta, covered with a greenish hue or pruina.
Subverruca-sowerbyana, furrowed or channelled.
Subverruca-sowerbyana, sulphurous, sulphur or brimstone-coloured.
Subverruca-tomentosa, sulphur or brimstone-coloured.
Subverruca-sowerbyana, covered with sulphy powder.
Subverruca-tomentosa, sulphur-coloured soredia.
Subverruca-sowerbyana, coloured with sulphur powder or pruina.
Subverruca-virescent, sulphury-green.
Subverruca-virescent, sulphury-green.
Superficial, lying on the surface.
Tartaraceous, having a rough crumbling surface.
Tartarico-farinose, with crumbly powder.
Terebra, longitudinally rounded.
Terebra-compressed, terete and compressed.
Terebrhusco-compressed, somewhat terete or compressed.
Terebrhusco-compressed, somewhat terete or compressed.
Terebrhusco-compressed, on the apex or summit of a branch or stipes.
Terricolo, growing on the earth.
Tessellato-areolate, having areolae resembling a tesselated pavement.
Tessellato-fuscescent, yellowish-brown passing into dark-brown.
Tessellato-rufescense, yellowish-brown passing into reddish-brown.
Tessellato-rufescence, brownish-yellow-red.
Thalamium, the same as hymenium.
Thalline, composed of, or of the same substance as the thallus.
Thalline-margin, the margin of an apothecium formed of the thallus.
Thalloidal, composed of the thallus.
Theilus, the foliaceous or crustaceous portion of a lichen which bears the
fructification.
Thallus, the foliaceous or crustaceous portion of a lichen which bears the
fructification. See Asci.
Thalotremoid, having tubercular apothecia like those of Thalotrema.
Thalotremoid-theciferous, having an open wart-like or disk-like aspect.
Theorid, like a thrysus, the branches compact, the lower ones shorter than
the middle ones.
Theorido-conglomerate, clustered together in a thyrsus-like manner.
Tomentose, covered with tomentum or down-like hairs.
Tomentoso-filamentose, tomentum composed of filaments.
Torto-cuniate, knotted and entangled.
Transverse, at right angles to the longitudinal direction.
Tremulous, shaky.
Triangular, divided into three portions.
Triquetrose, three-edged or sided.
Tri-septate, having 3-septa or divisions.
Truncate, with an abrupt termination as if cut off.
Truncate-conical, of a truncate or flattened cone-shape.
Truncate-crenate, abruptly cut off and crenate.
Truncate-furcate, truncate and forked.
Tuberculose, consisting of tubercles.
Tuberculose-albo-sorediate, having white sorediate tubercles.
Tuberculose-elevated, raised upon a tubercle.
Tuberculose-glotherate, in clustered tubercles and conglomerations.
Tuberculose-lecanorine, a lecanorine apothecium elevated on a tubercle.
Tuberculose-nigricantior-sorediate, having blackish sorediate tubercles.
Tuberculose-spherical, consisting of round tubercles.
Tuberculose-unequal, uneven with tubercles.
Tubulose, hollow like a tube.
Tubuloso-inflated, having an inflated tube-like form.
Tumid, swollen.
Turbinate, shaped like a top.
Turbinato-cylindrical, of an elongated top-like form.
Turbinato-lentiform, top-shaped, flattened on the summit.
Turgescent, swollen.
Turpid, swollen.
Turpis-cylindrical, of a swollen cylindrical shape.
Umber, dull-brown.
Undulate, as applied to a thallus fixed to the matrix by the centre; as 
applied to an epithecium, navel-like.
Umbrone, with a projecting point or boss in the centre.
Umbrino-laqueours, umber-coloured-olive.
Undulate, wavy.
Undulato-attenuate, tapering upwards in a wavy mode.
Undulato-crispate, wavy and crisped or curled.
Undulato-crisped, wavy and crisped.
Undulato-lobate, with wavy lobes.
Undulato-plano, a flattened wavy surface.
Undulato-plicate, wavy and plaited.
Undulato-rugose, wrinkled in a wavy mode.
Undulato-sinuate, waved in a sinuate mode.
Undulato-vulvate-rugose, with wavy furrowed wrinkles.
Uniform, of the same size, thickness or substance throughout.
Umbilicate, spores with one septum or division.
Unstratified, applied to a thallus in which the normal layers cannot be distinctly
seen but are confused.
Urocotate, of a sunken cup-like shape.
Urocoteiform, sunk in the thallus like a cup as the apothecia of the genus
Urocotaria.
Urocotate-oppress, having an urceolate apothecium closely pressed to the
thallus.
Urceolato-concave, concave like a cup.
Urceolato-innate, applied to apothecia of a cup-like shape sunken in the thallus.
Urceolato-scutelliform, urceolate and shield-like.
Variolaroid, an abortive apothecium developed into a powdery or granulose tubercle, like the supposed fructification of the old pseudo-genus Variolaria.
Villosa, hairy.
Vinous-red, red like port wine.
Violaceo-fuscescent, violet with a brown hue.
Violaceo-rubescent, violet with a red tinge.
Virescent, approaching a green hue.
Viroscenti-cinerascence, greenish-greyish.
Viroscenti-cinereous, greenish-grey.
Viroscenti-fuscous, greenish-brown.
Viroscenti-fuscous, greenish-dark-brown.
Viroscenti-olivaceous, greenish-olive.
Vitellinus-yellow, yellow like the yolk of an egg.
Verruculari-elongate, lengthened out like a worm.
Verriform, worm-like.
Verriformis-cylindrical, cylindrical and twisted like a worm.
Ventricoso-fagiform, of a swollen or inflated spindle-shape.
Verruvaroid, having fruit like the verrucae or apothecia of a Verrucaria.
Verruce, small wart-like tubercles or elevations of the thallus.
Verruceform, of a wart-like tubercular form.
Verrucose, wart-like.
Verrucoso-areolate, composed of wart-like areoles.
Verrucoso-areolato-diffract, broken up into verrucose areoles.
Verrucoso-confluent, with warts growing together.
Verrucoso-conglomerate, in clustered verrucose portions.
Verrucoso-diffract, divided by chinks into wart-like areoles.
Verrucoso-glebulose, having crumb-like warts.
Verrucoso-gglomerulose, conglomerated into wart-like heaps.
Verrucoso-granulate, a thallus composed of verrucae and granules.
Verrucoso-leprose, with warty scurf.
Verrucoso-papillate, having papillae-like warts.
Verrucoso-rugose, with wrinkled warts.
Verrucoso-scabrous, roughened with warts.
Verrucoso-sorediate, having wart-like soredia.
Verrucoso-squamose, consisting of scaly warts.
Verrucoso-tomentose, warty and tomentose.
Verrucoso-tuberculose, having wart-like tubercles.
Verrucoso-unequal, unevenly wart-like.
Verruculosino-cinereous, consisting of ashy-grey small warts.
Verruculosos-scabrous, roughened with very minute warts.
Verticillato-proliferous, becoming proliferous, whorl above whorl.
Wax, of a wax-like consistence or aspect.
Zonate, marked with concentric wavy undulations.
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ADDITIONS AND CORRECTIONS.

Pycnothelia apoda, Nyl. white or whitish, thin, slightly granuloso-crustaceous, everywhere sparingly producing small erect abortive, ellipsioideo-vesiculose or subgranuliform podetia; apothecia entirely sessile on the thallus, ferrarugineo-rufous or rufo-ochraceous, opake, plane, immarginate or somewhat convex; spores fusiformi-oblong; paraphyses moderate; epithecium rufo-fuscescent.

On the earth, rare. 1878.

Syn.:—Nyl. in Flora 1878, p. 241.
Geog. Distr.:—France.
Ireland:—Kylemore. Mr. Larbalastier.

“Spores .057—.010 mm. long, .004 mm. broad. Thecae I blue then lutescent, apices obscure. Probably a subspecies of P. papillaria, but the apothecia are sessile on the basal thallus, and often aggregate. Thallus yellow. Spermogonia commonly inclosed in the hymenium without any distinct conceptacle; spermata arcuate .008—.012 mm. long, .0005 mm. broad.” (Nyl.)

Pannaria melantera, Stirt. black, effuse, deeply and widely diffract or rather squamose, squamae thickish, minutely papillose, nigro-carulescent beneath; apothecia black, small, sessile, plane, or somewhat convex, margin black and shining; paraphyses thickish, articulate, apices clavate carulescent; hypothecium fuscescent; spores 8, colourless, oblong, 1-3 septate or simple.

On micaceo-schistose rocks, rare. 1878.

Bot. Prov.:—15.
Scotland:—Ben Lawers. Dr. Stirton. (1878.)

Similar to P. dolichotera, Nyl., but with longer spores, .03—.045 mm. long, .0045—.005 mm. broad. Gelatina hymenea I carulescent, thecae fulvescent.

Lecidea pulchella, (Schrad). sulphureo-citrine or bright virescenti-yellow, orbicular, rotundato-lobate in the circumference, gyroso- or bullato-plete, thick, smoothish; hypothallus spongiose black; apothecia black, naked, arising from the hypothallus between the folds of the thallus, single or clustered, subimmerso-appressed, plane, at length convex, the obtuse margin obliterated, internally black; excipulum black, hypothecium dark-fuscos-black; paraphyses coherent, yellowish-fuscescent, apices fuscos; spores 8, fuscous, ellipsoidal or oblong, broadly-rounded at the ends, constricted in the middle, 1-septate, epispore moderate.
On the earth among alpine rocks, very rare. 1842.

*Leceidea mucosa*, Stirt. fulvous, gelatinous, or evanescent; apothecia fuscous or fuscous-black, somewhat plane, convex or almost sphaerical, small, internally fuscous or pallido-fuscous; hypothecium fuscous; paraphyses conglutinate indistinct, apices colourless, not clavate; spores 8, colourless, ellipsoid, simple.

On putrid wood, rare. 1878.

*Leceidea insita*, Stirt. parasitic, apothecia black, small, convex, immarginate, generally *nearly sphaerical*, internally rufescent; spores 12-16, colourless, *sphaeroid*, simple; paraphyses distinct, slender, filiform, apices rufous or almost colourless; hypothecium rufous or rufous-black.

Parasitic on thallus of *Peltigera aphthosa*, 1878.

*Leceidea fucata*, Stirt. cinereous, granulose, or evanescent; apothecia black, round or oblong, or somewhat irregular, convex and immarginate, *internally entirely of an intense-violet colour*, scarcely changed by iodine, K caeruleo-virescent; spores 1.3, colourless, ellipsoid or oblongo-ellipsoid, *simple*, epispore thick and pellucid; hypothecium colourless.

On decorticated wood, rare. 1878.

*Opegrapha mirifica*, Stirt. whitish or albido-cinerascens, thickish, minutely rimulose, sometimes nearly granulose, sometimes farinaceous, (K—C red but C alone—); apothecia black, moderate, sessile, round or oblong, scattered or aggregate; epithecium cavi-pruinose or naked, at first somewhat concave and then acutely margined, at length plane, often somewhat convex and immar-
ginate; hypothecium black or fuscous-black, thick; paraphyses irregular, indistinct, spacies clavate, nigricant; spores 8, colourless, oblong or obliquely fusiform, 3-septate.

On rocks, rare, 1878.


**Bot. Prov.**—16.

**Scotland:**—Island of Cumbrae, Bute. Dr. Stirton. (1878.)

Spores .014—.021 mm. long, .0035—.0045 mm. broad. Gelatina hymenea I vinous-red.

*Verrucaria Mortarii, Arn. (in bb. Lamyi.) dirty-whitish, thin, minutely areolato-rimose, firm, unequal; apothecia black immersed; ostiolum somewhat prominent; perithecium dimidiate, black; paraphyses none; filamenta ostiolari slender; spores 8, colourless, oblong, simple, granular.

On stones, rare, 1878.

**Syn.**—Nyl. in Flora 1878 p. 344.

**Bot. Prov.**—4.

**England:**—On walls of Quy churchyard! Cambridgeshire. Mr. Larbalestier. (1878.)

"Spores .027—.02 mm. long, .017—.018 mm. broad." (**Nyl.**) Spores .027—.031 mm. long, .014—.016 mm. broad.

p. 337. Mr. Larbalestier says Nylander now regards *Lecidea rupicola*, Nyl. as *Lecanora beccomna*, Nyl.


p. 340. "Mweelan" should always be written "Mweelan."

p. 341. "Benvyle" should be "Bonvyle" always.

p. 341. Mr. Larbalestier says "the supposed saxicole state of *Lecidea curvata*, Ach. from Ann Port, Jersey, Nylander long ago informed me was only *Lecanora Hutchinsiae*, Nyl."


p. 221. "Glencorbol" should be "Glencorbot" passim.


p. 335. *L. ternaria*, Nyl. var. with 3-septate spores .016—.22 mm. long; .056—.06 mm. broad; these I persistently blue; on Mosses in Ireland. Mr. Larbalestier. Nyl. in Flora, 1878, p. 248.

p. 335. Nyl. in Flora, 1878, p. 248 says that *Lecidea Gagei* (Sm.) Hook. is *L. lenticularis* "apotheciis rufescenibus vel pallidis," as frequently collected in Ireland by Gage, Taylor, and Larbalestier.

p. 303. Nyl. in Flora, 1878, p. 248, says that *L. albocecoruleescens var. alpina*, Scher. is *L. phaeenteroides*, Nyl. in Flora, 1875, p. 363.

p. 130. *Parmelia xanthomyela*, Nyl. ! & *Parmelia McMilliana*, Stirr. ! are identical with *Parmelia endochlora*, Leight. !!

p. 212. Mr. Larbalestier finds *Lecanora heamatites*, (Chab.) in very fair quantity on the branches of very young trees near Cherry Hinton, Cambridgeshire (1879).


Mr. McAndrew has sent me from New Galloway, Kircudbright (13):—

*Umbilicaria erosa.*

*Leptogium Burgessii.*

*Leptogium muscicolum* (in fruit).

*Collema aggregatum.*

*Platysma triste.*

*Platysma conniixtum.*

*Peltigera aphthosa.*

*Peltigera rufesccens.*

*Parmelia incurva.*
Parmelia Borreri.
Parmelia lanata.
Calicium trachelinum var. hemiplodum. Nyl.
Lecidea lutea.
p. 213. Vale Castle, "Guernsey," not "Jersey."
p. 216. for "Beaufort" read "Beauport."
p. 217. for "Le Moge" read "La Moge" and passim.
p. 220. for "Mont Orgueal" read "Mont Orgueil" & passim.
p. 212. Mr. Larbalestier finds Lecanora arenaria, Pers., frequent on Church
walls and old bridges about Cambridge (4).
p. 241. for "inculpted" read "inseulpted."
p. 242. for "L. rhizbola" read "L. rhizobola."
p. 244. under L. lirida, add
CHANNEL ISLANDS:—Locquaine Hill, Guernsey, Janvoins Tomb, Rozel,
Jersey. Mr. Larbalestier.
p. 257. for "cinereous" read "cinereous"
p. 263. for "L. accessitans" read "accessitans."
p. 265. to L. temebricosa add
IRELAND:—Holy Island, Lough Inagh, Connemara. Mr. Larbalestier.
p. 268. for "cinereous" read "cinereous."
p. 271. for "Lough Teagh" read "Lough Feagh."
p. 220. to L. Ralfsii, Salw. add.
IRELAND:—near Kylemore. Mr. Larbalestier.
p. 386. to L. Parmeliarum, add common in Connemara, Mr. Larbalestier.
p. 391. for "A. laricicola," read "X. laricicola."
p. 392. under Agyrium rufum add Ballynahinch, Connemara. Mr. Larbalestier.
p. 406 to Opegrapha varia add f. lutescens, Ach. Noirmont, Jersey, Mr.
Larbalestier, and Kaglith, near Church Stretton, Salop. Epithecium lutescent.
p. 408. Mr. Larbalestier informs me that Opegrapha hapaleoides from
Clifton, Sommersetahire, is now regarded by Nylander as Opegrapha echlovides,
Nyl.
p. 416 to Arthonia excipienda, add Doughruagh Mountain, Kylemore. Mr.
Larbalestier.
p. 34 for L. musicolum, (Sw) read L. musicicum, (Sw.)
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