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EX OFFICINA TYPOGRAPHICA F. TILGMANN

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ACTA SOCIETATIS PRO FAUNA ET FLORA FENNICA, 57, N:o 2.

LICHENOGRAPHIA FENNICA IV

LECIDALEAS II

SCRIPSIT

E D V. A. VAINIO

POST MORTEM AUCTORIS MANDATU SOCIETATIS PRO FAUNA  
ET FLORA FENNICA OPUS RECENSUIT ET ABSOLVIT  
B. LYNGE, OSLO

(CUM INDICE PARTIS II)

HELSINGFORSIAE 1934  
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## PREFACE.

During a long series of years the Finnish lichenologist Edv. A. Vainio published many masterly monographs on lichens from almost every part of the world. Towards the end of his life he again devoted his time to the lichens of his own country which had been the subject of his first publications.

He planned a large »Lichenographia Fennica», in 7 volumes. As was to be expected from him, he started his work with the most difficult families, the *Pyrenolichenes*, including also some plants, intermediate between lichens and fungi (*Acta Soc. pro Fauna et Flora Fenn.*, vol. 49, No. 2, 1921). Part II (l. c. vol. 53, No. 1, 1922) comprised the *Baeomyceae* and a part of the *Lecideales*, ending with the genus *Rhizocarpon*. Part III (l. c. vol. 57, No. 1, 1927) comprises the *Coniocarpeae*.

When Vainio died his manuscript for part IV was far advanced. The genera *Catillaria*, *Diplophragmia* and *Sculula* were quite ready for the printer. He had also written by far the greater part of the diagnoses of the genus *Lecidea* when death called him to rest. In reality it would not have required much time for him to complete this important manuscript.

The Board of the *Societas pro Fauna et Flora Fennica* found it necessary that part IV of the *Lichenographia Fennica* should be finished, and it gave the present writer the task of completing it. A task which was equally honourable as it was difficult.

After much hesitation I ventured the attempt. I was fully aware that anything which I could do would be much inferior in value to Vainio's own work. But Vainio never hesitated to place his immense knowledge and his precious time at our disposal when wanted. And it was only natural that any one of the Scandinavian lichenologists would deeply feel his obligation when called upon to finish Vainio's posthumous work.

A liberal grant from the *Societas* enabled me to spend about two months in Helsingfors and Åbo. It was my task there to com-

pare Vainio's manuscript with the Finnish collections, in order to find out the parts that were still lacking in the manuscript. A considerable number of species were found to be quite undescribed. The same was the case with several references to the *Lichenes exsiccati*, to literature, and to the distribution of some species. It was also necessary to have the plants to sight in order to write the *Clavis specierum*, which has been written by the editor.

Vainio's diagnoses are broadly descriptive. Nothing could escape his eagle-eye. His observations were expressed in his wonted style, and written in a clear hand where no trace of his age was visible.

The work would have been more uniform if I could have written my diagnoses in the same manner. But I have preferred to use my own style. Firstly insufficient knowledge of the Latin language prevented me from an imitation of his diagnoses. Secondly I felt it desirable to make the diagnoses a little more analytical and surveyable. I have, therefore, concentrated the descriptions and accentuated the leading characters by spacious types.

The subgenus *Psora* (Ach.) Th. Fr. was ready from Vainio's hand. All the diagnoses had been written, and the species arranged in definite order. The same was the case with the subgenus *Protoblastenia* (Zahlbr.) Vain., which Vainio included into the genus *Lecidea*. In *Die natürlichen Pflanzenfam.* Zahlbruckner regards this subgenus as a beginning *Caloplaca*, and I am inclined to be of the same opinion.

But Vainio had not completed the arrangement of the species. There was no suggestion of the sections, and Vainio had not expressed his opinion on the subgenus *Biatora*.

From some remarks in the manuscript I got the impression that Vainio's confidence in this subgenus had diminished. This is also in good accord with my own view, and I have simply united the two subgenera *Eulecidea* Th. Fr. and *Biatora* Fr., exclusive of *Protoblastenia*.

I have tried to arrange the species in natural sections. An unobjectionable arrangement can only be done by a scientist, who has penetrated into the subject such as Vainio himself had done

it. — My diagnoses of the sections are short, they are chiefly based on Th. M. Fries in *Lichenographia Scandinavica*.

Th. Fries's subdivision of his subgenus *Eulecidea* is firstly based on the medullary reaction with J. This reaction is an excellent species character in the genus, and it certainly unites many related species into natural sections, e. g. the *Lecidea atrobrunnea* section. — But it seems to me that the species of this section are also related to the *Lecidea fuscoatra* section, on account of their conformable areolae and colour.

I would have preferred to begin the work with species which have only a little developed thallus, e. g. the *Lecidea sylvicola* section. Such species might perhaps be regarded as related to the fungi. But in the manuscript Vainio had already given the subgenus *Psora* the first place, as a »subg. I». I am of opinion that this subgenus contains the species which have attained the highest development, perhaps a connecting link to the *Cladoniaceae*.

If Vainio's arrangement is admitted there are two sections of the *Eulecidea* which are evidently related to the *Psorae*, viz. the *Lecidea atrobrunnea* and *fuscoatra* sections, containing species with an areolated thallus. I am not convinced that the positive reaction of the medulla with J really suggests an affinity between the sections, but it may be practical to unite such sections, until a better arrangement can be found. An areolated thallus is also seen in other sections, e. g. in the *Lecidea leucophaea* section. — The pycnoconidia are decisive for the distinction between that section and the following section *Lecidea erythrophaea*. Unfortunately fertile pycnidies are often lacking. — The apothecia of *Lecidea Tornoënsis* agree well with some species of the *Lecidea erythrophaea* section, but the species differs considerably in its remarkable spores.

The habitus of the species of the *Lecidea elabens* section often agree well with the *Lecidea xanthococcae*, but the pycnoconidia of the former section are long, in the latter they are short, as far as we know them. Otherwise these sections differ in the colour of the hypothecium, perhaps an overestimated character. Compare for instance the nearly related muscicolous *Lecidea alpestris* and *crassipes* sections.

I do not know whether a muscicolous habitat suggests a relation, it is perhaps not probable. But anyhow I have felt it convenient to unite such sections.

It seems to me that the *Lecidea coarctata* and *rivulosa* sections are very isolated in the genus. — There are also several other sections, the place of which can be much discussed.

I have got the impression that an investigation of the excipulum might give us many valuable suggestions on the subdivision of the genus. But unfortunately we have no such investigation with this special aim in view.

The importance for the specific descriptions of such characters as the spores (size, form, spore-wall), the hymenium (height, colours), the paraphyses (concrete or not, incrassated or not), and the hypothecium and excipulum will be acknowledged by every lichenologist.

A Clavis specierum must be based on characters of that kind. But in a Clavis it is not always possible to unite all the species of the same section. A Clavis is analytical, a section is synthetical.

The most unsatisfactory part of my work has been the preparation of the *Lecidea elaeochroma* section, and I am obliged to ask the indulgence of my colleagues for it. By far the greater part of the descriptions were ready from Vainio's hand, but some of them were still wanting. These descriptions could have been supplied without much difficulty if the plants had been definitely named. But it was evident from Vainio's manuscript, as well as from his herbarium in Åbo that he had not definitely made up his mind with respect to the nomenclature and the limitation of some of these very critical species. If I should have tried to clear up such difficulties it would have necessitated a comprehensive and intense study of many types, several of which would not have been accessible to me here. It would have been beyond an editorial task to travel to many museums to study them, and perhaps find them lacking, perhaps destroyed, or perhaps to be a mixtum of several types, now separated as distinct species.

Nor am I convinced that a study of the oldest types can always be decisive. For instance: Acharius described his »*Borrera tenella*»

in Lichen. Univers. (1810) p. 498. It is quite evident from his description that his species is a plant with ascendent, fornicated apices, accordingly *Physcia ascendens* Bitter. But in Acharii herb. in Helsingfors we find 6 plants named »*Borrera tenella*». Five of them are *Physcia ascendens*, as limited by Bitter, and one of them *Physcia tenella*, sensu Bitteri. Accordingly Acharius did not distinguish between these two species, as we now do. It seems to me that »*Borrera tenella*» in herb. Acharius should be regarded as the type of what we would now call a section, comprising *Physcia ascendens* and *Physcia tenella*, as limited by Bitter. But the types of these elementary species are Bitter's plants, now in Bremen. — With his keen sense of formal logic Vainio took the opposite view. In the herbarium of Helsingfors he intercalated the *Physcia asependens* of Bitter under the name of *Physcia tenella* (Ach.) Vain.

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I wish to express my profound gratitude to many institutions and botanical friends for their valuable and much appreciated assistance. Firstly to the Societas pro Fauna et Flora Fennica, and to its president, Professor Alvar Palmgren, who entrusted this honourable task to me, and also to the Botanical museums of Helsingfors and Åbo, which have promptly sent me their material for study and comparison. Further to Professor K. Linkola, Helsingfors, who has revised the spelling of several Finnish names and arranged them geographically, and to many Finnish and Swedish lichenologists, none mentioned, none forgotten, who have always unselfishly placed their knowledge at my disposal.

The plates have been made and printed in Oslo. The photographic work was done by Miss Lily Monsen, our University photographer, the clichées by A/S Cliché, and the printing by A. W. Brögger's printing office.

Oslo, Pharmaceutical Institution, September 1932.

B. Lyng.

Trib. 15. **Lecideales** Vain.

(*Lichenographia Fennica* II, *Acta Soc. p. F. et Fl. Fenn.*  
53, N:o 1, 1922).

Subtrib. 1. **Cladonieae** Vain.

1. *Cladonia* (Hill) Web.; spp. 1—43. p. 14—124.
2. *Pilophoron* (Tuck.) Nyl; sp. 1. p. 125—128.

Subtrib. 2. **Lecideaceae** Vain.

1. *Toninia* (Mass.) Koerb.; spp. 1—3. p. 129—135.
2. *Thalloedaema* Mass.; spp. 1—4. p. 135—146.
3. *Basidia* De Not.; spp. 1—35. p. 146—227.
4. *Bilimbia* De Not.; spp. 1—23. p. 227—268.
5. *Sporopodium* Mont.; spp. 1—3. p. 268—276.
6. *Rhizocarpon* (Ram.) Th. Fr.; spp. 1—35. p. 276—380.

Trib. 15. **Lecideales** Vain. (cont.)

(*Lichenographia Fennica* IV, *Acta Soc. p. F. et Fl. Fenn.*  
57, N:o 2, 1934).

7. *Lecidea* (Ach.) Th. Fr.; spp. 1—222. p. 9—419,
8. *Catillaria* (Ach.) Th. Fr.; spp. 1—29. p. 420—471.
9. *Diplophragmia* Vain.; sp. 1. p. 472—473.
10. *Scutula* Tul.; spp. 1—3. p. 473—478.

7. **Lecidea** (Ach.) Th. Fr.

Ach. Meth. Lich. (1803) p. 32 (em.), Lich. Univ. (1810) p. 32 (em.), Syn. Lich. (1814) p. 11 (em.); Th. Fr. Lich. Scand. II (1874) p. 410; A. Zahlbr. Lichenes (1905) p. 130 in Engl. und Prantl Die natürl. Pflanzenfam.; Vain. Lich. Ins. Philipp. IV (1923) p. 47, Lich. Fenn. II (1922) p. 129, Nyl. Lich. Scand. (1861) p. 185 p.p.

Thallus crustaceus, continuus vel rimosus vel areolatus vel squamosus vel plus minusve pulveraceus, areolae planae vel plus minusve convexae usque verrucosae. Thallus uniformis vel in margine effiguratus, substrato hyphis hypothallicis vel medullaribus adfixus, rhizinis destitutus, ecorticatus vel anguste corticatus, esorediatus vel rarius sorediatus. Goniidia cystococcoidea aut pleurococcoidea et in cephalodiis raro evolutis cyanophycea.

Apothecia rotundata vel mutua pressione interdum irregularia vel angulosa, sessilia vel immersa vel breviter stipitata. Peritheciun proprium incoloratum vel coloratum vel carbonaceum, hyphis dense contextis formatum, thallo non vel in juventuti solum marginatum vel persistenter, sed imperfecte marginatum. Discus laete coloratus vel obscuratus usque nigricans, nudus vel pruinosis. Hypothecium incoloratum vel coloratum vel carbonaceum. Paraphyses indivisae vel interdum ramosae, tenues, interdum in apice plus minusve incrassatae, concretae vel facile discretiae. Sporae 8:nae vel rarissime 16:nae, simplices, incoloratae, parvae, ellipsoideae vel globosae vel ovoideae vel anguste ovales, rectae vel leviter curvatae, vulgo leptodermatiae, mediocres aut parvae.

Conidangia immersa, globosa, in vertice obscurata, conidia exobasidialia, solum in subgenere *Protoblastenia* endobasidialia, recta vel arcuata, anguste oblonga vel cylindrica usque filiformia.

Th. Fries writes (Lich. Scand. l. c.): »Thallus forma valde variabilis. Optime evolutus constitutus est e squamis crassis

vel membranaceis, adscendentibus, subtus strato corticali persistente vel dirupto evanescente tectis, infimum evolutionis gradum praebet thallus hypophloeodes, ex hyphis inter fibras ligneas cellulasque corticis serpentibus gonidiorumque glomerulis formatus, omnino absconditus vel in soredia passim efflorescens. Vulgo tamen est uniformiter verrucosus vel areolatus. Color admodum variabilis, hypothallus nunc distinctus, nunc (saepius) minus evidens.»

And furthermore (l. c. p. 411): »Secundum dimensiones hoc in genere sporas ita designamus: sporae minutissimae sunt infra 6  $\mu$  longae, minutae 6—10  $\mu$ , mediocres 10—15  $\mu$ , majusculae 15—20  $\mu$ , magnae 20—30  $\mu$  longae. Etiam maiores dicuntur maximae.»

(Literary references by Vainio, description compiled by B. Lynge after Th. Fries and Zahlbruckner, l.c.).

#### CLAVIS SPECIERUM<sup>1)</sup>.

1. Thallus squamulosus vel squamuloso-crustaceus, squamulis discretis vel in crustam congestis connatisive (Th. Fr. Lich. Scand. II p. 411) I. *Psora* (Hall.) Mass. p. 37.
- 1\*. Thallus crustaceus, uniformis, continuus vel vulgo areolatus, interdum deficiens.
2. Apothecia acido chrysophanico colorata ideoque KOH laete roseo tincta II. *Protoblastenia* (Zahlbr.) Vain. p. 60.
- 2\*. Apothecia acido chrysophanico non colorata III. *Eulecidea* (Th. Fr.) Lynge (incl. *Biatora*) p. 71.

#### Subgen. I. **Psora** (Hall.) Mass.

1. Species lignicolae.
2. Apothecia atra.
3. Squamulae adscendentibus, subtus sorediatae,  $\text{CaCl}_2\text{O}_2$  superne rubescentes 6. *L. scalaris* Ach. p. 44.
- 3\*. Squamulae adpressae, sorediis destitutae,  $\text{CaCl}_2\text{O}_2$  non mutatae 7. *L. Friesii* Ach. p. 46.
- 2\*. Apothecia rufa, squamulae adscendentibus 8. *L. cladonioides* (Fr.) Th. Fr. p. 47.
- 1\*. Species terricolae vel muscicolae.
2. Sporae 12:nae vel 16:nae 16. *L. epiphaea* Nyl. p. 58.

<sup>1)</sup> Auctore B. Lynge.

- 2\*. Sporae 8:nae.  
3. Squamulae majores, 1—8 mm. latae.  
4. Squamulae albidae vel glaucescentes  
    1. *L. rubiformis* Wbg. p. 37.  
4\*. Squamulae rubescentes 2. *L. decipiens* (Ehrh.) Ach. p. 39.  
4\*\*. Squamulae fuscescentes vel castaneae.  
    5. Squamulae contiguae, arcte adnatae  
        10. *L. demissa* (Rutstr.) Ach. p. 49.  
    5\*. Squamulae imbricatae, marginibus plus minusve liberae vel  
        etiam adscendententes.  
    6. Squamulae castaneae, nitidae, apothecia globosa  
        3. *L. globifera* Ach. p. 41.  
    6\*. Squamulae fuscescentes, opacae, apothecia planiuscula  
        4. *L. lurida* (Sw.) Ach. p. 42.  
3\*. Squamulae minores.  
4. Thallus distincte squamulosus.  
5. Squamulae totae adpressae, fere *L. rubiformi* deminuti aemula-  
    lantes, paraphyses laxe cohaerentes  
    11. *L. Silénii* Vain. p. 52.  
5\*. Squamulae imbricatae, paraphyses arcte cohaerentes  
    9. *L. prasinolepis* Nyl. p. 49.  
4\*. Thallus granuloso-squamulosus (vide etiam sub *Eulecidea*).  
5. Thallus sat crassus, margo apotheciorum persistens, hymenium  
    70  $\mu$ , paraphyses distincte capitatae, sporae late ellipsoideae,  
    12—17  $\times$  7—9  $\mu$  15. *L. rufofusca* (Anzi) Nyl. p. 57.  
5\*. Thallus tenuior (*L. demissae* deminutae aemulatur), margo  
    apotheciorum demum evanescens, hymenium 50  $\mu$ , para-  
    physes apice leviter solum incrassatae, sporae anguste ellip-  
    soideae 17. *L. turficola* (Hellb.) Th. Fr. p. 59.  
1\*\*. Species saxicolae.  
2. Squamae magnae, 2—4 mm., subplanae, livido-cinerascentes,  
    apothecia aurantiaco-cinnamomea, paraphyses KOH intense  
    violasceni-roseae 5. *L. testacea* (Hoffm.) Ach. p. 43.  
2\*. Squamulae multo minores, 0.3—2.0 mm., gleboso-verrucosae,  
    apothecia atra, paraphyses KOH non violasceni-roseae.  
3. Sporae globosae, diam. 7—10  $\mu$ , apothecia plana, 0.5—1.2 mm.,  
    paraphyses laxissime cohaerentes, hymenium superne subsma-  
    ragdulum, hypothecium obscure fuscum, thallus cinereo- vel  
    rufesceni-fuscus 13. *L. cinereorufa* Schaer. p. 54.  
3\*. Sporae ellipsoideae, 9—13  $\times$  4—6  $\mu$ , apothecia (demum) con-  
    vexa, paraphyses arcte cohaerentes.  
4. Apothecia minuta, 0.5—0.6 mm., paraphyses apice nigricanti-  
    fuscae, hypothecium fusco-nigrum, thallus badius vel fusco-  
    rufescens 12. *L. fuliginosa* Tayl. p. 53.

- 4\*. Apothecia 1 mm., hymenium superne cyanescens, hypothecium incoloratum, thallus plus minusve obscure cinereus  
 14. *L. rugifera* Vain. p. 56.

Subgen. II. **Protoblastenia** (Zahlbr.) Vain.

1. Species saxicolae.
2. Ad saxa calcarea.
3. Hypothecium rubricoso-fuscescens vel fusco-nigrum  
 24. *L. fuscorubens* Nyl. p. 69.
- 3\*. Hypothecium pallidum  
 18. *L. rupestris* (Scop.) Ach., formae saxicolae. p. 61.
- 2\*. Ad saxa non calcarea.
3. Thallus sorediis sulphureis instructus  
 23. *L. rubiginans* (Nyl.) Magn. p. 68.
- 3\*. Thallus sorediis destitutus.
4. Hymenium J levissime caerulescens, deinde vinose rubens,  
 hypothecium KOH parum reagens  
 24. *L. fuscorubens* Nyl. p. 69.
- 4\*. Hymenium J circa ascos caerulescit, ceterum non mutatur,  
 hypothecium KOH solutionem violaceam effundit  
 20. *L. rupestris* \**Siebenhaariana* (Kbr.) Th. Fr. p. 64.
- 1\*. Species corticolae vel truncicolae.
2. Thallus  $\text{CaCl}_2\text{O}_2$  rubescens, apothecia fusca vel fusco-rufescentia  
 22. *L. quernea* Ach. p. 67.
- 2\*. Thallus  $\text{CaCl}_2\text{O}_2$  immutatus, apothecia cinnabarina  
 21. *L. cinnabarina* Somrft. p. 65.
- 1\*\*. Species terricolae 19. *L. rupestris* \**terricola* (Anzi) Th. Fr. p. 64.

Subgen. III. **Eulecidea** (Th. Fr.) Lynge

Syn. *Eulecidea* Th. Fr. + *Biatora* (Fr.) Th. Fr.

A. SPECIES SAXICOIAE.

(species lignicolae vel corticolae p. 25, species muscicolae vel terricolae p. 32).

1. Medulla J caerulescens (medulla non caerulescens p. 14).
2. Medulla KOH mox vel e flavo rubescens.<sup>1)</sup>
3. Thallus cinerascens aut albidus,  $\text{CaCl}_2\text{O}_2$  non tingitur  
 55. *L. cyanea* (Ach.) Vain. p. 119.
- 3\*. Thallus flavescens,  $\text{CaCl}_2\text{O}_2$  rubescens  
 57. *L. theiodes* Somrft. p. 133.

<sup>1)</sup> Cfr. *L. pseudopilati* Vain.

- 2\*. Medulla KOH non rubescens.
- 3. Thallus hydrate ferrico tinctus.
  - 4. Areolae crassae, verrucosae 52. *L. silacea* Ach. p. 115.
  - 4\*. Areolae sat tenues, planae
    - 56. *L. lapicida* f. *ochromeliza* (Nyl.) Harm. et f. *ochracea* (Nyl.) Vain. p. 130 et 132.
- 3\*. Thallus hydrate ferrico non tinctus, plus minusve intense fuscus.
  - 4. Sporae latae, e. g. 9—11  $\mu$  crassae.
  - 5. Sporae 18—25  $\mu$  longae, paraphyses laxe cohaerentes
    - 48. *L. athroocarpa* Ach. p. 104.
  - 5\*. Sporae 12—16  $\mu$  longae, paraphyses arcte cohaerentes
    - 46. *L. atrocarpoides* Vain. p. 101.
  - 4\*. Sporae angustiores, vulgo circiter 4—7  $\mu$  crassae.
    - 5. Paraphyses laxe cohaerentes, hypothecium fusco-nigrum
      - 43. *L. subcinerascens* Nyl. p. 98.
    - 5\*. Paraphyses arcte cohaerentes, areolae (rufo-) fuscescentes, saepe margine pallidiores.
      - 6. Hypothecium fusco-nigrum
        - 45. *L. paupercula* Th. Fr. p. 99.
    - 6\*. Hypothecium incoloratum vel pallide fuscescens.
      - 7. Areolae crassae, convexae vel verrucosae
        - 42. *L. atrobrunnea* (Ram.) Schaer. p. 96,
    - 7\*. Areolae tenuiores, planae
      - 47. *L. Helsingforsiensis* Nyl. p. 102.
- 3\*\*\*. Thallus hydrate ferrico non tinctus, albidus vel cinerascens.
  - 4. Sporae majores, 14—20  $\times$  8—12  $\mu$ .
  - 5. Thallus passim parce sorediosus, apothecia pruinosa, plana, arcte adpressa, hypothecium fusco-atrum
    - 51. *L. sorediza* Nyl. p. 111.
    - 5\*. Thallus sorediis destitutus (cfr. etiam *L. sorediza* Nyl.).
    - 6. Apothecia subimmersa, diu plana, hypothecium albidum, thallus albidus 53. *L. rhagadiella* (Nyl.) Th. Fr. p. 116.
    - 6\*. Apothecia adnata, convexa, hypothecium fusco-fuligineum, thallus cinereo-fuscescens
      - 44. *L. atrocervina* Vain. p. 99.
    - 4\*. Sporae minores, circiter 6—10  $\times$  4—6  $\mu$ .
      - 5. Hypothecium (fusco-)nigrum.
      - 6. Thallus tenuissimus, apothecia plana, hymenium angustum, circiter 50  $\mu$  66. *L. inops* Th. Fr. p. 148.
      - 6\*. Thallus (vulgo) crassus, hymenium altum, circiter 100—125  $\mu$ .
      - 7. Hypothallus albidus, thallus albidus (—glaucescens), apothecia saepe thallo subimmersa, plana, margine (interdum

- etiam disco) plus minusve pruinosa, sporae ellipsoideae,  
 $10-13 \times 5-7 \mu$  50. *L. speirea* Ach. p. 108.
- 7\*. Hypothallus ater, thallus caeruleo-cinereus, apothecia  
adpressa, magis convexa, nuda, sporae late ellipsoideae,  
 $7-9 \times 5-7 \mu$  49. *L. confluens* Fr. p. 106.
- 5\*. Hypothecium non coloratum vel pallide fuscescens.
6. Sporae (saltem pro parte) subglobosae.
7. Areolae 0.3—0.8 mm., planae, apothecia inter areolas sita  
58. *L. Kittilensis* Vain. p. 134.
- 7\*. Areolae 1.0—3.0 mm., verrucosae, apothecia thallo im-  
mersa 165. *L. demolita* Vain. p. 325.
- 6\*. Sporae ellipsoideae.
7. Thallus bene evolutus.
8. Thallus verrucosus, medulla J leviter violascens, asci  
cylindrico-clavati, sporae  $11-12 \times 7-8 \mu$ , epithecium  
violaceo-fuligineum 120. *L. serenior* Vain. p. 249.
- 8\*. Thallus rimoso-areolatus, medulla J caerulescens, asci  
clavati, sporae (vulgo) angustiores,  $4-6 \mu$ , epithecium  
nigricans aut olivaceo-nigricans  
54. *L. tessellata* Flk. p. 117.
- 7\*. Thallus evanescens aut parcissime evolutus.
8. Peritheciun in parte interiori KOH rubescens (ut in me-  
dulla thallina *L. cyaneae*)  
64. *L. pseudopilati* Vain. p. 144.
- 8\*. Peritheciun KOH non rubescens.  
56. *L. lapicida* f. *ecrustacea* Anzi p. 132
- 1\*. Medulla J non caerulescens (medulla J caerulescens p. 12).
2. Medulla KOH rubescens.
3. Thallus sorediis instructus 90. *L. Petsamoënsis* Räs. p. 208.
- 3\*. Thallus sorediis destitutus.
4. Thallus rufescens vel flavidо-stramineus, areolae 0.4—4.0 mm.,  
apothecia majora, 0.8—4.0 mm., thallo immersa, immarginata.  
Cortex KOH rubescens 135. *L. armeniaca* (DC.) Fr. p. 281.
- 4\*. Thallus cinerascens, areolae 0.2—1.5 mm., apothecia parva,  
0.5—1.2 mm., thallo adnata, margine tenui nitido circumdata.  
Etiam medulla KOH rubescens  
85. *L. Lulensis* (Hellb.) Stiz. p. 199.
- 2\*. Medulla KOH non rubescens.
3. Thallus, saltem ab initio, parasiticus.
4. Thallus laevigatus, supra *Lecanoram sordidam* crescens  
32. *L. intumescens* (Flk.) Nyl. p. 84.
- 4\*. Thallus granulato-furfuraceus  
33. *L. furvella* Nyl. p. 86.
- 3\*. Thallus ab initio autonomus.

4. Thallus cephalodiis rufescentibus instructus.
5. Apothecia aspicilioidea, verrucis gibbosis centraliter immersa  
69. *L. pelobotryon* (Wbg.) Somrft. p. 153.
- 5\*. Apothecia lecideina, inter areolas sita.
6. Thallus crassus, apothecia 1 mm. superantia  
68. *L. elegans* (Th. Fr.) Vain. p. 151
- 6\*. Thallus tenuior, apothecia diam. 0.5—1.0 mm.
- 4\*. Thallus cephalodiis destitutus  
67. *L. panaeola* (Ach.) Vain. p. 150.
5. Thallus furfuraceo-isidiosus  
33. *L. furvella* Nyl. p. 86
- 5\*. Thallus (interdum inconspicue) sorediosus.
6. Thallus citrinus vel flavescens.
7. Thallus totus farinoso-sulphureus, discus apotheciorum luteus, hymenium 30  $\mu$ , sporae 3—7  $\times$  1—3  $\mu$   
220. *L. lucida* Ach. p. 413.
- 7\*. Thallus disperse sorediosus, discus livido-cinerascens, hymenium 50—70  $\mu$ , sporae 8—11  $\times$  3—5 (—7)  $\mu$   
218. *L. orosthea* Ach. p. 409
- 6\*. Thallus cinerascens.
7. Hypothecium fusco-nigrum, sporae 17—30  $\times$  9—12  $\mu$   
72. *L. soredizodes* (Nyl.) Vain. p. 169.
- 7\*. Hypothecium pallidum.
8. Apothecia mollia, fusco-rufescentia, sporae 10—18  $\times$  6—9  $\mu$ .  
170. *L. coarctata* \*oblegens Th. Fr. p. 333.
- 8\*. Apothecia atra, sporae minores.
9. Paraphyses laxe cohaerentes, sporae late ellipsoideae, 9—14  $\times$  7—9  $\mu$   
124. *L. Luhankaënsis* Vain. p. 258.
- 9\*. Paraphyses magis cohaerentes, sporae angustiores, 8—14  $\times$  4—5 (—7)  $\mu$ .
10. Thallus pallide cinerascens, saepe esorediosus, apothecia frequentia, rufofusca vel atra, hymenium superne aerruginosum, conidia longa, plus 10  $\mu$   
82. *L. leucophaea* (Flk.) Nyl. p. 192.
- 10\*. Thallus fusco-cinerascens, distincte sorediosus, apothecia rarissima, atra, hymenium superne fuscescens, conidia brevia, ca. 2  $\mu$ ,  
155. *L. praeruptarum* DR. et Magn. p. 131.
- 5\*\*. Thallus nec isidiosus nec sorediosus.
6. Hypothecium obscurum. (Hypothecium pallidum p. 20).
7. Apothecia minuta vel parva, diam. vulgo < 0.5 mm. (Apothecia majora p. 18).
8. Paraphyses laxe cohaerentes.

9. Asci cylindrici, sporae  $9-12 \times 5 \mu$ , thallus cinereus.  
 10. Thallus crassus, areolae  $0.2-0.5$  mm. latae, epruinosaes  
     118. *L. cuculi* Vain. p. 247.  
 10\*. Thallus tenuis, areolae  $0.15-0.35$  mm. latae, subpruinosaes  
     121. *L. lygaeiza* Vain. p. 250.  
 9\*. Asci clavati.  
 10. Hymenium  $70-80 \mu$  altum, apothecia adnata, sporae  
      $7-13(-16) \times 5-8 \mu$ .  
 11. Thallus minute verruculosus, hypothallus indistinctus, sporae  $7-13 \times 5-8 \mu$   
     129. *L. albiodocinarella* Vain. p. 266.  
 11\*. Thallus areolatus, in hypothallo nigro innatus, sporae  $12-16 \times 5-8 \mu$ .  
     122. *L. praenubila* Nyl. p. 251.  
 10\*. Hymenium tenuius,  $35-40$  vel  $60 \mu$ , sporae minutae,  
      $3-7 \times 3-5 \mu$ .  
 11. Apothecia thallo innata, thallus glauco-caeruleus  
     143. *L. chalybeoides* Nyl. p. 292.  
 11\*. Apothecia thallo adnata, thallus cinereo-pallescens.  
     144. *L. nugaria* Nyl. p. 293.  
 8\*. Paraphyses non laxe cohaerentes.  
 9. Thallus plus minusve distincte ferrugineus.  
 10. Hypothallus distinctus, thallus tenuis, discus concavus,  
     hypothecium KOH purpurascens, sporae  $11-14 \times 6-8 \mu$   
     77. *L. Dicksonii* (Gmel.) Ach. p. 184.  
 10\*. Hypothallus indistinctus, thallus crassus, discus convexus, hypothecium KOH immutatum, sporae  $10-14 \times 4-6 \mu$   
     37. *L. fuscoferruginea* Vain. p. 91.  
 9\*. Thallus non ferrugineus.  
 10. Apothecia gyrosa  
     29. *L. fuscocinerea* Nyl. p. 82.  
 10\*. Apothecia non gyrosa.  
 11. Sporae maximae,  $> 20 \mu$  longae.  
 12. Epithecum fuscescenti-nigricans  
     34. *L. trochodes* (Tayl.) Cromb. p. 87.  
 12\*. Epithecum aeruginoso-nigricans  
     31. *L. aviaria* Vain. p. 84.  
 11\*. Sporae mediocres,  $10-20 \mu$  longae.  
 12. Ad cementum vel saxa calcarea  
     150. *L. polycocca* Somrft. p. 301.  
 12\*. Ad saxa non calcarea.  
 13. Hymenium  $30-40 \mu$  altum  
     139. *L. pycnocarpa* (Kbr.) Ohlert p. 287.

- 13\*. Hymenium 70 (—90) altum.  
14. Hymenium J persistenter caerulescens  
180. *L. Haemensis* Vain. p. 354.  
14\*. Hymenium J e caeruleo intense vinosum  
34. *L. trochodes* (Tayl.) Cromb. p. 87.  
11\*\*. Sporae parvae vel minutae,  $< 10 \mu$  longae.  
12. Sporae late ellipsoideae vel subglobosae.  
13. Hymenium altum,  $100 \mu$ , superne fusco-fuligineum,  
sporae  $7 \times 4.5 \mu$ , thallus incrassatus  
30. *L. somphoterella* Vain. p. 83.  
13\*. Hymenium angustius,  $40-60 \mu$ , epithecum vel  
totum hymenium aeruginosum vel olivaceo-nigri-  
cans, sporae majores,  $6-11 \times 4.5-5$  vel  $8 \mu$ .  
14. Thallus areolato-diffractus, areolae planae, apothecia  
opaca, immarginata.  
15. Hypothallus conspicuus, epithecum aeruginoso-  
fuligineum.  
16. Hypothecium fuscescens, thallus fuscescens  
40. *L. extenuata* Nyl. p. 94.  
16\*. Hypothecium rubricoso-rufescens, thallus ob-  
scure cinereus  
39. *L. Mosigii* (Hepp) Anzi p. 93.  
15\*. Hypothallus indistinctus, epithecum suboli-  
vaceo-nigricans, thallus griseo-rufescens  
41. *L. Satakuntensis* Vain. p. 95.  
14\*. Thallus disperse verruculosus, albidus, apothecia  
nitida, marginata  
146. *L. Ivalensis* Vain. p. 296.  
12\*. Sporae (saepe anguste) ellipsoideae vel oblongae.  
13. Hypothecium aeruginoso-nigricans, hymenium te-  
nue,  $25-40-50 \mu$ , sporae parvae.  
14. Thallus leprosus vel rimuloso-granulatus, virenti-  
vel alutaceo-albidus, sporae minutissimae,  $5-8 \times$   
 $1.5-2.5 \mu$   
154. *L. tuberculata* Somrft p. 308.  
14\*. Thallus subverniceus, rimuloso-areolatus, cine-  
reo-fuscescens vel cinereo-fuligineum, sporae par-  
vae,  $7-10 \times (2-) 3-3.5 \mu$   
149. *L. hypocyanea* Vain. p. 300.  
13\*. Hypothecium non aeruginosum, sed rubricosum  
vel fuscescens vel fusco-nigrum.  
14. Hypothecium KOH immutatum.  
15. Apothecia minutissima, diam.  $0.15-0.35$  mm.  
148. *L. lapillicola* Vain. p. 299.

- 15\*. Apothecia diam. (vulgo) 0.4—0.8 mm.  
 16. Totum hymenium smaragdulum, apothecia ab initio convexa  
    147. *L. sylvicola* Flot. p. 297.  
 16\*. Hymenium (saltem superne) fuligineum.  
 17. Thallus tenuis, effusus, apothecia adnata  
    145. *L. erratica* Kbr. p. 294.  
 17\*. Thallus pulchre rimoso-areolatus, apothecia saltem primum thallo immersa.  
 18. Areolae medio rufesceni-pallidae, apothecia persistente immersa, paraphyses tenuissimae, sat laxe cohaerentes  
    38. *L. Keimioensis* Vain. p. 92.  
 18\*. Areolae uniformiter fuscantes aut obscure cinerascentes, opacae, discus apotheciorum demum prominens, paraphyses sat crassae, arcte cohaerentes  
    35. *L. griseonigricans* Vain. p. 89.  
 14\*. Hypothecium KOH purpurascens vel rubricosum.  
 15. Epitheciun aeruginosum.  
 16. Thallus evanescens  
    153. *L. enterophaea* Vain. p. 307.  
 16\* Thallus minute areolatus, cinereus  
    36. *L. plumbeoatra* Vain. p. 90.  
 15\*. Totum hymenium incoloratum, thallus non evanescens.  
 16. Apothecia subpruinosa, livida aut fuscantia  
    186. *L. botryoides* Nyl. p. 360.  
 16\*. Apothecia nuda.  
 17. Apothecia fusco-nigricantia, hymenium 35—45  $\mu$  altum, thallus verruculosus  
    187. *L. laxula* Nyl. p. 361.  
 17\*. Apothecia rufescantia, hymenium 60—65  $\mu$  altum, thallus sublaevigatus  
    185. *L. poliodes* Nyl. p. 359.  
 7\*. Apothecia majora, diam. vulgo > 0.5 mm. (Apothecia minuta vel parva p. 15).  
 8. Thallus obscurus, fuscantes.  
 9. Thallus bene evolutus, areolatus, areolae planae.  
 10. Planta crassa, major, areolae usque ad 1—2.5 mm., apothecia usque ad 2 mm., sporae 10—16  $\times$  5—7  $\mu$ .  
 11. Areolae (saepe pallide) fuscantes, hypothallus nigricans, bene evolutus  
    25. *L. fuscoatra* (L.) Ach. p. 72.

- 11\*. Areolae subferrugineo-fuscescentes, hypothallus indistinctus 37. *L. fuscoferruginea* Vain. p. 91.
- 10\*. Planta minor, areolae 0.1—0.3 mm., apothecia 0.5—0.8 mm., sporae 7—10  $\mu$  longae  
35. *L. griseonigricans* Vain. p. 89.
- 9\*. Thallus tenuis vel evanescens.
10. Thallus tenuis, epithecium fuscum, sporae 11—17  $\times$  4.5—7  $\mu$  28. *L. rimiseda* Nyl. p. 81.
- 10\*. Thallus evanescens, epithecium cyanescens, sporae 7—12  $\times$  2—3.5  $\mu$   
141. *L. commaculans* Nyl. p. 290.
- 8\*. Thallus pallidus, albidus, cinerascens vel ochraceus.
9. Hymenium 50—70  $\mu$ .
10. Apothecia majora, 1—2.5 mm., parathecium extus fuligineo-violaceum, KOH distinctius violascens, sporae angustae, 6—11  $\times$  2.5—3.5  $\mu$   
65. *L. auriculata* Th. Fr. p. 146.
- 10\*. Apothecia minora, 0.4—0.8 mm.
11. Apothecia atro-purpurea, 0.15—0.5 mm., peritheciun dilute vel intense violaceo-fuscescens, hymenium 55—60  $\mu$  altum, epithecium pallescens vel subrubricosum 181. *L. delincta* Nyl. p. 354.
- 11\*. Apothecia nigra, 0.3—1.0 mm, peritheciun totum fusco-nigrum, hymenium 70  $\mu$  altum, epithecium olivaceo-nigricans  
75. *L. crustulata* (Ach.) Vain. p. 176.
- 9\*. Hymenium altum, ultra 80  $\mu$ , usque ad 125  $\mu$ .
10. Hypothecium KOH purpurascens  
63. *L. phylliscina* Nyl. p. 144
- 10\*. Hypothecium KOH immutatum.
11. Ad rupes calcem continentates. Thallus tenuiter rimoso-areolatus, apothecia 0.5—0.8 mm., asci evacuati transversim rugosi (KOH)  
76. *L. albosuffusa* Th. Fr. p. 181.
- 11\*. Ad rupes non calcareas. Asci evacuati non rugosi.
12. Apothecia parva vel mediocria, 0.5—1.0 mm., arcte adpressa vel subinnata, hymenium 70—100  $\mu$ , paraphyses in apice leviter solum incrassatae, sporae 12—18  $\times$  6—8  $\mu$  74. *L. cinereoatra* Ach. p. 172.
- 12\*. Apothecia majora, 0.8—2.0 (—3) mm., numquam subinnata, sporae majores.  
13. Paraphyses in apice clavatae, hymenium 100—140  $\mu$ , thallus crassiusculus, ochraceus  
73. *L. flavocaerulescens* (Hornem.) Ach. p. 170

- 13\*. Paraphyses in apice non incrassatae, thallus vulgo non ochraceus, vel in ff. *L. sterizae* tenuis, plus minusve ochraceus.
14. Hypothecium subhymeniale tenue, rufescens, praeterea fusco-nigrum, hymenium 120—130 (—170)  $\mu$ , thallus crassiusculus, caesio-albicans vel glaucescens  
 71. *L. albocaerulescens* (Wulf.) Flk. p. 167.
- 14\*. Hypothecium subhymeniale tenue, albidum, praeterea fusco-nigrum, thallus crassitudine valde varians, albidus vel cinerascens vel in ff. ochraceus 70. *L. steriza* (Ach.) Vain. p. 154.
- 6\*. Hypothecium pallidum (Hypothecium obscurum p. 15).
7. Apothecia parva, vulgo  $< 0.4$  mm., paraphyses arcte cohaerentes.
8. Epithecium fuscescens  
 140. *L. amphoterooides* Vain. p. 289.
- 8\*. Epithecium sordide caeruleum vel subfuligineum.
9. Thallus sat crassus, verruculosus, fuscescens, sporae 9—  
 14  $\times$  5—6  $\mu$  142. *L. melaphanoides* Nyl. p. 291.
- 9\*. Thallus tenuis.
10. Thallus albidus vel cinereus, hypothallus indistinctus.
11. Sporae minutae, 6—9  $\times$  3  $\mu$ , apothecia 0.2—0.4 mm  
 152. *L. lynceola* Th. Fr. p. 307.
- 11\*. Sporae mediocres, (7—) 9—15  $\times$  3—4  $\mu$ , apothecia usque ad 0.8 mm  
 151. *L. conferenda* Nyl. p. 302.
- 10\*. Thallus obscure fuscescens, areolae hypothallo atro distincto impositae 40. *L. extenuata* Nyl. p. 94.
- 7\*. Apothecia majora, vulgo  $> 0.4$ —0.5 mm.
8. Sporae late ellipsoideae (longitudo latitudinem vulgo non duplo superans). (Sporae ellipsoideae vel oblongae p. 22).
9. Paraphyses (in aqua) facillime liberae, in apice non incrassatae.
10. Ascii cylindrici, epithecium violaceo-fuligineum.
11. Apothecia adnata, demum immarginata, verrucae thallinae 0.15—0.4 mm., contiguae, medulla J  $\div$   
 119. *L. somphotera* Vain. p. 248.
- 11\*. Apothecia primum innata, quasi margine proprio cincta, deinde elevata, verrucae thallinae 0.4—0.5 mm, supra hypothallum nigrum dispersae, medulla J violacea 120. *L. serenior* Vain. p. 249.
- 10\*. Ascii plus minusve late clavati.
11. Ad rupes calcareas, hypothecium KOH purpurascens  
 126. *L. subsequens* Nyl. p. 261.

- 11\*. Ad rupes non calcareas, hypothecium KOH non purpurascens.
12. Thallus partim in soredia fatiscens  
124. *L. Luhankaënsis* Vain. p. 258.
- 12\*. Thallus sorediis destitutus.
13. Thallus evanescens vel tenuissimus, excipulum in parte interiori incoloratum  
125. *L. goniophila* Flk. p. 258.
- 13\*. Thallus melius evolutus, modice incrassatus aut sat crassus, excipulum vulgo magis obscuratum  
123. *L. stigmatea* Ach. p. 252.
- 9\*. Paraphyses (in aqua) non facillime liberae.
10. Sporae majores,  $14-20 \times 10-12 \mu$   
91. *L. superlata* Vain. p. 209.
- 10\*. Sporae minores, latitudinem  $8 \mu$  non superantes.
11. Paraphyses in apice non incrassatae, conidia  $11-14 (-18) \mu$ .
12. Sporae late ellipsoideae,  $9-12 \times 5.5-6.5 \mu$ , thallus albidus vel vulgo plus minusve sulphureus, farineus, rimosus, haud areolatus  
138. *L. elata* Schaer. p. 286.
- 12\*. Sporae crassiores, usque subglobosae, thallus impure albidus, plus minusve distincte verrucoso-areolatus.
13. Epithecium cyanescens, sporae  $7-13 \times 5-6 (-8) \mu$ , thallus vulgo crassus, verrucosus, KOH lutescens, addito  $\text{CaCl}_2\text{O}_2$  lutescenti-fulvescens  
127. *L. subcongrua* Vain. p. 263.
- 13\*: Epithecium fuscescens vel subicoloratum, sporae  $9-15 \times 7-8 \mu$ , thallus evanescens vel tenuis, KOH et KOH +  $\text{CaCl}_2\text{O}_2$  immutatus  
128. *L. altrosanguinea* (Flk.) Vain. p. 265.
- 11\*. Paraphyses in apice clavatae vel etiam capitatae, conidia breviora.
12. Apothecia nitida, valde convexa, hymenium superne smaragdulum vel nigricans, conidia  $6-8 \mu$ .
13. Apothecia demum prominentia, areolae planae vel subplanae  
134. *L. subbulbata* Vain. p. 280.
- 13\*. Apothecia convexa, sed latere raro thallum superantia, areolae convexae  
133. *L. aglaea* Somrft p. 277.
- 12\*. Apothecia opaca, plana vel planiuscula, hymenium superne fuscescens, conidia  $3-4 \mu$ .

- 13. Thallus albescens vel pallide cinerascens.
- 14. Apothecia pruinosa
  - 160. *L. mollis* \**caesioalbescens* (Magn.) p. 319.
- 14\*. Apothecia epruinosa
  - 161. *L. asyndeta* Nyl. p. 321.
- 13\*. Thallus fuscescens vel obscure cinerascens.
- 14. Apothecia diu immersa, thallum aequantia, tenuiter marginata, thallus crassus, areolato-diffractus.
- 15. Apothecia parva, 0.5—1.0 mm., crebra, saepe contigua, orbicularia vel mutua pressione angulosa, areolae verrucoso-rugosae
  - 162. *L. Helsinkiensis* Vain. p. 322.
- 15\*. Apothecia majora, 0.7—2.5 mm., magis dispersa, saepe irregulariter angulosa, areolae planae vel demum subconvexae, magis laevigatae
  - 163. *L. Kochiana* Hepp p. 323.
- 14\*. Apothecia (mox) emergentia, thallum superantia.
- 15. Thallus crassus, verrucoso-areolatus
  - 164. *L. Cacuminum* Vain. p. 324.
- 15\*. Thallus tenuis, minute areolatus, areolis planis, vel rimosus.
- 16. Margo persistens vel subpersistens, apothecia 0.5 mm.
- 17. Thallus subtessellato-areolatus, areolae 0.5—1.0 mm., pruinosa, apothecia minus arcte adpressa
  - 159. *L. mollis* (Wbg.) Nyl. p. 317.
- 17\*. Thallus magis irregulariter areolatus, areolae minores, epruinosa, apothecia arcte adnata
  - 167. *L. lygaeoplaca* Vain. p. 327.
- 16\*. Margo (vulgo mox) exclusus, apothecia minora, 0.4—0.6 (—0.7) mm.
- 17. Thallus pulchre minutissime areolatus, areolae 0.1—0.2 mm., tenuissimae, perithecium bene evolutum, apothecia sessilia
  - 166. *L. Hoglandica* Nyl. p. 326.
- 17\*. Thallus continuus, rimulosus, perithecium tenue, apothecia innata, sed thallum superantia
  - 168. *L. lygaea* Ach. p. 328.
- 8\*. Sporae ellipsoideae vel oblongae, longitudo latitudinem duplo vel magis superans (Sporae late ellipsoideae p. 20).
- 9. Sporae plus minusve fabaceae.
- 10. Thallus cinereus vel pallide murinus, apothecia late adnata
  - 156. *L. cyathoides* Ach. p. 312.

10\*. Thallus cinereo-fuscens, apothecia ab initio semi-immersa, demum late adnata

158. *L. subrivulosa* Vain. p. 316.

9\*. Sporae ellipsoideae.

10. Paraphyses facillime liberae.

11. Asci cylindrici, thallus obscure cinerascens, areolatus, apothecia thallo plus minusve innata.

12. Epithecium caerulecenti-smaragdulum.

13. Sporae 14—16 × 6—8 μ

117. *L. atrocinerea* (Schaer.) Vain. p. 244.

13\*. Sporae 10—12 × 5—6 μ

121. *L. lygaeiza* Vain. p. 250.

12\*. Epithecium caerulecenti-violascens, sporae 10—12 (—16) × (5—) 6—8 μ

119. *L. sompholeta* Vain. p. 248.

11\*. Asci clavati, sporae minutae, subcylindricae, thallus citrinus, granulato-leprosus 220. *L. lucida* Ach. p. 413.

10\*. Paraphyses non facillime liberae, vulgo arcte cohaerentes.

11. Thallus sulphureus vel virescenti-stramineus.

12. Apothecia thallum superantia, valde convexa, nitida, hypothallus ater, inter areolas albido-stramineas distincte visus 134. *L. subbullata* Vain. p. 280.

12\*. Apothecia saltem ab initio immersa.

13. Thallus virescenti-stramineus, hypothallo atro distincto circumdatus, areolae subeffiguratae, apothecia atra, nuda, epithecium caeruleo-fuligineum

78. *L. luteola* Nyl. p. 186.

13\*. Thallus dilute sulphureus, hypothallus haud visus, areolae angulatae, arcte contiguae, apothecia livida, pruinosa, epithecium olivaceo-nigricans

219. *L. sulphurea* (Hoffm.) Ach. p. 411.

11\*. Thallus fuscens aut cinereo-fuscens, areolae crassae vel crassiusculae.

12. Areolae planae, nitidae, squamaeformes, p.p. subdispersae, hymenium J caerulescens, superne KOH e rufescenti subrubicisum, conidia arcuata, 15—30 μ

26. *L. deusta* (Stenh.) Nyl. p. 78.

12\*. Areolae convexae, magis contiguae.

13. Apothecia primum verruculis immersa, demum lecanorina, margo persistens, epithecium fuscum, hymenium J e caeruleo vinose fulvescens, superne KOH sordide purpurascens

83. *L. tenebricans* Nyl. p. 197.

- 13\*. Apothecia semiimmersa, hymenium J caerulescens.  
 14. Apothecia in areolis semiimmersa, demum arcte  
     adnata, 1.3—2 mm., margo persistens, epithecium  
     fuscescens, sporae p.p. leviter curvatae  
        158. *L. subrivulosa* Vain. p. 316.  
 14\*. Apothecia inter areolas sita, 0.7—1.0 mm., margo  
     demum exclusus, epithecium cyaneo-fuligineum  
        80. *L. distensa* Vain. p. 190.  
 11\*\* Thallus cinereus vel albescens.  
 12. Peritheciun in parte exteriore KOH solutionem  
     violaceam vel rubricosam effundens.  
 13. Thallus tenuis vel fere obsoletus, peritheciun KOH  
     violaceum         62. *L. Pilati* (Hepp) Kbr. p. 141.  
 13\* Thallus crassus, verrucosus, peritheciun KOH  
     rubricosum         79. *L. tumidior* Nyl. p. 188.  
 12\*. Peritheciun KOH immutatum.  
 13. Sporae magnae vel majusculae, 11—20 (—26) ×  
     6—10 (—12)  $\mu$ , apothecia mollia, rosea vel rufo-  
     nigricantia, thallus  $\text{CaCl}_2\text{O}_2$  rubescens.<sup>1)</sup>  
 14. Thallus areolato-diffractus  
        169. *L. coarctata* (Sm.) Nyl. p. 329.  
 14\*. Thallus effusus, granulato-pulverulentus  
        170. *L. coarctata \*oblegens* Th. Fr. p. 333.  
 13\*. Sporae minores, vulgo circiter 8—12 (—14) ×  
     (3—) 4—6  $\mu$ , apothecia firmiora, obscuriora, vulgo  
     atra, thallus (tantum scimus)  $\text{CaCl}_2\text{O}_2$  non rube-  
     scens.  
 14. Thallus incrassatus, nitidus, areolae supra hypo-  
     thallum nigrum conspicuum dispersae vel conti-  
     guae, apothecia nitida, valde convexa, hymenium  
     altissimum, usque ad 250  $\mu$ .  
 15. Thallus testaceus, KOH non reagens  
        137. *L. testaceoatra* Vain. p. 284.  
 15\*. Thallus albidus aut stramineus, KOH dilute  
     lutescens         136. *L. leucomelaena* Vain. p. 283.  
 14\*. Thallus subopacus, hymenium multo angustius.  
 15. Thallus crassus aut sat crassus, distincte areo-  
     latus, areolae verrucosae vel convexae, interdum  
     subdiscretae, subeffiguratae.  
 16. Apothecia saltem ab initio thallo innata  
        84. *L. submilvina* Vain. p. 198.  
 16\*. Apothecia thallo adnata.

<sup>1)</sup> Sec. Th. Fries Lich. Scand. p. 447: »paraphyses laxe cohaerentes».

17. Areolae depresso-convexae, apothecia diu plana, margo subpersistens, discus rufo-fuscus vel ater 82. *L. leucophaea* (Flk.) Nyl. p. 192.
- 17\*. Areolae magis convexae, etiam apothecia magis convexae, margo demum exclusus, discus ater 81. *L. subdita* Nyl. p. 191.
- 15\*. Thallus tenuis, continuus vel rimoso-diffractus (areolae planae), vel evanescens.
16. Paraphyses apicem versus fuscae vel fuligineae.
- 17 Apothecia planiuscula, saltem ab initio pruinosa, humida rufescentia, paraphyses non-nihil clavatae  
59. *L. lithophila* Th. Fr. p 135.
- 17\*. Apothecia dein convexa, epruinosa, atra vel obscure atro-purpurea, paraphyses fusco-capitatae 92. *L. Altensis* Th. Fr. p. 210.
- 16\*. Paraphyses apicem versus smaragdulae vel olivaceo-fuligineae.
17. Sporae angustae, oblongae, 7—11 (—13) × 2.5—4 (—5)  $\mu$   
60. *L. enteromorpha* (Flot.) Vain. p. 138.
- 17\*. Sporae ellipsoideae, 10—12 (—14) × 5—7  $\mu$   
61. *L. subplanata* Vain. p. 141.

B. SPECIES LIGNICOLAE VEL CORTICOLAE.

(excl. *Psora*)

(species saxicolae p. 12, species muscicolae p. 32).

1. Paraphyses facillime liberae, sporae late ellipsoideae, (7—) 10—16 × 6—9  $\mu$ .
2. Thallus  $\text{CaCl}_2\text{O}_2$  rubescens  
131. *L. olivacea* (Hoffm.) Nyl. p. 271.
- 2\*. Thallus  $\text{CaCl}_2\text{O}_2$  non rubescens  
130. *L. euphorea* (Flk.) Nyl. p. 267
- 1\*. Paraphyses plus minusve cohaerentes.
2. Hypothecium obscurum. (hypothecium pallidum p 27.)
3. Granula caerulentia vel violascentia paraphysibus immixta, apothecia diu plana, fusco-nigricantia, marginata, 0.5—1,5 mm., sporae 9—17 × 3.5—7  $\mu$   
179. *L. fusca* (Schaer.) Th. Fr. p. 349.
- 3\*. Hymenium granulis caeruleis destitutum.
4. Thallus ± sorediatus, apothecia parva, diam. ad 0.5, rarius usque ad 0.8 mm.

5. Thallus obscurus, fusco-nigrescens, sporae latae,  $8-16 \times 6-7 \mu$  173. *L. humosa* (Ehrh.) Nyl. p. 337
- 5\*. Thallus pallidus, albidus vel cinerascens.
6. Thallus crassiusculus, e granulis contextus, apothecia minuta,  $0.2-0.4$  mm., sporae  $7-12 \times 3-4.5 \mu$  171. *L. botryosa* (Fr.) Nyl. p. 334.
- 6\*. Thallus tenuis—tenuissimus.
7. Apothecia nigra,  $0.2-0.5$  mm., hypothecium et perithecium KOH rubricoso-rufescentia, sporae  $5-7 \times 2 \mu$  115. *L. Tianensis* Vain. p. 242.
- 7\*. Apothecia madefacta fusca (saltem juniora),  $0.5-0.8$  ( $-1$ ) mm., hypothecium et perithecium KOH immutata, sporae  $9-15 \times 3-5 \mu$  182. *L. albofuscens* Nyl. p. 356
- 4\*. Thallus esorediatus, sporae majusculae,  $16-19 \times 9-11 \mu$ , apothecia  $0.7-2.0$  mm  
70. *L. steriza* (Ach.) Vain. f. *lignatilis* (Nyl.) Vain. p. 161.
- 4\*\*. Thallus esorediatus, sporae p.m.p. angustae, crassitudinem  $5 \mu$  non vel raro superantes, apothecia parva, vulgo  $<0.5$  mm., interdum usque ad  $0.8$  mm.
5. Epithecium cyanescens vel violascens.
6. Apothecia (sub-) persistente marginata, diu plana, epithecium KOH solutionem violaceam effundens, etiam cum hypothecio.
7. Thallus p.p. demum in soredia granulosa fatiscens 110. *L. xanthococca \*soropora* Vain. p. 237.
- 7\*. Thallus sorediis omnino destitutus 109. *L. xanthococca* Somrft p. 235.
- 6\*. Apothecia immarginata, (vulgo) mox convexa.
7. Hypothecium totum fusco-nigrum, sporae  $5-11 \times 2.5-3.5 \mu$  116. *L. paraclitica* Nyl. p. 243.
- 7\*. Hypothecium purpureo-fuligineum.
8. Epithecium fusco- subpurpureo-fuligineum, KOH parum mutatum, sporae  $8-14 \times 3-4 \mu$  112. *L. enclitica* Nyl. p. 239.
- 8\*. Epithecium fuligineum, KOH fere immutatum aut subcaerulescenti-nigricans, sporae  $5-7 \times 3-4 \mu$  114. *L. pithyophiloides* Vain. p. 242.
- 5\*. Epithecium fuscum vel decoloratum.
6. Apothecia atra.
7. Thallus granulosus, interdum pulveraceo-fatiscens.
8. Sporae latae,  $8-16 \times 6-7 \mu$  173. *L. humosa* (Ehrh.) Nyl. p. 337.

- 8\*. Sporae angustiores.
- 9. Thallus crassiusculus, fuscescens, epithecium KOH  $\div$ ,  
sporae  $7-13 \times 3-4.5 \mu$ 
  - 171. *L. botryosa* (Fr.) Nyl. p. 334.
- 9\*. Thallus tenuis, albibus, epithecium KOH rubricoso-rufescens, sporae  $5-7 \times 2 \mu$ 
  - 115. *L. Tianensis* Vain. p. 242.
- 7\*. Thallus evanescens, omnino esorediatus.
- 8. Hypothecium KOH subrubricoso- vel subpurpureo-rufescens
  - 111. *L. consimilis* Nyl. p. 238.
- 8\*. Hypothecium KOH immutatum
  - 113. *L. plebeja* Nyl. p. 240.
- 6\*. Apothecia pallidiora (testacea vel cinerea vel fuscescentia).
- 7. Apothecia primum plana et margine subpersistenti circumdata, demum depresso-convexa.
  - 8. Apothecia fusca vel fusco-nigricantia, nitida, hypothecium fusco-nigrum
    - 182. *L. albofuscescens* Nyl. p. 356.
  - 8\*. Apothecia cinereo-pallida, haud nitida, hypothecium rubricoso-rufescens
    - 183. *L. albofuscescens* \**Mustialensis* Vain. p. 357.
- 7\*. Apothecia mox convessa.
  - 8. Thallus evanescens, hypothecium J non caerulescens, sporae  $6-8 \times 3-4 \mu$ , ad lignum pineum crescens
    - 184. *L. apochroeella* Nyl. p. 358.
  - 8\*. Thallus distincte evolutus, hypothecium J  $\pm$  intense caerulescens, sporae  $8-11 \times 2.5-3 \mu$ .
    - 9. Thallus tenuis, paraphyses in apice haud incrassatae, ad corticem Abietis
      - 212. *L. sphaeroidiza* Vain. p. 399.
    - 9\*. Thallus modice incrassatus, paraphyses in apice incrassatae, ad corticem Sorbi
      - 213. *L. sylvestris* Vain. p. 400.
- 2\*. Hypothecium pallidum (hypothecium obscurum p. 25).
- 3. Sporae 12:nae—16:nae usque ad 32:nae, apothecia livida vel rufescens, thallus tenuis vel evanescens, ad cortices et ad lignum
  - 101. *L. lignaria* (Kbr.) Nyl. p. 224.
- 3\*. Sporae 8:nae.
- 4. Sporae magnae, late ellipsoideae,  $16-24 \times 10-16 \mu$ , apothecia atrosanguinea, subglobosa
  - 104. *L. Tornoënsis* Nyl. p. 229.
- 4\*. Sporae parvae, subglobosae, diam. vulgo  $3-6 \mu$ , vel late ellipsoideae.
- 5. Epithecium cyanescens, apothecia atra, plana, marginata, thallus sorediis destitutus.
- 6. Sporae globosae, diam.  $4-5 \mu$ 
  - 108. *L. infralapponica* Vain. p. 234.

- 6\*. Sporae late ellipsoideae vel subglobosae, (5—) 7—9 × 5 (—6)  $\mu$  99. *L. subfuscescens* Vain. p. 222.
- 5\*. Epithecium fuscescens vel rubricoso-fuscescens, apothecia fuscescens, thallus sorediosus vel granulos-leprosus.
6. Thallus fusco-nigricans, granulato-leprosus, apothecia mox convexa, sporae late ellipsoideae, 5—9 × 3—5  $\mu$ , vel subglobosae, diam. 3—5  $\mu$  100. *L. subhumida* Vain. p. 223.
- 6\*. Thallus cinereus, apothecia ab initio plana, deinde convexa.
7. Sporae globosae, diam. 4—6  $\mu$ , discus obscure rufo-fuscus, margine pallidiore cinctus, thallus subeffusus, sorediosus. 86. *L. Nylanderi* (Anzi) Th. Fr. p. 201.
- 7\*. Sporae subglobosae vel late ellipsoideae, 9—16 × 6—7  $\mu$ , discus rufescens vel purpureus, margine concolori cinctus, thallus subdisperse granulatus, sorediose fatiscens 88. *L. porphyrospora* (Anzi) Th. Fr. p. 204.
- 4\*\*. Sporae ellipsoideae, apud plures species anguste ellipsoideae.
5. Hymenium superne decoloratum vel dilute flavescens, apothecia vulgo pallida, testacea, cinnamomea vel rufescens, (cfr. tamen *L. globularis* \**sphaerella*). (hymenium superne cyanescens vel fuligineum p. 30).
6. Thallus ± sorediosus, soredia tamen interdum valde inconspicua.
7. Epithecium granulosum, KOH sese dissolvens, thallus substramineus vel impure albidus, discus mox convexus, lutescens vel lutescenti-pallidus.
8. Thallus verruculoso-inaequalis, granulis inconspectis sorediorum parce inspersus, ad cortices et ad lignum 217. *L. symmicla* Ach. p. 405.
- 8\*. Thallus soraliis rotundatis, sat crebris instructus, demum late sorediosus, ad saepimentum ligneum 214. *L. soraliata* Vain. p. 401.
- 7\*. Hymenium superne non granulosum, epithecium nullum, apothecia primum planiuscula, dein convexa vel subglobosa, thallus crebre sorediosus
8. Hymenium altum, 130—150  $\mu$ , sporae 10—21 × 3—4.5  $\mu$ , apothecia testaceo-rufescens 215. *L. epizanthoidiza* Nyl. p. 401.
- 8\*. Hymenium angustum, 45—70  $\mu$ , sporae 10—16 × 3.5—4.5  $\mu$ , apothecia pallida, cinereo-albida 216. *L. efflorescens* (Hedl.) Vain. p. 403.
- 6\*. Thallus esorediosus.
7. Epithecium granulosum, KOH sese dissolvens, paraphyses in apice non incrassatae.

8. Sporae mediocres, ellipsoideae,  $11-18 \times 5-9 \mu$   
98. *L. phaeopelidna* Vain. p. 221.
- 8\*. Sporae angustiores, crassitudine  $5 \mu$  non superantes.
9. Thallus tenuis, sed distincte evolutus, sporae  $9-17 \times 4-5 \mu$ , ad cortices et ad lignum.
10. Apothecia (sicca) pallida, flava vel olivacea, diam.  $0.5-1.0$  mm.  
217. *L. symmicta* Ach. p. 405.
- 10\*. Apothecia (sicca) obscuriora, subnigricantia, diam.  $0.2-0.4$  mm. 95 *L. olivascens* Th. Fr. p. 217.
- 9\*. Thallus evanescens, sporae minores, ad lignum crescentes.
10. Apothecia minutissima,  $0.1-0.25$  mm., discus ceraceo-flavidus, hymenium J intense et persistenter caeruleuscens, sporae minutissimae,  $3-8 \times 1.5-1.7 \mu$   
221. *L. symmictella* Nyl. p. 415.
- 10\*. Apothecia parva,  $0.3-0.6$  mm., discus pallide stramineus, hymenium J e caeruleo sordide violascit, sporae  $8-9 \times 3-4 \mu$   
209. *L. sapinea* (Th. Fr.) Vain. p. 395.
- 7\*. Hymenium superne non granulosum, epithecium nullum.
8. Paraphyses apice non vel levissime solum incrassatae.
9. Sporae minutae,  $6-9 \times 2-2.5 \mu$ , hymenium J caeruleuscens, apothecia minuta,  $0.2-0.4$  mm., thallus tenuis vel evanescens, ad lignum crescens  
210. *L. cinereopallens* Vain. p. 397.
- 9\*. Sporae majores,  $8-20 \times 4-7 \mu$ , hymenium J e caeruleo rubescens.
10. Apothecia majora,  $0.7-1.0$  mm., testacea vel rufescens, demum bene convexa, crusta verrucosoinaequalis  
203. *L. vernalis* (L.) Ach. p. 387.
- 10\*. Apothecia minora,  $0.2-0.5$  mm.
11. Sporae  $14-20 \times 5-7 \mu$ , p.p. uniseptatae, apothecia demum convessa, testaceo-rufescens, supra muscos, corticem et lignum 204. *L. subduplex* Nyl. p. 389.
- 11\*. Sporae  $8-16 \times 3.5-4$ , vel  $5 \mu$ , semper simplices, apothecia magis testacea.
12. Apothecia primum margine pallidiori satis distincto cineta, supra corticem arborum frondosarum crescens, rarius supra muscos  
206. *L. helvola \*minor* Nyl. p. 392.
- 12\*. Apothecia magis convessa, margine mox excluso, ad corticem Abietis  
205. *L. helvola* (Kbr.) Th. Fr. p. 390.

- 8\*. Paraphyses apice bene incrassatae, sporae interdum obsolete 1-septatae, apothecia minuta, 0.2—0.4 mm.
- 9. Apothecia albida vel roseo-albida (vel in herb. in aetate lutescenti-pallida), ad corticem arborum, praesertim Salicis 211. *L. albohyalina* Nyl. p. 397.
- 9\*. Apothecia testaceo-rufescens, ad corticem arborum 207. *L. meiocarpa* Nyl. p. 393.
- 9\*\*. Apothecia e carneo-fuscidula rufo- vel nigricanti-fusca 208. *L. sphaerella* (Hedl.) Vain. p. 394.
- 5\* Hymenium superne coloratum, cyanescens vel fuligineum vel fuscescens (hymenium superne incoloratum vel dilute flavescens p. 28).
- 6. Hymenium superne cyanescens vel cyanescens-fuligineum (hymenium superne fuscescens vel nigrescens p. 31).
- 7. Thallus sorediosus.
- 8. Hypothallus nigricans bene evolutus, sporae 9—12 × 4—7  $\mu$  87. *L. pullata* (Norm.) Th. Fr. p. 202.
- 8\*. Hypothallus non visus, sporae minutissimae, 4—6 × 1  $\mu$  222. *L. clavulifera* Nyl. p. 417
- 7\*. Thallus sorediis destitutus.
- 8. Sporae ellipsoideae, 11—18 × 5—9  $\mu$ , excipulum violascens, apothecia 0.3—0.5 mm., thallus tenuis vel tenuissimus. Ad corticem Salicis 98. *L. phaeopelidna* Vain.<sup>1)</sup> p. 221
- 8\*. Sporae anguste oblongae, 3—4  $\mu$  crassae.
- 9. Apothecia non pure atra, sed magis livida vel caerule-scenti-atra vel fusco-atra (madefacta), sporae parvae, 6—13 × 3—4  $\mu$ , thallus tenuis vel obsoletus.
- 10. Hymenium 70—140  $\mu$  97. *L. atroviridis* (Arn.) Th. Fr. p. 218.
- 10\*. Hymenium 40—45  $\mu$  94. *L. turgidula* Fr. p. 214.
- 9\*. Apothecia pure atra, hymenium 50—80  $\mu$ .
- 10. Apothecia minutissima, 0.15—0.35 mm., opaca, crebra, convexa, hypothecium J caerulescens, inferne fulve-

<sup>1)</sup> In his first diagnosis (Adj. Lich. Lapp. p. 99) Vainio described a dark epithecium: »sordide caerulescenti-olivaceum», and a violet excipulum: »violascens». When he reexamined the plant for this manuscript he found an uncoloured epithecium and the excipulum »fulvo-fuscescens aut subviolascens». The editor examined an apothecium and found the colours, which Vainio has described in the present manuscript.

- scens, sporae parvae,  $9-12 \times 3-4 \mu$ . Thallus tenuis,  
KOH flavescentia, in ligno  
106. *L. dolosula* (Nyl.) Vain. p. 231  
10\*. Apothecia minuta, 0.2—0.5 mm., sat crebra, hypo-  
thecium J caerulescens, superne cinerascens, inferne  
incoloratum, sporae parvae,  $7-12 \times 2-4 \mu$ . Thallus  
tenuissimus, KOH -, ad corticem Abietis  
96. *L. microsphaeroides* Vain. p. 217.  
10\*\*. Apothecia parva, 0.4—0.6 mm., opaca, crebra, con-  
vexa, hypothecium incolorato-pallidum, J inferne non  
reagens, sporae majores,  $11-21 \times 3-4.5 \mu$ . Thallus  
modice incrassatus, KOH flavescentia, in ligno  
105. *L. Kolaënsis* Nyl. p. 230.  
6\*. Hymenium superne fuscescens vel fusco-nigrescens vel  
olivaceo-nigrescens (hymenium superne cyanescens p. 30).  
7. Sporae p.p. leviter curvatae, saepe 1-septatae apparent,  
parvae,  $8 \times 3 \mu$ , thallus olivaceo-cinerascens, sorediis mi-  
nutis, deinde confluentibus instructus, vulgo sterilis, ad  
cortices 157. *L. Lightfootii* (Sm.) Ach. p. 315.  
7\*. Sporae rectae, (vulgo anguste) oblongo-ellipsoideae.  
8. Apothecia rufescenti-purpurascens, primum plana mar-  
ginata, deinde convexa. Species corticolae.  
9. Epithecium fuscum vel rufescens, sporae  $10-16 \times 3-5 \mu$   
thallus albidus, subevanescens, sorediis destitutus  
93. *L. erythrophaea* Flk. p. 212.  
9\*. Epithecium rubricoso-rufescens, sporae crassiores,  $12-$   
 $18 \times 6-7 \mu$ , thallus tenuis, sed distinctus, granulis  
subdispersis, fusco-glaucouscentibus, farinoso-dehiscenti-  
bus, formatus 88. *L. porphyrospoda* (Anzi) Th. Fr. p. 204.  
8\*. Apothecia olivacea vel olivaceo-nigricantia, subpersistente-  
ter plana et marginata, thallus  $\text{CaCl}_2\text{O}_2$  rubescens, ad  
truncos putrescentes et carbonisatos.  
9. Apothecia majora, usque ad 2 mm., livida vel olivaceo-  
nigricantia, sporae  $8-16 \times 4-7 \mu$ , thallus leproso-  
fatiscens, vulgo ad terram inventa  
174. *L. granulosa* (Ehrh.) Schaer. p. 340.  
9\*. Apothecia minora, ad 0.5 mm., nigricantia, sporae mi-  
nores,  $7-9 \times 3-4.5 \mu$ , thallus tenuior, granulosus,  
sorediis inconspicuis dispersis instructus, ad ligna  
truncosque vetustos vel carbonisatos  
175. *L. flexuosa* (Fr.) Nyl. p. 343.  
8\*\*. Apothecia atra, rarius olivaceo- vel livido-atra, cito  
convexa, immarginata, sporae parvae, vulgo 6—12.  
rarius usque ad  $17 \times (2-) 3-5 (-6) \mu$ .

9. Apothecia majuscula, usque ad 1.0 mm., optime nitida, thallus bene evolutus, albidus, nitidus, granulato-verrucosus, ad lignum vel truncos duriores  
     107. *L. elabens* Fr. p. 232.
- 9\*. Apothecia minuta, ad 0.5 mm., vulgo multo minores.
10. Sporae 12—17 × 4—5  $\mu$ , thallus mollis, verruculosus, cinereo-olivascens,  $\text{CaCl}_2\text{O}_2$  rubescens, ad cortices crescens  
     95. *L. olivascens* Th. Fr. p. 217.
- 10\*. Sporae minutae, thallus  $\text{CaCl}_2\text{O}_2$  non rubescens, ad lignum vel ad cortices.
11. Thallus granulosus vel pulverulento-fatiscens  
     176. *L. viridescens* (Schrad.) Ach. p. 344.
- 11\*. Thallus tenuissimus vel evanescens.
12. Apothecia minutissima, 0.1—0.4 (—0.5) mm., basi plus minusve constricta, atra vel fusco-atra.
13. Paraphyses non incrassatae  
     102. *L. globularis* (Ach.) Nyl. p. 225.
- 13\* Paraphyses capitato-incrassatae  
     94. *L. turgidula* Fr. p. 214.
- 12\*. Apothecia 0.4—0.6 mm., olivaceo-nigricantia, hemisphaerica, sed basi non constricta, ligno arcte adpressa  
     89. *L. hypopla* Ach. p. 205.

## C. SPECIES MUSCICOLAE VEL TERRICOLAE.

(excl. *Psora*)

(Species saxicolae p. 12, species lignicolae vel corticolae p. 25.)

1. Apothecia ignota, thallus e granulis albidis, minutis contextus.  
     (*Crocynia neglecta* (Nyl.) Hue p. 418.)
- 1\*. Species fertiles.
2. Sporae 12:nae vel 16:nae.
3. Sporae globosae, diam. 5—6  $\mu$   
     (*Bialorella geophana* (Nyl.) Vain. p. 364.)
- 3\*. Sporae anguste ellipsoideae, 7—14 × 3—6  $\mu$ .  
     16. *L. (Psora) epiphaea* Nyl. p. 58.
- 2\*. Sporae 8:nae.
3. Paraphyses facile discretiae.
4. Sporae valde pachydermaticae, subglobosae vel subquadratae, 9—14 × 8—11  $\mu$ , hypothecium fusco-rubens  
     132. *L. parasemella* Nyl. p. 276.
- 4\*. Sporae leptodermatiae.
5. Sporae late ellipsoideae, 7—16 × 7—8  $\mu$ , paraphyses apice parce incrassatae, hypothecium fulvo-rufescens, apothecia atra  
     131. *L. olivacea* f. *Wulfenii* (Hepp) Vain. p. 275.

- 5\*. Sporae ellipsoideae,  $7-14 \times 5-6 \mu$ , paraphyses apice in-crassatae, hypothecium pallidum, apothecia fusca aut sub-testaceo-rufescens  
103. *L. phaeotera* Nyl. p. 228.
- 3\*. Paraphyses plus minusve concretae.
4. Species parasitica (in *Diapensia lapponica*), sporae  $10-17 \times 4-5 \mu$ , hypothecium obscurum  
189. *L. Diapensiae* Th. Fr. p. 363
- 4\*. Species autonomae.
5. Hypothecium obscurum.
6. Granula caerulescentia vel violascentia paraphysibus immixta  
179. *L. fusca* (Schaer.) Th. Fr. p. 349.
- 6\*. Hymenium corpusculis caeruleis destitutum.
7. Thallus e verruculis elevatis isidiodeis contextus, albidus vel subcaesio-variegatus.
8. Sporae angustae, oblongae,  $9-16 \times 3-4 \mu$   
192. *L. ramulosa* Th. Fr. p. 369.
- 8\*. Sporae ellipsoideae,  $9-16 \times 5-8 \mu$   
193. *L. montanella* Vain. p. 371.
- 7\*. Thallus verruculis elevatis isidiodeis destitutus.
8. Thallus crassus, granulatus, albidus vel pallidus.
9. Granulae thalli parvae, apothecia (humectata  $\pm$  in atro-fuscescentem vergentia), satis dispersa, demum convexa, epithecium fuscum, paraphysum apices capitatae (KOH addito)  
178. *L. Berengeriana* (Mass.) Th. Fr. p. 347.
- 9\*. Granulae thalli majores, ca. 0.5 mm., subeffiguratae, apothecia conglomerata, mox convexa, atra, nitida, epithecium aeruginoso-fuligineum, paraphysum apices non incrassatae  
194. *L. assimilata* Nyl. p. 372.
- 8\*. Thallus tenuissimus vel tenuis.
9. Apothecia basi constricta, deinde plus minusve elevata usque turbinato-stipitata, epithecium fuligineum.
10. Apothecia 0.2—0.4 mm., sessilia vel elevato-adnata, ab initio convexa, hypothecium KOH fuscens. Thallus tenuissimus vel evanescens  
191. *L. verrucula* (Norm.) Th. Fr. p. 368.
- 10\*. Apothecia 0.3—0.7 mm., magis stipitata, ab initio planiuscula, hypothecium KOH deinde purpureo-subviolaceum. Thallus tenuis  
190. *L. crassipes* (Th. Fr.) Nyl. p. 366.
- 9\*. Apothecia basi non constricta, adpressa.
10. Sporae  $8-17 \times 4-8 \mu$ , peritheciun fusco-nigrum, etiam cum epithecio, apothecia minuta, (0.2—) 0.4—0.6 mm., thallus fusco-nigricans.

11. Thallus granulosus vel verruculosus  
     172. *L. uliginosa* (Fr.) Nyl. p. 335.
- 11\*. Thallus minute granulosus vel farinoso-leprosus  
     173. *L. humosa* (Ehrh.) Nyl. p. 337.
- 10\*. Sporae 6—10 × 3—4  $\mu$ , apothecia 0.3—1 mm., thallus albidus.
11. Perithecium obscure rubricoso-rufescens, etiam cum epithecio et magna parte hypothecii  
     188. *L. subflexuosa* Vain. p. 362.
- 11\*. Perithecium nigricans, etiam cum hypothecio, epithecium fuligineum  
     195. *L. morbifera* Vain. p. 374.
- 5\*. Hypothecium pallidum vel incoloratum.
6. Episporium crassum, sporae magnae, 16—24 × 10—16  $\mu$   
     104. *L. Tornoënsis* Nyl. p. 229.
- 6\*. Episporium tenue, sporae minores, angustiores.
7. Apothecia pallida: testacea vel rufescens vel cinnamomea.
8. Thallus crassus, e verruculis subcontiguis contextus  
     202. *L. cuprea* Somfrt p. 386.
- 8\*. Thallus tenuis, minute granulosus vel subeffusus.
9. Thallus sorediis farinosis numerosis crebris instructus (vulgo corticola)  
     215. *L. epizanthoidiza* Nyl. p. 401.
- 9\*. Thallus sorediis destitutus.
10. Apothecia minuta, 0.2—0.4 mm. (vulgo corticola)  
     206. *L. helvola* \*minor Nyl. p. 392.
- 10\*. Apothecia majora, 0.4—1.0 mm.
11. Apothecia 0.4—0.5 mm., sporae p.p. uniseptatae (etiam ad cortices)  
     204. *L. subduplex* Nyl. p. 389.
- 11\*. Apothecia 0.7—1.0 mm., sporae semper indivisae (vulgo muscicola)  
     203. *L. vernalis* (L.) Ach. p. 387.
- 7\*. Apothecia obscuriora: atra (interdum pruinosa) vel olivaceae.
8. Epithecum aeruginosum, thallus pallidus, albidus vel pallide ochroleucus.
9. Sporae minutissimae, 4—6 × 1  $\mu$ , thallus granuloso-fatiscens  
     222. *L. clavulifera* Nyl. p. 417
- 9\*. Sporae majores.
10. Sporae angustae, vulgo 3—4  $\mu$  latae, thallus crassus, granulato-diffractus.

11. Hypothecium incoloratum, maculis dilute rubricosis passim instructum, parte inferiore dilute rubricosum, hyphae ibi KOH parum turgescentes  
196. *L. alpestris* Somrft p. 376.
- 11\*. Hypothecium p.p. subrubricosum, p.p. subalbidum, inferne aut medio subalbibum, hyphae ibi KOH bene turgescentes 197. *L. stenotera* Nyl. p. 377.
- 10\*. Sporae latiores, (4—) 5—9 (—10)  $\mu$  (cfr. tamen *L. limosa* f. *albocincta* Vain.: sp. 8—14  $\times$  3—5  $\mu$ ).
11. Sporae mediocres, 8—15  $\times$  4—5  $\mu$ , apothecia nuda, thallus sat tenuis 198. *L. limosa* Ach. p. 379.
- 11\* Sporae majores (vide infra), thallus optime globoso-granulatus.
12. Sporae 12—16  $\times$  5—7  $\mu$ , apothecia vulgo caesio-pruinosa, thallus fuscescenti- aut albido-cinerascens 201. *L. caesioatra* Schaer. p. 384.
- 12\*. Sporae 16—23 (—33)  $\times$  6—9 (—10)  $\mu$ , thallus stramineus vel albido-flavescens.
13. Apothecia pulche caesio-pruinosa, hypothecium subaeruginosum vel subfuscescens  
199. *L. pallida* Th. Fr. p. 382.
- 13\*. Apothecia nuda, hypothecium superne caerule-scenti-pallidum 200. *L. Dovrensis* Nyl. p. 383.
- 8\*. Epitheciun fuscescens vel olivascens vel fusco-fuligineum.
9. Thallus  $\text{CaCl}_2\text{O}_2$  rubescens, apothecia carneo-livida vel livido-nigricantia.
10. Apothecia majuscula, usque ad 2 mm., diu vel persistenter plana, olivacea vel nigricantia  
174. *L. granulosa* (Ehrh.) Schaer. p. 340.
- 10\*. Apothecia parva, 0.4—0.7 mm., mox convexa, atra  
176. *L. viridescens* (Schrad.) Ach. p. 344.
- 9\*. Thallus  $\text{CaCl}_2\text{O}_2$  non rubescens.
10. Thallus leproso-gelatinosus, effusus, virescenti-cinerascens, apothecia nigricanti-olivacea, 0.5—0.8 mm., sporae 7—9  $\times$  4—5  $\mu$   
177. *L. gelatinosa* Flk. p. 345.
- 10\*. Thallus areolatus vel verrucosus, non leprosus.
11. Sporae crassae, 13—18  $\times$  7—9  $\mu$ , paraphyses distincte capitatae (sec. Th. Fr.), hymenium J caerulescens, inter ascos demum fulvescens  
15. *L. (Psora) rufofusca* (Anzi) Nyl. p. 57.
- 11\*. Sporae angustiores, 9—16  $\times$  4—6  $\mu$ , paraphyses apice non incrassatae vel leviter clavatae, totum hymenium J persistenter caerulescens.

12. Sporae parvae,  $6-10 \times 3-4 \mu$   
195. *L. morbitera* Vain. p. 374
- 12\*. Sporae mediocres.
13. Thallus squamuloso-granulatus, cervino-cinerascens, apothecia late adnata  
17. *L. (Psora) turficola* (Hellb.) Th. Fr. p. 59.
- 13\*. Thallus areolatus, areolis subrotundatis, badio-rufescens, apothecia ab initio thallum non superantia, demum emergentia  
27. *L. lepidotella* Nyl. p. 80.

Subg. I. **Psora** (Hall.) Th. Fr.

Lich. Scand. II (1874) p. 411; Vain. Ét. Lich. Brés. II (1891) p. 45, Lich. Ins. Philipp. IV (1923) p. 47; Zahlbr. Ascol. (1905) p. 132. *Psora* Hall. Hist. Stirp. Helv. III (1798) p. 93 p. p. Mass. Ric. Lich. Crost. (1852) p. 90 p. p., Mem. Lich. (1853) p. 123; Koerb. Syst. Lich. Germ. (1855) p. 175 (em.); Müll. Arg. Princ. Class. (1862) p. 40, Consp. Lich. Nov. Zel. (1894) p. 11; Arn. Lich. Münch. (1891) p. 70.

Thallus squamulosus aut squamaeformi-areolatus aut subfoliaceus e verruculis demum in sidia accrescentibus constans. Sporae minores parvaeve, decoloratae.

Sect. 1. **Placolepis** (Trev.) Vain.

*Placolepis* Trev.

Thallus squamis majusculis, crassis, disoretis, hypothallo fruticuloso.

*Astroplaca* Bagl. (Enum. Lich. Ligur. p. 45, Koerb. Par. Lich., p. 120) thallo majusculo, astroideo-laciniato ab hac sectione distinguitur.

1. **L. rubiformis** Wahlenb.

Fl. Lapp. (1812) p. 479, Fl. Suec. (1826) p. 905; Ach. Syn. Lich. (1814) p. 52; Th. Fr. Lich. Scand. II (1874) p. 412; Nyl. in Hue Lich. Exot. (1892) p. 184; *Baeomyces rubiformis* Wahlenb. in Ach. Meth. Lich. (1803) p. 324, tab. 7 f. 5. *Cenomyce* Ach. Lich. Univ. (1810) p. 52. *Psora* Th. Fr. Lich. Arct. (1860) p. 169. *Lecidea globifera* var. *rubiformis* Nyl. Lich. Scand. (1861) p. 193. *L. globifera* var. *diluta* Nyl. Nov. Lich. Norv. (K. Sv. Vet. Ak. Förh. 1860) p. 295 (l. c. 1861 p. 111).

Exs. Nyl. Lich. Mont-Dor. (1856) n. 43 (sec. Nyl. in Lamy Cat. Lich. Mont-Dore p. 96). — Th. Fr. Lich. Scand. Exs. II (1860) n. 39. — Anzi Lich. Rar. Langob. IV (1861) n. 137. — Havaas Lich. Norv. Exs. (1907) n. 355. — Malme Lich. Suec. Exs. XVII (1914) n. 413.

Thallus squamis latitudine mediocribus, adscendentibus, rotundato-lobatis, modice incrassatis, vulgo concavis, laevi-

gatis aut superne demum rimulosis, superne fuscescenti-  
aut glaucescenti-pallidus, leviter nitidus aut opacus, mar-  
gine albidus et saepe tenuiter pruinosis, subtus albidus.  
Apothecia solitaria aut saepe demum conglomerata; saepe  
mediocria, convexa, immarginata, nigricantia, saepe leviter  
nitida, haud pruinosa. Hypothecium superne rufescens aut  
rubricoso-rufescens, inferne dilute coloratum albidumve. Epi-  
thecium aut hymenium totum rubricoso-rufescens. Sporae  
oblongae ellipsoideaeve aut subfusiformes, long. 0.010—0.017,  
crass. 0.004—0.007 mm.

*Distr.* Ad terram parcam et ipsam rupem in fissuris rupium in  
reg. subalp. montis Iivaara in Kuusamo (f. *glaucescens* Vain. Adj.  
Lich. Lapp. II p. 31, ibi etiam a F. Silén collecta). Sec. Th. Fr.  
(Lich. Scand. p. 413) ad Kitkajoki in Kuus. (F. Silén). L. Kem.:  
Hirveäkallio in Kuolajärvi (Nivajärvi), lecta a Pesola (f. *glaucescens*).  
In jugo alpino inter Kilpisjärvi et Lyngen in Norvegia a Norrl.  
collecta.

Thallus superne strato corticali obductus 0.060—0.080 mm crasso,  
decolore aut lutescente, ex hyphis formato irregulariter contextis,  
pachydermaticis, conglutinatis, cavitatibus oblongis ellipsoideisve  
aut rotundatis, 0.003 mm latis, in squamas circ. 1—5 mm latas, 0.260—  
0.290 mm crassas, basi connatas divisus, pulvinulos circ. 15—6 mm  
latos formans, hyphis hypothallinis albidis, in rhizinas paucas sub-  
fruticulosas, longas laxe confertis. »KOH vel  $\text{CaCl}_2\text{O}_2$  colorem non  
mutant» sec. Th. Fr. Apothecia lat. 2—0.6 mm, crass. circ. 0.6 mm,  
basi constricta, saepe demum moriformi-conglomerata (»baccam  
parvulam *Rubi idaei* referant», ut Wahlenb. ait). Hypothecium  
crassum, ex hyphis conglutinatis erectis et in infima basi irregula-  
riter contextis formatum. Peritheciun dilute coloratum aut partim  
decoloratum, ex hyphis radiantibus, sat pachydermaticis, congluti-  
natis formatum, cavitatibus ellipsoideis oblongisque 0.0015—0.002 mm  
latis. Hymenium circ. 0.060 mm crassum, »jodo dilute caerulescit,  
dein sordide decoloratur» (Th. Fr.). Epitheciun KOH pulchrius  
rubricosum (solutionem rubricosam effundens). Paraphyses arcte  
cohaerentes, simplices, crebre septatae, haud (aut tantum supra  
apices) gelatinosae. Asci clavati. Sporae 8:nae, distichae, simplices,  
apicibus vulgo obtusis, rarius rotundatis. Gonidia vulgo globosa  
(parcius ellipsoidea), diam. 0.010—0.005 mm, membrana sat tenui,  
tantum simplicia visa, cystococcoidea.

*Obs.* Loco ventoso in littore lacus Päijänne in latere rupis grani-  
tiae in Rappukallio in Korpilahti et in scopulo erratico in Onkisalo  
in Luhanka (Ta.) plantam sterilem legi, quam Nyl. determinavit

»*L. rubiformis* (?) incerta» (Vain. Fl. Tav. Or., 1878, p. 109), quae inter species cognitas quidem plantae nostrae maxime consimilis est, sed ab ea nonnullis notis differt, quare eam *Lecideam ventosam* Vain. nominavimus. Thallus lobis 0.6—1.2 mm latis, 0.180—0.250 mm crassis (tenuioribus quam in *L. rubiformi*), superne saepe concavis, rufescentibus aut testaceo-rufescentibus, margine concoloribus aut saepe cinerascentibus, subtus nigricantibus, superne strato corticali obductis, 0.060—0.110 mm crasso, testaceo-rufescente aut inferne pallido, chondroideo, ex hyphis formato irregulariter aut partim subverticaliter contextis, pachydermaticis, cavitatibus oblongis ellipsoideisve aut rotundatis, 0.001—0.0015 mm latis, hypothallo subfruticuloso, repente, nigricante aut raro testaceo, tota longitudine substrato arcte adnato. Haec specimina forsitan sunt relicta speciei emorientis, nec ad formam degeneratam *L. rubiformis* pertineant, quod etiam similitudo speciminum amborum locorum natalium indicat.

## 2. *L. decipiens* (Ehrh.) Ach.

Meth. Lich. (1803) p. 80, Syn. Lich. (1814) p. 52; Wahlenb. Fl. Lapp. (1812) p. 480; Nyl. Lich. Scand. (1861) p. 214, Lich. Paris (1896) p. 77. Th. Fr. Lich. Scand. II (1874) p. 418. *Lichen stellatus* Relh. Fl. Cantab. (1785) p. 430 (conf. Schaeer. Lich. Helv. Spic. III, 1828, p. 116). *L. decipiens* Ehrh. Beitr. zur Naturk. 4 (1785) p. 46?, in Hedw. Stirp. Crypt. II (1789) p. 7, t. 1 f. B; Ach. Lich. Prodr. (1798) p. 96. *Lecanora* Ach. Lich. Univ. (1810) p. 409. *Psora* Koerb. Syst. Lich. Germ. (1855) p. 177; Th. Fr. Lich. Arct. (1860) p. 171; Arn. Lich. Jur. (Fl. 1884) p. 148, Lich. Münch. (1891) p. 70. *Lichen gypsophilus* Schrad. Spic. Fl. Germ. I (1794) p. 89; Ach. Lich. Suec. Prodr. (1798) p. 98.

*Exs.* Moug. et Nestl. Stirp. Cr. Vog. I (1810) n. 58. — Schaer. Lich. Helv. Exs. VII (1828) n. 164. — Fr. Lich. Suec. Exs. XV (1833) n. 402. — Desmaz. Pl. Crypt. Fr. ed. 1 sér. I XXIII n. 1141, ed. 2 sér. I XI (1841) n. 541. — Hepp Flecht. Eur. III (1853) n. 120. — Mass. Lich. It. Exs. III (1855) n. 70. — Rabenh. Lich. Eur. Exs. VII (1857) n. 177, XII (1858) n. 345 (v. *dealbata*). — Leight. Lich. Brit. Exs. XI (1858) n. 334. — Stenh. Lich. Suec. Exs. n. 15. — Anzi Lich. Venet. II (1863) n. 56 (v. *dealbata*), Lich. Sondr. n. 162, Lich. Exs. It. V (1865) n. 240. — Arn. Lich. Exs. (1872) n. 523 (c. paras.), Lich. Mon. (1891) n. 278. — Roumeg. Lich. Gall. Exs. V (1883) n. 463. — Flag. Lich. Fr.-Comté VIII n. 383, Lich. Alg. II n. 143. — Lojka Lich. Univ. IV (1886) n. 180. — Harm Lich. Loth. n. 900. — Claud et Harm. Lich. Gall. Exs. VI (1904)

n. 293. — Elenk. Lich. Fl. Ross. III (1904) n. 133 a-d. — Zahlbr. Krypt. Exs. Vindob. XVIII (1911) n. 1767. — Malme Lich. Suec. Exs. XIV (1913) n. 341. (Sec. cit.)

Thallus squamis modice dilatatis, adnatis, primum subrotundis, demum rotundato-lobatis crenatisve, vulgo planis concavisve, superne pallido-rubescensibus aut demum leviter obscuratis, nitidis, laevigatis aut demum crebre areolato-rimulosis, nudis (aut raro albido-pruinosis opacisque in v. *dealbata*), margine vulgo albo et anguste revoluto. Apothecia marginalia, solitaria aut pauca in eadem squama, medioreria aut minora, depresso-convexa, disco nigro aut raro fusco-nigro, nudo, opaco, margine mediocri, cinerascente, haud prominente, persistente aut subevanescente. Hypothecium superne pallidum aut partim dilute rufescens, inferne albidum. Epithecum fusco-rufescens. Sporae oblongae ellipsoideaeve aut parce subglobosae, long. 0.009—0.015, crass. 0.007—0.009 mm.

*Distr.* »Ad terram particulis calcareis refertam» (sec. Th. Fr.) crescit. L. Enont.: In reg. alp. ad Koltapahta (J. P. Norrlin). In reg. alp. inter Kilpisjärvi et Lyngen in Norvegia (Norrl.) et pluribus Nordlandiae locis (sec. Norm. Spec. Loc. Nat. p. 347).

Thallus squamis circ. 1—8 mm longis latisque, circ. 0.2—0.3 mm crassis, dispersis aut contiguis, KOH non reagentibus, subtus albidis aut demum cinerascentibus, rhizinis pluribus, subfruticosus substrato adnatus, superne strato corticali obductus circ. 0.100—0.160 mm crasso, carneo-pallido, ex hyphis formato verticalibus sat pachydermaticis, conglutinatis, crebre septatis, cavitatibus cellularum 0.002—0.003 mm latis, in parte summa saepe adhuc strato pellucido circ. 0.020 mm crasso, ex hyphis longitudinalibus, conglutinatis formato, instructus. Apothecia lat. 0.8—1.8 mm, adnata et demum basi leviter constricta. Hypothecium crassum, ex hyphis irregulariter contextis, leviter pachydermaticis, passim partim haud omnino conglutinatis, formatum, superne pallidum et partim dilute rufescens, inferne albidum. Perithecum extus pallidum, intus irregulariter contextum albidumque. Hymenium circ. 0.070 mm crassum, jodo leviter caerulescens et partim demum vinose rubens. Epithecum fusco-rufescens, KOH demum purpureum. Paraphyses arcte cohaerentes, simplices, membrana KOH leviter aut parum gelatinoso-turgescens. Sporae 8:nae, distichae, simplices, apicibus rotundatis aut obtusis. Conidangia »fere immersa, fusca». Sterigmata »simplicia, raro leviter

articulata». Conidia »cylindrica, recta, raro leviter articulata» (Flag. Fl. Lich. Franch.-Comté p. 404), »long. 0.005—0.006, crass. 0.0008 mm» (Nyl. Lich. Paris p. 77). Gonidia diam. 0.005—0.006 mm.

### 3. *L. globifera* Ach.

Lich. Univ. (1810) p. 213, Syn. Lich. (1814) p. 51; Schaer. Lich. Helv. Spic. III (1828) p. 109 (excl. syn.), En. Lich. Eur. (1850) p. 97; Nyl. Lich. Scand. (1861) p. 193 (excl. var.); Th. Fr. Lich. Scand. II (1874) p. 411. *Psora* Mass. Ric. Lich. Crost. (1852) p. 91; Koerb. Syst. Lich. Germ. (1855) p. 178; Th. Fr. Lich. Arct. (1860) p. 170.

*Exs.* Funck Crypt. Fichtelg. XXX (1824) n. 620. — Sommerf. Pl. Cr. Norv. I (1826) n. 53. — Schaer. Lich. Helv. Exs. VII (1828) n. 158 (sec. Arn. Lich. Tirol XXV, 1893, p. 403). — Salw. Lich. Cent. III n. 222 (sec. Lynge). — Hepp Flecht. Eur. IX (1860) n. 489. — Th. Fr. Lich. Scand. Exs. II (1860) n. 40. — Anzi Lich. Sond. VI n. 161, Lich. Rar. Langob. VII (1861) n. 263. — Rabenh. Lich. Eur. Exs. XXIII (1862) n. 642. — Erb. Crit. It. XXV (1865) n. 1231 (231). — Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 302 — Lojka Lich. Univ. IV (1886) n. 176. — Havaas Lich. Norv. Exs. (1904) n. 231.

Thallus squamis p. p. latis mediocribusque, adscendentibus, modice incrassatis, late rotundato-lobatis, vulgo concavis, laevigatis aut demum areolato-rugulosis, superne castaneus aut raro olivaceus vel olivaceo-pallescens, vulgo non pruinosus, vulgo nitidus, demum caespitosus. Apothecia in eodem lobo pauca aut vulgo solitaria, saepe mediocria, convexa, disco nigricante aut fusco-nigro, opaco, nudo, margine pallescente, mox excluso. Hypothecium superne anguste diluteque fuscescens aut rubricosum, inferne late albidum. Peritheciun vulgo pallidum. Epitheciun fuscescens aut rubricosum. Sporae ellipsoideae aut parce globosae, long. 0.007—0.011 (0.005—0.013, »—0.015 mm» sec. annot. Nyl.), crass. 0.005 (—0.0035) mm.

*Dislr.* Ad detritum arenosum et in fissuris rupium dolomitcarum calcarearumque. K. Lad.: Ad Bajonnoje (V. Räsänen) et alibi in Valamo (Nyl. l. c.), Korpikallio in Ruskeala (Norrl. Symb. Fl. Lad.-Kar. p. 29, Hj. Hjelt et V. F. Brotherus, H. L. F. n. 302), Korkeaniemi in Pälkjärvi (Hj. Hjelt et V. F. Brotherus).

Thallus raro superne leviter pruinosus (in specim. e Korpikallio), saepe apicibus diu accrescentibus et simul basi emoriens, subcaespi-

tosus, lobis circ. 3—7 (—2) mm longis latisque, circ. 0.260—0.210 mm crassis, subitus pallidis, superne strato corticali obductis, circ. 0.080 mm crasso, chondroideo-plectenparenchymatico, ex hyphis formato suberectis, pachydermaticis, conglutinatis, cavitate rotundata aut ellipsoidea, 0.004—0.002 mm lata (aut depressa in parte summa), hyphis hypothallinis vulgo albidis, in rhizinas paucas, subfruticulosas, in substratum penetrantes, longas laxe confertis. Sec. Th. Fr. KOH et  $\text{CaCl}_2\text{O}_2$  non reagens. Apothecia lat. 0.8—1.5 (—2.2) mm, crass. circ. 0.5—0.6 mm, basi constricta, margine haud prominente. Hypothecium crassum, ex hyphis tenuibus, leptodermaticis, irregulariter contextis, conglutinatis formatum, in parte inferiore albida crystallos (calc. oxalat. cet.) et aërem inter hyphas continens et magis impellucidum. Perithecium pallidum aut dilute subrubicsum, ex hyphis radiantibus, sat pachydermaticis, conglutinatis formatum, cavitatibus oblongis, 0.0015—0.002 mm latis, aut evanescens. Hymenium 0.050—0.080 mm crassum, »jodo dilutius caerulecens, dein subvinose rubens» (Th. Fr.). Epithecum KOH pulchrius rubricosum (solutionem rubricosam parcam effundens). Paraphyses arcte cohaerentes, simplices, membrana gelatinosa, septis increbris, cavitate tenuissima, in apice leviter dilatata. Asci clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae, decolores, simplices, apicibus vulgo rotundatis, sec. Nyl. long. 0.012—0.015 mm, quales non vidi, sec. Leight. (Lich. Great Brit. 3 ed., 1879, p. 241), qui ipse sporas mensus est, long. 0.010—0.013, crass. 0.005—0.006 mm. Gonidia globosa, diam. 0.006—0.009 mm, tantum simplicia visa.

#### 4. *L. lurida* (Sw.) Ach.

Meth. Lich. (1803) p. 77 ( $\alpha$ ), Lich. Univ. (1810) p. 213 ( $\alpha$ ), Syn. Lich. (1814) p. 51; Wahlenb. Vet. Ak. Handl. 1806 p. 143. Fl. Suec. (1833) p. 906; Schaeer. Lich. Helv. Spic. III (1828) p. 108; Nyl. Lich. Scand. (1861) p. 192; Th. Fr. Lich. Scand. II (1874) p. 413. *Lichen luridus* Sw. in N. Act. Ups. IV (1784) p. 247; Westring Vet. Ak. Handl. 1791 p. 296; Ach. l. c. 1795 p. 129, tab 5 fig. 2, Prodr. Lich. Suec. (1798) p. 95. *Psora lurida* Koerb. Syst. Lich. Germ. (1855) p. 176; Th. Fr. Lich. Arct. (1860) p. 171; Arn. Lich. Jur. (Fl. 1884) p. 149.

*Exs.* Fr. Lich. Suec. Exs. VI (1825) n. 157. — Schaeer. Lich. Helv. Exs. VII (1828) n. 157. — Hepp Flecht. Eur. III (1853) n. 121. — Nyl. Herb. Lich. Par. III (1855) n. 131. — Mass. Lich. It. Exs. III (1855) n. 67, 68 (f. *dispersa*). — Rabenh. Lich. Eur. Exs. I (1855) n. 9. — Stenh. Lich. Suec. Exs. VI (1863) n. 161. — Havaas Lich. Norv. Exs. (1904) n. 232. (Sec. cit.)

Thallus squamis p. p. latis mediocribusque, late adnatis, marginibus adpressis liberisque, modice incrassatis, rotundato-lobatis, vulgo planis, laevibus, superne lurido-pallescensibus aut cervino-fuscescentibus, opacis, subtus pallidis subalbidisve, tomento hypothallino subalbido obductis, demum etiam rhizinis instructus. Apothecia marginalia, subsolitaria, saepe mediocria, late adnata, basi leviter constricta, disco plano aut demum depresso-convexo, fusco-rufescente nigricanteve, nudo, saepe parum nitido, margine modice incrassato, nigricante, persistente aut demum excluso. Hypothecium superne dilute fuscescens, inferne mediove albidum. Peritheciun fuscescens. Epitheciun fuscescens. Sporae vulgo ellipsoideae oblongaeve, long. vulgo 0.013—0.014 mm (0.010—»0.016» mm sec. Th. Fr.), crass. 0.005—0.007 mm (—»0.010 mm» sec. annot. Nyl.). Conidia »ellipsoidea aut subcylindrica» sec. Mudd.

*Distr.* Ad terram regionum calcarearum haud infrequens in Scandinavia, septentrionem versus adhuc in Finmarkia proveniens (sec. Th. Fr.). In Fennia nondum collecta.

### Sect. 2. **Chrysospora** Vain.

Squamae magnae, dilatatae, epithecium aurantiacum, KOH violascens.

#### 5. **L. testacea** (Hoffm.) Ach.

Meth. Lich. (1803) p. 80, Syn. Lich. (1814) p. 51; Schaer. Lich. Helv. Spic. III (1828) p. 116, IV (1833) p. 191; Nyl. Lich. Scand. (1861) p. 193; Th. Fr. Lich. Scand. II (1874) p. 414. *Psora* Hoffm. Pl. Lich. I (1790) p. 99; Koerb. Syst. Lich. Germ. (1855) p. 177; Arn. Lich. Fränk. Jur. (Fl. 1884) p. 148. *Lichen testaceus* Ach. Lich. Suec. Prodr. (1798) p. 96. *Lecanora testacea* Ach. Lich. Univ. (1810) p. 409. *Bialora* Fr. Lich. Eur. Ref. (1831) p. 251. *Lichen saxifragus* Sm. Trans. Linn. Soc. I (1791) p. 82, tab. 4 f. 4 (sec. A. L. Smith Mon. Brit. Lich. II p. 13).

*Exs.* Schaer. Lich. Helv. Exs. XIX (1843) n. 468. — Hepp Flecht. Eur. V (1857) n. 236. — Zwackh Lich. Exs. (1858) n. 266 bis. — Arn. Lich. Exs. (1864) n. 258. — Lojka Lich. Hung. II (1882) n. 54. — Harm. Lich. Gall. Exs. II (1908) n. 91 (»*L. t. v. albida*«). — Malme Lich. Suec. Exs. XVI (1914) n. 397.

Thallus squamis modice dilatatis, adnatis adpressisve aut demum subimbricatis vel confertim plicatis, lobatis, superne pallido- vel subolivaceo- vel albido-glaucescens, subitus et saepe margine leviter prominente albidus, superne leviter pruinosus aut denudatus. Apothecia solitaria aut parce conferta, mediocria, disco convexo, aurantiaco vel aurantiaco-rufescente, nudo, opaco, margine concolore pallidoreve, tenui, vulgo excluso evanescenteve. Hypothecium albidum pallidumve. Epithecum aurantiacum fulvescensve, KOH violascens. Sporae ellipsoideae oblongaeve, »long. 0.010—0.014, crass. 0.005—0.006 mm» (sec. annot. Nyl.).

*Distr.* In rupibus calcareis in Suecia parcius proveniens (sec. Th. Fr.), in Fennia nondum collecta est.

Squamae longitudine latitudineve 2 (1) —7 mm, crass. 0.2—0.4 mm, superne laevigatae, »KHO et  $\text{CaCl}_2\text{O}_2$  non reagentes» (sec. Th. Fr.), hypothallo demum leviter evoluto, subfruticoso, albido. Apothecia lat. 1—2 (—3.5) mm, basi constricta, gonidiis destituta. Perithecum extus fulvescens, intus pallidum. Hypothecium superne anguste plectenparenchymaticum, cellulis parvis, sat leptodermaticis ceterum irregulariter contextum, impellucidum et materiam in KOH haud dissolutam continens. Hymenium »jodo dilute caerulescens, dein fulvescens» (sec. annot. Nyl.). Paraphyses arcte cohaerentes, simplices, membrana tenuiter subgelatinosa. Sporae 8:nae, distichae. »Sterigmata simplicia, raro 2—3 articulata. Conidia cylindrica, recta, long. 0.007, crass. 0.001 mm» (sec. Nyl. Prodr. Lich. Gall. p. 350).

### Sect. 3. **Micropsora** Vain.

Thallus squamis tenuioribus, saepe angustius laciniatis, hypothallo byssideo, ex hyphis disjunctis formato, aut parum evoluto.

#### 6. **L. scalaris** Ach.

Meth. Lich. (1803) p. 78, Lich. Univ. (1810) p. 214, Syn. Lich. (1814) p. 52; Wahlenb. Fl. Lapp. (1812) p. 478; Sommerf. Suppl. Fl. Lapp. (1826) p. 175. *Lichen scalaris* Ach. Vet. Ak. Handl. (1795) p. 127, tab. 5 f. 1, Lich. Suec. Prodr. (1798) p. 95. *Psora ostreata* Hoffm. Deutschl. Fl. II (1796) p. 163; Koerb. Syst. Lich. Germ. (1855) p. 176; Th. Fr. Lich. Arct. (1860) p. 169; Schwend. Fl. 1864

p. 329; Arn. Lich. Fränk. Jur. (Fl. 1884) p. 149. *Parmelia* Fr. Lich. Eur. Ref. (1831) p. 94. *Lecidea* Schaer. Lich. Helv. Spic. III (1828) p. 110; Nyl. Lich. Scand. (1861) p. 242; Th. Fr. Lich. Scand. II (1874) p. 414.

*Exs.* Floerk. Deutsch. Lich. V (1819) n. 82. — Fr. Lich. Suec. Exs. VI (1825) n. 155. — Flot. Lich. Exs. n. 243. — Sommerf. Pl. Crypt. Norv. II (1836) n. 134. — Schaer. Lich. Helv. Exs. XIX (1843) n. 467. — Zwackh Lich. Exs. (1851) n. 77. — Leight. Lich. Brit. Exs. II (1852) n. 50. — Koerb. Lich. Sel. Germ. I (1856) n. 10. — Hepp Flecht. Eur. V (1857) n. 235. — Rabenh. Lich. Eur. Exs. XVI (1859) n. 449. — Mudd Lich. Brit. Exs. II (1861) n. 141. — Fellm. Lich. Arct. (1864) n. 202 (f. *myrmecina*). — Stenh. Lich. Suec. Exs. IV n. 105. — Arn. Lich. Monac. (1891) n. 167. — Kern. Fl. Exs. Austro-Hung. XVI (1899) n. 3127. — Mig. Cr. Germ. Exs. XVIII (1904) n. 95. — Elenk. Lich. Fl. Ross. IV (1904) n. 193. — Zahlbr. Kr. Exs. Vindob. XVI (1907) n. 1593. — Malme Lich. Suec. Exs. VII (1910) n. 163. (Sec. cit.)

Thallus squamulis reniformibus, adscendentibus, circ. 0.8—1.8 mm latis, integris aut rarius 2—3-lobatis, superne glaucescentibus aut albido- vel pallido-glaucoscentibus aut raro pallido-fuscescentibus, subtus et margine vulgo leviter reflexo albidis et farinoso-sorediosis, hypothallo inconspicuo. Apothecia squamis late adnata, mediocria majusculave, disco plano aut demum depresso-convexo, caesio-pruinoso aut raro nudo et nigricante fuscove, margine concolore aut partim pallescente, subpersistente, demum subflexuoso. Hypothecium fusconigrum. Epithecum sordide aeruginosum. Sporae »oblongae, long. 0.011—0.012, crass. 0.0025—0.0035 mm» sec. Nyl.

*Distr.* Ad lignum praesertim carbonisatum et corticem Pini, raro etiam Betulae in sylvis siccis et in pariete horrei sat frequenter toto territorio. In Lapponia Inarensi sat frequenter ad lacum Inari et annotata in Kultala et ad Paatsjoki (conf. Vain. Adj. Lich. Lapp. II p. 31, Norrl. Ber. Torn. Lappm. p. 340). Ad catar. Krivetsch in flum. Umpjok in Lapp. Imandr. (A. O. Kihlman), Kantalahti (H. Hollmén).

Thallus KOH non reagens,  $\text{CaCl}_2\text{O}_2$  superne rubescens, squamis crebris 0.030—0.160 mm crassis, superne strato corticali obductis cartilagineo, substramineo, 0.020—0.030 mm crasso, hyphis hypothallinis, disjunctis, parce evolutis, in substrato sub microsc. conspicuis, albidis. Apothecia lat. 4—0.7 mm, basi haud constricta, opaca. Hy-

pothecium sat tenue (circ. 0.080 mm crassum), hyphis sat leptodermaticis, maxima parte irregulariter contextis. Peritheciū extus aeruginoso-fuligineum, intus albidum, sat leptodermaticum, KOH non reagens, hyphis subradiantibus, conglutinatis, cavitatibus rotundatis aut oblongis, 0.002 mm latis, tantum laterale. Hymenium 0.040—0.050 mm crassum, »jodo caerulescens« (Nyl.). Epitheciū KOH non reagens, »HNO<sub>3</sub> violascens« (Th. Fr.). Paraphyses arcte cohaerentes, simplices, tenuiter gelatinosae, cavitate tenuissimo. Sporae raro evolutae. Conidia »cylindrica, recta« sec. Th. Fr. Gonidia cystococcidea, globosa, diam. 0.009—0.014 mm, membrana tenui, vacuolis lateribus latis, majora (circ. 0.016 mm), autosporas nonnullas continentia.

*Obs. 1.* *L. scalaris* β *myrmecina* Ach. (Meth. Lich., 1803, p. 78, *L. ostreata* var. *myrmecina* Nyl. Lich. Scand. p. 243), apotheciis p. p. denudatis, squamis partim superne subcervinis instructa, nonnullis locis collecta est. — *L. ostreata* a. *vulgaris* Th. Fr. (Lich. Scand. II p. 415), squamis glaucescentibus descripta, ad formam normalem spectat.

Jyväskylä (Vain.). Mustiala (A. Kullhem). Kyrkslätt (A. Kullh.), Evo (G. Lång). Kitsa (=Kitscha) in Lt (=L. Tulom.) Nyl. Lapp. Or. 164 (Fellm. 202), Kaamasjoki in Inari (Silén), Kätkesuanto in Muonio-niska (Norrl.), Muonio in Muonioniska (Norrl.), Kantalahti (H. Hollmén). Par. Suojärvi (Norrl.). Valamo (W. Nyl.), Hoglandia (E. Nyl.) Alkkula (E. Nyl.)

*Obs. 2.* De *L. lepidotella* Nyl. (Fl. 1877 p. 223) videas in stirpae *L. fuscoatrae*.

## 7. *L. Friesii* Ach.

in Liljebl. Sv. Fl. (1816) p. 610; Nyl. Lich. Scand. (1861) p. 243; Th. Fr. Lich. Scand. II (1874) p. 416. *Psora* Hellb. Nerik. Laffl. (1871) p. 61. *L. myrmecina* Fr. in Vet. Ak. Handl. (1822) p. 257, Lich. Eur. (1831) p. 344 (haud Ach.). *L. Caradocensis* Leight. Lich. Brit. Exs. V (1854) n. 160 (sec. Arn.).

*Exs.* Fr. Lich. Suec. Exs. I (1818) n. 28. — Leight. Lich. Brit. Exs. V (1854) n. 160. — Zwackh Lich. Exs. (1858) n. 278 A, B. — Moug. et Nestl. Stirp. Vog. XV (1860) n. 1432. — Mudd Lich. Brit. Exs. II (1861) n. 142. — Stenh. Lich. Suec. Exs. IV n. 105. — Fellm. Lich. Arct. (1864) n. 202. — Roumgu. Lich. Gall. Exs. II (1880) n. 192, Gen. Lich. (1895) n. 33. — Havaas Lich. Norv. Exs. (1902) n. 114. (Sec. cit.)

Thallus squamulis rotundatis difformibusve, adpressis aut rarius adscendentibus, integris aut leviter crenulatis, vulgo convexis, saepe inflexis, superne cervinis aut olivaceo-

vel testaceo-glaucoscentibus aut rarius albido-glaucoscentibus, nitidis, sorediis destitutis, subtus albidis, hypothallo inconspicuo. Apothecia minuta aut sat parva, basi constricta, acervulata aut simplicia, atra, nuda, opaca, disco plano, margine tenui, prominente, vulgo flexuoso, persistente. Hypothecium fusco-fuligineum. Epithecum fuligineum aut subfuscescens. Sporae »ellipsoideae, long. 0.007—0.008, crass. 0.003—0.004 mm» sec. Nyl.

*Distr.* Ad lignum putridum siccumve vel carbonatum truncorum caudicumque et raro ad corticem Pini, praesertim in sylvis siccis, interdum etiam ad sepimenta lignea. Passim in toto territorio, in regionibus silvosis majoribus etiam sat frequenter. In regione pinifera Lapponiae Inarensis et in reg. infralapponica sat frequenter (Vain. Adj. Lich. Lapp. II p. 31, Norrl. Ber. Torn. Lapp. p. 341, 346, Fl. Kar. Oneg. II p. 35). Ad Ponschozero in Lapp. Im. (A. O. Kihlman).

Thallus nec KOH nec  $\text{CaCl}_2\text{O}_2$  reagens, squamis 0.2—0.8 mm latis, circ. 0.170 mm crassis, crebris, superne strato corticali obductis cartilagineo, saepe substramineo, 0.025—0.040 mm crasso. Apothecia lat. 1—0.4 mm, crass. circ. 0.160—0.170 mm, crebra. Hypothecium hyphis sat leptodermaticis, irregulariter contextis, conglutinatis, cavitatibus elongatis, angustis. Perithecum totum fuligineum, KOH fusco-fuligineum, hyphis subradiantibus, sat leptodermaticis, conglutinatis, cavitatibus oblongis, angustis. Hymenium 0.050—0.060 mm crassum, »jodo caerulescens» (Nyl.). Epithecum KOH fere decoloratum. Paraphyses arcte cohaerentes, simplices, haud distincte gelatinosae, tenues. Sporae 8:næ, raro evolutæ. Conidangia semiimmersa, verrucaeformia, vertice late fusco-nigricantia, basi pallida, saepe aggregata. Sterigmata brevissima, simplicia, apicibus conidia effarentibus. Conidia cylindrico-oblonga, recta, long. 0.003—0.004, crass. 0.0005—0.0007 mm, apicibus rotundatis. Gonidia cystococcoidea, globosa, diam. 0.008—0.014 mm, membrana sat tenui aut modice incrassato.

#### 8. *L. cladonioides* (Fr.) Th. Fr.

Lich. Scand. II (1874) p. 417; Vain. Adj. Lich. Lapp. II (1883) p. 32. *Biatora ostreata* v. *cladonioides* Fr. Summ. Veg. Scand. I (1846) p. 111 (sec. cit. Lich. Suec. Exs. n. 229). *B. (Lec.) scalaris* Fr. I. c. VIII (1824) n. 229 (haud Ach.). *Lecidea scalaris*  $\beta$  *myrmecina* Fr. Sched. Crit. VIII (1826) p. 14 (haud K. Vet. Ak. Handl. 1822 p. 257). *L. anthracophila* Nyl. Fl. 1865 p. 603, Hue Addend. II (1888) p. 233. *Psora* Falk Blek. (1874) p. 14.

*Exs.* Norrl. et Nyl. *Herb. Lich. Fenn.* IV (1875) n. 169 a, b. — Malme *Lich. Suec. Exs.* II (1897) n. 42, XVI (1914) n. 394. — Havaas *Lich. Norv. Exs.* (1901) n. 23.

Thallus squamulis reniformibus rotundatisve aut difformibus, adscendentibus aut adpressis, integris aut leviter crenulatis, planis aut convexis, castaneo-rufescensibus cervinisve aut raro glaucescentibus vel albido-glaucescentibus (margine concolore aut albido cinerascenteve et pruinoso vel raro subsoredioso), subtus albidis cinerascentibusve, hypothallo indistincto. Apothecia parva, vulgo conglomerata, convexa margineque excluso, rufa, nuda, basi leviter constricta. Hypothecium decoloratum aut superne pallidum. Epithecium rufum. Sporae »fusiformes aut fusiformi-oblongae, long. 0.007—0.013, crass. 0.002—0.004 mm» (sec. Th. Fr.).

*Distr.* Ad caudices et truncos pineos carbonatos, praesertim ad carbonem, sed in iisdem truncis saepe etiam ad lignum et raro ad corticem, praesertim in silvis siccis et locis apricis. In regionibus silvosis in provinciis mediis passim aut sat frequenter obvenit, sed saepe tantum sterilis. Septentrionem versus adhuc in Karelia boreali et in par. Repola in Karelia Onegensi occ. passim. OKaj.: Ad Lapinsalmi, Lenttiira, Kylmälä in Kuhmo, ad Hossa in Kianta (Vain l. c. p. 32). Kuus.: In reg. abiet. ad Näränkävaara (Vain. l. c.). L Kem.: Pyhäntunturi in Sodankylä (Vain.).

Thallus superne nitidus aut opacus, nec KOH nec  $\text{CaCl}_2\text{O}_2$  reagens, squamis  $\text{CaCl}_2\text{O}_2$  subtus sord. rubesc. sec. Th. Fr., 0.3—1.3 mm latis, circ. 0.250 mm crassis, crebris, superne strato corticali obductis cartilagineo, 0.050—0.060 mm crasso, cellulis parum distinctis, strato medullari in parte infima hyphis pachydermaticis crassioribusque. Apothecia lat. 0.3—0.7 mm, crass. circ. 0.160 mm, leviter nitida, partibus coloratis KOH paullo intensius rufescens. Hypothecium hyphis sat leptodermaticis, irregulariter contextis, conglutinatis, cavitatibus oblongis, angustis. Peritheciun tenuer, testaceum pallidumve aut extus rufescens, hyphis radiantibus, modice pachydermaticis, conglutinatis, cavitatibus angustis. Hymenium 0.030—0.035 mm crassum, »jodo plus minus intense caerulescit, dein subvinoso-rubente decoloratur» (sec. Th. Fr.). Paraphyses arcte cohaerentes, simplices, haud distincte gelatinosae, apicibus leviter incrassatis (crass. 0.003 mm). Sporae raro evolutae. Gonidia globosa, diam. 0.007—0.010 mm, tantum simplicia visa, membrana sat tenui.

9. **L. prasinolepis** Nyl.

Th. Fr. Lich. Scand. II (1874) p. 417. *L. vernalis* \**prasinolepis* Nyl. Lich. Scand. (1860) p. 202.

Thallus squamulis difformibus, parvis, tenuibus, adscendentibus, demum confertis imbricatisque, crenulatis aut sublacinulatis, superne cinereo-glaucoscentibus, subitus albidis, haud sorediosis, hypothallo sub squamis evoluto. Apothecia mediocria aut sat parva, simplicia aut confluentia, basi constricta, disco leviter convexo aut sat plano, rufo aut fuscescente, nudo, sat opaco, margine concolor pallescenteve, sat tenui, haud prominente, vulgo mox excluso. Hypothecium decoloratum. Epithecium rufescens. Sporae ellipsoideae oblongaeve aut parce globosae, »long. 0.010—0.015, crass. 0.006—0.007 mm» (sec. Nyl. et Th. Fr.).

*Distr.* Supra terram humosam in Lapponia Inarensi a. 1856 ab Edwino Nylandro sat parce collecta. Denuo non reperita.

Affinis est *L. cladonioidi* sed in eam transire non videtur, squamulis magis profundiusque crenulatis tenuioribus numquam rufescentibus, margine concoloribus, nec pruinosis nec sorediosis, apothecis in statu simplice paullo majoribus. Thallus squamulis 0.2—0.4 mm longis latisque, 0.090—0.130 mm crassis, strato corticali evanescente, hyphis hypothallini fuscis albidisve. Apothecia simplicia lat. 0.7—0.9 mm, crass. circ. 0.4 mm, KOH non reagentia. Hypothecium hyphis sat leptodermaticis, sat irregulariter contextis aut partim suberectis, conglutinatis, cavitatibus angustis. Peritheciun extus testaceum rufescensve, intus albidum, hyphis radiantibus, tenuibus, leptodermaticis conglutinatis, cavitatibus angustis, oblongis. Hymenium 0.050—0.060 mm crassum, »jodo caeruleoscens» (sec. Nyl.). Paraphyses arce cohaerentes, simplices, parum (aut leviter) gelatinosae, cellulis oblongis, crass. 0.0015 mm, apicibus 0.003—0.004 mm crassis. Sporae 8:næ, distichæ, apicibus rotundatis obtusisve, raro partim globosæ, diam. 0.006 mm.

10. **L. demissa** (Rutstr.) Ach.

Meth. Lich. (1803) p. 81, Lich. Univ. (1810) p. 200 (a.), Syn. Lich. (1814) p. 50; Th. Fr. Lich. Scand. II (1874) p. 420; Vain. Lich. Exp. Vegae Pitl. (1909) p. 118. *Psora* Almqu. Lich. Iakt. Sib. (1879) p. 37, 47; Arn. Lich. Tirol. XXI (1880) p. 131. *Lichen demissus* Rutstr. Diss. Pl. Crypt. (1794) p. 8; Ach. Prodr. Lich. Suec. (1798) p. 104.

*Lichen atrorufus* Dicks. Pl. Crypt. IV (1801) p. 22; Sm. Engl. Bot. n. 1102. *Lecidea atrorufa* Ach. Meth. Lich. (1803) p. 74, Lich. Univ. (1810) p. 200 ( $\alpha$ .), Syn. Lich. (1814) p. 51 (excl. v.); Wahlenb. Fl. Lapp. (1812) p. 479; Schaer. Lich. Helv. Spic. III (1828) p. 123; Nyl. Lich. Scand. (1861) p. 198. *Bialora* Fr. Lich. Suec. Exs. (1824) n. 228, Sched. Crit. (1826) p. 14, Lich. Eur. (1831) p. 255; Koerb. Syst. Lich. Germ. (1855) p. 194. *Psora* Hook. in Sm. Engl. Bot. V (1833) p. 192; Th. Fr. Lich. Arct. (1860) p. 171.

*Exs* Fr. Lich. Suec. Exs. VIII (1824) n. 228. — Schaer. Lich. Helv. Exs. VII (1828) n. 171. — Flot. Lich. Exs. III n. 239. — Koerb. Lich. Sel. Germ. II (1846) n. 42. — Hepp Flecht. Eur. III (1853) n. 122, XI (1860) n. 645. — Rabenh. Lich. Eur. Exs. III (1856) n. 60. — Nyl. Lich. Mont-Dore (1856) n. 47. — Th. Fr. Lich. Scand. Exs. II (1860) n. 41. — Anzi Lich. Sondr. VI n. 159. — Sten. Lich. Suec. Exs. VI ed. 2 (1863) n. 162. — Wartm. et Schenk Schweiz. Krypt. V (1863) n. 475. — Fellm. Lich. Arct. (1864) n. 151 (sec. herb. Nyl.) — Anzi Lich. Exs. Min. Rar. It. V (1865) n. 238. — Cromb. Lich. Brit. Exs. II (1877) n. 171. — Salw. Lich. Herb. II n. 133. Johns. North Engl. Lich. IX (1900) n. 335. — Cumm. Dec. North Am. Lich. I (1903) n. 358. — Havaas Lich. Norv. Exs. (1904) n. 233. — Harm. Lich. Gall. Exs. II (1908) n. 89. — Malme Lich. Suec. Exs. VII (1910) n. 164. — Zahlbr. Krypt. Vindob. XXI (1913) n. 2158. (Sec. Lyngé).

Thallus squamis vulgo majusculis, fere totis adnatis, contiguis et partim confluentibus, margine irregulariter crenulatis aut parce sublobatis, sat tenuibus, superne cinereo-rufescens aut rarius fuscescentibus albidisve, opacis, subtus fusco-nigricantibus, hypothallo byssoideo, fusco-nigricante. Apothecia saepe magna mediocriave, tota hypothallo thallove adnata, basi haud constricta, disco plano aut raro convexo, fusco aut raro nigricante, nudo, margine concolore, tenui, persistente aut mox evanescente. Epithecum fusco-rufescens. Hypothecium albidum, perithecio fusco impositum. Sporae ellipsoideae oblongaeve aut subfusiformes, long. 0.011—0.015, crass. 0.005—0.006 mm.

*Distr.* Ad terram arenosam et humosam muscosque putridos frequenter in reg. alpina subalpinaque (betulina) Lapponiae et paroeciae Kuusamo (Norrl. Ber. Torn. Lappm. p. 334, Vain. Adj. Lich. Lapp. II p. 33, Nyl. Lich. Lapp. Or. p. 143, Kihlm. N. Beitr. Flecht. Kola p. 57). Le.: Pahtivaara (Norrlin). In reg. pinifera ad Paatsjoki in LIn. (Vain. l. c.) et pluribus locis in LKem. (Norrl. l. c.).

Tb.: Pihlajavesi (Norrl.). Ta.: Sääksmäki (A. Kullhem). Ab.: Vihti.  
N.: Helsingforsia (W. Nyl.), Jungfruberget in Kyrkslätt (A. Kullhem).  
Al.: Geta (E. Nyl.).

Thallus habitu subcrustaceus areolatusque, sed areolis margine partim etiam liberis (nec adnatis) et crenulatis effiguratisque, difformibus, lat. 5—0.5 mm, crass. circ. 0.240—0.260 mm, planis aut fortuito convexis, sat laevigatis, haud sorediosis, KOH non reagentibus, hypothallo impositis, superne strato corticali obductis circ. 0.030 mm crasso, ex hyphis formato erectis, 0.004 mm crassis, leptodermaticis, conglutinatis, cellulis oblongis ellipsoideisve, saepe a zona gonidiali haud distincte limitato. Apothecia lat. circ. 0.4—2 (—4) mm, demum saepe difformia submembranacea, inter squamas immersa aut etiam margine thallum superantia, disco subnitido. Hypothecium ex hyphis formatum erectis, sat leptodermaticis, conglutinatis cavitatibus oblongis ellipsoideisve, circ. 0.0015—0.002 mm latis, perithecio impositum. Peritheciun basale demum crassum, ex hyphis irregulariter contextis, sat leptodermaticis, conglutinatis, formatum, fusco-fuligineum, in latere (paratheciun) evanescens aut (in apotheciis thallo adnatis) bene evolutum, extus rufescens, hyphis radiantibus aut subverticalibus. Hymenium circ. 0.070—0.080 mm crassum, jodo caerulescens. Paraphyses arcte cohaerentes, crass. 0.002—0.0015 mm, apice rufescente clavatae, 0.003—0.004 (—0.005) mm, typice simplices, basim versus parce ramoso-connexae parum gelatinosae, cellulis oblongis. Epithecium KHO non reagens. Ascii clavati aut parce cylindrici, in apice membrana incrassata. Sporae 8:nae, distichae aut parcus monostichae, apicibus obtusis rotundatisve. Gonidia globosa, diam. 0.004—0.009 mm, tantum simplicia visa, membra tenui.

*Obs.* *F. albicans* Vain. Adj. Lich. Lapp. II p. 33, thallo subalbido instructa, ad terram in reg. subalp. montis Mäntytunturi in Kuus. et ad Königäs prope Mare Glaciale in LIn. (Vain.) collecta est. Thallo cinerascente instructa nonnullis aliis locis collecta sec. specim. in Mus. Fenn. *F. atrorufa* (Dicks.) Vain., l. c., est forma frequentior, thallo cinereorufescente (vel olivaceo-cinerascente) instructa.

*Var. demissella* Vain.

Thallus squamis parvis, totis adnatis, contiguis, saepe angulosis, integris aut raro parceque sublobatis, sat tenuibus, superne cinereo-rufescentibus, opacis, subtus vulgo albidis, hypothallo byssideo, fuscescente. Apothecia mediocria, thallo adnata, basi haud constricta, disco plano aut raro depresso-convexo, atro, nudo, margine concolore, tenuissimo aut demum evanescente. Epithecium fusco-rufescens. Hypothecium albidum, perithecio fusco impositum. Sporae ellipsoideae aut parce globosae, long. 0.007—0.012, crass. 0.006—0.007 mm.

*Distr.* Ad terram turfosam *Lecideae decoloranti* socia in reg.

subalp. jugi Suoloselkä in LIN. (»*L. turficola*« Vain. Adj. Lich. Lapp. II p. 33).

*L. demissae* proxime est affinis, praesertim squamis minoribus ab ea differens et forsan ejus variatio. Thallus squamis 0.3—0.15 (—0.5) mm latis, parce etiam confluentibus, saepe proliferis et superpositis, crass. 0.080—0.120 mm, planis aut parce depresso-convexis, laevigatis, haud sorediosis, KOH non reagentibus, strato corticali destitutis, maxima parte gonidia continentibus. Hypothallus tantum microscopio conspicuus. Apothecia lat. 0.5—1.3 (—1.8) mm, p. p. demum lobata et difformia submembranacea, squamas non aut parum superantia, disco nitido. Hypothecium ex hyphis formatum erectis, sat leptodermaticis, conglutinatis, perithecio impositum. Peritheciun hyphis radiantibus, p. p. pachydermaticis, intus primum albendum, extus fusco-fuligineum. Hymenium jodo caeruleoscens. Paraphyses arcte cohaerentes, crass. circ. 0.0015 mm, saepe apice 0.003 mm, simplices, in KOH visae leviter gelatinosae, cellulis oblongis. Epitheciun KOH non reagens. Sporae 8:næ, distichæ, apicibus rotundatis. Gonidia globosa, diam. circ. 0.007—0.008 mm, tantum simplicia visa.

*Obs.* *L. atrorufella* Nyl., Fl. 1869 p. 409, sec. specim. orig. (Norrl. Ber. Torn. Lappm. p. 334) ad subg. *Biatoram* pertinet et observante Th. Fr. (Lich. Scand. II p. 475) atque sec. adnot. Nyl. in bibl. sua non differt a *L. turficola* (Hellb.) Th. Fr.

### 11. *L. Silénii* Vain. (n. sp.).

Thallus e squamulis parvis, rotundatis, leviter concavis aut planis, pallidis, saepe anguste albido- vel cinereo-marginali, subtus albis, in plagulas circ. 1—3 mm latas, 1—0.5 mm crassas confertis confluentibusque, hypothallo indistincto. Apothecia simplicia dispersaque, mediocria aut p. p. sat parva, late adnata, basi haud aut demum leviter constricta, disco vulgo plano, fusco aut fusco-nigricante, nudo, parum nitido, margine tenui, leviter prominente, atro, nitido. Epitheciun rufescens. Hypothecium pallido-lutescens. Sporae oblongae, long. 0.013—0.016, crass. 0.0045—0.005 mm.

*Distr.* Ad terram arenosam in Edlehoivi in Lapponia Inarensi a. 1877 a F. Silén collecta (n. 419).

Thallo vix differt a *Thalloedaemate syncomisto* (Floerk.) et *Th. conglomerato* (Ach.). *F. squalens* (Nyl.) posterioris, hypothecio albido instructa, disco atro, margine crassiore, apotheciis p. p. confertis confluentibusque, hypothallo radiciformi bene evoluto et epithecio

aeruginoso sec. specim. orig. in herb. Nyl. a *L. Silénii* differens, hae plantae evidenter ad diversas species pertinent, etiam si sporae vetustiores *L. Silénii* 1-septatae essent. — Thallus squamulis 0.3—0.7 mm latis, tenuibus. Apothecia lat. 0.8—0.3 mm, tenuia. Hypothecium hyphis erectis. Peritheciun extus rufescens, intus pallidum. Hymenium circ. 0.070 mm crassum, jodo caerulescens. Paraphyses sat laxe cohaerentes, crass. 0,0015 mm, apice clavato-incrassatae, clava 0,003—0,0015 mm crassa. Gonidia cystococcoidea, globosa, diam. 0,006—0,010 mm, parce etiam ellipsoideo-subglobosa, tantum simplicia visa.

## 12. *L. fuliginosa* Tayl.

in Mackay Fl. Hibern. II (1836) p. 131; Th. Fr. Lich. Scand. II (1874) p. 421; Leight. Lich. Great Brit. 3 ed. (1879) p. 246; Lamy Cat. Lich. Mont-Dore (1880) p. 110. *Psora* Arn. Lich. Tirol XXX (1897) p. 23. *Lecidea badia* Nyl. Nya Bot. Not. 1852 p. 177, (sec. n. 16930 in herb. Nyl.). *L. confusa* Nyl. l. c. 1853 p. 182 (sec. herb. Nyl.), Lich. Scand. (1861) p. 216. *Psora Koerberi* Mass. in Koerb. Par. Lich. 2 Lief. (1860) p. 119 (sec. Th. Fr.).

*Exs.* Leight. Lich. Brit. Exs. X (1858) n. 305. — Arn. Lich. Exs. (1887) n. 1234, (1897) n. 1744 (in hb. meo). — Zwackh Lich. Exs. (1889) n. 1086 (in hb. meo). — Harm. Lich. Loth. n. 919. — Claud. et Harm. Lich. Gall. Exs. VI (1904) n. 294. — Malme Lich. Suec. Exs. XXII (1915) n. 546. (Sec. cit.)

Thallus e verrucis subsquamiformibus conglomeratis crassis constans, superne fusco-rufescens aut obscure fuscens aut raro castaneo-testaceus, leviter nitidus, hypothallo indistincto. Apothecia parva, late adnata, basi haud aut raro leviter constricta, atra, nuda, immarginata aut tenuissime submarginata. Epithecium fusco-fuligineum. Hypothecium fusco-fuligineum. Sporae ovoideae aut ellipsoideae, long. 0.009—0.012, crass. 0.004—0.005 mm (»long. 0.007—0.010, crass. 0.004—0.006 mm», sec. Th. Fr. et annot. Nyl.).

*Distr.* In lateribus scopulorum erraticorum graniticorum et gneissaceorum supra rupes rara. Ab.: Louhikkomäki prope Aboam (Vain.). N.: Ad Kiiskilä et in Lounatpuoli (Vain.).

Thallus squamis 2—0.3 mm latis, circ. 0.5—1.5 mm crassis, difformibus, contiguis et saltem inferne confluentibus, vulgo convexis, superne rugosis aut verruculoso-inaequalibus aut sat laevigatis, glomerulos circ. 1—3 mm latos, contiguos rimaque disjunctos aut dispersos formantibus, haud sorediatis, medulla alba, jodo non

reagente. Apothecia lat. 0.5—1.2 mm, solitaria aut nonnulla acervulata, saepe leviter nitida. Hypothecium hyphis erectis, sat leptodermaticis, conglutinatis, cavitatibus angustis. Peritheciun fuscens, tenue, hyphis radiantibus, leptodermaticis, conglutinatis, cavitatibus angustis. Hymenium circ. 0.050—0.060 mm crassum, »jodo praecipue asci caerulescunt» (Th. Fr.), KOH non reagens. Paraphyses arcte cohaerentes, simplices, leviter gelatinosae. Asci clavati. Sporae 8:næ, distichæ, decoloræ, simplices, apicibus rotundatis aut altero apice obtuso. Conidia »filiformia, arcuata, long. 0.012—0.017, crass. 0.0005 mm» (sec. annot. Nyl. in herb. suo). Gonidia cystococcoidæ, tantum simplicia visa, diam. 0.007—0.012 mm.

*Obs.* *L. subconfusa* Nyl., Fl. 1876 p. 307, sec. specim. orig. in ins. Faeroe a Rostr. lectum (*L. confusa* Nyl. f. *subconfusa* Nyl. Fl. 1869 p. 84), habitu subsimilis *Catillariae intrusæ* Th. Fr., sed areolis thalli obscure cinerascentibus, planis, »sporis simplicibus, hypothecio crasso, fuscescente, epithecio nigricante (vel caerulescenti-infuscato)» a *L. fuliginosa* et *C. intrusa* differt.

### 13. *L. cinereorufa* Schaer.

Lich. Helv. Spic. III (1828) p. 122, IV (1833) p. 193 (sec. Nyl. in Nya Bot. Not. 1853 p. 182); Stenh. Vet. Ak. Förh. 1862 p. 475; Th. Fr. Lich. Scand. II (1874) p. 419; Vain. Adj. Lich. Lapp. II (1883) p. 32. *Schaereria* Koerb. Syst. Lich. Germ. (1855) p. 232. Th. Fr. Lich. Arct. (1860) p. 175. Bagl. et Carest. Cat. Lich. Vals. (1867) p. 376. *Psora* Arn. Lich. Tirol XXVI (1896) p. 131; Lindau Flecht. (1913) p. 84. *Lecidea lugubris* Fr. Lich. Eur. Ref. (1831) p. 314 p. p. (sec. Th. Fr., conf. Vain. Lich. Fenn. II p. 230); Nyl. Nya Bot. Not. 1852 p. 176, Lich. Scand. (1861) p. 232, 293; Fr. (Th. Fr.) Lich. Suec. Exs. XII (1852) n. 351. *Psora* Mass. Geneal. Lich. (1854) p. 20.

*Exs.* Fr. (Th. Fr.) Lich. Suec. Exs. XII (1852) n. 351. — Th. Fr. Lich. Scand. Exs. I (1859) n. 19. — Mudd Lich. Brit. Exs. II (1861) n. 183. — Stenh. Lich. Suec. Exs. VI ed. 2 (1863) n. 175. — Hepp Flecht. Eur. XIII (1867) n. 737 f. 2 (see. Arn. l. c.). — Cromb. Lich. Brit. Exs. I (1874) n. 91 (herb. Nyl.). — Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 191. — Havaas Lich. Norv. Exs. (1907) n. 368. (Sec. cit.)

Thallus e squamis verrucisque subsquamæformibus constans sat minutis mediocribusve, subintegris aut sublobatis, sat tenuibus, confluentibus, in crustam crassam aut sat crassam diffractam congestis, superne cervinus vel cinereo-

fuscescens, sat opacus, hypothallo indistincto. Apothecia mediocria et p. p. sat parva, basi bene constricta, disco plano, nigro, nudo, margine sat crasso, prominente, nigricante aut obscure cinerascente. Epithecium aeruginosum aut aeruginoso-fuligineum. Hypothecium fusco-fuligineum. Sporae globosae, diam. 0.007—0.010 mm.

*Distr.* Ad scopulos erraticos et saxa granitica (et porphyrica) locis apricis ventosisque et in silvis increbris siccisque rara aut passim vel etiam sat frequenter. Ab.: Runsala (Ruissalo) (A. Kullhem, V. Räsänen), Pahaniemi (Vain.). N.: Suursaari vel Hoglandia (Vain., Brenn. I. c. p. 109), Degerö prope Helsingforsiam (W. Nyl.), Jungfruberget in Kyrkslätt (G. Lång). Ta.: Mukkula in Hollola et Kotavuori in Kuhmoin (Norrl. Bidr. Sydöstr. Tav. Fl. p. 191), Syrjä in Mustiala (A. Kullhem), Kirkkonkylä in Padasjoki (Vain.), passim — sat frequ. praesertim in littoribus lacus Päijänne (Vain. Fl. Tav. Or. p. 116). KLad.: Kirjavalahti (Norrl., H. L. F. n. 191), ad Puputinlahti in Kurkijoki (V. Räsänen). KOn.: Selki (Norrl. Fl. Kar. On. II p. 34). Kb.: Pyssyvaara in Nurmes (Vain.). OKaj.: Ohtosenvaara et Pöyhölä in Kuhmo, Kylmälampi in Kianta (Vain.). Kuus.: Jyrävänniemi (F. Silén), reg. subalp. montium Nuorunen et Ukonvaara (Vain.). KKer.: reg. subalp. montis Päänuorunen (Vain.). LIn.: reg. subalp. jugi Suoloselkä in Sodankylä et reg. pinif. ad Ruoptuinvaara et Paatsjoki (Vain. Adj. Lich. Lapp. II p. 32). LEnont.: Ad Kilpisjärvi (Norrl.).

Thallus subtus demum obscuratus emoriensque, eam ob causam substrato laxe affixus, squamis vulgo convexis, 2—0.3 mm longis, 1—0.3 mm latis, circ. 0.2—0.1 mm crassis, crustam circ. 1—15. mm crassam formantibus, subtus primum pallidis, superne strato corticali cartilagineo tenui evanescente obductis, vulgo sat laevigatis. Apothecia lat. 1.2—0.5 mm, solitaria, margine haud pruinosa, saepe leviter nitido. Hypothecium hyphis irregulariter contextis, leptodermaticis, conglutinatis, cavitatibus angustis. Peritheciun fusco-fuligineum, in margine summo aeruginoso-fuligineum, KOH non reagens, hyphis subradiantibus, sat tenuibus, leptodermaticis, conglutinatis, cavitatibus 0.003 mm latis, ellipsoideis oblongisve, partim extus subdecoloratum. Hymenium circ. 0.160—0.200 mm crassum, »jodo caerulescens» (Th. Fr.). Epithecium KOH non reagens. Paraphyses laxe cohaerentes, apicibus saepe leviter ramosis et crebre constrictae articulatis. Asci cylindrici, membrana tenui. Sporae 8:nae, monostichae, simplices. Conidangia thallo immersa, vertice emergentia, lat. circ. 0.160 mm, conceptaculo fusco- et partim aeruginoso-fuligineo. Sterigmata simplicia, haud septata, long. 0.010 mm, basi crass. 0.0015 mm, apicem versus sensim attenuata, apice conidia

efferentia. Conidia bacillaria, long. 0.004—0.006, crass. 0.0007 mm, recta (abundanter visa). Gonidia cystococcoidea, globosa aut subglobosa, diam. 0.007—0.010 mm, tantum simplicia visa.

*Obs.* *F. acarosporoides* Vain. (*L. cinereorufa* f. *acarosporoides* Vain. Adj. Lich. Lapp. II p. 32), thallo partim distinctius squamoso et areolis planiusculis. In reg. subalp. montis Nuorunen in Kuusamo (Vain.).

#### 14. *L. rugifera* Vain.

Adj. Lich. Lapp. II (1883) p. 33.

Thallus sat crassus, e verrucis basi connatis, latere saepe liberis squamaeformibusque, cerebrino-rugosis, superne cineris, obscure cinereis et partim albido-cinereis, subtus atque saepe etiam latere albidis, hypothallo indistincto. Apothecia mediocria aut sat parva, late adnata, basi haud constricta, simplicia aut leviter tuberculoso-confluentia, atra, nuda, sat opaca, convexa, immarginata. Epithecium cyanescenti-nigricans. Hypothecium albidum, perithecio fusco-fuligineo tenui impositum. Sporae ellipsoideae, long. 0.009—0.013, crass. 0.005—0.006 mm.

*Distr.* In latere rupis in reg. subalp. montis Ukonvaara in Kuusamo (Vain.).

Thallus crass. 0.5—1 mm, opacus, jodo non reagens, KOH immutatus aut partibus albidis flavescens, verrucis squamisque 0.5—1 mm latis, saepe leviter crenatis flexuosisve, rugis elongatis, cerebrino-pli-catis. Apothecia lat. 0.4—1 mm. Hypothecium subalbidum aut sordide albidum, in parte superiore hyphis suberectis, sat leptodermaticis, conglutinatis. Perithecium subfusco-fuligineum, tenue, hyphis leptodermaticis, conglutinatis. Hymenium circ. 0.040—0.044 mm crassum, jodo caerulescens, sine limite distincto in hypothecium transiens. Paraphyses arcte cohaerentes, parce ramoso-connexae, leviter gelatinosae, apice clavatae. Asci clavati, membrana apice modice incrassata. Sporae 8:nae, distichae, simplices, apicibus rotundatis, membrana leviter incrassata. Conidia bacillaria, recta aut rectiuscula, apicibus obtusis, long. 0.012—0.010, crass. 0.001 mm. Sterigmata simplicia. Gonidia cystococcoidea, globosa, diam. 0.009—0.020 mm, vacuolis lateralibus, interdum autosporas continentia, membrana modice incrassata.

15. **L. rufofusca** (Anzi) Nyl.

Flora 1869 p. 409; Th. Fr. Lich. Scand. II (1874) p. 476; Hue Addend. II (1874) p. 135. *Biatora* Anzi Cat. Lich. Sondr. (1860) p. 76, Lich. Langob. Exs. V (1861) n. 178; Th. Fr. Bot. Not. 1866 p. 56. *L. decolorans*  $\beta$  *cinnamomea* Hellb. Vet. Ak. Förh. 1865 p. 473 (sec. Th. Fr.). *L. aquilonia* (Krempelh.) Nyl. Fl. 1865 p. 4.

Thallus sat crassus aut modice incrassatus, verruculosoinaequalis, verrucis sat minutis aut verruculis elevatis, saepe etiam subisidioideis, contiguis, aut supra thallum continuam crebre inspersis, albidus cinerascensve aut pallido-olivaceus, sorediis destitutus, hypothallo indistincto. Apothecia fere mediocria aut sat parva, adnata, basi constricta, disco rufo aut fuscescente, nudo, plano aut demum convexo, margine tenui aut fere mediocri, subconcolore, aut demum excluso. Hypothecium decoloratum pallidumve, irregulariter contextum. Epithecum rubricoso-rufescens. Paraphyses arcte (in KHO laxius) cohaerentes. Sporae 8:nae, ellipsoideae oblongaeve aut subovoideae, »long. 0.012—0.017, crass. 0.007—0.009 mm» sec. annot. Nyl. in specim. orig. (long. 0.011—0.016, crass. 0.005—0.007 mm ibi vidi).

*Distr.* LIn.: Supra muscos destructos et terram detritam ad Ivalojoki in par. Inari (F. Silén) et in Koppeloivi in par. Utsjoki (Silén).

Thallus KOH flavescent (sec. annot. Nyl.),  $\text{CaCl}_2\text{O}_2$  non mutatus (sec. Th. Fr.), opacus. Apothecia lat. 0.3—0.7 (—1.2) mm, leviter nitida aut sat opaca, conferta dispersave, gonidiis destituta. Hypothecium parte subhymenali jodo caerulescens, ceterum non reagens, parte superiore leptodermaticum, parte inferiore pachydermaticum, hyphis partim defecte conglutinatis, cavitatibus cellularum difformibus, 0.002—0.005 mm latis. Perithecum parte exteriore rubricoso-rufescens, hyphis radiantibus, leviter pachydermaticis, subsimplicibus, cavitatibus angustis, jodo non reagens. Hymenium non granulosum, circ. 0.070 mm crassum, jodo caerulescens, inter ascos partim demum fulvescens. Epithecum KOH non reagens. Paraphyses simplices, haud gelatinosae, 0.0005—vix 0.001 mm crassae, apicibus clavatis, 0.003 mm crassis. Gonidia globosa, diam. 0.006—0.016 mm, cystococcoidea.

*Obs.* In specimine n. 19905, ad corticem in Kylemore in Hibernia collecto (Larbal. Lich. Herb. III (1879) n. 102), conidia sec. annot.

Nyl. »filiformia, bene aut parcus leviter arcuata, long. 0.020—0.024, crass. 0.0006 mm, sporae long. 0.012—0.020, crass. 0.008—0.011 mm», sed thallo tenui, continuo sublaevigato instructa, habitu similis est *L. erythrophaeae* Floerk.

### 16. *L. epiphaea* Nyl.

Flora 1865 p. 4, Lich. Lapp. Or. (1866) p. 147, En. Lich. Fret. Behr. (1888) p. 9, 22, 45; Th. Fr. Lich. Scand. II (1874) p. 477; Vain. Adj. Lich. Lapp. II (1883) p. 49; Hue Addend. II (1888) p. 141. *Biatora collodea* Th. Fr. Lich. Spitsb. (1867) p. 36 (»*B. sarcodesa*« err. typ. in Lich. Scand. p. 477).

*Exs.* Fellm. Lich. Arct. (1864) n. 157 (in herb. Nyl.).

Thallus tenuissimus aut sat crassus, subverruculosoinaequalis aut verrucosus, subcontinuus dispersusve, albidus aut subcinerascens, sorediis destitutus, hypothallo indistincto. Apothecia mediocria, adnata, basi constricta, crassa, disco fusco, nudo, nitidulo, bene convexo aut raro primum planiusculo, mox immarginata aut raro primum margine tenui, superne subconcolore pallidoreve instructa. Hypothecium pallidum decoloratumve, crassum, parte superiore lata ex hyphis erectis formatum. Epithecium rufescens. Paraphyses arcte cohaerentes. Sporae 12:nae—16:nae aut abortu pauciores, oblongae aut p. p. ellipsoideae, long. 0.007—0.014, crass. 0.003—0.006 mm.

*Distr.* Supra muscos destructos (praesertim *Gymnomitrion cinnatum* et *Andreaeum*) in rupibus et raro ad ipsam rupem (in latere rupis gneissaceis) aut terram, crescit. LPon.: Prope Ponoj (Fellm. l. c.). LIn.: In reg. pinifera ad Veskonиеми et in monte Ruoptuinväara (Vain. l. c.). LENont.: In monte prope Leutsuväara ad Kilpisjärvi (Norrl. Ber. Torn. Lappm. p. 335). Kuus.: Ad Kitkajoki (F. Silén, »*L. tenebricosa saxicola*« sec. determ. Nyl., n. 143) et in reg. abiet. montis Mäntytynturi (Vain. l. c. p. 50).

Thallus KOH lutescens deindeque fulvescens, verrucis 0,2—0,6 mm latis. Apothecia lat. 0.4—1.5 mm, simplicia dispersaque aut partim conferta confluentiaque aut tuberculosa, gonidiis destituta, hyphis conglutinatis. Hypothecium parte superiore crassa jodo caerulescens, parte inferiore irregulariter contexta, ramoso-connexa, jodo fulvescens, totum pachydermaticum et chondroideum, cavatibus 0.001—0.005 mm latis, elongatis. Peritheciun pallidum decoloratumve aut in margine superne rufescens, jodo non reagens, hyphis

radiantibus, ramoso-connexis (in KOH visis), pachydermaticis, cavitibus oblongis elongatisve, 0,001—0,0015 mm latis. Hymenium non granulosum, circ. 0,000 mm crassum, jodo vulgo caerulescens, inter ascos demum fulvescens. Epithecum KOH rubricoso-rufescens. Paraphyses simplices aut passim parcissime ramoso-connexae, membrana tenuiter gelatinosa, in KOH leviter turgescente, cavitate tenuissima, increbre septatae, apice clavatae, clava rufescente, 0,003—0,006 mm crassa, superne strato continuo, tenui, gelatinoso, decolore obductae. Gonidia cystococcoidea, vulgo globosa, diam. 0,006—0,012 mm.

Var. *rupiseda* Th. Fr. l. c.; Vain. l. c. p. 50.

Thallus verrucosus verruculosusve. Rupicola

*Distr.* In lateribus rupium gneissacearum collecta. LIn.: In monte Ruoptuinvaara (supra indicata). Kuus.: Ad Kitkajoki et in Mäntyunturi (supra ind.).

Sporae 12:nae—16:nae aut p. p. abortu pauciores, distichae, long. 0,010—0,014, crass. 0,004—0,006 mm.

*Obs. 1.* »*L. epiphaea*, octospora (sporis 8:nis in thecis)» in Nyl. En. Lich. Fret. Behr. (1888) p. 22 indicatur.

*Obs. 2.* Apothecia vulgo sat late adnata, sed rarius prolifera et nutrice, ex qua nata sunt, substipitiformi, pallida, cartilaginea, apothecium vetustum degeneratum sistente, hymenio nullo evoluto.

### 17. *L. turficola* (Hellb.) Th. Fr.

Lich. Scand. II (1874) p. 475. *Biatora turficola* Hellb. Vet. Ak. Förh. (1865) p. 462. *Lecidea atrorufella* Nyl. Fl. 1869 p. 409 (sec. Th. Fr. et annot. Nyl. in bibl. sua); Hue Addend. II (1888) p. 135.

Thallus sat tenuis, e verrucis verruculisve constans depresso-sis, integris, adnatis aut adpressis subsquamulosisque, albido-pallescentibus pallidisve, opacis, sorediis destitutus, hypothallo indistincto. Apothecia parva, late adnata, basi haud constricta, tenuia, disco fusco aut fusco-rufescente, plano aut depresso convexo, nudo, opaco, immarginata (aut »margine tenuissimo, demum evanescente cincta» sec. Th. Fr.). Hypothecium pallidum decoloratumve, tenue, hyphis irregulariter contextis. Epithecum rufescens aut fusco-rufescens. Paraphyses arcte cohaerentes. Sporae 8:nae, oblongae ellipsoideaeve, »long. 0,009—0,016, crass. 0,004—0,006 mm» (sec. Th. Fr.), »long. 0,014—0,017, crass. 0,006—0,007 mm» (sec. Nyl.).

*Distr.* Ad terram arenosam in Pahtavaara in LENONT. (»*L. atrorufella*« Nyl. in NORRL. Ber. Torn. Lapp p. 334.

Adhuc defecte cognita et affinitate incerta, nimis parce a NORRL. collecta. Secund. specimen NORRLINIANUM a me descripta. Verruculae thalli superne strato corticali cartilagineo, irregulariter contexto, circ. 0.020 mm crasso aut saepe evanescente instructae, subtus albidae aut saepe fuscantes et hyphas hypothallinas fuscas breves parce emittentes. Apothecia 0.4—0.8 mm lata, crebra aut parce conferta, verrucis thalli tota (usque ad marginem) adnata nec ab iis distincte limitata, quare basim versus thallina lecanorinaque apparent et stratum habent myelohyphicum, aërem inter hyphas continens et saepe parce gonidiis instructum, subtus strato fusco obductum hyphas fuscas hypothallinas emittente (eam ob causam apothecia a Nyl. descripta sunt »basi nigricante«). Interdum apothecia angustiora latiorave sunt, quam verruca e qua enata sunt, et tunc in latere pars thallina ad verrucam pertinens facile distinguitur e parte ad apothecium pertinente. Ceterum parathecium jodo vino rubens (haud caerulescens), partes thallinae autem jodo fulvescentes. Hypothecium textura variabile, interdum partim etiam plectenparenchymaticum, jodo caerulescens. Parathecium (peritheciun) ex hyphis radiantibus, leptodermaticis, saepe sat crebre septatis, conglutinatis, formatum, extus rufescens, intus subdecoratum. Hymenium circ. 0.050 mm crassum, jodo caerulescens. Paraphyses simplices, septatae, apice leviter clavato-incrassatae, 0.002—0.003 mm crasso, membrana haud distincte gelatinosa, sed in KOH demum leviter turgescente. Epithecium nec granulosum, nec gelatinoso-obductum, KOH non reagens. Sporae in specimine »*L. atrorufella*« a NORRL. collecto a me visae simplices, long. 0.010—0.016, crass. 0.004—0.005 mm. Gonidia pleurococcoidea, glomerulosa, cellulis subglobosis globosive, diam. 0.005—0.009 mm, haud micareoidea.

#### Subg. II. **Protoblastenia** (Zahlbr.) Vain.

*Blasenia* sect. 1. *Protoblastenia* Zahlbr. Ascol. (1907) p. 226 (em.). *Protoblastenia* Steiner Flecht. It.-Franz. Grenzg. (Verh. Z.-B. Ges. Wien 1911) p. 47 (em.). *Pyrrhospora* Koerb. Syst. Lich. Germ. (1855) p. 209 (em. et nom. inept.).

Thallus crustaceus. Apothecia chrysophysinum (vel materiam KOH violascentem) continentia, typice subfulvescentia. Sporae saepe minores. Sterigmata saepe multiarticulata.

»Ob naturam spermogoniorum (arthrosterigmatum) locum suum naturalem inter *Placodia* occupet« ex opinione Nylandri (Lich.

Scand. p. 147), quod etiam reactio chemica epithecii (chrysophy- scinum continentis) affirmat. Nota autem graviore, endosporio haud incrassato, sicut etiam sporis simplicibus, a *Theloschistoides* differt. Ceterum sterigmata in hac specie constanter pluriseptata (»endo- basidialia») non sunt et talia etiam in *Lecidea chrysophyllum* non continentibus proveniunt (conf. Steiner l.c.), quare notam genericam certam non constituunt, nec reactio violacea a KOH procovata omnibus *Lecidealibus* deest, in *Sporopodium vulpino* et speciebus affinibus, *Lecidea (Psora) testacea*, cet. observata. Ad *Protoblastenia* pertinet etiam *L. cinnabarodes* Nyl., quae sterigmatibus articulatis a Nyl. (Lich. Nov. Zel., 1888, p. 80) descripta, proxime affinis similisque est *L. cinnabarinae* Sommerf. et *L. russulae* Ach., disco apotheciorum rubro, KOH purpureo-violascente, instructis, sed conidangiis incognitis. Ad hoc subgenus inserendae item sunt: *L. cinereorubra* Vain., *L. griseococcinea* Nyl., *L. russulina* Nyl., *L. subsimilis* Nyl. et *L. interjuncta* Nyl.

### 18. *L. rupestris* (Scop.) Ach.

Meth. Lich. (1803) p. 70, Lich. Univ. (1810) p. 206 (excl.  $\gamma$ ), Syn. Lich. (1814) p. 39; Th. Fr. Lich. Scand. II (1874) p. 423. *Lichen rupestris* Scop. Fl. Carn. II (1772) p. 364 (sec. Ach.); Ach. Lich. Suec. Prodr. (1798) p. 43. *Biatora* Fr. Vet. Ak. Handl. 1822 p. 271; Koerb. Syst. Lich. Germ. (1855) p. 207; Th. Fr. Lich. Arct. (1860) p. 191; Ara. Lich. Fraenk. Jur. (Fl. 1884) p. 149; Flag. Fl. Lich. Franche-Comté II (1894) p. 408. *Placodium rupestre* Brandt et Rostr. Lich. Dan. (1869) p. 80. *Lecanora rupestris* Leight. Lich. Great Brit. 3ed. (1879) p. 203. *Blastenia* (sect. *Protoblastenia*) *rupestris* Zahlbr. Ascol. (1907) p. 227. *Lichen calvus* Dicks. Fasc. Crypt. Brit. II (1790) p. 18, tab. 6 f g. 4 (conf. infra). *Lecanora calva* Nyl. Lich. Scand. (1861) p. 147. *Lecidea rupestris*  $\beta$  *irrubata* Ach. Lich. Univ. (1810) p. 206. *L. irrubata* Ach. Syn. Lich. (1814) p. 40. *Lecanora irrubata* Nyl. in Norrl. et Nyl. Herb. Lich. Fenn. I (1875) n. 41, Lich. Paris (1896) p. 50.

Thallus tenuis aut rarius sat crassus, verruculosus- aut verrucoso-inaequalis aut sat laevigatus, albidus aut subcinerascens aut raro ochraceus, KOH non reagens, aut cum substrato confusus, hypothallo indistincto. Apothecia sat parva aut raro mediocria, tota adnata aut foveolato-immersa, disco fulvo aut aurantiaco aut raro luteo aut fulvo-rufescente, margine vulgo subconcolore, demum excluso. Hypothecium pallidum decoloratumve, KOH non reagens. Epitheciun

fulvescens, KOH violascens. Paraphyses arcte cohaerentes. Sporae ellipsoideae aut subglobosae, long. 0.009—0.018, »crass. 0.006—0.010 mm» (sec. Nyl.).

Var. *irrubata* Ach. l. c. *Lecanora calva* var. *irrubata* Nyl. Lich. Scand. (1861) p. 147. *Lecidea rupestris a typica* Th. Fr. Lich. Scand. II (1874) p. 424.

*Exs.* Fr. Lich. Suec. Exs. XIV (1833) n. 400 p.p. (in herb. Nyl.). — Norrl. et Nyl. Herb. Lich. Fenn. I (1875) n. 41.

Thallus tenuis aut modice incrassatus, verruculoso-inaequalis aut sat laevigatus, dispersus aut continuus, albidus aut subcinerascens. Apothecia adnata, fulva aut aurantiaca aut raro lutea.

*Disfr.* Ad saxa calcarea et raro ad saxa talcaceo- et gneissaceo-schistosa collecta. Ab.: Finby (Vain.). Simonby in Pargas (F. Elfving). Ta: Letku in Tammela (A. Kullhem). KLad.: Kirjavalahti (Kullh., Norrl. H. L. F. n. 41 a), Lahentausta in Sortavala (Vain.), Korpikallio in Ruskeala (Norrl., H. L. F. n. 41 b, Symb. Fl. Lad. p. 27). Leppäsyvä Nykynmäki in Suistamo (Vain.). KOn.: Tiudie (Kullh., N. I. Fellman), Valkeamäki (Th. Simming, Norrl. Fl. Kar. Oneg. II p. 32). Sb.: Hautasaari in Tervasalo prope Kuopio (K. Linkola). Kuus.: Prope Kuoppaaja (v. *calva* in Vain. Adj. Lich. Lapp. I p. 147), Ruskeakallio (F. Silén).

Thallus continuus aut dispersus, raro parceque granulis sorediorum inspersus. Apothecia lat. 0.4—1 mm, saepe sat crebra aut rarius nonnulla confluentia, hyphis conglutinatis, gonidiis destituta, sed strato thallino, partim gonidia continentia saepe imposita. Peritheciun pseudoparenchymaticum, sat leptodermaticum, ex hyphis radiantibus formatum, cavitatibus cellularum 0.0015—0.002 mm latis, intus pallidum, extus fulvescens, KOH violascens. Hypothecium plectenparenchymaticum, sat leptodermaticum; seriebus cellularum verticalibus, cavitatibus rotundatis aut oblongis, 0.002—0.003 mm latis. Hymenium circ. 0.070 mm crassum, »jodo circa ascos caerulescit, ceterum non mutatur» (Th. Fr.). Paraphyses crass. 0.002 mm, simpllices, cellulis oblongis aut elongatis, membranis in KOH leviter incrassatis. Sporae 8:nae, distichae, simplices, apicibus rotundatis obtusisve. Membrana haud incrassata. »Sterigmata saepe valde articulata, interdum fere simplicia praesertim in var. *incrstante*.» (Flag. Fl. Lich. Franche-Comté p. 408, 409), »crass. 0.004 mm» (Nyl. Lich. Scand. p. 147). Conidia long. circa 0.005—0.006, »crass. 0.001 mm» (Nyl. l.c.). Gonidia cystococcoidea, globosa, diam. 0.008—0.010 mm, simplicia aut autosporas 0.005—0.006 mm latas continentia, membrana sat tenui.

*Obs. 1.* *F. alpina* (Arn.) Vain. (*Biatora rupestris* var. *alpina* Arn. Lich. Tirol IV, 1869, p. 643, XIV, 1875, p. 474), in Arn. Lich. Exs.

(1867) n. 350 distributa (n. 350 b in herb. Nyl.), thallo modice in-crassato, contigue verrucoso areolato, apotheciis fulvescentibus aut leviter sordidescientibus paullo a v. *irrubata* differens, ad Pellon-kylä in Karjalohja in Ab. (Ch. E. Boldt) et ad Schungu in KOn. collecta est. Hypothecio pallido a v. *Siebenhaariana* differt. — F. *rufescens* Schaeer. Lich. Helv. Spic. IV (1833) p. 184 (*Verrucaria rufescens* Hoffm. Obs. Bot. p. 49. Pl. Lichenos. I, 1790, p. 80, tab. 17 fig. 1 sec. Schaeer.), in Fr. Lich. Suec. Exs. n. 400 p.p. et Zwackh Lich. Exs. (1883) n. 755 (in herb. Nyl.) distributa, thallo tenui aut sat tenui, verruculoso, apotheciis adnatis, testaceis aut testaceo-fulvescentibus dignota, in Mustasaari in Lohja in Ab. a Ch. E. Boldt lecta est. — Apothecia in fig. Hoffm. rubra pincta, a Schaeer. l.c. luteo-rufescens et demum in En. Lich. Eur. p. 146 fulva describuntur.

*Obs. 2.* *L. rupestris* β *irrubata* Ach., Lich. Univ. (1810) p. 206 (*L. irrubata* Ach. Syn. Lich., 1814, p. 40), sec. specim. orig. thallo incrassato instructa est.

*Obs. 3.* F. *lutescens* Vain. (*Biatora rupestris* f. *lutescens* (Vain.) Hav., in Bergens Museums Aarbog 1909 n. 1 p. 25), apotheciis pulchre luteis adnatis et thallo tenui albido instructa, in rupe schistoso ad Granvin in Norvegia collecta est.

Var. *calva* (Dicks.) Schaeer. Lich. Helv. Exs. IX (1833) n. 221 (sec. cit.), Lich. Helv. Spic. IV (1833) p. 184, En. Lich. Eur. (1850) p. 146; Th. Fr. Lich. Scand. II (1874) p. 424. *Lichen calvus* Dicks. l.c. *Lecanora irrubata* \**L. calva* Lamy Exp. Lich. Caut. (1884) p. 46.

Thallus calcii immixtus, macula albida indicatus, laevigatus, opacus. Apothecia adnata aut demum leviter fossulanti-subimmersa, demum convexa, fulvescentia.

*Distr.* Ad saxa calcarea provenit. Alandia (A. J. Malmgren). LKem.: Sodankylä (Edvin Nylander).

Est forma intermedia inter var. *irrubatam* et var. *incrustantem*, in ambas transiens.

Var. *incrustans* (D.C.) Schaeer. Lich. Helv. Exs. IX (1833) n. 220 (sec. cit.), Lich. Helv. Spic. IV (1833) p. 184, En. Lich. Eur. (1850) p. 146; Th. Fr. Lich. Scand. II (1874) p. 424. *Patellaria incrustans* DC. in Lam. Fl. Frans. II (1815) p. 361 (sec. cit.). *Biatora rupestris* \**B. incrustans* Arn. Lich. Fränk. Jur. (Fl. 1884) p. 150. *B. incrustans* Arn. Lich. Tirol XXX (1897) p. 23.

*Exs.* Moug. et Nestl. Stirp. Voges. X (1833) n. 944 p.p. (Mus. Fenn.). — Hepp Flecht. Eur. V (1857) n. 274 (in herb. meo). — Rabenh. Lich. Eur. Exs. XVI (1859) n. 468 (Mus. Fenn.).

Thallus calcii immixtus, macula albida indicatus, aut evanescens. Apothecia fossulanti-immersa, sat plana aut leviter convexa, fulvescentia.

*Distr.* In rupe dolomitica in Alandia (A. J. Malmgren a. 1861).

Haec variationes saepe in eodem specimine transeunt. — Hypothallus linea nigricante saepe thallum limitans, ad thallum alienum vicinum pertinet. — Nyl. hanc variationem a v. *calva* non distinxit, nomine *Lecanora incrustantis* (Ach. Lich. Univ., 1810, p. 405, Syn. Lich., 1814, p. 174) *Placodium incrustans* A. L. Smith designans (Hue Addend. I, 1886, p. 69).

#### 19. \***L. terricola** (Anzi) Th. Fr.

Lich. Scand. II (1874) p. 425. *Biatora rupestris* var. *terricola* Anzi Cat. Lich. Sondr. (1860) p. 78; Arn. Lich. Tirol XI (1873) p. 499 (15). *Biatora terricola* Th. Fr. Lich. Spitsb. (1867) p. 37. *Lecanora calva* \**terricola* Stizenb. Ind. Lich. Hyperb. (1876) p. 27. *Biatora Siebenhaariana* f. *terricola* Arn. Lich. Tirol XXX (1897) p. 23. *B. rupestris* var. *terrestris* Anzi Lich. Lang. Exs. V (1861) n. 182 (sec. Lynge Ind. Exs. I p. 28).

Thallus sat crassus, verrucosus et verruculoso-inaequalis, albus vel albidus, hypothallo indistincto. Apothecia sat parva aut raro mediocria, tota adnata, convexa, testaceo-fulvescentia aut fulvo-rufescens, fere mox immarginata. Hypothecium pallidum et partim rufescens rubricosumve, KOH partim violascens. Epithecum subfulvescens, KOH violascens. Paraphyses arcte cohaerentes. Sporae ellipsoideae, »long. 0.007—0.010, crass. 0.004—0.005 mm» (sec. Th. Fr.).

*Distr.* Ad terram alpinam in Suecia, Norvegia et in Alpibus provenit, in Fennia nondum collecta

#### 20. \***L. Siebenhaariana** (Koerb.) Th. Fr.

Lich. Scand. II (1874) p. 424 (excl. exs. cit.). *Biatora Siebenhaariana* Koerb. Syst. Lich. (1855) p. 207. *Lecanora irrubata* subsp. *Siebenhaariana* Cromb. in Journ. Bot. (1885) p. 195. *Lecanora calva* \**Siebenhaariana* Stizenb. Ind. Lich. Hyperb. (1876) p. 27. *Placodium rupestre* subsp. *Siebenhaarianum* A. L. Smith Mon. Brit. Lich. I (1918) p. 226.

*Exs.* Koerb. Lich. Sel. Germ. IV (1856) n. 104 (in herb. Nyl.).

Thallus modice incrassatus aut sat tenuis, verruculoso-inaequalis, cinerascens albidusve, hypothallo indistincto. Apothecia sat parva aut raro mediocria, tota adnata aut

demum basi subconstricta, convexa, fulvo-rufescentia aut fulvo-fuscescentia aut p. p. impure aurantiaca. Hypothecium pallidum et partim aurantiacum vel dilute rufescens-rubricosum, KOH solutionem violaceam effundens. Hymenium totum aut epithecium subfulvescens aut pallido-rufescens, KOH violascens. Paraphyses arcte cohaerentes. Sporae ellipsoideae oblongae.

*Distr.* »Ad rupes schistosas granitoideasque alpium» (sec. Th. Fr.) in Lapponia Suecica et in Norvegia proveniens, in rupe talcacea ad Kuoppaajo in Kuusamo collecta est (in *L. rupestrem* transiens).

*Obs. 1.* *F. alpina* (Arn.), sub hanc subsp. a Th. Fr. relata, intermedia inter *L. rupestri* et *\*L. Siebenhaariana* est. »De hujus et *\*L. terricolae* cum *L. rupestri* nexus minime dubitamus; tantummodo ne nimis intricata esset formarum dispositio, eas seorsim tractavimus», Th. Fr. indicat.

*Obs. 2.* *Zeora leucoderma* Anzi, Neosymbola Lich. Rar. (1866) p. 7 (*Lecanora calva* *\*L. leucoderma* Nyl. in litt. sec. Stizenb. Lich. Helv. I p. 99), sec. fragm. specim. orig. in herb. Nyl. apotheciis p.p. albido-marginatis instructa, ceterum similis est *L. rupestri* var. *calvae*. Sporae »long. 0.009—0.014, crass. 0.006—0.010 mm» sec. ann. Nyl.

## 21. *L. cinnabrina* Sommerf.

in Vet. Ak. Handl. 1823 p. 115, Suppl. Fl. Lapp. (1826) p. 170; Schaer. Lich. Helv. Spic. IV (1833) p. 174, XII (1842) p. 555, En. Lich. Eur. (1850) p. 143; Nyl. Lich. Scand. (1861) p. 194, Lich. Nov. Zel. (1888) p. 8; Th. Fr. Lich. Scand. II (1874) p. 422. *Biatora* Fr. Lich. Eur. Ref. (1831) p. 266; Koerb. Syst. Lich. Germ. (1855) p. 206; Par. Lich. (1865) p. 152; Th. Fr. Lich. Arct. (1860) p. 191; Arn. Lich. Tirol XIV (1875) p. 462, 489; Flag. Fl. Lich. Franche-Comté II (1892) p. 409.

*Exs.* Koerb. Lich. Sel. Germ. III (1856) n. 72. — Stenh. Lich. Suec. Exs. II (1859) n. 56. — Th. Fr. Lich. Scand. Exs. I (1859) n. 17. — Hepp Flecht. Eur. IX (1860) n. 485. — Fellm. Lich. Arct. (1864) n. 147. — Un. Itin. n. 43. — Rabenh. Lich. Eur. Exs. XXXIV (1871) n. 905. — Arn. Lich. Exs. (1875) n. 625. — Zwackh Lich. Exs. (1876) n. 461. — Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 304. Havaas Lich. Norv. Exs. (1906) n. 312. — Malme Lich. Suec. Exs. XV (1913) n. 358.

Thallus tenuis aut sat tenuis, verruculosoinaequalis aut sat laevigatus, sorediis (soraliis) prominentibus, modice

incrassatis aut sat crassis, albidus, hypothallo indistincto. Apothecia crebra aut dispersa, sat parva aut mediocria, late adnata, disco depresso-convexo, saepe primum plano cinnabarino, nudo, margine concolore, tenui, demum aut mox excluso. Hypothecium decoloratum aut partim subfulvescens. Epithecium aurantiacum, KOH violaceum. Paraphyses arcte cohaerentes. Sporae oblongae aut ellipsoideae, long. 0.009—0.010, crass. 0.002—0.004 mm (»long. 0.008—0.012 mm» sec. Nyl.).

*Distr.* Ad corticem Abietis, Juniperi et Betulae (etiam B. nanae) et interdum ad lignum Juniperi crescit, in regionibus borealibus proveniens. OKaj.: In abiegno montis Hiidenvaara in Kuhmo, in abiegno turfose prope Laakso et Hossa in Kianta (Vain. Adj. Lich. Lapp. II p. 34). Kuus.: In abiegno montis Näränkävaara (Vain. l.c.). Ob.: Aavasaksa et Alkkula in Ylitornio (F. Silén). KKer.: In abiegno in monte Kivakka (Vain. l.c.), Iiava (N. I. Fellman, Nyl. Lich. Lapp. Or. p. 142). L. Enont.: »In reg. alpina et betulina sat parce et in reg. pinifera rare ad Karesuanto» (Norrl. Ber. Torn. Lappm. p. 334). L. In.: In reg. betulina (subalp.) in jugo Suoloselkä et in montibus Hammastunturit (Vain. l.c.). LIm.: Ad Kantalahti (H. Hollmén), Lovosersk (A. O. Kihlman). LTul.: Kola (P. A. Karsten, Fellm.). LPon.: Ponoj (Fellm., Nyl. l.c.). Specimen ex Orlov indicatum (in Kihlm. Flecht. Kola p. 56) ad *Placodium* pertinet.

Thallus subcontinuus, KOH lutescens,  $\text{CaCl}_2\text{O}_2$  non reagens, sorediis<sup>1)</sup> (soraliis) dispersis, circ. 0.5—1.5 mm latis. Apothecia lat. 0.4—1.2 mm, simplicia aut rarius confluentia, saepe leviter nitida, margine interdum primum prominente, basi saepe demum leviter constricta, gonidiis destituta. Hypothecium hyphis irregulariter contextis, leviter pachydermaticis, conglutinatis aut interdum parce aëre disjunctis, parte superiore saepe partim anguste erectis. Peritheciun bene evolutum, hyphis radiantibus, simplicibus, leviter pachydermaticis conglutinatis, materiam aurantiacam, granulosam, KOH violascentem, praesertim in limite hypharum continens, cavitibus angustis. Hymenium »jodo caerulescens (praecipue asci)», sec. Th. Fr. Epithecium granulosum. Paraphyses tubulis tenuissimis, membranis tenuibus, in KOH parum gelatinoso-incrassatis, non

<sup>1)</sup> *Soredium* Acharii, sicut etiam *soralium*, acervum granulorum gonidia continentium (e voce *σορός* sive arca derivatum) significat; chnaumata Wallrothii (*χναῦμα*), frustula praecipue rerum cupedinarium significantia, spectant ad granula sorediorum (conf. Schaeer. l.c.).

distincte ramoso-connexae, apicibus haud incrassatis. Sporae parce evolutae, 8:nae, distichae, simplices. Gonidia cystococcoidea, diam. 0.008—0.016 mm, simplicia, globosa.

22. **L. quernea** Ach.

Meth. Lich. (1803) p. 62, Lich. Univ. (1810) p. 202, Syn. Lich. (1814) p. 36; Schaer. En. Lich. Eur. (1850) p. 141; Nyl. Prodr. Lich. gall. (1857) p. 112 (358), Lich. Scand. (1861) p. 196, Lich. Paris (1896) p. 91; Th. Fr. Lich. Scand. II (1874) p. 425; Fink Lich. Minnes. (1910) p. 75. *Lichen querneus* Dicks. Crypt. Fase. I (1785) p. 9, tab. 2 f. 3. *Biatora quernea* Fr. Vet. Ak. Handl. 1822 p. 268, Lich. Eur. Ref. (1831) p. 279; Flag. Fl. Lich. Franche-Comté II (1894) p. 410. *Pyrrhospora quernea* Koerb. Syst. Lich. Germ. (1855) p. 209, Par. Lich. 2 Lief. (1860) p. 174. *Biatora tabescens* Koerb. Syst. Lich. Germ. (1855) p. 203 (p.p.), Lich. Sel. Germ. VI (1857) n. 164 (in herb. Nyl.).

*Exs.* Floerk. Deutsch. Lich. VII (1821) n. 123. — Fr. Lich. Suec. Exs. VII (1824) n. 199. — Schaer. Lich. Helv. Exs. XXIV (1849) n. 582. — Leight. Lich. Brit. Exs. II (1852) n. 61 (Mus. Fenn.). — Nyl. Herb. Lich. Par. III (1855) n. 134. — Mass. Lich. It. Exs. IX (1856) n. 311. — Koerb. Lich. Sel. Germ. VI (1857) n. 164, XI (1868) n. 316. — Hepp Flecht. Eur. IX (1860) n. 494 (in herb. meo). — Stenh Lich. Suec. Exs. VI (1863) n. 17. — Malme Lich. Suec. Exs. XX (1915) n. 488. (Sec. cit.).

Thallus tenuis aut sat tenuis, fere totus sorediosus aut passim parcissimeque verruculoso-inaequalis, flava,  $\text{CaCl}_2\text{O}_2$  rubescens, hypothallo albido aut ad ambitum partim nigricans. Apothecia vulgo dispersa, sat parva aut mediocria, tota adnata, vulgo depresso-convexa, fusca aut fusco-rufescens aut raro nigra, immarginata. Hypothecium vulgo pallidum decoloratumve. Epithecum rufescens, KOH solutionem violaceo-rubricosam effundens. Paraphyses arcte cohaerentes. Sporae ellipsoideae subglobosaeve, »long. 0.007—0.013, crass. 0.005—0.008 mm» (sec. Th. Fr. et Nyl., cet.).

*Distr.* »Ad truncos Quercuum vetustiores, praecipue basin eorum versus, parcius ad cortices Juniperi, Betulae, Fagi, Abietis, Ulmi, saepe sterilis» in Scandinavia (sec. Th. Fr.). Ad corticem Abietis abundanter et fert. in ins. Mjölk prope Helsingforsiam a me adhuc anno 1882 collecta. Ad corticem Abietis in ins. Gripö in par. Föglö in Alandia ster. (Vain.). Ab.: Ruissalo ad Aboam (Räsänen).

Thallus continuus aut subdispersus, soredia (soralia) nulla aut non distincte limitata formans, chnaumatibus (vel granulis sorediorum) flavidis fere totus aut subdisperse obductus, KOH non reagens<sup>1)</sup>, addito  $\text{CaCl}_2\text{O}_2$  (et hac solutione sola) rubescens. Apothecia lat. 0.4—1.6 mm, nuda, simplicia aut demum leviter tuberculosa aut parce confluentia, saepe demum difformia vel arthonioidea. Hypothecium jodo partim dilute caerulescens, hyphis suberectis, sat leptodermaticis, conglutinatis, cavitatibus 0.0015—0.002 mm latis, subrotundatis et oblongis, in parte inferiore etiam hyphis irregulariter contextis, pachydermaticis, conglutinatis. Perithecium bene evolutum, jodo non reagens, chondroideum, hyphis radiantibus, tenuibus, parce ramoso-connexis et simplicibus, sat leptodermaticis (membrana in KOH leviter turgescente), conglutinatis, cavitatibus angustis, extus rufescens, intus pallidum subdecoloratumve. Hymenium jodo caerulescens, inferne haud distincte limitatum. Epithecum granulosum. Paraphyses tubulis tenuissimis, membranis tenuibus, in KOH leviter gelatinoso-incrassatis, simplices aut parce furcatae, apicibus parum incrassatis. Sporae 8:nae aut saepe abortu pauciores, distichae, decolores et p.p. morbose rufescentes, simplices. »Sterigmata vulgo simplicia.» Conidia »tenuia, cylindrica» (sec. Flagey l.c.). Gonidia cystococcoidea, globosa, diam. 0.007—0.014 mm, tantum simplicia visa.

### 23. *L. rubiginans* (Nyl.) Magnuss.

Bot. Not. 1923 p. 414. *Lecanora rubiginans* Nyl. Fl. 1873 p. 291. *Lecidea quernea* f. *saxicola* Nyl. in Brenn. Bidr. Hogl. Lafv. (1885) p. 100 (Th. Fr. Lich. Scand. II, 1874, p. 426); Hue Addend. (1886) p. 93.

*Exs.* Malme Lich. Suec. Exs. XXVI (1917) n. 645. — Magnusson Lich. sel. Scand. III (1929) n. 62.

Thallus sat tenuis aut modice incrassatus, verruculosoinaequalis, albidus aut albido-stramineus, sorediis sulphureis flavidisve dispersis aut confluentibus,  $\text{CaCl}_2\text{O}_2$  non reagens, hypothallo indistincto. Apothecia dispersa, sat parva aut mediocria, tota adnata, disco depresso-convexo, subfuscus aut

<sup>1)</sup> Sec. Th. Fr. (Lich. Scand. II p. 426) et alios auctores eum sine commemoratione imitantes thallus KOH flavescit, quod indicat eum hanc plantam commiscuisse cum subsimili sterili *Pertusaria lutescens* (Hoffm.) Lamy, cuius thallus K flavescit et addito  $\text{CaCl}_2\text{O}_2$  intense vitellinus evadit.

nigricante, interdum tenuiter marginata. Hypothecium pallidum decoloratumve. Epithecium rufescens, KOH solutionem violaceo-rubricosam effundens. Paraphyses arcte cohaerentes. Sporae ellipsoideae subglobosaeve, »long. 0.007—0.010, crass. 0.006—0.007 mm» (sec. annot. Nyl.) et long. 0.005—0.006, crass. 0.0035—0.005 mm.

*Distr.* Ta: In latere umbroso rupis gneissaceae una cum *Arthonia abscondita* in insula Onkisalo in Luhanka (»*Lecidea gerula*» in Vain. Fl. Tav. Or., 1878, p. 110). N.: In rupe porphyrica una cum *Parmelia fuliginosa*, *Lecanora badia* cet. in Majakallio in Hoglandia (Brenner Bidr. Hogl. Lafv. p. 100).

Thallus dispersus aut partim subcontinuus, nec KOH, nec addito  $\text{CaCl}_2\text{O}_2$  reagens. Apothecia lat. 0,3—1 mm, simplicia aut demum tuberculosa, saepe demum difformia, nuda, margine disco subconcolore aut paullo pallidiore, integro aut flexuoso, parum prominente, persistente aut demum excluso. Hypothecium partim jodo dilute caerulescens, hyphis suberectis, sicut in *L. quernea*. Peritheciun bene evolutum, pallidum aut extus rufescens, jodo non reagens, hyphis simplicibus, radiantibus, leviter pachydermaticis, conglutinatis, cavitatibus oblongis, angustis. Hymenium jodo caerulescens. Epithecium granulosum. Paraphyses simplices et praesertim marginem versus ramoso-connexae, apice non incrassatae, tubulis tenuissimis, membranis tenuibus, in KOH gelatinoso-incrassatis. Sporae 8:nae, distichae, decolores aut morbose rufescentes, simplices. Conidia »filiformia, arcuata, long. 0.022—0.030, crass. 0.0007 mm» sec. annot. Nyl. Gonidia cystococcoidea, globosa, diam. 0.006—0.014 mm, tantum simplicia visa.

#### 24. *L. fuscorubens* Nyl.

Bot. Zeit. 1861 p. 338 p. p., Fl. 1862 p. 463, Lich. Lapp. Or (1866) p. 182.; Th. Fr. Lich. Scand. II (1874) p. 440. *L. sanguineoatra* var. *fuscorubens* Nyl. Prodri. Lich. Gall. (1857) p. 352 (Lich. Paris, 1896, p. 79). *L. sanguineoatra* \**L. fuscorubens* Nyl. Lich. Scand. (1861) p. 199. *Bialora fuscorubens* Nyl. Nya Bot. Not. 1853 p. 183 (in herb. Nyl. deest), Arn. Lich. Fränk. Jur. (Fl. 1885) p. 158, Lich. Münch. (1891) p. 75. *Lecidea monilicola* Schaeer. Lich. Helv. Spic. IV (1833) p. 161 sec. Steiner Flecht. Ital.-franz. Grenzg. (Verh. Zool.-bot. Ges. Wien, 1911) p. 48 (non Ach. sec. Th. Fr. l. c. p. 515). *Lecidella* Koerb. Par. Lich. Lief. (1865) p. 224 (sec. Arn.). *Bialora* Hepp Flecht. Eur. (1857) n. 262 (sec. Steiner). *Protoblastenia* Steiner l. c.

*Exs.* Hepp Flecht. Eur. (1857) n. 262, 263. — Arn. Lich. Exs. (1858) n. 1, 23 a, b, (1859) n. 45, 46, Lich. Monac. (1889) n. 43, 44,

(1894) n. 354. — Malbr. Lich. Norm. n. 290. — Koerb. Lich. Sel. Germ. XIII (1873) n. 376. — Anzi Lich. Langob. Exs. XIV (1873) n. 572. — Zwackh Lich. Exs. (1876) n. 464. — Oliv. Herb. Lich. l'Orne VIII n. 385. — Harm. Lich. Loth. IX n. 814. (Sec. cit.).

Thallus tenuis (aut sat tenuis in v. *ochracea*), plus minus inaequalis verruculosusve, haud sorediosus, cinereo-glaucescens aut albidus (aut ochraceus in v. *ochracea*), aut saepe evanescens, hypothallo indistincto. Apothecia parva aut sat parva, sat late adnata, basi constricta, sed adpressa, disco fuscescente aut fusco-rufescente aut nigricante, nudo, plano aut demum convexo, margine tenui, nigricante, persistente aut demum excluso. Hypothecium rubricoso-fuscescens aut fusco-nigrum. Paraphyses arcte cohaerentes, apice subrufescenti-clavatae. Sporae 8:nae, ellipsoideae aut suboblongae, long. 0.006—0.012, crass. 0.004—0.007 mm.

*Distr.* Ad saxa calcarea et chloritico- atque talcaceo-schistosa, raro etiam granitica et gneissacea crescens, pluribus locis collecta. Al. (Edv. Nylander). Ab.: Simonsby, Storgård (F. Elfving), Malm (Vain.) in Pargas, Hermala in Isosaari in Lohja (Ch. E. Boldt). N.: Brändskär ad Tvärminne (E. Häyrén), Lovisa (F. Elfving). Ta.: Torro (saxa granit.) et Talsola (gneiss.) in Tammela (Kullh. Lich. Rar. Must. p. 274), Luopioinen (granit., C. Leopold), Kuhmoin (J. P. Norrlin). K Lad.: Lahentauta (var. *ochracea*, Vain.) et alibi ad Kirjavalahti (Norrl.) in par. Sortavala. Leppäsyriä Nykynmäki in Suistamo (Vain.). KOn.: Pöpönsaari in Suojärvi (Norrl. Fl. Kar. On. II p. 28), Perttiniemi (p. p. f. *ochracea*, Kullh.). Sb.: Hautasaari in Tervasalo ad Kuopio (K. Linkola). Kuus.: Ad Paloniemi et Kuoppaoja prope Paanajärvi (Vain. Adj. Lich. Lapp. II p. 39).

Apothecia vulgo crebra aut sat crebra, lat. 0.3—0.3 mm, gonidiis destituta, disco leviter nitido aut opaco, margine haud aut leviter prominente. Hypothecium KOH parum reagens, distinctius subrubicsum, hyphis sat tenuibus, fere totum hyphis irregulariter contextis (conf. f. *fuscorubescens*) 0.002—0.003 mm crassis, sat leptodermaticis, conglutinatis. Peritheciun rubricoso-fuscescens aut fuscescens, KOH parum reagens, hyphis subirregulariter radiantibus, 0.004—0.003 mm crassis, parum pachydermaticis, conglutinatis, cellulis saepe subellipsoideis. Hymenium circ. 0.075—0.080 mm crassum, nec granulosum, nec corpusculis fuligineis instructum, jodo levissime (aut in f. *goniophiloide* intense) caerulescens, deindeque vinose rubens. Paraphyses simplices, haud distincte gelatinosae, distincte increbre

septatae, clava apicali crass. 0.003—0.009 mm, KOH non reagente. Sporae distichae, simplices, apicibus vulgo rotundatis. Conidangia »nigra» (sec. annot. Nyl. in »*L. ochracea*« n. 20956). Sterigmata «articulata, articulis conidia efferentibus» (sec. Steiner l. c.: »fulera endobasidialia«). Conidia »bacilliformia, recta, long. 0.0035—0.0045 (—0.006), crass 0.0008—0.0006 mm» (sec. annot. Nyl. in herb. suo, conf. etiam Steiner l. c.). Gonidia cystococcoidea, globosa, diam. 0.008—0.018 mm, membr. sat tenui, tantum simplicia visa.

*Obs. 1.* *L. fuscorubens* var. *planata* Vain., Adj. Lich. Lapp. II (1883) p. 39, apotheciis minoribus (0.003—0.004 mm latis), subsistenter marginatis, disco plano, nigricante aut fusco-nigricante, hymenio jodo levissime caerulescente glaucescenteve deindeque vinose rubescente. In rupibus calcareis et chloritico-schistosis prope Kuoppaoja in Kuus. — Var. *goniophloides* Vain. l. c., hymenio jodo intense caerulescente demumque vinose rubente, disco nigricante aut fuscescente, demum convexo instructa, in rupe talcaceo-schistosa prope Kuoppaoja in Kuus.

*Obs. 2.* *F. fuscorubescens* Vain. (*L. Altensis* var. *fuscorubescens* Vain. l. c. p. 96), hypothecio inferne subdecolorato differens, ad saxa schistosa prope Sirkelä in Kuus. Huc etiam specimina nomine »*L. Altensis* Th. Fr.« e Kuus. indicata pertinent. — Hypothecium parte superiore rufescens aut partim pallidum, in apotheciis crassioribus late ex hyphis erectis formatum, in parte inferiore hyphis irregulariter contextis. Peritheciun in eodem apothecio partim rufescens, partim decoloratum. Hymenium jodo intense aut dilute caerulescens deindeque vinose rubens (in solutione minus concentrata interdum persistenter caerulescens). Sporae long. 0.009—0.018, crass. 0.004—0.005 mm (non bene evolutae). Conidia non visa. In *L. Altensi* Th. Fr. (Lich. Scand. II, 1874, p. 552) conidia arcuata indicantur.

Var. *ochracea* (Hepp) Vain. *Biatora ochracea* Hepp Flecht. Eur. (1857) p. 263. *Lecidelta* Koerb. Par. Lich. (1865) p. 210. *Lecidea* Nyl. in Stizenb. Lich. Helv. (1882) p. 152 et in Lamy Exp. Lich. Caut. (1884) p. 68, Nyl. Lich. Paris (1896) p. 79. *Biatora fuscorubens* \**B. ochracea* Arn. Lich. Jur. (Fl. 1884) p. 159.

Thallus tenuis aut sat tenuis, continuus aut areolato-diffractus aut subdispersus, ochraceus aut impure ochraceo-glaucescens.

*Distr.* Ad saxa calcarea in Lahentausta in par. Sortavalala (Vain.) et ad Perttiniemi in KOn. (A. Kullhem).

### Subgen. III. **Eulecidea** (Th. Fr.) Lynge

*Biatora* (Fr.) Th. Fr. Lich. Scand. II (1874) p. 422 (excl. »*Stirps L. cinnabarinae* l. c. p. 422 = subgen. *Protoblastenia* (Zahlbr.) Vain.) + *Eulecidea* Th. Fr. Lich. Scand. II (1874) p. 481.

Thallus crustaceus, uniformis, apothecia laetius vel obscurius colorata vel persistenter nigra, numquam KOH violascens (by the editor).

Sect. **Lecidea fuscoatra.**

Thallus areolatus vel areolato-diffractus, fuscescens vel obscure cinereo-fuscescens, hypothecium vulgo obscurum, paraphyses cohaerentes. Hyphae medullares non amyloideae. Species saxicolae.

**25. L. fuscoatra (L.) Ach.**

Meth. Lich. (1803) p. 44, Syn. Lich. (1814) p. 12; Nyl. Prodr. Lich. Gall. (1857) p. 379 (133), Lich. Scand. (1861) p. 229 p. p.; Th. Fr. Lich. Arct. (1860) p. 210 (p. p., sec. auct. ipsum), Lich. Scand. II (1874) p. 525; Vain. Adj. Lich. Lapp. II (1883) p. 77; Zahlbr. Cat. Lich. Un. III (1925) p. 579. *Lichen fuscoater* L. Sp. Pl. (1753) p. 1607.

*Icon.* Gallœ Nat. Hist. Dan. Lich. I (1927) pl. 99—108.

Thallus vulgo modice incrassatus aut sat crassus, rarius crassus aut sat tenuis tenuisve, interdum evanescens, intense aut dilute fuscescens vel fusco-pallescens aut subluridus aut pallidus aut impure subalbidus, »CaCl<sub>2</sub>O<sub>2</sub> rubescens» (sec. Nyl.), KOH non reagens, areolatus, areolis contiguis aut dispersis, planis aut rarius convexis aut concavis, sorediis destitutus (conf. infra), laevigatis aut demum inaequalibus, medulla jodo non reagente, hypothallo nigricante bene evoluto aut indistincto. Apothecia thallo adnata aut rarius immersa aut in hypothallo sita, demum basi leviter constricta, lat. circ. 1.8 mm aut minora (raro 3 mm), dispersa aut sat crebra, vulgo demum sat crassa aut modice incrassata, disco plano aut demum vel fere mox convexo, laevigato, nigro, nudo aut plus minus pruinoso, opaco, margine vulgo modice incrassato, non aut leviter prominente, nigro aut primum cinereo-nigricante, nudo aut raro pruinoso, persistente aut fere mox excluso. Hypothecium fusco-nigrum, sat crassum, maxima parte irregulariter contextum. Epithe-

cium aeruginoso-fuligineum. Paraphyses arcte cohaerentes, leviter gelatinosae. Asci anguste clavati. Sporae »oblongae ellipsoideaeve, long. 0.010—0.016, crass. 0.005—0.007 mm» (sec. Nyl.) aut subglobosae globosaeve et diam. 0.006 mm.

*Distr.* »Exceptis regionibus borealibus alpinisque, ubi est rara vel desideratur, est frequens per totum territorium» (sec. Th. Fr., frequenter in Ta. sec. Norrl. Bidr. Sydöstr. Tav. Fl. p. 190, frequ. in Tav. Or. sec. Vain. Fl. Tav. Or. p. 116). Praesertim rupes, et lapides saxaque granitoidea incolit. Raro ad lignum (in tecto ligneo in sepulcreto Rossico Viburgi, leg. Vain.) et in rupe calcarea in Europa merid.

*F. fumosa* (Hoffm.) Nyl. Lich. Scand. (1861) p. 230; Vain. Adj. Lich. Lapp. II (1883) p. 77. *Verrucaria fumosa* Hoffm. Deutschl. Fl. II (1796) p. 190. *Patellaria fumosa* Hoffm. Pl. Lich. (1801) p. 3, tab. 49 fig. 2. *Lecidea fumosa* Nyl. Obs. Lich. Pyr. Or. (1873) p. 38, Nyl. in Hue Addend. II (1888) p. 204. *L. fuscoatra* \**L. fumosa* Nyl. Lich. Paris (1896) p. 92.

Thallus intense aut dilutius subfuscescens aut subrufescens testaceus, non pruinosus, areolis vulgo contiguis, hypothallo indistincto. Apothecia disco nudo.

*Distr.* In provinciis meridionalibus et mediis haud rara et pluribus locis adhuc in Karelia bor. (Vain. l. c.), etiam in LIn. ad Königäs prope Mare glaciale (Vain. l. c.).

Thallus vulgo nitidus, rarius opacus,  $\text{CaCl}_2\text{O}_2$  erythrinose tingitur, areolis circ. 2—0.3 mm latis, vulgo angulosis. Conidia »recta, long. 0.007—0.009, crass. 0.0005—0.0006 mm» (sec. adn. Nyl., Lich. Paris p. 92).

*F. fuscoatra* (Nyl.) Vain. *Lecidea fumosa* var. *fuscoatra* Nyl. in Hue Addend. II (1888) p. 204 (Nyl. Lich. Scand. p. 229, Fl. 1869 p. 413). *Lecidea dendritica* Ach. Meth. Lich. (1803) p. 44 sec. Nyl., sed indeterminabilis (forsan non *Verrucaria dendriticata* Hoffm. Pl. Lichenos. I, 1790, t. 19 f. 4, pag. 90). *L. fuscoatra* f. *macra* subf. *fumosa* Harm. Cat. Lich. Lorr. (1894) p. 404.

*Exs.* Zwackh Lich. Exs. (1881) n. 664 (hb. Nyl. et Vain.).

Thallus subfuscescens, non pruinosus, areolis dispersis aut partim contiguis, hypothallo nigricante. Apothecia disco nudo.

*Distr.* Locis numerosis in prov. meridionalibus, velut in Alandia, Reg. Aboënsi, Nylandia, Karelia Olonetsensi.

*F. opaca* (Schaer.) Vain. Adj. Lich. Lapp. II (1883) p. 77. *Lecidea fumosa* γ *opaca* Schaer. En. Lich. Eur. (1850) p. 110.

*Exs.* Fr. Lich. Suec. Exs. XIII (1827) n. 355 B (sec. Schaer. l. c.). — Norrl. et Nyl. Herb. Lich. Fenn. cont. (1921) n. 755 b (a transiens in f. *fuscoatram*).

Thallus subfuscescens, non pruinosus. Apothecia disco pruinoso.

*Distr.* Al.: Badhusberget in Mariehamn (Vain.), Brändö (H. Hollmén et V. Sederholm). N.: Mejlans prope Helsingforsiam (Vain.).

Thallus areolis nitidis, contiguis aut parce dispersis, planis, hypothallo nigricante. Apothecia disco tenuiter pruinosa.

*Obs.* *Lecidea contigua*  $\beta$  *tectorum* Mass. Ric. Lich. Crost. (1852) p. 75, »thallo fusco, apotheciis atropruinosis« descripta, forsitan ad *f. opacam* pertinet.

*F. turgida* (Anzi) Vain. *Psora fumosa* var. *turgida* Anzi Lich. Langob. Exs. VII (1861) n. 280 (hb. Nyl.), Manip. Lich. (1862) p. 148. *Lecidea inturgescens* Nyl. Fl. 1881 p. 186 (hb. Nyl.); Hue Addend. II (1888) p. 206; Zahlbr. Cat. Lich. Un. III (1925) p. 602.

Thallus sublurido- aut subbadio-pallescens, areolis bene convexus aut verrucaeformibus, nitidis, non pruinosis. Apothecia disco demum convexo, tenuiter pruinosa.

*Distr.* Ab.: In summo monte granitico ad Ajonpää in par. Naantali (Vain.), Muhkurimäki prope Aboam (Vain.). Ta.: Ad lapidem prope Rutalahti in Korpilahti (Vain.).

Thallus areolis 1—0.15 mm latis, dispersis aut contiguis, hypothallo indistineto aut conspicuo nigricanteque. Apothecia lat. 1—0.6 mm.

*F. scopulorum* Vain.

Thallus sublurido- aut subbadio-pallescens, areolis bene convexus aut verrucaeformibus, nitidis, non pruinosis. Apothecia disco demum convexo, nigro, nudo.

*Distr.* N.: In rupe granitica in Kyrkslätt (A. Kullhem), in rupe gneissacea prope Tvärminne (E. Häyrén). Ta.: In rupe gneissacea in Asikkala (J. P. Norrlin).

Thallus areolis partim dispersis, medulla jodo non caerulescente, hypothallo nigricante. Epithecium olivaceo-fuligineum. Hypothecium fusco-nigrum, sat tenuie.

*Obs.* Specimen ad Kentijärvi in KOn ab A. Kullhem collectum huic formae est proximum, verrucis verruculoso-inaequalibus aut confluentibus, apotheciis tuberculoso-confluentibus, epithecio aeruginoso-fuligineo, hypothecio fusco-fuligineo, parti obscuratae verrucae thallinae imposito, medulla jodo non reagente.

*F. Mosigii* (Ach.) Nyl. Lich. Scand. (1861) p. 230; Th. Fr. l. c. p. 527; Vain. l. c. *Lecidea fumosa*  $\beta$  *Mosigii* Ach. Lich. Un. (1810) p. 157 (specim. e Lusatia), Syn. Lich. (1814) p. 12. *L. grisella* f. *Mosigii* Zahlbr. Cat. Lich. Un. III (1925) p. 594 p. p. (non *Lecidella Mosigii* Koerb. Par. Lich. (1861) p. 201, conf. sub *L. obscurissima*).

*Exs.* Moug. et Nestl. Stirp. Cr. Vog. V (1815) n. 461 (Mus. Fenn.). — Schaer. Lich. Helv. Exs. XXV (1852) n. 625 (hb. Nyl.). — Hepp Flecht. Eur. III (1853) n. 131 (hb. Vain.). — Lojka Lich. Hung.

Exs. II (1882) n. 72 (hb. Vain.). — Zwackh Lich. Exs. (1883) n. 792 (hb. Vain.). — Malme Lich. Suec. Exs. XV (1913) n. 372 (Mus Fenn.).

Thallus areolis pallescentibus, planis, non pruinosis. Apothecia disco pruinoso.

*Distr.* Sat frequenter aut passim in prov. merid. et mediis, velut in Ab., N., St., Ta. (»*L. fuscoatra* v. *grisella*« Norrl. Bidr. Sydöstr. Tav. Fl. p. 190), Sa., Klad., KSv., Sb., Kb. (multis locis sec. Vain. Adj. Lich. Lapp. II p. 77).

Thallus areolis circ. 1.5—0.3 mm latis, nitidis, angulosis, contiguis, hypothallo indistincto. Apothecia lat. 2—0.7 mm, saepe demum convexa. Hypothecium fusco-nigrum, KOH non reagens, parte superiore jodo caerulescens, hyphis erectis et irregulariter contextis commixtis, strato thallino, gonidiis destituto, jodo non reagenti, impositum. Peritheciun extus fusco-fuligineum, KOH non reagens, hyphis 0.004—0.003 mm crassis, sat leptodermaticis, radiato-constipatis, conglutinatis, intus impure albido hyphisque sat irregulariter contextis, conglutinatis. Hymenium circ. 0.060 mm crassum, jodo caerulescens deindeque vino rubens. Epithecium aeruginoso-fuligineum, parum granulosum, KOH non reagens. Paraphyses arcte cohaerentes, simplices, increbre septatae, leviter gelatinosae, crass. 0.0015—0.0018 mm, guttulas oleosas (»microgonidia«) saepe continentis, apice parum incrassatae. Ascii clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae, simplices, ellipsoideae, long. 0.008—0.012, crass. 0.005—0.006 mm, in eodem apothecio etiam globosae et diam. 0.006 mm.

*Obs. 1.* *Lecidea grisella* Nyl. Lich. Lapp. Or. (1866) p. 160, Lich. Paris (1896) p. 92, Arn. Lich. Fränk. Jur. (1885) p. 161, Nyl. in Hue Addend. II (1888) p. 206, »thallo lurido-albido vel cinerascente,  $\text{CaCl}_2\text{O}_2$  erythrinice rubescente, vix distinguenda nisi sicut varietas a \**L. fumosa*\*, majore parte ad f. *Mosigii* pertinet. *Lecidea fumosa* v. *grisella* Floerk. in Flot. Lich. Siles. (1829) n. 141 et 142 in Schaer. En. Lich. Eur. (1850) p. 110 descripta. Conf. *L. grisella* Arn. Lich. Tirol V (1870) p. 530.

*Obs. 2.* *Lecidea grisella* f. *meiosporiza* Nyl. Fl. 1876 p. 239 (Hue Addend. II, 1888, p. 206), thallo albido, opaco, non pruinoso, areolis planis, contiguis, hypothallo indistincto, disco demum convexo, pruinoso, margine pruinoso, conidiis »rectis, long. 0.007—0.008, crass. 0.0005—0.0006 mm» (sec. adn. Nyl.) instructa est.

*F. roridella* Vain.

*Exs.* Norrl. et Nyl. Herb. Lich. Fenn. cont. (1921) n. 755 a et b. Thallus areolis medio cinereo- aut testaceo-pallescentibus aut testaceo-rufescensibus, praesertim margine tenuiter pruinosis, opacis. Apothecia disco pruinoso.

*Distr.* In saxis et rupibus collecta. N.: Helsingforsia (Vain.). Ta.: Hersala in Hollola et Saksala in Padasjoki (Vain.), Evo (Norrl., n. 15281 in hb. Nyl.). Sa.: Mikkeli (Norrl., H. L. F. cont. n. 755).

Thallus areolis majoribus minoribusve, contiguis aut dispersis, planis aut concavis aut raro convexis, hypothallo indistincto aut evoluto nigricanteque. Apothecia circ. 1.5—0.3 mm lata, disco plano aut demum convexo.

*Obs.* *Lecidea fuscoatra* v. *pallescens* Fr. Summ. Veg. Scand. (1846) p. 116 et *L. fuscoatra* γ *subcontigua* Fr. Lich. Eur. Ref. (1831) p. 317 in Th. Fr. Lich. Scand. II (1874) p. 526 »crusta pallida, opaca» descripta, p. p. ad hanc forman pertinere videtur.

*F. retrahens* (Nyl.) Vain. *L. fuscoatra* f. *cechumenoides* subf. *retrahens* (Nyl.) Vain. Adj. Lich. Lapp. II (1883) p. 78; Zahlbr. Cat. Lich. Un. III (1925) p. 585.

Thallus evanescens, areolis parcissimis, convexis, pallescentibus, tenuiter pruinosis. Apothecia tenuiter pruinosa.

*Distr.* N.: In scopollo granitico prope Helsingforsiam (Vain.).

Nomen a Nyl. datum. Thallus areolis circ. 0.5—0.2 mm latis, opacis, »CaCl<sub>2</sub>O<sub>2</sub> rubescentibus» (sec. adn. Nyl.), hypothallo indistincto. Apothecia crebra aut partim dispersa, lat. 1.4—0.3 mm, disco convexo, tenuiter pruinoso et p. p. denudato, margine tenui, obscure cinerascente.

*Obs.* *F. pauperrima* (Nyl.) Vain. (*L. fuscoatra* var. *grisella* f. *pauperrima* Harm l. c. p. 404, *L. pauperrima* Nyl. Fl. 1879 p. 220) apotheciis tenuioribus, planis aut rarius demum depresso-convexis, totis pruinosis aut denudatis differt a f. *retrahente*, nec in Fennia collecta.

*F. subecrustacea* Falk Östr. Blek. Laffl. (1874) p. 16; Th. Fr. Lich. Scand. II (1874) p. 526. *L. fuscoatra* f. *Mosigii* subf. *subecrustacea* Vain. l. c. p. 77. *L. grisella* f. *subecrustacea* Zahlbr. Cat. Lich. Un. III (1925) p. 595.

Thallus evanescens, areolis parcissimis, planis aut convexis, pallescentibus, non pruinosis. Apothecia disco non pruinoso.

*Distr.* N.: In scopolis et rupibus graniticis prope Helsingforsiam (Vain.), in rupe granitica in summo montis Kuckubacka in Sibbo (Vain.).

Thallus areolis circ. 0.8—0.2 mm latis, nitidis, hypothallo indistincto. Apothecia dispersa aut sat crebra, lat. 0.8—0.3 mm, disco opaco, demum convexo, margine tenui nigricante aut obscure cinerascente

*F. subcontiguella* Vain.

*Exs.* Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 302 (Mus. Fenn.).

Thallus areolis pallescentibus, planis aut concavis, praesertim margine pruinosis. Apothecia disco nudo.

*Distr.* N.: Supra rupem graniticam in summo montis Kuckubacka in Sibbo (Vain.). Sa.: Supra saxa aprica in Mikkeli (Norrl. l. c.).

Thallus areolis circ. 1—0.5 mm latis, vulgo angulosis, contiguis, tenuiter pruinosis aut partim medio nudis subnitidisque et tantum latere pruinosis, hypothallo nigricante partim conspicuo. Apothecia lat. 1—0.6 mm, disco plano aut demum convexo, margine vulgo obscure subcinerascente.

*Obs.* *Lecidea interjecta* Nyl. Fl. 1866 p. 418 (Hue Addend. II, 1888, p. 201), ad »*L. grisellam* Floerk.» in Nyl. Lich. Paris p. 92 (Zahlbr. Cat. Lich. Un. III p. 593) ducta, ab ea disco nudo differt et a f. *subcontigua* distinguitur thallo rimoso-diffracto, albido, hypothallo indistincto, »epithecio subincolore» (non aeruginoso-fuligineo) quoad specimen n. 15028 e Lusitania. Aliud specimen (n. 15029) in Anglia collectum, ad *Lecideam Salwegi* Vain. (n. sp.) pertinet, thallo modice incrassato, rimoso, haud areolato, verruculoso-inaequali, glauco-cinerascente, apotheciis 0.5—0.3 mm latis, tenuibus, disco subplano, nigro, nudo, opaco, margine tenui, integro, nigricante, »hypothecio fusco, epithecio subincolore, hymenio jodo caerulescente deindeque vinose rubente, sporis long. 0.009—0.011, crass. 0.006—0.007 mm, thallo  $\text{CaCl}_2\text{O}_2$  rubescente» (sec. adn. Nyl.). Hae plantae ad rupes calcareas crescunt.

*F. cechumenoides* Vain. Adj. Lich. Lapp. II (1883) p. 77; Zahlbr. Cat. Lich. Un. III (1925) p. 584.

*Icon.* Gallœ Nat. Hist. Dan. Lich. I (1927) pl. 106.

*Exs.* Hepp Flecht. Eur. IX (1860) n. 492 (hb. Vain.). — Arn. Lich. Exs. (1862) n. 191 (hb. Nyl.). — Zwackh Lich. Exs. (1883) n. 792 (hb. Nyl.). — Arn. Lich. Monac. (1889) n. 112 (hb. Nyl.). — Malme Lich. Suec. Exs. XXVI (1917) n. 648 (Mus. Fenn.).

Thallus areolis pallescentibus, planis aut concavis, non pruinosis. Apothecia disco nudo.

*Distr.* Praesertim ad rupes graniticas crescit. Ab.: In saxo gneissaceo prope Itä-Heikkilä Aboae (Vain.) et in Ruissalo (K. Linkola), Karkkali in Karjalohja (Ch. E. Boldt), Paavola et Kaijola in Lohja (Boldt). N.: Majakallio in Hoglandia (M. Brenner), Helsingforsia (Vain.), Kyrkslätt (A. Kullhem). Ka.: Vanha-Viipuri (»*L. fumosa* f. *grisella*» Vain. Lich. Vib. p. 67). Sat.: Loimaa (A. J. Malmgren). Ta.: Kuusto et Mustiala in Tammela (Kullh.), Asikkala (J. P. Norrlin). Sa.: Ristiina (E. Nylander), Savonlinna (O. A. J. Carlenius). KLad.: Ruskeala (Linkola). KOn.: Nihisaari (Kullh.).

Thallus areolis contiguis, vulgo leviter nitidis, strato corticali circ. 0.045—0.040 mm crasso, e duabus partibus formato: 1:0, parte exteriore, circ. 0,010 mm crassa, decolorata, chondroidea, hyphis sub-

destructis, conglutinatis, cavitatibus horizontalibus, striis brevibus, angustissimis indicatis; 2:0, parte crassiore, superne pallida, inferne decolorata, hyphis verticalibus, conglutinatis, 0.004—0.003 mm crassis cavitatibus brevibus aut subglobosis, 0.002—0.0015 mm latis. Hypothallus indistinctus. Apothecia lat. circ. 2.5—0.6 mm. Gonidia cystococcaceae, globosa aut subglobosa. Conidia filiformia, recta, long. 0.007—0.009, crass. 0.0005—0.0006 mm» (sec. adn. Nyl. in n. 15264. conf. etiam Galløe l. c. f. 252).

*Obs.* In hac forma (in specim. ad Itä-Heikkilä collecta), sicut etiam in f. *fumosa* (ad Ajonpää collecta) interdum in latere areolarum parce observantur granula thallina, quae heteromerica sunt, in eo a granulis homoeomericis sorediorum differentia, et ad statum intermedium inter granula sorediorum et isidia pertinent, sed vera isidia thallo affixa non formant.

## 26. *L. deusta* (Stenh.) Nyl.

Flora 1879 p. 206, Nyl. in Brenner Bidr. Hogl. Lafv. (1885) p. 96; Hue Addend. II (1888) p. 184. *Lecidea fuscoatra* var. *deusta* Stenh. in Fr. Lich. Suec. Exs. XIV (1833) n. 405; Nyl. Lich. Scand. (1861) p. 229. *Lecanora deusta* Nyl. Fl. 1872 p. 552, Obs. Lich. Pyr. Or. (1873) p. 23; Th. Fr. Lich. Scand. II (1874) p. 404, 411, 526, 527; Norrl. et Nyl. Herb. Lich. Fenn. VI (1882) n. 297; Malme Lich. Suec. Exs. XVIII (1914) n. 445.

*Exs.* Fr. Lich. Suec. Exs. XIV (1833) n. 405 (hb. Nyl.). — Norrl. et Nyl. Herb. Lich. Fenn. VI (1882) n. 297. — Malme Lich. Suec. Exs. XVIII (1914) n. 445, XXII (1915) n. 545 (Mus. Fenn.).

Thallus modice incrassatus aut sat crassus, primum areolatus, areolis demum subsquamaeformibus, planis aut parcus convexis aut concavis, badiis fuscescentibusve aut rarius fusco-nigricantibus, vulgo nitidis, contiguis aut rarius partim subdispersis, sorediis destitutus, medulla J non reagente, hypothallo nigricante. Apothecia thallo immersa, dein adnata, lat. 0.3—0.7 mm, sat tenuia, basi non constricta, disco plano aut raro demum convexo, nigro, nudo, opaco, margine demum distincto, tenui, non prominente, nigro, nudo, vulgo persistente. Hypothecium albidum pallidumve, hyphis erectis, conglutinatis. Epithecium subrufescens fuscescensve. Paraphyses arcte cohaerentes, apice clavatae. Asci clavati. Sporae »long. 0.010—0.015, crass. 0.005—0.006 mm» (sec. adn. Nyl. in Norrl. H. L. F. n. 297).

*Distr.* Locis apricis in rupibus et saxis graniticis, gneissaceis, porphyricis et silaceis sat rare — passim. Al.: Ad Djupviken in Väster-Geta (K. Linkola); in Alandia collecta etiam ab E. Nylander. Ab.: Hirvenluoto (Vain.), Runsala (F. Elfving, Vain.), Iso-Heikkilä et Muhkuramäki (Vain.) prope Aboam, Ispoinen et Luolavuori in Kaarina (Vain.), Ajonpää et Viialanvuori in ins. Luonnonmaa in par. Naantali (Vain.), prope Långvik in Karjalohja (Ch. E. Boldt), Kaijola in Lohja (Boldt), Merimasku (P. A. Karsten). N.: Somerikonvuoret (Vain.), Pohjoiskallio, Purjekallio et Tervamäki in Suursaari v. Hoglandia (Brenner Bidr. Hogl. Lafv. p. 97), Tvärminne (Elf.), Toivola (Vain.) et alibi ad Helsingforsiam (Nyl., Vain., Norrl. H. L. F. n. 297), Kyrkslätt (A. Kullhem). Karelia (Nyl.). Ta.: Herala in Hollola (Vain.), Kuus.: In reg. subalp. montis Ukonvaara (Vain. Adj. Lich. Lapp. I p. 171). KKer.: In reg. subalp. montis Kivakka (Vain. l. c.). LKem. (E. Nylander).

Areolae thalli circ. 1—0.2 mm latae, angulosae aut rotundatae aut difformes aut demum subsquamiformes et leviter lobatae adscendentesque, lat. usque ad 2 mm, »KOH addito  $\text{CaCl}_2\text{O}_2$  non reagentes» (sec. adn. Nyl.), strato obductae decolorato, usque ad 0.015 mm crasso, ex hyphis formato horizontalibus, conglutinatis, subdestructis, striis oblongis tenuissimis, cavitatem indicantibus, stratum obtegente fuscescenti-testaceum, apicibus hypharum verticalibus, constipatis, conglutinatis, 0.003—0.002 mm crassis, sat leptodermaticis. Apothecia dispersa aut partim sat crebra. Peritheciū extus intense rufescens aut subfuscescens, hyphis sat tenuibus, radiatis, intus albidum, hyphis in KOH visis ramoso-connexis membranisque turgescentibus, interdum gonidia continens (quod etiam Nyl. observavit). Hypothecium jodo caerulescens, hyphis in KOH visis ramoso-connexis, membranis gelatinoso-turgescentibus. Hymenium jodo caerulescens. Epitheciū KOH solutionem rufescentem effundens et demum subrubricosum. Paraphyses simplices, increbre septatae, leviter aut parum gelatinosae, circ. 0.001 mm crassae, apice clavatae, clava 0.002—0.003 mm crassa, subrufescente. Sporae 8:nae, distichae. Conidangia verruculas hemisphaericas, fuligineas formantia. Sterigmata long. 0.010—0.015 mm, apicibus conidia efferentibus. Conidia filiformia, fere medio subangulato- aut rotundato-plicata, apicibus ambobus rectis, crass. circ. 0.0005 mm, long. 0.016—0.030 mm (conidia duplo breviora rectaque immixta forsitan fragmenta longiorum sunt). Conidia »arcuata long. 0.015—0.030 mm», a Nyl. in specim. a Norrl. collectis visa, in hb. suo descripta delineataque sunt. Gonidia cystococcaceae.

*Obs.* *F. coracinella* Vain., areolis fusco-nigricantibus aut fere fuligineis, hypothallo nigro adnatis, apotheciis crebris, diu thallo immersis, demum leviter emergentibus a *L. deusta* typica differens,

ad Ajonpää in par. Naantali supra rupes apricas abundanter provenit cum speciminibus magis *L. deusta* consimilibus. Apothecia lat. 0.3—0.6 mm, disco plano, nigro, opaco, margine tenuissimo, nigro. Hypothecium albidum, jodo caerulescens, hyphis erectis. Peritheciun interdum parce gonidia continens, extus fuscum. Hymenium circ. 0.055—0.060 mm crassum, jodo caerulescens. Epithecium subcaerulenti-nigricans, in eodem apothecio parce etiam fuscescenti-fuligineum, KOH solutionem rufescensem non effundens. Paraphyses arcte cohaerentes, in KOH sat laxae cohaerentes, parce septatae, crass. 0.001—0.0015 mm, clava 0.002 (—0.004) mm, leviter gelatinosae. Ascii clavati, in apice membrana bene incrassata. Sporae 8:næ, distichæ, oblongæ aut ellipsoideæ, interdum septo tenuissimo, decoloratae, long. 0.008—0.013 (—0.015), crass. 0.003—0.006 mm. Conidia recta et p. p. rotundato-plicata, filiformia, long. 0.028—0.030, crass. 0.0005 mm. Gonidia cystococcaceæ. Tantum forma sit *L. deusta*, quamquam habitu *L. obscurissimam* referens.

## 27. *L. lepidotella* Nyl.

Flora 1877 p. 223; Nyl. in Brenner Bidr. Hogl. Lafv. (1885) p. 117; Hue Addend. II (1888) p. 232; Zahlbr. Cat. Lich. Un. III (1925) p. 879 (sub sect. *Psora*).

Thallus areolatus, areolis 0.6—0.2 mm latis, sat tenuibus, saepe subrotundatis, contigue aggregatis, planis aut concaviusculis, pallido-badiis vel pallido-rufescens, nudis, margine subcinerascentibus, hypothallo indistincto. Apothecia lat. 0.3—0.56 mm, tenuia, primum thallum non superantia, demum emergentia et basi non aut parum constricta, disco plano, sicco nigro, humido fusco, nudo, opaco, margine nigro, nudo, opaco, tenui, integro. Hypothecium pallidum, hyphis erectis. Parathecium fusco-fuligineum. Epithecium pallido-rufescens aut pallescens. Paraphyses arcte cohaerentes, sat leviter gelatinosae. Sporae »oblongae, long. 0.010—0.015, crass. 0.005 mm» (Nyl. l. c.).

*Distr.* N.: Supra plantas destructas (»*Sirosiphon saxicola*«) in rupe porphyrica in Kotimäki in Suursaari (Hoglandia), Vain. 1875. Parcissime collecta una cum *Lecidea fuscocinerea*.

Affinis est *Lecidea deusta*, jam parathecio ab ea differens. Areolis adnatis a *Psora* differt. Thallus areolis medio subnitidis, margine subpruinosus, medio strato corticali obductis, circ. 0.060 mm crasso, zona inferiore pallida, subimpellucida, circ. 0.030 mm crassa, hyphis

erectis, apicibus clavatis, constipatis, 0.002 mm crassis, zona superiore pellucida, circ. 0.030 mm crassa, decolorata, chondroidea, subdestructa, striis tenuissimis subconspicuus, horizontalibus, cavitates cellularum indicantibus. Apothecia crass. circ. 0.140 mm, margine discum non aut parum superante, persistente. Hypothecium hyphis conglutinatis, strato medullari thalli myelohyplico, gonidiis destituto impositum. Parathecium circ. 0.040 mm crassum, hyphis radiantibus, sat tenuibus, membrana modice incrassata, cavitatis oblongis, circ. 0.002 mm latis. Hymenium circ. 0.050 mm crassum, »jodo caerulescens (asci praesertim tincti)» sec. Nyl. Epithecum non granulosum. Paraphyses tubulis 0.0015 mm crassis, increbre septatis, apicibus non incrassatis. Ascii clavati, in apice membrana bene incrassata. Sporae 8:næ, decoloratae, simplices (sec. Nyl.). Gonidia cystococcaceæ.

The editor found it very difficult to find a proper place for this species in any of the *Lecidea* sections. Nylander found it related to *Lecidea ostreata* or to *L. deusta* (Hogl. Lafv. I. c.). In his manuscript Vainio contested the former view, without stating his own opinion. — In his herbarium this species has the number 3987. Numbers 3981—3986 are species of the *Lecidea elaeochroma* section. They cannot be related to this species with its very coherent paraphyses and rather narrow spores. No. 3988 is *Lecidea Killilensis*, and Nos. 3989 and 3990 *Lecidea Keimioënsis* and *L. deusta*, of the *Lecidea fuscoatra* section. — All the species of this section are directly saxicolous, and they have a dark hypothecium.

28. *L. rimisæda* Nyl.

Flora 1874 p. 226; Hue Addend. II (1888) p. 205; Zahlbr. Cat. Lich. Un. III (1925) p. 684.

Thallus parce evolutus, areolis sat tenuibus, circ. 0.3—0.2 mm latis, planis aut convexis, dispersis aut parce contiguis, pallidis et partim cinerascentibus obscuratisque,  $\text{Ca}(\text{Cl}_2\text{O}_2)$  non reagentibus, sorediis destitutus, medulla jodo non reagente, hypothallo indistincto aut passim nigricante. Apothecia partim in series conferta, lat. 0.8—0.4 mm, basi leviter constricta, modice incrassata aut sat tenuia, disco plano, laevigato, nigro, opaco, non pruinoso, margine sat tenui, nigro, opaco, non pruinoso, leviter prominente, persistente. Hypothecium fusco-nigrum aut p. p. superne anguste albidum, hyphis erectis. Epithecum fuscum aut fusco-fuligineum.

Paraphyses arcte cohaerentes, leviter gelatinosae. Ascii clavati. Sporae »long. 0.011—0.017, crass. 0.0045 mm» sec. Nyl., long. 0.016, crass. 0.007 mm a me visae.

*Distr.* N.: In saxis graniticis prope Helsingforsiam (Vain.).

Intermedia inter *L. fuscoatram* et *L. crustulatum*, colore epithecii ab ambabus differens, sed colore partim pallido affinitatem cum *L. fuscoatra* ostendens. Hymenium non aeruginosum, crass. circ. 0.060—0.070 mm, »jodo caeruleo, dein vino fulvescens» sec. Nyl. Paraphyses increbre septatae, crass. circ. 0.0018 mm, vix 0.002 mm, apice parum incrassatae. Ascii in apice membrana modice incrassata. Sporae 8:næ, distichæ. Conidia »filiformi-bacillaria, recta, long. 0.006—0.009, crass. 0.001 mm» sec. adn. Nyl.

## 29. *L. fuscocinerea* Nyl.

in Nya Botan. Notis. 1852 p. 177 (Fl. 1853 p. 99) sec. spec. origin. Fr. Lich. Suec. Exs. XIV (1833) n. 406 c (n. 13050 in hb. Nyl.), Fl. 1881 p. 186, Lich. Paris (1896) p. 92; Th. Fr. Lich. Scand. II (1874) p. 527; Zahlbr. Cat. Lich. Un. III (1925) p. 587. *Lecidea atroalba* Fr. I. c., Lich. Eur. Ref. (1831) p. 310 p. p. (nec. Ach., nec *Lichen atroalbus* L.). *L. hydropica* Koerb. Par. Lich. 3 Lief. (1861) p. 227 (sec. Th. Fr. Bot. Not. 1867 p. 152). *L. gyrizans* Nyl. Lich. Scand. (1861) p. 231, Fl. 1863 p. 307. *Aspicilia tenebrosa* var. *fusco-cinerea* Boist. N. Fl. Lich. II 1903 p. 146.

*Exs.* Fr. I. c. XIV (1833) n. 406 c. — Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 200 (hb. Vain.). — Zwackh Lich. Exs. (1889) n. 1087 (?). — Malme Lich. Suec. Exs. XV (1913) n. 373 (hb. Vain.).

Thallus modice incrassatus aut sat crassus, areolatus, areolis 0.15—1 mm latis, contiguis, convexis aut depresso-convexis aut primum sat planis, saepe verrucaeformibus, sat laevigatis aut raro demum verrucoso-inaequalibus, cinereis aut obscure cinereis, sorediis destitutus, medulla KOH bene lutescente, ad ambitum hypothallo bene evoluto, nigricante. Apothecia inter areolas thalli sita, thallum non superantia aut demum prominentia, vulgo p. p. conferta, lat. 0.3—0.7 mm, basi non constricta, disco plano, nigro, nudo, opaco, subscabrido, margine tenuissimo, leviter prominente, anguloso aut subgyrose flexuoso, nigricante aut obscure cinerascente, nudo. Hypothecium fuscescens, in parte superiore hyphis erectis, ceterum irregulariter contextis. Perithe-

cium fusco-fuligineum. Epithecum fusco-fuligineum. Asci clavati. Paraphyses arcte cohaerentes, ramoso-connexae, crebre articulatae. Sporae 8:næ, distichæ, globosæ aut ellipsoideæ, long. 0.004—0.007, crass. 0.003—0.005 mm (sec. Nyl. »long. 0.010—0.014, crass. 0.007—0.009 mm»).

*Distr.* Ad saxa et rupes præsertim graniticas sat rara, in partibus meridionalibus et mediis Fenniae proveniens. Al.: Ramsholm et Öfverby in Jomala (Vain.), Lemböte in Lemland (Vain.). Ab.: Prope Aboam (Fr. Elfving), Aristonselkä (Räsänen), Hautausmaa, prope Luolauvori, Peltola et Ispoinen in Kaarina (Vain.), Ajonpää in Luonnonmaa in par. Naantali (Vain.). N.: Kotimäki (Vain., Brenner) pluribus locis et Mäkiinpäälys in Suursaari v. Hoglandia (»*L. fuscocinerea* var. *gyrizans* Nyl.» in Brenner Bidr. Hogl. Lafv. p. 109), Toivola Helsingforsiae (Vain.), Stansvik (J. P. Norrlin), Degerö (Vain.). Ta.: Evo (Norrl. et Nyl. H. L. F. n. 200). Sa.: Katko in Juva (A. Kullhem). Oa.: »Ad rupes montis Bötömfjället sat frequens» in Bötö (sec. A. J. Malmgren Fört. Lafv. Sat. p. 83).

Thallus jodo non reagens, KOH superne non reagens. Hymenium jodo dilutissime caerulescens, dein fulvescenti-rubescens. Epithecum crassum, KOH non reagens. Paraphyses saepe constrictæ articulatae, apice parum incrassatae. Conidia long. 0.006—0.007, crass. 0.0007 mm, recta, bacilliformia (sec. adn. in hb. Nyl.). Gonidia pleurococcaceæ, simplicia et parce 2—4 cellulosa.

### 30. *L. somphoterella* Vain. (n. sp.).

Thallus modice incrassatus aut sat tenuis, arcolatus, areolis vulgo minutis planisque, contiguis, cinereis, medulla KOH lutescens, sorediis destitutus. Apothecia parva, lat. 0.3—0.6 mm, primum thallum non superantia, demum leviter prominentia, basi non constricta, disco plano, nigricante, nudo, opaco, margine tenui, intreco, concolor, opaco, nudo. Hypothecium fuscescens, hyphis erectis. Perithecum fuscescenti-fuligineum. Epithecum fusco-fuligineum. Asci clavati. Paraphyses arcte cohaerentes. Sporae 8:næ, distichæ, subglobosæ aut ellipsoideæ, long. 0.007, crass. 0.004—0.005 mm.

*Distr.* Supra rupem in Kotimäki in Suursaari (Hoglandia) a. 1875 a me collecta.

Affinis est *L. fuscocinerea*, apotheciis solitariis et thallo ab ea differens. Thallus strato decolorato ex hyphis destructis conglutinatis formato, tenui obductus, parum nitidus, non pruinosus, areolis

vulgo 0.3—0.4 mm latis, ad ambitum parce majoribus passim parce depresso-convexis, vulgo laevigatis, hypothallo nigricante passim parce ad ambitum conspicuo. Apothecia KOH solutionem rubicoso-rufescens effundentia, margine demum subexcluso. Hypothecium aërem inter hyphas non continens. Hymenium circ. 0.100 mm crassum. Paraphyses leviter gelatinosae, parce ramoso-connexae, apicibus vix incrassatis, crebre leviter constrictae articulatae (in KOH visae). Gonidia parce 2—4-cellulosa, pleurococcaceae.

### 31. **L. aviaria** (n. sp.).

Thallus sat tenuis, areolatus, areolis parvis, circ. 0.2—0.6 mm latis, contiguis et parce dispersis, planis, fuscescenti-cinereis, opacis, sat laevigatis, sorediis destitutus, medulla KOH non reagente, hypothallo nigricante. Apothecia inter areolas sita, thallum non superantia, lat. 0.3—0.4 mm, basi non constricta. disco plano, nigro, nudo, opaco, laevigato, vel subcorroso, margine indistincto. Hypothecium fusconigrum, hyphis erectis. Epithecium aeruginoso- aut partim subolivaceo-nigricans. Paraphyses arcte cohaerentes, crebre septatae. Ascii clavati. Sporae 8:næ, distichæ, ellipsoideæ oblongæve, long. 0.019—0.025, crass. 0.009—0.011 mm.

*Distr.* N.: Supra saxa littoralia aviaria in ins. Blåskär in Ingå (W. Brenner).

Affinis est *L. fuscocinerae*, sed sporis majoribus, hypothecio obscuriore et thallo tenuiore ab ea differens. Non satis bene evoluta, quare mihi adhuc dubia videtur, sed oblivioni non tradenda. Thallus KOH parum reagens, nec addito  $\text{CaCl}_2\text{O}_2$  reagens, strato corticali ex apicibus clavatis, obscuratis, constipatis hypharum formato instrutus, hypothallo nigricante parce ad ambitum et inter areolas conspicuo. Apothecia non aspicilioidea. Hymenium circ. 0.090 mm crassum. Paraphyses sat bene gelatinosae, p. p. leviter constrictae articulatae, parce ramoso-connexae, crass. 0.001—0.005 mm, apice clavato, obscurato, crass. 0.003—0.004 mm. Gonidia cystococcaceae, majora minoraque, globosa et subglobosa, raro autosporas circ. 6 continentia.

### 32. **L. intumescens** (Floerke) Nyl.

Herb. Lich. Par. II (1855) n. 58, Prodr. Lich. Gall. (1857) p. 373 (127), Lich. Seand. (1861) p. 231; Th. Fr. Lich. Scand. II (1874) p. 528; Arn. Lieh. Tirol XXIII (1887) p. 92, XXV (1893) p. 367,

XXVIII (1896) p. 120; Hue Addend. II (1888) p. 209; Zopf Hedw. 1896 p. 333, 335; Zahlbr. Cat. Lich. Un. III (1925) p. 601. *Lecidea petraea* var. *intumescens* Floerk. apud Flot. Fl. 1828 p. 690. *L. (atro-alba)* var. *intumescens* Flot. Lich. Schles. (1829) p. 8 (n. 175). *L. confervoides* ζ *intumescens* Schaeer. En. Lich. Eur. (1850) p. 113. *L. insularis* Nyl. N. Bot. Not. 1852 p. 177, tab. I f. 8 b; Tuck. Syn. North Am. Lich. II (1888) p. 76. *Lecidella Koerb.* Syst. Lich. Germ. (1855) p. 239, Par. Lich. 3 Lief. (1861) p. 202. *Nesolechia intumescens* (Rehm) Sacc. Syll. Fung. XVIII (1906) p. 171.

*Exs.* Flot. Lich. Schles. (1829) n. 175. — Leight. Lich. Brit. Exs. V (1854) n. 161. — Nyl. Herb. Lich. Par. II (1855) n. 58. — Hepp Flecht. Eur. V (1857) n. 258. — Mudd Lich. Brit. Exs. II (1861) n. 174. — Anzi Lich. Langob. Exs. VIII (1863) n. 330. — Rabenh. Lich. Eur. XXVII (1865) n. 749. — Erb. Cr. Ital. XXVIII (1866) n. 330 (1390). — Lojka Lich. Hung. Exs. II (1882) n. 76 (hb. Vain.). — Arn. Lich. Exs. (1882) n. 942 (hb. Vain.), 1658 (hb. Nyl.). — Zwackh Lich. Exs. (1882) n. 724 (hb. Vain.). Sec. Arn. Lich. Fränk. Jur. (Fl. 1884) p. 160.

Thallus primum parasiticus supra thallum *Lecanorae*, areolatus et verrucosus, modice incrassatus aut crassus, areolis verrucosis, verrucis 0.3—0.15 mm latis, fere contiguis, cinereo-fuscescentibus, sorediis destitutus, medulla KOH non reagente, hypothallo nigro limitatus. Apothecia thallum non superantia, crebra aut parce nonnulla conferta, lat. 0.3—0.7 mm, basi non constricta, disco plano, nigro, nudo, laevigato, margine tenuissimo aut demum indistincto, nigro, nudo. Hypothecium fuscescens, in parte superiore hyphis erectis. Peritheciun fusco-fuligineum. Epitheciun fuscum. Ascii clavati. Paraphyses arcte cohaerentes, parce ramoso-connexae, crebre articulatae. Sporae 8:næ, distichæ, ellipsoideæ et subglobosæ, long. 0.007—0.012, crass. 0.005—0.006 mm.

*Distr.* Locis apricis supra rupes et scopolos graniticos (gneissaceos) et syeniticos in partibus meridionalibus et mediis rara in Fennia. Al.: Pantsarnäs in Geta (K. Linkola), Kallas (A. Wahlberg). Ab.: Vittakari prope Aboam (Räsänen). Kultaranta (Vain., Räsänen). N.: Somerikonvuoret in Suursaari v. Hoglandia (Vain.), Degerö prope Helsingforsiam (Vain.), Munkkulla in Kyrkslätt (A. Kullhem). Ta.: Tammela (Kullh.), Sääksmäki (Kullh.), Kalkkinen in Asikkala (F. Silén, Norrl. Bidr. Sydöstr. Tav. Fl. p. 191). KLad.: Linnamäki in Kurkijoki (V. Räsänen). KOn.: Klimski (Kullh., »*L. insularis*» Nyl. Lich. Lapp. Or. p. 186), »supra saxa dioritica locis apricis ad

Sunnu, Schungu et Asheb» (»*L. insularis*« Norrl. Fl. Kar. Oneg. II p. 44).

Supra *Lecanoram sordidam* et sec. Zopf (Hedwigia 1896 p. 335) raro etiam supra *Lecanoram sulphuream* primum crescit, sed matricem lecanorinam demum destruit, ita ut *Lecanora* tantum substratum organicum emortuum nigricans inter rupem et *Lecideam intumescensem* bene vigentem format. Ad ambitum partes novellae thalli et hypothallus niger *L. intumescensis* saepe supra thallum adhuc vigentem *Lecanorae* observatur. Restat perscrutari, an etiam gonidia e thallo matricis usurpet, sicut *Arthonia physciae* facit (quod distincte observavi et in Lich. Exp. Vegae Pitlekai p. 153 descripsi). — Thallus saepe maculas rotundatas in thallo *Lecanorae sordidae* formans, verrucis non pruinosis, parum nitidis, medulla jodo non reagente. Apothecia saepe angulosa difformiave, lateribus verrucarum thalli affixa, inter verrucas sita, disco haud distincte nitido. Hymenium jodo non aut levissime caerulescens, dein fulvescenti-rubescens. Sporae guttulas oleosas suepe continententes. Gonidia cystococcaceae, globosa, vulgo simplicia, interdum 6 autosporas continentia.

### 33. *Lecidea furvella* Nyl.<sup>1)</sup>.

Nyl. apud Mudd Manual (1861) p. 207. Th. Fries Lich. Scand. II (1874) p. 530. Vainio Adj. Lich. Lapp. II (1883) p. 84. Brenner Hoglands Lafvar (1885) p. 110. Elenkin Lich. Flor. Ross. Med. III—IV (1911) p. 411. A. L. Smith Mon. Brit. Lich. (1926) p. 103. Zahlbr. Cat. Lich. Un. vol. III (1925) p. 578. *Lecidea furvula* Nyl. Addenda nova, Flora (1866) p. 418. *Lecidea spongiosula* Nyl. Addenda nova, Flora 1867 p. 372. Brenner Hoglands Lafvar (1885) p. 118.

Tab. III, fig. 2.

Exs. Magnusson Lich. sel. scand. (1927) No. 11.

Planta interdum supra thallum aliorum lichenum crescens. Thallus effusus, crassus vel crassiusculus, laxe adhaerens, mollis, diffracto-areolatus, areolae diam. 0.3—0.7 mm, rotundatae vel crenulato-angulatae, verrucosae, *granulato-furfuraceae* vel isidioideae, facile deinde pro parte decorticatae, opacae, obscure olivaceo-fuscae vel nigrescentes, madefactae immutatae.

Saepe sterilis. Apothecia diam. 0.4—0.7, rarius usque ad 1 mm, adpressa et late adfixa, sed thallum superan-

<sup>1)</sup> By B. Lyngé.

tia, crenata vel varie angulata. Discus planus, ater, epruinosus, laevigatus vel deinde plus minusve sebrosus, margine elevato, flexuoso, nitido, persistenti circumdatus. Excipulum nigricans, cum hypothecio confluens, hypothecium sordide fusco-nigricans. Hymenium 100—120  $\mu$  altum, pallide fuscescens, superne fusco-fuligineum. Epithecum granulosum. Paraphyses arcte cohaerentes, valde indistinctae, crebre divergenter ramosae, versus apicem leviter solum incrassatae. Asci clavati, 16—20  $\mu$  crassi, octospori. Sporae (saepe late) ellipsoideae, 10—14  $\times$  6—7  $\mu$  (Th. Fries Lich. Scand. p. 530: 11—16  $\times$  6—9  $\mu$ , Vain. Adj. Lich. Lapp. p. 84: 10—11  $\times$  6  $\mu$ ).

Pycnides ignota.

Medulla J $\ddot{\text{v}}$ , KOH  $\ddot{\text{v}}$ , CaCl<sub>2</sub>O<sub>2</sub>  $\ddot{\text{v}}$ . Hymenium J e caeruleo fuligineum vel sordide obscure vinosum. Hypothecium KOH fuscescens, etiam cum hypothecio.

*Distr.* In lateribus saxorum duriorum locis apricis ventosis crescit. Ostrob. in regione infralapponica ad Lapinsalmi et Selkäsaari in par. Kuhmo (Vain.). Simpsiö in Lapua (Räsänen). Kuus: in regione subalpina montium Ukonvaara, Nuorunen et Mänty-tunturi (Vain.). Lapp. Inar.: in regione pinifera in monte Ruoptuivaara (Vain.). Tavastia austr.: Evois (Norrl.) et Luhanka (Vain.). Nylandia: Helsingfors (Lång), Kyrkslätt (Kullh., Lång.). Karelia bor.: Nurmes (Vain.). Karelia austr.: Hogland (Brenner). Karelia oneg.: Tiudie (Norrl.).

#### 34. *L. trochodes* (Tayl.) Cromb.

Lich. Brit. (1870) p. 94; Leight. Lich. Great Brit. (1871) p. 257, 3 ed. (1879) p. 250; Th. Fr. Lich. Scand. II (1874) p. 531; Vain. Adj. Lich. Lapp. II (1883) p. 83; Harm. Cat. Lich. Lorr. (1898) p. 398; Elenk. Lich. Ross. Med. 3—4 (1911) p. 411; Zahlbr. Cat. Lich. Un. III (1925) p. 711. *Opegrapha saxigena* var. *trochodes* Tayl. ex Leight. in Ann. Mag. Nat. Hist. ser. 2, XIII (1854) p. 93. *Rimularia limborina* Nyl. Fl. 1868 p. 346; Hue Addend. II (1888) p. 312. *Lecidea limborina* Lamy Bull. Soc. Bot. Fr. (1878) p. 457; A. L. Smith Mon. Br. Lich. II (1911) p. 81. *Lecidea inconcinna* Nyl. Fl. 1872 p. 357; Hue Addend. II (1888) p. 188.

*Exs.* Havaas Lich. Norv. Exs. (1914) n. 471 (var. *nigrita* Th. Fr., Mus. Fenn.).

Thallus tenuissimus aut modice incrassatus aut sat crassus, vulgo areolatus, areolis contiguis aut dispersis, planis aut depresso-convexus, fuscescens aut cinerascentibus (aut nigricantibus sec. Th. Fr.) aut albidis, opacis, sorediis destitutus, hypothallo nigro plus minus conspicuo. Apothecia dispersa aut raro crebra, lat. 0.2—0.5 mm, nigra, nuda, opaca, disco rimaeformi-annulari inter marginem et columellam vel excrescentiam hypotheciale leviter prominentem, margine incurvo, modice incrassato, vulgo prominente, saepe leviter flexuoso vel suberenato. Hypothecium fuscescens aut rubricoso-fuscescens. Epitheciun fuscescens (aut raro oliveo-fuscescens). Paraphyses gelatinosae, parce evolutae, tubulis tenuissimis, ramoso-connexis. Sporae ellipsoideae, long. 0.012—0.016 (—0.022), crass. 0.006—0.010 (—0.013) mm (sec. Nyl. long. 0.018—0.030, crass. 0.011—0.016 mm), saepe demum fumoso-obscuratae aut nigricantes.

Var. *limborina* (Nyl.) Vain. *Rimularia limborina* Nyl. Fl. 1868 p. 347; Hue l. c. *Lecidea subgyratula* Nyl. Fl. 1873 p. 296; Hue l. c. p. 212; A. L. Smith Mon. Brit. Lich. II (1911) p. 82. *L. trochodes* var. *subgyratula* Vain. Adj. Lich. Lapp. II (1883) p. 83. *L. inferior* f. *subgyrosa* Nyl. in Norrl. Ber. Torn. Lapp. (1873) p. 339 (nomen nudum); Stizenb. Ind. Lich. Hyperb. (1876) p. 46.

Thallus tenuissimus, fuscescens aut nigrescens aut cinerascens.

*Distr.* Al.: Ad rupem graniticam in Badhusberget in Mariehamn (Vain., f. *nigrita* Th. Fr.). N.: Ad rupem porphyricam in Kotikallio in Hoglandia (»*L. trochodes*« sec. Nyl. in Brenner Bidr. Hogl. Lafv. p. 105). Ta.: Tolsola in Tammela (A. Kullhem sec. Th. Fr. l. c.). Kuus.: Ad rupem dioriticam in regione subalpina montis Nuorumen (»v. *subgyratula*« Vain. l. c.). LKem.: In monte Sammaltunturi in Kittilä (»*L. inferior* f. *subgyrosa*« sec. Nyl. in Norrl. Ber. Torn. Lapp. p. 339).

Apothecia adnata, basi non constricta, columella centrali, nigro, prominente aut interdum discum non superante. Hypothecium fuscescens, KOII non reagens, hyphis sat irregulariter contextis. Peritheciun fusco-fuligineum, KOII non reagens. Hymenium circ. 0.070 mm crassum, jodo sat dilute caerulescens, dein intense vinose rubens. Epitheciun fuscescens vel fusco-nigrum, KOII non reagens. Ascii late clavati aut subventricosi, in apice membrana bene aut modice incrassata. Sporae 8:nae, distichae, ellipsoideae aut p. p. subglobosae, long. 0.012—0.016, crass. 0.006—0.009 mm aut subglobosae, long. 0.011 et crass. 0.009 mm (aut sec. Nyl. etiam majores, »long.

0.018—0.030, crass. 0.011—0.018 mm» in »*L. inferiore* f. *subgyroza* Nyl.» in n. 13078 et 13079). Conidia »cylindrica, recta, long 0.0035—0.0045, crass. 0.0005—0.0006 mm» (sec. adn. Nyl. in n. 13078). Gonidia globosa, diam. circ. 0.010—0.012 mm, cystococcaceae.

Var. *eupsoides* Vain. Adj. Lich. Lapp. II (1883) p. 83. Zahlbr. Cat. Lich. Un. III (1925) p. 711.

Thallus sat crassus, areolatus aut rimoso-areolatus, fusco-nigricans.

*Diskr.* Kuus.: Ad rupem dioriticam in reg. subalp. montis Ii-vaara.

Thallus areolis contiguis, vulgo planis, opacis, partim tenuior et subcontinuus (status in v. *limborinam* transiens). Apothecia primum innata, dein emergentia adnataque, basi non constricta, partibus obscuratis rubricoso-fuscescentibus aut subpurpureo-fuscescentibus, KOH distinctius purpureis. Hypothecium sat irregulariter contextum. Hymenium circ. 0.060 mm crassum, jodo dilute caerulescens, dein vinose rubens. Ascii sat late clavati. Sporae 8:nae, distichae, ellipsoideae, long. 0.012—0.022, crass. 0.007—0.013 mm, decoloratae aut demum fumoso-obscuratae nigricantesve.

*Obs.* *Lecidea trochodes* var. *Hardangeriana* Vain. (Havaas Bergens Museums Aarbog 1909 n. 1, p. 30) thallo crasso aut sat crasso, areo-lato-disperso aut rimuloso, albo, opaco, KOH non reagente, apothecis adnatis, demum basi leviter constrictis, habitu sicut in *L. trochode*, hypothecio fusco, KOH non reagente, epithecio olivaceo aut fuscescente, KOH non reagente, paraphysibus increbre ramoso-connexis, gelatinosis, sporis  $16 \times 7 \mu$ , instructa est. Ad Granvin in Norvegia a J. J. Havaas collecta est.

### 35. *L. griseonigricans* Vain.

Adj. Lich. Lapp. II (1883) p. 111; Oliv. Bull. Géogr. Bot. XXV (1915) p. 118, 170; Zahlbr. Cat. Lich. Un. III (1925) p. 596.

Tab. IV, fig. 2.

Thallus sat tenuis aut modice incrassatus, crebre areolato-diffractus, areolis circ. 0.15—0.25 mm latis, angulosis, contiguis, planis, fuscescentibus aut obscure cinerascentibus (aut alutaceo-pallescentibus in f. *Repolensi*), opacis, non pruinosis, laevigatis, hypothallo nigricante, bene distincto. Apothecia sat crebra, primum thallo immersa, jam primo immarginata, disco demum prominente, convexo, nigro, nudo, lat. 0.3—0.8 mm. Hypothecium comparate crassum,

fusco- aut subrubricoso-nigricans, in parte superiore hyphis suberectis. Perithecium tenue, extus fusco-nigricans. Epithecum fusco- aut olivaceo-nigricans. Paraphyses arcte cohaerentes, sat crassae, leviter gelatinosae. Sporae ellipsoideae aut breviter ellipsoideae, long. 0.007—0.010, crass. 0.004—0.006 mm.

*Distr.* Kb.: Ad saxa dioritica littoralia in ins. Kynsisaari lacus Piellisjärvi (Vain. l. c.). Kuus.: Ad saxa subinundata dioritica in rivulo Kiekkipuro prope Paanajärvi (Vain. l. c.).

*Buelliam atralam* in memoriam revocans, sed affinis *L. extenuatae*. Thallus sorediis destitutus, nec jodo, nec KOH, nec  $\text{CaCl}_2\text{O}_2$  reagens. Apothecia KOH non reagentia, basi non constricta, disco laevigato, leviter nitido aut opaco. Hypothecium fusco-nigrum aut passim parce subrubricoso-fusconigrum, hyphis conglutinatis, in parte superiore sat erectis, in parte inferiore sat irregulariter contextis, hypothecium subhymeniale rufescens, tenuissimum, parum distinctum. Perithecium fusco-nigrum, crass. 0.030—0.040 mm. Hymenium 0.040—0.050 mm crassum, jodo caeruleescens, ascis impure vinoze rubentibus. Paraphyses simplices et p. p. parce furcatae, crass. 0.0015—0.0017 mm, apicibus parum incrassatis, gelatina obscurata obvolutis clavam 0.0025—0.004 mm crassam formantibus. Asci clavati. Sporae 8:nae, distichae, decoloratae, simplices.

F. *Repolensis* Vain. Thallus alutaceo-pallescens.

*Distr.* Kb.: Ad rupem dioriticam in littore lacus Koroppi in Repola (in Karelia Onegensi) a. 1875 legi.

Ob colorem thalli est quasi autonoma species, sed in fissura rupis iisdem thallus continuatus colorem cinerascentem obtinuit, transitum in *L. griseonigricantem* indicans. Etiam *L. Salakuntensem* in memoriam revocans, sed apotheciis majoribus ab ea differens.

### 36. *L. plumbeoatra* Vain.

Adj. Lich. Lapp. II (1883) p. 82; Oliv. Bull. Géogr. Bot. XXV (1915) p. 166; Zahlbr. Cat. Lich. Un. III (1925) p. 671.

*Exs.* Malme Lich. Suec. Exs. XXXVIII (1925) n. 947.

Thallus sat tenuis, areolatus, areolis minutis, circ. 0.15—0.3 mm latis, angulosis, contiguis, planis, cinereis, opacis, non pruinosis, laevigatis, hypothallo nigro parum conspicuo. Apothecia crebra aut sat crebra, thallo immersa, jam primo immarginata, disco demum prominente, convexo, nigro, nudo, opaco, lat. 0.3—0.5 (—0.7) mm. Hypothecium com-

parate crassum, fuscescenti- et subrubricoso-nigricans, in parte superiore hyphis suberectis. Perithecium tenue, fuligineum. Epithecum aeruginoso-nigricans. Paraphyses arcte cohaerentes, sat crassae, leviter gelatinosae. Sporae oblongae aut ellipsoideae, long. 0.009—0.012, crass. 0.004—0.005 mm.

*Distr.* Kb.: Ad saxa granitica littoralia in ins. Kynsisaari lacus Pielisjärvi (Vain. l. c.).

Proxime affinis est *L. griseonigricanti*, sed non sit ejus subspecies aut variatio, ab ea differens thallo cinereo, hypothallo parum conspicuo, epithecio aeruginoso-nigricante et hypothecio KOH purpurascente. Thallus sorediis destitutus, nec jodo, nec KOH reagens. Apothecia basi non constricta, disco laevigato. Hypothecium inferne hyphis irregulariter contextis, KOH primum pulchre purpurascens, hypothecium subhymeniale tenue, rufescens aut subrubricosum, KOH purpurascens. Perithecium aeruginoso-fuligineum, KOH sordidescens. Hymenium circ. 0.050 mm crassum, »jodo intense caerulescens, dein ascis vinose rubentibus» (Vain. l. c. p. 83). Paraphyses simplices, crass. 0.0015 mm aut paullo tenuiores, apice aeruginoso-nigricantes, 0.003 mm crasso, increbre septatae, gelatina hymeniali in KOH turgescente. Epithecum KOH subolivaceum. Ascii clavati, in apice membrana sat bene incrassata. Sporae 8:nae, distichae, simplices, decolores.

### 37. *L. fuscoferruginea* Vain. (n. sp.).

Thallus crassus aut sat crassus, areolato-diffractus, areolis circ. 2.5—0.2 mm latis, angulosis, contiguis, planis, subferrugineo-fuscescentibus, opacis, non pruinosis, hypothallo indistincto. Apothecia partim sat crebra, primum thallo immersa, jam primo immarginata, demum prominentia aut vulgo disco solo prominente, convexo, nigro, nudo, lat. 0.3—1.2 mm. Hypothecium comparate crassum, fusco-nigrum, partim rubricoso-nigricans, in parte superiore hyphis erectis. Perithecium tenue, fusco-nigrum. Epithecum fusco-nigrum, tenue, partim dilutescens. Paraphyses arcte cohaerentes, sat crassae, leviter gelatinosae. Sporae ellipsoideae oblongaeve, long. 0.010—0.014, crass. 0.004—0.006 mm.

*Distr.* Kb.: Ad lapidem graniticam in littore cataraetae prope Lieksa (Vain. 1875).

Colore thalli crassioris et hypothallo non distincto differt a *L. griseonigricante*. — Thallus sat laevigatus, demum substrato laxe

affixus, nec jodo, nec KOH reagens, sorediis destitutus. Apothecia KOH non reagentia, basi non constricta, disco laevigato, opaco. Hypothecium hyphis conglutinatis, in parte inferiore irregulariter contextis, hypothecium subhymeniale vix distinctum. Peritheciun extus fusco-nigrum, intus dilutescens, hyphis radiantibus, tenuibus, membranis modice incrassatis, conglutinatis, cavitatibus angustis, oblongis. Hymenium circ. 0.050 mm crassum. Paraphyses simplices, crass. 0.0015—0.002 mm, apicibus non incrassatis. Gonidia cysto-cocceae, tantum simplicia visa.

### 38. **L. Keimioënsis** Vain. (n. sp.).

Thallus tenuis, areolatus, areolis minutis, circ. 0.2—0.4 mm latis, angulosus, contiguis aut raro partim leviter dispersis, planis aut sat planis, medio rufesceni-pallidis, margine vulgo angustissime cinereo-limbatis subpruinosisque, hypothallo nigro passim inter areolas conspicuo. Apothecia dispersa, thallo immersa, lat. 0.4—0.7 mm, disco nigro, nudo, opaco, margine tenuissimo, integro, obscure cinerascente, distincto aut deficiente. Hypothecium fusco-fuligineum, superne hyphis suberectis, inferne irregulariter contextis, hypothecium subhymeniale albidum, hyphis suberectis. Peritheciun fuligineum. Epitheciun aeruginoso- aut partim (submorbose) fusco-fuligineum. Paraphyses sat laxe cohaerentes, parum gelatinosae, tenuissimae, apice clavato-incrassatae. Sporae ellipsoideae, long. circ. 0.010—0.012, crass. 0.005—0.006 mm (parce visac).

LKem.: Ad rupem dioriticam in Keimiötunturi in Kittilä (L. Kari).

Praesertim apotheciis majoribus differt a *L. exrenualae*. Thallus sorediis destitutus, nec jodo, nec  $\text{CaCl}_2\text{O}_2$ , nec KOH reagens. Hypothallus interdum rimulosus (sicut in *L. praenubila*). Apothecia non emergentia, basi non constricta, KOH parum reagentia, lecideina et perithecio fuligineo instructa. Hymenium circ. 0.045—0.050 mm crassum, jodo intense persistenter caerulescens. Paraphyses nequidem in KOH distinctius gelatinosae, simplices, haud distincte septatae, 0.001 mm crassae, apice vulgo aeruginoso-fuligineo-clavatae, clava circ. 0.003—0.005 mm crassa. Ascii clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae.

Vainio had just recognized this plant as a new species, and named it when he was brought to his death-bed.

Habitually the plant resembles *Lecidea extenuata*, from which it differs in its larger areolae, more elevated and larger apothecia, and especially in its dark hypothecium. The editor refers it to the *Lecidea fuscoatra* section (Th. Fr. Lich. Scand. II p. 525). It differs from *Lecidea fuscoatra* in its smaller and more appressed apothecia, its thinner thallus, and smaller areolae. The editor was unable to obtain any reaction with  $\text{CaCl}_2\text{O}_2$ .

### 39. *L. Mosigii* (Hepp) Anzi.

Manip. Lieb. (1862) p. 27 (156); Jatta Fl. It. Crypt. Lieb. (1911) p. 600 *Lecidella Mosigii* Koerb. Par. Lieb. 3 Lief. (1861) p. 201 (*Biatora* Hepp); Arn. Lich. Tirol XIII (1874) p. 10 (240), XIV (1875) p. 443. *Lecidea tenebrosa* \**obscurissima* Nyl. Cirea Lich. Arm. Delph. (1863) p. 399. *L. obscurissima* Nyl. Fl. 1872 p. 553, Obs. Lieb. Pyr. Or. (1873) p. 24, Lich. Pyr. Or. (1891) p. 48; Lamy Exp. Lich. Caut. (1884) p. 86; Arn. Lich. Tirol XXIV (1889) p. 255. *Lecidea impavida* Th. Fr. Lich. Scand. II (1874) p. 529 (sec. Jatta l. c.), conf. infra.

Exs. Anzi Lich. Lang. Exs. IV (1861) n. 153 (sec. Stizenb. Lieb. Helv. p. 194 et Jatta l. c.). — Arn. Lich. Exs. (1873) n. 552 (hb. Nyl.), (1880) n. 843 (hb. Vain.), (1893) n. 1586 (hb. Vain.). — Zwackh Lich. Exs. (1881) n. 667 (hb. Vain.).

Thallus sat tenuis, areolato-diffractus, areolis circ. 0.2—0.3 (—0.7) mm latis, angulosis, contiguis, planis, obscure cinereis, opacis, non pruinosis, laevigatis, sorediis destitutus, hypothallo nigro. Apothecia dispersa aut partim crebra, primum thallo immersa, dein emergentia adnatae, basi non constricta, lat. 0.3—0.4 (—0.7) mm, disco plano aut demum convexo vel depresso-convexo, nigro, nudo, opaco, laevigato, immarginato aut raro primum margine tenuissimo, nigro, opaco, integro, non (aut leviter) prominente. Hypothecium rubricoso-rufescens, hyphis erectis. Epithecum aeruginoso-fuligineum. Paraphyses arête cohaerentes. Asci clavati. Sporae ellipsoideae, »long. 0.009—0.012, crass. 0.006—0.008 mm» (sec. adn. Nyl.).

Distr. Vainio had not stated its distribution in the manuscript. The editor found it impossible to do it after his herbarium, i. a. for fear of confusion with *Lecidea fuscoatra* f. *Mosigii*.

In specimine orig. *L. obscurissimae* (e La Grave, n. 14054 in hb. Nyl.) apothecia demum adnata, disco demum convexo, margine

primum tenuissimo, dein mox excluso. Paraphyses simplices, leviter gelatinosae, sat increbre septatae, crass. 0.0015—0.001 mm, apice leviter incrassatae. Ascii in apice membrana modice incrassata. Hymenium crass. 0.006 mm. Sporae 8:næ, distichæ. In specim. e Pic du Midi, n. 14052 »hymenium jodo intense caerulescens, sterigmata 2—3-articulata, conidia bacilliformia, recta, long. 0.0035, crass. 0.0007 mm» (sec. adn. Nylandri): In ambobus thallus humidus obscure cinereus, nec fuscescens. — *L. Mosigii* in Zwackh Lich. Exs. n. 667 (in alpibus Bormensis ab Anzi coll.) habitu omnino similis est *L. obscurissimae* Nyl. Diversa est *L. famosa* (*L. fuscoatra*) Ach. var. *Mosigii* Ach. Lich. Univ. (1810) p. 157. — In Arn. Lich. Exs. n. 552 (»*Lecidella Mosigii*«) areolæ thalli albidae (humidae glaucescenti-cinereo-albidae), depresso-convexæ, supra hypothallum nigrum dispersæ, jodo non reagentes, in strato corticali tenuissimo hyphis erectis, constipatis, apice olivaceis aut pallidis, strato hyalino subdestructæ subevanescente obductæ. Peritheciū olivaceo-fuligineum in apotheciis junioribus distinctum, hyphis radiantibus, tenuibus. Epitheciū sordide aeruginoso- aut subolvaceo-fuligineum. Hypothecium rufescens aut subfulvo-rufescens. Nominetur f. *somphoteriza* Vain.

*Obs. 1.* *Lecidea impavida* Th. Fr. Lich. Spitsb. (1867) p. 42, Lich. Scand. II (1874) p. 529, »thallo nigricante vel obscure badio, subnitido« descripta, *Lecideae Mosigii* non congruens.

*Obs. 2.* *Aspicilia moriooides* Blomb. in Arn. Lich. Exs. (1881) n. 904 (in hb. Nyl.), (1884) n. 1044, (1898) n. 1044 b, Lich. Tirol XXII (1886) p. 78, XXIII (1887) p. 93, facie externa subsimilis est *Lecideae Mosigii*, sed ab ea distinguitur thallo saltem humido aeneo-rufescente, secco p. p. cinerascente, p. p. aeneo-rufescente, apotheciis constanter thallo immersis, hypothecio pallido aut albescente (hypothallo fuscescenti imposito), hymenio superiore pulchre aeruginoso, epithecio aeruginoso-fuligineo.

#### 40. *L. extenuata* Vain.

Adj. Lich. Lapp. II (1883) p. 78; Oliv. in Bull. Géogr. Bot. XXV (1915) p. 111; Zahlbr. Cat. Lich. Un. III (1925) p. 577.

Tab. I, fig. 3.

Thallus tenuis, areolatus, areolis minutis, circ. 0.2—0.3 mm latis, angulosis, contiguis aut raro partim dispersis, leviter concavis aut planis, fuscescentibus aut subtestaceis aut raro subcinerascentibus, margine saepe angustissime caesio-cinereo, hypothallo nigro passim inter areolas conspicuo. Apothecia crebra aut dispersa, thallo immersa, immarginata aut pri-

mum tenuissime marginata, disco nigro nudoque aut tenuissime pruinoso, plano, circ. 0.1—0.15 mm lato. Hypothecium fuscescens aut parte superiore albidum, hyphis irregulariter contextis, hypothecium subhymeniale albidum, hyphis suberectis. Peritheciun aeruginoso- aut olivaceo-fuligineum, KOH non reagens. Epithecium aeruginoso-fuligineum aut aeruginoso-nigricans. Paraphyses arcte cohaerentes, sat crassae, leviter gelatinosae. Sporae ellipsoideae, long. 0.008—0.009, crass. 0.005 mm.

*Distr.* Ab.: Ispoinen in Kaarina (Vain.), Katarinanlaakso in Kaarina (Vain.). Li.: Suoselkä in rupe granitica (Vain.).

In stirpem *L. Mosigii* pertinet. Thallus sorediis destitutus, nec jodo, nec KOH reagens. Apothecia non emergentia, basi non constricta, KOH non reagentia, lecideina et perithecio fuligineo instructa, quamquam habitu aspicilioidea. Hymenium 0.040—0.045 mm crassum, jodo caerulescens, dein vino rubens (sec. Vain. l. c.). Paraphyses leviter gelatinosae, simplices et p. p. parce ramoso-connexae, crass. 0.0015 mm, apice 0.002—0.003 mm. Asci clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae, simplices.

#### 41. *L. Satakuntensis* Vain. (n. sp.).

Thallus sat tenuis, areolato-diffractus, areolis circ. 0.2—0.25 (—0.5) mm latis, angulosis aut difformibus, contiguis, planis, griseo-rufescensibus, opacis, non pruinosis, laevigatis, sorediis destitutus, hypothallo indistincto. Apothecia partim crebra, thallo immersa aut demum parum prominentia, basi non constricta, lat. 0.25—0.35 mm, disco plano aut planiusculo, thallum vulgo aequante, nigro, nudo, opaco, laevigato, immarginata aut raro margine nigro, tenuissimo, subinconspicuo. Hypothecium rubricoso-rufescens, in parte superiore hyphis erectis. Epithecium subolivaceo-nigricans. Paraphyses arcte cohaerentes. Sporae »ellipsoideae, long. 0.009—0.011, crass. 0.005—0.006 mm» (sec. adn. Nyl.).

*Distr.* St.: Ad saxum graniticum in Siikainen (A. J. Malmgren, Fört. Lafv. Satak., 1861, p. 83: »*L. intumescens*» sec. det. Nyl.).

Hoc nomine designavi plantam a Nyl. in Lich. Scand. (1861) p. 231 his verbis commemoratam: »*L. intumescens* forma thallo aequali, apotheciis innatis, lecta a cl. A. J. Malmgren», de qua in Th. Fr. Lich. Scand. II (1874) p. 529 dicitur: »Vix hue» (ad *L. intume-*

*sceniem) »pertinet, sed non nihil abnormis videtur». Nihil abnormis ostendit, sed planta proxima *Lecidea Mosigii* Anzi, colore thalli griseo-rufescente ab ea differens. Peritheciū rubricoso-fuligineum, hyphis tenuibus, conglutinatis. Hymenium circ. 0.040 mm crassum, »jodo caerulescens, dein violascens» (sec. adn. Nyl.). Paraphyses simplices, increbre septatae, non constrictae, apice parum incrassatae, non distinete gelatinosae, sat tenues. Ascī clavati. Sporae 8:næ, distichæ, simplices, decolores, guttulam oleosam continentæ (sec. adn. Nyl.). Thallus strato corticali non evoluto, medulla KOH non reagente. Gonidia cystococcaceæ, globosa, interdum autosporas numerosas continentia.*

*Obs.* *Lecidea umbonatula* Nyl. Fl. 1872 p. 365 et in Brenner Bidr. Hogl. Lafv. (1885) p. 106, Hue Addend. II (1888) p. 211 et 336, Zahlbr. Cat. Lich. Un. III (1925) p. 714, proxima est *Lecanoræ (Aspiciliae) Bockii* Rodig.

#### Sect. *Lecidea atrobrunnea*.

Thallus areolatus, plus minusve intense fuscus, hypothecium fuscescens vel fuligineum. Medulla J caerulescens. Species saxicolæ.

#### 42. *L. atrobrunnea* (Ram.) Schaer.

Lich. Helv. Spic. III (1828) p. 134, En. Lich. Eur. (1850) p. 109; Fr. Lich. Eur. Ref. (1831) p. 319; Nyl. Prodr. Lich. Gall. (1857) p. 379 (133); Th. Fr. Lich. Arct. (1860) p. 218, Lich. Spitsb. (1867) p. 41, Lich. Scand. II (1874) p. 481; Hue Addend. II (1888) p. 203; Tuck. Syn. North Am. Lich. II (1888) p. 74; Vain. Lich. Cauc. (1899) p. 324, Exp. Antaret. Belge Lich. (1903) p. 33; Zahlbr. Cat. Lich. Un. III (1925) p. 522. *Rhizocarpon atrobrunneum* (Ram.) DC. Fl. Fr. ed. 3, II (1805) p. 367. *Psora atrobrunnea* Mass. Ric. Lich. (1852) p. 92, Arn. Lich. Tirol XXIII (1887) p. 112. *Lecidella Koerb.* Syst. Lich. Germ. (1855) p. 239. *Lecidea fuscoatra*  $\beta$  *gibba* Wahlenb. Fl. Lapp. (1812) p. 473 (sec. Th. Fr.), non Ach. Syn. Lich. (1814) p. 12.

*Exs.* Schaer. Lich. Helv. Exs. XVIII (1842) n. 444 (Lynge). — Rabenh. Lich. Eur. Exs. XV (1859) n. 439 (Mus. Fenn.). — Arn. Lich. Exs. (1888) n. 1390 (»var. *leprosolimbata*», hb. Nyl.).

Thallus crassus aut sat crassus, areolatus, areolis contiguis aut supra hypothallum nigrum dispersis, convexis aut planis, testaceo- aut cinereo-fuscescentibus aut isabellinis, haud raro tenuiter subalbido- aut subcinereo-marginatis,

sorediis destitutus, medulla jodo caerulescente. Apothecia adnata, lat. 1.2—0.6 (—1.5) mm, demum sat crassa aut modice incrassata, basi demum leviter constricta, disco plano aut vulgo demum convexo, nigro, nudo, opaco, margine sat tenui aut modice incrassato, nigro, nudo, opaco, subpersistente aut demum excluso. Hypothecium dilute aut partim intense fuscescens (»aut incoloratum« sec. Th. Fr.), hyphis erectis, conglutinatis. Hymenium superius aeruginosum, epithecio aeruginoso-fuligineo. Paraphyses arcte cohaerentes, leviter gelatinosae. Ascii clavati. Sporae ellipsoideae aut subglobosae, long. 0.007—0.009, crass. 0.003—0.005 mm (»l. 0.008—0.012, cr. 0.004—0.006 mm« sec. Th. Fr.).

*Distr.* LIn.: Supra rupeem dioriticam in reg. subalpina ad Königäs prope Mare glaciale (Vain. Adj. Lich. Lapp. II p. 50). LENONT.: Ad Pietsovaara et Kilpisjärvi in Suecia (Norrl. Ber. Torn. Lappm. p. 339, Th. Fr. L. Sc. II p. 482).

Habitu valde variabilis, plures formas formans, quas hic omittimus, quia in Fennia rarissima est. Thallus areolis circ. 0.6—1.5 (0.2—2.5) mm latis, laevigatis, opacis aut leviter nitidis, angulosis aut rotundatis aut difformibus, interdum demum subsquamaeformibus et lateribus e substrato disruptis vel subadscendentibus, »CaCl<sub>2</sub>O<sub>2</sub> non tinctis« (sec. Th. Fr.), medulla KOH non reagente (Zw. 982), strato corticali circ. 0.100—0.080 mm crasso, ex hyphis formato 0.004—0.006 mm crassis, irregulariter contextis, conglutinatis, crebre rotundato-cellulosis, modice pachydermaticis, decoloratis, apicibus hypharum breviter erectis, constipatis, testaceo-fuscescentibus, superne obducto alio strato decolorato, circ. 0.010—0.005 mm crasso, hyphis subdestructis, conglutinatis, magis pachydermaticis, horizontalibus, cavitatibus angustissimis, oblongis, subdistinctis. Hypothallus plus minus distinctus, nigricans. Apothecia dispersa aut p. p. conferta, interdum etiam hypothallo affixa. Peritheciun extus aeruginoso-fuligineum, intus impure subalbidum, hyphis radiantibus, 0.004—0.005 mm crassis, sat leptodermaticis, conglutinatis, infra hypothecium non continuatum. Hypothecium sat tenue, crass. circ. 0.140 mm, strato thallino impositum gonidiis destituto, demum vulgo bene incrassato, albo, myelohypophico impositum. Hymenium jodo caerulescens, crass. 0.040—0.070 mm. Paraphyses simplices, increbre septatae, crass. 0.0015 mm, apicibus leviter incrassatis (0.003 mm). Ascii in apice membrana modice incrassata. Sporae 8:nae, distichae, simplices, decolores. »Conidia filiformia, recta vel leviter curvata, long. 0.009—0.013 mm« (sec. Th. Fr. Lich. Scand. p. 482).

43. **L. subcinerascens** Nyl.

Flora 1877 p. 228 (non Fl. 1881 p. 540; Hue Addend. II, 1888 p. 224 p. p.). *L. atrobrunnea* \**L. subcinerascens* Nyl. in Brenner Bidr. Hogl. Lafv. (1885) p. 105.

Thallus sat crassus (»crassit. 0.5 vel tenuior» sec. Nyl.), areolatus aut areolato-diffractus, areolis circ. 0.6—1,5 (—0.3) mm latis, contiguis, planis, subverruculoso-inaequalibus, cinereo-fuscescentibus, opacis, sorediis destitutus, medulla jodo caerulescente, KOH partim lutescente, hypothallo indistincto. Apothecia areolis thalli immersa, demum leviter emergentia vel semi-emersa, lat. 1—0.5 mm lata, basi non constricta, disco plano, nigro, nudo, opaco, vulgo laevigato, margine primum inconspicuo, demum vulgo modice incrassato, saepe leviter prominente, integro, nigro, nudo, opaco. Hypothecium fusco-nigrum, hyphis sat erectis, conglutinatis. Epithecum aeruginoso- et subolivaceo-fuligineum. Paraphyses in KOH visae laxe cohaerentes, mediocres, increbre septatae. Asci clavati. Sporae 8:næ, distichæ, ellipsoideæ oblongæve, simplices, decolores, »long. 0.011—0.015, crass. 0.005—0.006 mm» (sec. Nyl.).

*Distr.* N.: Supra saxa syenitica in Somerikongvuoret (Vain.) et in rupibus porphyricis littoralibus in Mustjyrkänvuori in Suursaari (Hoglandia) sec. Brenner I. c. (hoc specimen in Mus. Fenn. non reperi).

Thallus strato obductus decolore, 0.020 mm crasso, ex hyphis subdestructis, conglutinatis, horizontalibus formato, stratum obtengente pallido-fuscescens, apicibus hypharum suberectis, subclavatis, constipatis, pallido-fuscescentibus vel intense pallidis. Verrucae fertiles saepe demum prominentes crassioresque. Perithecum tenue, fuscescens, partim in eodem apothecio pallidum. Apothecia strato myelohyphico destituta. Hypothecium obscuratum medullæ thalli albae, gonidiis destitutae, impositum. Paraphyses crass. 0.0015 mm, simplices, leviter gelatinosae, increbre septatae, non constrictae, apicibus 0.003 mm crassis, obscuratis. Sporas parce vidi 0.008 mm longas, 0.006 mm latas. Gonidia cystococcaceæ. »Sterigmata subarticulata» (fere sicut in *Cladoniis*), conidia »filiformia, recta, long. 0.008—0.01, crass. 0.0005—0.0006 mm» (sec. adn. Nyl.). — Affinitate omnino incerta. Non sit affinis *L. atrobrunneae*. Errore in Hue I. c. ad *Buelliam disciformem* ducta.

44. **L. atrocerina** Vain. (n. sp.).

Thallus crassus aut sat crassus, areolatus, areolis contiguis, convexis aut primum planis, obscure subcinerascentibus, sorediis destitutus, medulla jodo caerulescente, hypothallo nigricante interdum parce conspicuo. Apothecia demum adnata, lat. 0.7—1.5 mm, demum modice incrassata, basi non constricta aut demum leviter constricta, disco primum plano, dein mox convexo, nigro, nudo, opaco, margine sat tenui, nigro, nudo, opaco, non prominente, persistente aut demum subexcluso. Hypothecium hyphis suberectis, conglutinatis, fusco-fuligineum, inferne in stratum thallinum bene incrassatum colore obscurato sensim transiens. Hymenium superius aeruginosum, epithecio aeruginoso-fuligineo. Paraphyses arcte cohaerentes, leviter gelatinosae. Ascii clavati. Sporae ellipsoideae, long. 0.014—0.015, crass. 0.007—0.010 mm (parce visac).

*Distr.* KLad.: Ad saxa granitica in ins. Kotiluoto (L. Kari).

Affinis sit *L. atrobrunneae*, praesertim areolis leviter inaequalibus, subcinerascentibus et strato medullari thalli infra hypothecium sito late obscurato ab ea differens. Thallus areolis circ. 0.5—2 mm latis, angulosus aut difformibus, parum nitidis, non albido-marginatis, medulla KOH parte superiore levissime lutescente. Apothecia dispersa aut p. p. sat crebra aut parce confluentia, primum haud diu thallum aequantia, non superantia. Peritheciun fuligineum aut extus fuligineum et intus anguste subobscuratum, infra hypothecium non continuatum, hyphis conglutinatis. Hymenium jodo caerulescens, circ. 0.100 mm crassum. Paraphyses simplices, parce septatae, crass. 0.002—0.005 mm, apice 0.002—0.003 mm. Ascii clavati, in apice membrana modice incrassata. Sporae simplices, decolorantes.

45. **L. paupercula** Th. Fr.

Lich. Scand. II (1874) p. 482; Vain. Adj. Lich. Lapp. II (1883) p. 51; Nyl. En. Lich. Fret. Behr. (1888) p. 58 (253); Hue Lich. Exot. (1891) p. 135. *Lecidea subfumosa* Vain. Lich. Exp. Vegae Pitlekai (1909) p. 138 (excl. *L. poliocarpa*). *L. aeneola* Zahlbr. Cat. Lich. Un. III (1925) p. 501 (non Vain., quod Zahlbr. errore indicat), conf. infra. Exs.<sup>1)</sup> Havås Lich. Norv. (1902) n. 138. — Malme Lich. Suec. Exs. XV (1913) n. 371. — Suza Lich. Boh.-Slov. Exs. IV (1929) n. 97.

<sup>1)</sup> Exs. by B. Lyngé.

Thallus sat tenuis aut sat crassus, areolatus, areolis dispersis aut contiguis, planis aut leviter concavis aut raro convexis, rufo- vel testaceo-fuscescentibus aut testaceis aut raro cinereo-fuscescentibus, vulgo plus minus distincte cinereo-marginatis, sorediis destitutus, medulla jodo caerulecente, hypothallo nigricante. Apothecia adnata, lat. 0.5—1.3 mm, basi non constricta, disco plano aut raro demum convexo, nigro, nudo, opaco, margine tenui aut sat tenui aut raro sat crasso, nigro, nudo, non aut parum prominente. Hypothecium modice incrassatum, fusco-nigrum aut raro in eodem apothecio superne impure albidum, hyphis erectis. Hymenium superius aeruginosum, epithecio subfuligineo. Paraphyses arete cohaerentes, leviter gelatinosae. Asci clavati. Sporae ellipsoideae oblongaeve, long. 0.010—0.012 (0.007—0.016), crass. 0.005—0.006 mm.

F. Theodori Vain. *Lecidea paupercula* Th. Fr. I. c. Vain. I. c. (excl. var.).

Thallus tenuis aut sat tenuis, areolis rufo-fuscescentibus, vulgo cinereo-marginatis, supra hypothallum nigricantem vulgo dispersis.

*Distr.* In rupibus saxisque praesertim in partibus septentrionalibus territorii. N.: Tvärminne (F. Elfving), Lounatpuoli in Hoglandia (»*L. atrofuscescens*« sec. Nyl. in Brenner Bidr. Hogl. Lafv. p. 106, ster. Kb.: Kalliovaara et pag. Lieksa in Pielisjärvi (vel par. Lieksa), Riihivaara, Piironen, Kopras in par. Nurmes (Vain. I. c.). Ok.: Lammasjärvi in Kuhmo, Kylmälampi, Suomula, Yläjoki, Hossa in Kianta (Vain. I. c.). Kuus.: In reg. subalpina montium Iivaara et Ukonvaara (Vain. I. c.). KKer.: In reg. subalp. montium Kivakka et Päänuorunen (Vain. I. c.), Kolgolaks, Ruanjärvi (N. I. Fellman, »*L. fuscoatra*« Nyl. in Lich. Lapp. Or. p. 160 p. p. sec. Th. Fr. I. c. et hb. Nyl.). LIn.: Köngäs (Vain.). LMur.: Jeretik (H. Hollmén).

Thallus areolis planis et concavis, lat. circ. 0.5—0.2 mm, rotundatis aut angulosis, interdum contiguis. Apothecia dispersa aut p. p. sat crebra, margine vulgo tenui, vulgo persistente, opaco. Hypothecium fusco-nigrum, hyphis congregatis. Peritheciun fusco-nigrum, in margine aeruginoso-fuligineum, hyphis tenuibus, congregatis. Hymenium circ. 0.085—0.065 (—0.100) mm crassum, jodo caerulescens. Paraphyses arete cohaerentes, leviter gelatinosae, simplices, crass. 0.0015—0.001 mm, apice vix incrassatae. Asci clavati, in apice membrana modice incrassata. Sporae distichae, long. 0.010—0.012 (0.007—0.016), crass. 0.005—0.006 mm.

*Obs.* *Lecidella aeneola* Arn. Lich. Tirol X (1873) p. 8 (*Psora subfumosa* f. *aeneola* Arn. l. c. XXI, 1880, p. 131, *Ps. atrobrunnea* f. *aeneola* Arn. l. c. XXIII, 1887, p. 112, XXX, 1897, p. 22), a me non visa, ab Arn. ducta ad *L. atrobrunneam*. In specim. orig. e Rettenstein sec. Arn. medulla jodo fulvescens, quare haec planta a *L. paupercula* et *L. atrobrunnea* differt.

*F. incrassata* Vain. Adj. Lich. Lapp. II (1883) p. 52. *L. aeneola* f. *incrassata* Zahlbr. Cat. Lich. Un. III (1925) p. 501.

Thallus modice incrassatus, areolis contiguis. Apothecia margine sat crasso.

*Distr.* Kuus.: Ad rupem dioriticam in regione subalpina montis Ukonvaara (Vain.).

Medulla jodo caerulescens. Hypothallus nigricans, praesertim ad ambitum parce conspicuus. Apothecia disco plano, margine persistente. Hymenium superius in eodem apothecio aeruginosum et partim fuscescens.

*Obs.* *Psora atrobrunnea* var. *subfumosa* Arn. Lich. Tirol XIV (1875) p. 486 (XXIII, 1887, p. 112, *Psora subfumosa* Arn. Lich. Tirol XXI, 1880, p. 131, XXX, 1897, p. 22, Lich. Exs. Index (1894) p. 11) spectat ad Arn. Lich. Exs. (1873) n. 551 (»*Psora atrobrunnea* sec. Arn.), cuius specimen dextrum ad statum distincte in *L. atrobrunnea* transeuntum pertinet, at specimen sinistrum *L. paupercula* refert, areolis tamen paullo latioribus crassioribusque ab ea differens. Nomine *subfumosae* igitur designari potest *L. atrobrunnea* f. thallo tenuiore instructa. — *Lecidea fuscoatra* Nyl. Fl. 1875 p. 301 sec. specim. orig. n. 15329 a, in Kühthei ab Arn. 1872 collectum, omnino similis est plantae in Zwackh Lich. Exs. (1880) n. 602 (in hb. Nyl. et Vain.) distributae »nomine »*L. subfumosae»), prope Predazzo ab Arn. 1880 collectae, quae a *L. paupercula* f. *Theodori* Vain. areolis thalli differt paullo latioribus, circ. 1—0.3 (—1.5) mm latis, et nominetur *L. paupercula* f. *fuscoatra* (Nyl.) Vain. — *L. paupercula* f. *subfumosa* in Vain. Adj. Lich. Lapp. II (1883) p. 51 commemorata, in reg. subalp. ad Königäs prope Mare Glaciale in LIn. collecta, areolis thalli magis contiguis, minus distincte albido-marginatis descripta, errore olim Lojkae data, nunc mihi deest.*

#### 46. *L. atroocarpoides* Vain.

*Lecidea atroocarpoides* Vain. Adj. Lich. Lapp. II (1883) p. 52; Arn. Lich. Tirol XXIII (1887) p. 86; Zahlbr. Cat. Lich. Un. III (1925) p. 526.

Thallus tenuis, areolatus, areolis supra hypothallum nigrum dispersis, planis, testaceo-rufescentibus, tenuiter sub-

cinereo- aut subalbido-marginatis, sorediis destitutus, medulla jodo caerulescente. Apothecia adnata, lat. 0.8—0.3 mm, basi non aut leviter constricta, disco primum haud diu plano, dein convexo, nigricante, vulgo tenuiter cinerascenti-pruinoso, opaco, margine tenui, vulgo tenuiter pruinoso, parce nigro, opaco, persistente aut demum fere excluso. Hypothecium modice incrassatum, fusco-nigricans, parte subhymeniali tenui albido, hyphis erectis, conglutinatis. Hymenium superius aeruginosum, epithecio fuligineo aut fuscescenti-olivaceo. Paraphyses sat arcte cohaerentes, leviter gelatinosae. Asci clavati aut ventricoso-clavati. Sporae breviter ellipsoideae, long. 0.012—0.016, crass. 0.009—0.012 mm.

*Distr.* Kuus.: Ad rupem graniticam littoralem ad Tavajärvi (Vain.), una cum *Pterygio pannariello*.

Thallo consimilis est *L. pauperculae*, apotheciis tenuiter pruinosis, magis convexis ab ea differens et analoga *L. poliocarpae* Vain. (Lich. Exp. Vegae Pitl. p. 139). Thallus areolis lat. circ. 0.4 (0.2—0.7) mm. Apothecia vulgo hypothallo affixa, dispersa, margine integro, non prominente. Hypothecium aërem inter hyphas non continens. Peritheciun fuscum aut extus subviolaceo-nigricans. Hymenium circ. 0.080—0.100 mm crassum, jodo caerulescens. Paraphyses simplices, crass. 0.0015 mm, apicibus parum incrassatis, increbre septatae. Epitheciun vix distincte granulosum. Asci in apice membrana modice incrassata. Sporae 8:nae, distichae, simplices, decolorantes.

#### 47. *L. Helsingforsiensis* Nyl.

Flora 1881 p. 4, 186, Fl. 1882 p. 457; Hue Addend. II (1888) p. 206; Zahlbr. Cat. Lich. Un. III (1925) p. 596.

*Exs.* Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 335.

Thallus sat crassus aut modice incrassatus, areolatus, areolis contiguis, planis aut plus minus convexis aut raro concavis, testaceo-rufescentibus aut cinereo-luridis, plus minus distincte aut non subcinereo-marginatis, sorediis destitutus, medulla jodo caerulescente, KOH non rubescente, hypothallo nigricante partim limitatus. Apothecia adnata, lat. 0.8—1.3 mm, basi non aut partim leviter constricta, disco plato, demum vulgo convexo, nigro, nudo, opaco, marginē tenui, nigro aut obscure cinerascente, nudo. Hypothecium

modice incrassatum, superne decoloratum aut dilute fuscescens, inferne fuscescens, hyphis erectis. Hymenium superius aeruginosum, epithecio fuligineo. Paraphyses arcte cohaerentes, leviter gelatinosae. Asci clavati. Sporae ellipsoideae oblongaeve, »long. 0.011—0.014, crass. 0.007—0.009 mm» (sec. Nyl.).

*Distr.* N.: In rupibus graniticis locis editioribus, apricis, ventosis ad Helsingforsiam (Norrl. H. L. F. n. 335, Vain.); Loumatpuoli in Hoglandia (ster., »*L. atrofuscens*» sec. determ. Nyl. in Brenner Bidr. Hogl. Lafv. p. 106, Vain. leg.).

Proxime affinis *L. pauperculae*, sed hypothecio ab ea differens et vulgo etiam areolis crassioribus contiguisque et hypothallo minus distincto ab ea recedens. Thallus strato decolorato, circ. 0.010—0.020 mm crasso, ex hyphis subdestructis formato, stratum corticale obtegente, apicibus hypharum clavatis, erectis, constipatis, conglutinatis, pallidis, 0.004 (—0.003) mm crassis, sat leptodermaticis instructum, strato medullari crebro, irregulariter contexto, hyphis sat leptodermaticis, circ. 0.005—0.007 mm crassis. In specim. orig. n. 15170 et 15171 et H. L. F. n. 335 areolae thalli modice incrassatae, lat. circ. 0.5 (0.2—0.7) mm, angulosae, contiguae, planae, laevigatae, testaceo-rufescentes, tenuiter cinerascenti- aut subalbido-marginatis, »CaCl<sub>2</sub>O<sub>2</sub> non reagentibus» sec. adn. Nyl. Apothecia disco demum convexo. Hypothecium striis erectis, angustis, obscuratis, aërem continentibus. Peritheciun fusco-aut aeruginoso-fuligineum, hyphis tenuibus, radiantibus, conglutinatis. Paraphyses crass. 0.0015 (—0.002) mm, increbre aut partim apicem versus sat crebre septatae, simplices, apice vix incrassatae. Hymenium ab hypothecio haud distincte limitatum, circ. 0.050—0.070 mm crassum, »jodo caerulescens, dein vino rubescens» (sec. Nyl.). Conidia »recta, bacillaria, long. 0.008—0.011, crass. 0.0007 mm» (sec. adn. Nyl.). Gonidia cystococcaceae.

F. *Alppilensis* Vain. Thallus sat crassus, areolis inaequaliter convexis aut ambitum versus p. p. planis, cinereo-fuscescentibus aut testaceo-cinerascentibus aut lurido-cinereis, plus minus distincte tenuiterque subcinerascenti-marginatis aut p. p. immarginatis. Apothecia disco plano aut demum convexo, margine sat tenui, vulgo persistente.

*Distr.* In rupibus graniticis prope Alppila (Alphyddan) et Aquaeductum ad Helsingforsiam pluribus locis abundantanterque a. 1882—1887 collecta (Vain.). Huc etiam n. 15169 in hb. Nyl., a Norrl. lectus, »*L. Helsingforsiensis*» a Nyl. determinatus, pertinet.

Areolae thalli lat. circ. 1—0.3 mm, difformes, saepe demum p. p. laxe affixae aut irregulariter subadscendentes, medulla jodo caerulecente, ad ambitum hypothallo cinereo-nigricante plus minus evoluto.

Apothecia priuum areolis immersa, dein mox emergentia et demum adnata, vulgo dispersa. Hypothecium fuscescens (circ. 0.2—0.15 mm crassum) aut superne subviolaceo-fuscescens aut in eodem apothecio partim superne subcinereum, hyphis erectis, corpuseula fusca (sed non aërem) inter hyphas continens. Peritheciun fusco-fuligineum, in margine aeruginoso-fuligineum. Epithecium aeruginoso-fuligineum. Paraphyses simplices, arcte (in KOII sat laxe) cohaerentes, leviter gelatinosae, increbre septatae, crass. 0.0015—0.002 mm, apice 0.003 (—0.004) mm. Ascii clavati. Sporae 8:næ, distichæ, decoloratae, ellipsoideæ oblongæve, long. 0.010—0.014, crass. 0.0045—0.006 mm. Gonidia cystococcacea.

#### 48. **L. athroocarpa** Ach.

Meth. Lich. (1803) p. 41 (conf. infra); Th. Fr. Lich. Scand. II (1874) p. 483; Arn. Lich. Tirol XXIII (1887) p. 85, Lich. Fragm. XXXVI (1899) p. 15; Zahlbr. Cat. Lich. Un. III (1925) p. 521. *Lecidea atrofuscescens* Nyl. Fl. 1866 p. 371 (conf. infra). *Lecidella atrofuscescens* Arn. Lich. Tirol VI (1871) p. 1109, X (1873) p. 96, XXX (1887) p. 25. Exs. Arn. Lich. Exs. (1873) n. 557 (f. *polygonia*), (1886) n. 1177, (1895) n. 1659 (Mus. Fenn.), — Havås Lich. Norv. Exs. (1911) n. 421.

Thallus sat crassus aut modice incrassatus, areolatus, areolis contiguis, planis aut leviter concavis, sublurido-palle-scens aut subfuscescens aut rarius pallescens, sorediis destitutus, medulla jodo caerulescente, hypothallo indistincto aut nigro, hinc inde visibili. Apothecia thallo immersa aut demum leviter emergentia, lat. circ. 0.8—1.5 mm, disco plano, nigro, nudo, opaco, margine indistincto aut demum tenui, nigro, nudo. Hypothecium impure albidum pallidumve aut rufescens vel fuscescens aut superne cinerascens, hyphis erectis. Epithecium fusco-fuligineum. Paraphyses sat laxe cohaerentes. Ascii ventricoso-clavati. Sporae ellipsoideæ oblongæve, distichæ, »long. 0.018—0.025, crass. 0.009—0.011 mm» sec. adn. Nyl. (—0.013 mm longæ, —0.007 mm crassæ).

*Distr.* Supra rupes graniticæ et dioriticæ collecta. Ab.: Merimasku (P. A. Karsten, Th. Fr. l. c., pertinet ad f. *polygonia*, conf. infra). N.: Lounatpuoli in Suursaari vel Hoglandia parce fert. (Vain., Nyl. determ., Brenner Bidr. Högl. Lafv. p. 106). KLad.: Kirjavalahti in Sortavala (Norrl. Symb. Fl. Lad.-Kar. p. 30, a Nyl. determ., sed morbosa et vix certe determinabilis).

Species rara et adhuc defecte cognita. Thallus »CaCl<sub>2</sub>O<sub>2</sub> non

reagens» (sec. Arn.), intus KOH non reagens. Areolae lat. 1.3—0.25 mm, medio nitidae, nec pruinosa, margine concolore aut subalbido. Hypothecium impure albidum vel sordide pallidum in specimine e Merimasku, stratum sat tenue rufescens fornians (strato thallino, gonidiis destituto, albo impositum) aut superne intense pallidum et inferne fuscescens in specimine orig. *L. atrofuscescens* Nyl. e Ben Lawers. Peritheциum fusco-fuligineum plus minus evolutum (in specim. e Ben Lawers p. p. bene evolutum). Hymenium »jodo caerulescens, dein p. p. vinose rubens vel fulvescens» sec. adn. Nyl. Paraphyses parce ramoso-connexae, bene gelatinosae, tubulis 0.001—0.0015 mm crassis (e Merimasku). Asci in apice membrana bene incrassata (Merimasku). Sporae long. 0.016—0.022, crass. 0.008—0.012 mm (Ben Lawers) aut long. 0.013—0.017, crass. 0.008—0.009 mm (Merimasku), »long. 0.018—0.025, crass. 0.009—0.011 mm» (Lojka It. Cauc. n. 85 sec. adn. Nyl.). Conidia »bacillaria, recta, long. 0.007—0.009, crass. 0.001 mm» (sec. Nyl. Fl. 1887 p. 134, Hue Addend. II p. 334 et adn. in hb. Nyl.). »Sterigmata simplicia aut parce ramosa» sec. iconem a Nyl. delineatam (specim. e Limoges, n. 15165).

*Obs. 1.* *Lichen athrocarpus* Ach. Lich. Suec. Prodr. (1798) p. 77 (rectius scribendum est *L. athrocarpus*) spectat ad *Verrucariam fasciculatam* Hoffm. (Deutschl. Fl. II, 1796, p. 190), exactius non cognitam, nec ab Ach. visam, quare nomen Acharianum est omnino vagum, nec admittendum ex opinione Nylandri (Fl. 1887 p. 134, Hue Addend. II, 1888, p. 334). *Lecidea athroocarpa* Ach. Meth. Lich. (1803) p. 41 (*L. cechumena* β *athroocarpa* Ach. Lich. Un., 1810, p. 158) sec. hb. Ach. respicit specimen (e Suecia) thallo sublurido-pallente, areolis, non albido-marginatis, contiguis, planis, medulla jodo caerulescente, apotheciis non emergentibus (»absque sporis» sec. adn. Nylander); aliud specimen in Finmarkia a Wahlenberg lectum, item thallo sublurido, areolis contiguis, non albido-marginatis, medulla jodo caerulescente, apotheciis emergentibus, nigro-marginatis instructa est. Specimen e Germania (Schrader), medulla J non reagente, ad *L. atrocinereum* pertinens, non est originale.

*Obs. 2.* »*Lecidea fumosa* v. *polygonia*« Flot. Lich. Schles. (1829) n. 139 A et B sec. Nyl. Fl. 1881 p. 186 et in Hue Addend. II (1888) p. 206 est autonoma species (»quasi *L. atrofuscescens*, sporis nonnullis minoribus, long. 0.013—0.016, crass. 0.006—0.008 mm, conidios »bacillaribus, rectis, long. 0.006—0.008, crass. 0.0007 mm«. Thallus areolis non albido-marginatis, »KOH addito  $\text{CaCl}_2\text{O}_2$  non reagens, medulla jodo caerulescente» (sec. adn. Nyl.). Huc pertinet Arn. Lich. Exs. (1873) n. 557 (sec. Nyl. I. e. et Arn. Lich. Münch., 1891, p. 76). Saltem specimen in Merimasku a P. A. Karsten collectum ad *L. athroocarpam* f. *polygoniam* (Flot.) Vain. pertinet, sporae aliorum specim. fennicorum non sunt cognitae.

Sect. **Lecidea confluens.**

Thallus albidus vel fumoso-cinereus, hypothecium jam primitus valde obscurum. Hyphae medullares eximie amyloideae. Species saxicolae.

49. **L. confluens** (Web?) Ach. p. p.<sup>1)</sup>

Acharius Meth. Lich. (1803) p. 40 p. p., Lich. Univ. (1810) p. 174 p. p.; Wahlenberg Flora Lapponica (1812) p. 472; Schaeerer Spicil. Lich. (1828) p. 144, Enum. Lich. (1850) p. 118; Fries Lich. Eur. (1831) p. 318; Koerber Syst. Lich. Germ. (1855) p. 250; Th. Fries Lich. Arct. (1861) p. 208, Lich. Scand. II (1874) p. 484; Vain. Adj. Lich. Lapp. II (1883) p. 52; A. L. Smith Brit. Lich. II (1911) p. 72. Lynge Lich. Nov. Zemlya (1928) p. 66; Zahlbr. Cat. Lich. Un. III (1925) p. 536. *Lichen confluens* Weber Spicil. Flor. Goetting. (1778) p. 180 (? , thallus »farinaceus«, an *Lecidea soredica*?); Ach. Lich. Suec. Prodr. (1798) p. 60. *Verrucaria confluens* Hoffm. Plantae Lichenosae I (1790) p. 87. *Lecidea contigua* \**L. confluens* Nyl. Lich. Scand. (1861) p. 225 p. p., Lich. Lapp. Orient. (1866) p. 160. *Lecidea vapulata* Anzi Man. Lich. Lang. (1861) p. 157.

Exs. Anzi Lich. Ital. super. VI (1865) n. 286, Lich. Lang. VII (1861) n. 283, s. n. *Lecidea vapulata*. — Cromb. Lich. Brit. II (1877) n. 182. — Havås Lich. Norv. (1904) n. 203. — Hepp Flecht. Eur. III (1853) n. 125, s. n. *Bialora*. — Johns. Lich. Herb. X (1906) n. 383, 384. — Malme Lich. Suec. XXIX (1918) n. 720. — Mudd Lich. Brit. II (1861) n. 180. — Schaeer. Lich. Helv. VIII (1828) n. 187. — Zwaekh Lich. Exs. III n. 131.

Thallus limitatus vel subeffusus, tartareus, modice incrassatus vel crassus, rimoso-areolatus vel praecipue versus marginem magis discrete areolatus, areolae plus minusve confluentes supra hypothallum nigrum impositae. Areolae 0.5—1.0 mm latae, angulatae vel magis rotundatae, saepe rimosae, depresso-convexae. Thallus caeruleus vel fumoso-cinereus vel albido-cinereus, opacus, laevigatus, isidiis sorediisque destitutus. Hypothallus ater, secundum marginem et inter areolas discretas distinete visus.

<sup>1)</sup> By B. Lynge.

Apothecia dispersa et rotundata vel approximata vel etiam confluentia et mutua pressione angulata, majuscula, diam. 0.8—2.0 mm., primo thallo adpressa, plana et crasse prominente marginata, in acetate supra thallum magis elevata, convexa et immarginata. Discus ater, epruinosus, saepe rimosus, interdum umbonatus. Margo primo integer, deinde saepe plus minusve flexuosus. Excipulum fusco-nigrescens, hypothecium obscure fuscum. Hymenium altitudine variante, vulgo 100—125  $\mu$ , vel tenuius, 60—100  $\mu$ , superne olivaceo-nigricans. Paraphyses arcte cohaerentes, in apice haud incassatae. Ascii sat anguste clavati. Sporae (raro evolutae) late ellipsoideae vel ellipsoideo-globosae, 7.5—10  $\times$  5—6.5  $\mu$  (sec. Th. Fries Lich. Scand. p. 485: 7—9  $\times$  5—7  $\mu$ , sec. Vain. Adj. Lich. Lapp. p. 53: 6—10 (—14)  $\times$  4—5 (—7)  $\mu$ .

»Pycnides vulgo ellipsoideae, oblongae vel varie lirellae-formes, rima angusta nigricante, marginibus thallo vulgo pallidioribus. Pycnoconidia bacilliformia, recta vel leviter curvula, 7—12  $\mu$  longa», sec. Th. Fries Lich. Scand. p. 485.

Medulla J caerulescens, KOH et  $\text{CaCl}_2\text{O}_2$  non mutatur. Hymenium J persistenter caeruleo-nigricans.

In Adj. Lich. Lapp. p. 53 Vainio described the following formae (f. *renudata* is here referred to *Lecidea sorediza*):

F. *vulgaris* Schae. »Enum. Eur. p. 118. *L. confluens* Th. Fr. Lich. Scand. p. 484.

Thallus fumoso- vel plumbeo-cinereus, esorediosus, areolis vulgo contiguis. Apothecia nuda. Sporae minutae, 6—10 (—12)  $\times$  4—5 (—7)  $\mu$ . — Ad rupes graniticas et dioriticas in regione subalpina montium Iivaara et Nuorunen in par. Kuusamo. — Epitheciun smaragduto- vel olivaceo-fuligineum. Hymenium circiter 60—80  $\mu$  crassum.»

Distr. Ab.: Aboa (Elfving). Iso-Heikkilä ad Aboam (Vain.). Kaijola in Lojo (Boldt). N.: Helsingforsia (Lång). Oa.: (Malmgren). Om.: Lappajärvi (Backman). O. Kaj.: Sotkamo (Chydenius). Ks.: Iivaara et Nuorunen in Kuusamo (Vain.). L. kem.: Kemiötunturi in Muonioniska (Norrlin). Lim.: Umba (Silén). In alp. Lujauri-urt (Kiblman). Le.: Karesuanto (Norrlin). Li.: Inari (Granit et Poppius). Edehojer (Silén). Lps.: Pummanki in Peninsula piscatorum (Häyrén).

F. *connectens* Vain.

»Thallus plumbéo-cinereus, esorediosus, areolis saltem passim supra hypothallum nigrum dispersis. Apothecia nuda vel juniora tenuissime pruinosa demumque nuda. Sporae majores, 12—14 (raro 9) × 5—7  $\mu$ . In regione infralaponica: ad Lehtovaara; in regione subalpina montis Iivaara in par. Kuusamo et montis Hammastunturi in Lapponia Inarensi. — Epithecum smaragdulo- vel olivaceo-fuligineum. Hymenium circ. 75—110  $\mu$  crassum.»

*Distr.* Al.: (Edv. Nylander). Gripö in Föglö (Vain.). Geta (Vain.). Ab.: Luonnonmaa ad Naantali (Vain.). Artukainen in Raisio (Vain.). N.: Kyrkslätt (Lång). Suursari v. Hoglandia (Vain.). Ta.: Koski (Vain.). Rutalahti in Korpilahti (Vain.). Kl.: Vaavalahdi in Kirjavalahti par. Sortavala (Vain.). Sb.: Neulamäki in Kuopio (Linkola). K. On.: Klimskij (Kullhem). O. Kaj.: Lehtovaara in Kianta (Vain.). Li.: ad templum in Inari (Silén). Lt.: Kitoska in peninsula piscatorum (Karsten). Kola (Fellman).

*Obs. 1.* It is evident from the diagnoses that Acharius limited his *Lecidea confluens* much more widely than we now do. In Lich. Scand. l. e. Th. Fries writes »*Lecidea confluens* Fr.» But most probably also that species was a wider species than our *Lecidea confluens*, including e. g. *Lecidea sorediza*.

*Obs. 2.* *Lecidea confluens* (Web.) f. *ecrustacea* in Anzi Lich. Lang. n. 401 has the chemical reaction KOH sanguinea. Characteristic red crystals are precipitated by KOH, suggesting *Lecidea pantherina*, and not *Lecidea confluens*.

##### 50. *L. speirea* Ach.<sup>1)</sup>.

Meth. Lich. (1803) p. 52; Nyl. Fl. 1875 p. 104 (Fl. 1870 p. 38); Th. Fr. Lich. Scand. II (1874) p. 485; Arn. Lich. Tirol XIV (1875) p. 444, XV (1876) p. 365, XVIII (1878) p. 260, XXIII (1887) p. 90, Labrador (1896) p. 13; Vain. Adj. Lich. Lapp. II (1883) p. 54; Nyl. in Hue Addend. II (1888) p. 194 (n. 1234); Tuck. Syn. North Am. Lich. II (1888) p. 71; Shirley Proceed. R. Soc. Queensl. VI (1889) p. 167; Elenk. Lich. Fl. Ross. med. 3—4 (1911) p. 395; Zahlbr. Cat. Lich. Un. III (1925) p. 692; Lynge Lich. Nov. Zeml. (1928) p. 67. *Lichen speireus* Ach. Lich. Suec. Prodr. (1798) p. 59. *Lecidea contigua* var. *speirea* Dietrich Lich. Germ. (1832—37) p. 20; Nyl. Lich. Scand. (1861) p. 225. *Lichen cinerascens* With. Bot. Arrang. Br. Pl. 3 ed. IV (1796) p. 8 sec. Cromb. Grevillea XII p. 57 (nomen ineptum et oblitum). *Lecidea cinerascens* A. L. Smith Mon. Br. Lich. II (1911) p. 73. *Lecidea margaritacea* a Ach. Lich. Un. (1810) p. 185, Syn.

<sup>1)</sup>). References to literature and exsiccata by Vainio, the rest by B. Lynge.

Lich. (1814) p. 31. *Diplotomma trullisatum* Krempelh. Fl. 1853 p. 442 (sec. Nyl. Fl. 1875 p. 104). *Porpidia trullisata* Koerb. Syst. Lich. Germ. (1855) p. 221.

*Exs.* Fr. Lich. Suec. Exs. XIII (1827) n. 376 A (Nyl. Fl. 1870 p. 38), XIV (1833) n. 410 (Nyl. I. c.). — Desmaz. Pl. Cr. Nord Fr. ed. I ser. I, XVII (1836) n. 846 (Mus. Fenn.), Pl. Cr. Fr. ed. II ser. I (1836) n. 46 (Mus. Fenn.). — Hepp Flecht. Eur. III (1853) n. 126 (»*L. contigua* α *vulgaris*», hb. Vain.). — Arn. Lich. Exs. (1869) n. 410 (hb. Nyl.), (1872) n. 509 (hb. Nyl.), (1876) n. 677 a-c (b in hb. Nyl.), (1883) n. 1007 (»*f. alpina*», hb. Nyl.), (1884) n. 1053 (»*L. speirea* var. *trullisata*», hb. Nyl.). — Norrl. et Nyl. Herb. Lich. Fenn. III (1875) n. 146 (»*f. subcalcarea*«). — Zwackh Lich. Exs. n. 1207 (hb. Nyl.). — Havaas Lich. Norv. Exs. (1901) n. 43 (Mus. Fenn.). — Johns. North Engl. Lich. X (1906) n. 386 (Lynge). — Malme Lich. Suec. Exs. XVII (1914) n. 420 (Mus. Fenn.).

Thallus cretaceus, limitatus vel subeffusus, modice incrassatus vel sat crassus, irregulariter vel reticulate undulatotrimosus, areolae 0.3—0.5, rarius usque ad 1 mm. latae, planae vel subplanae, varie rugulosae. Thallus albidus vel alboglaucescens, sorediis isidiisque destitutus, hypothallo albido-glaucescens circumdatus.

Apothecia numerosa et dispersa vel numerosissima et tum hinc inde approximata, mediocria vel majuscula, diam. 1—1.5 mm., in areolis innata, thallum subaequantia. Discus e subconcavo diu vel persistenter planus, rarius deinde leviter convexus, ater, plus minusve pruinosis, saltem ab initio, deinde magis denudatus, margine distincto, crasso, saepe flexuoso, albo-suffuso (pseudolecanorino) circumdatus. Excipulum ater, etiam cum hypothecio. Hymenium altum: 120—130  $\mu$ , in parte inferiori rufofasciati-fuscum, superne olivaceo-fuligineum, granulosum. Paraphyses arcte cohaerentes, in apice capitato- vel clavato-incrassatae (4—4.5  $\mu$ ). Sporae saepe male evolutae, ellipsoideae vel dacryoideae, 10—15  $\times$  5—8  $\mu$ .

Thallus J caerulescens, KOH et  $\text{CaCl}_2\text{O}_2$  immutatus. Hymenium J persistenter et intense caerulescens.

*Distr.* Ad rupes schistosas et granitoideas, si calcem foventes. Al.: Ramsholm in Jomala (Vain.). Insula Bärö in Kumlinge (Hollmén et Sederholm). Kl.: Valamo (W. Nylander, Vain.: *F. margari-*

*tacea* Ach.). Haukkariutta in Sortavala (Räsänen). K. Ol.: Petrosawodsk (Günther). Kb.: Lipinlahti in Nurmes (Vain.). Ks.: Kitkajoki (Silén). Lv.: Ad ost. flum. Aatsherok (Kihlman). Le.: Kilpisjoki (Norrlin).

In his notes Vainio had suggested the following formae:

F. *pruinosa* Vain. Lich. Cae. (1899) p. 326. F. *margaritacea* (Ach.) Nyl. Lich. Scand. (1861) p. 225 (Ach. p. p.). Th. Fr. Lich. Scand. II p. 486. *Porpidia trullisata* Kremph. Lich. Bay. (1861) p. 210, p. p. *Diplotomma trullisata* Kremph. Flora 1853 p. 442, orig. in hb. Nyl. n. 15610 (»Epithecium atroviride», sec. Arnold in 15606 hb. Nyl.?).

*Discus apotheciorum pruinosis.*

Distr. Al.: Ramsholm, ad lapides graniticos depresso in territorio calcareo (Vain.). N.: Helsingforsia (Vain.). Kl.: Valamo (W. Nyl.), (»*L. contigua* var. *confluens* Th. M. Fr.») (Vain.). Kar. On.: Nihiisaari (Th. Simming, 15603) »12—16 × 6—7», gel. hym. J. caerul. Kb.: Nurmes: Lipinlahti, s. n. *L. confluens* f. *meiosporoides* Vain. Adj. II p. 54. Kol.: Petrosawodsk (Günther). Lapp. Varsugae: Ad ostium fluminis Natscherok n. 379 (Kihl., p. 58, sine sporis).

F. *alpina* (Hepp apud Arnold) Dalla Torre et Sarnth.

Vide Zahlbr. Cat. Lich. III (1925) p. 694.

»Thallus candidus, apothecia atra, nuda, plana, mutua pressione angulosa, epithecium atroviride, hypothecium atrofuscum, sporae oblongae, 15 × 7  $\mu$ . Arnold Lich. Exs. n. 410», sec. Arnold Lich. Tirol X, p. 98.

Kuus.: Kitkajoki (F. Silén), »*Lecidea confluens* var. *subcalcarea*» sec. Nyl.

*Obs.* In his manuscript Vainio had suggested the following notes:

1. *Lecidea leuciticoides* Nyl. (conf. sub *L. confluente*) apothecis nudis, primum immersis, demum convexis, et rima circumcinetis, thallo sat crasso aut crasso, inaequaliter subverrucoso-incrassato, rimuloso, hypothallo nigricante ad marginem leviter conspicuo. Est *Lecidea speirea*, disco nudo.

2. *Lecidea confluens* var. *subcalcarea* Nyl. Scand. p. 225 e Delphin. 1860, (hb. Nyl.) n. 15670: apoth. pruinosis.

3. *Lecidea euspeirea* Nyl. Flora 1875 p. 104 (Hue 194) »16—18 × 10—11  $\mu$  in monte Gemmi in Helvetia est major et forsan autonoma species (disco pruinoso) sporis majoribus.

In Brit. Lich. (1911) A. L. Smith has given preference to the species name *cinerascens*, based on *Lichen cinerascens* With. Arr. ed. 3, IV, p. 8 (1796). If *Lichen cinerascens* is identical with *Lecidea speirea* — the editor has not seen it — *Lecidea cinerascens* must be a more correct name than *Lecidea speirea*. The editor has, however, not felt justified in making such alterations in Vainio's manuscript.

51. **L. sorediza** Nyl.<sup>1)</sup>.

Lich. Pyr. Orient., Flora (1873) p. 72 et Caen (1873) p. 38, Addenda Nova, Flora 1875, p. 104, Lich. Pyr. Orient. obs. nov., Paris (1891) p. 63; Leight. Lich. Flora Great Brit. ed. III (1879) p. 305; Arnold Lich. Fragm., Flora 1882 p. 140, Lich. München I (1891) p. 78, Lich. fränk. Jura (1885) p. 163; Brenner Hoglands Lafvar (1885) p. 102; A. L. Smith Brit. Lich. II (1911) p. 68; Sandstede Flecht. n. w. deutsch. Tiefl. (1912) p. 76. *Lecidea albocaerulescens* p. p. Mudd Brit. Lich. (1867) p. 211. *Lecidea tumida* Mass. Ricerche Aut. Lich. (1852) p. 68. Jatta Syll. Lich. Ital. (1900) p. 364. *Lecidea speirea* \**subconfluens* Th. Fr. Lich. Scand. II (1874) p. 487. *Lecidea inconfluens* Nyl. Addenda Nova, Flora 1875 p. 104; Norrl. Flora Karel. Oneg. II (1876) p. 34. *Lecidea confluens* f. *sorediza* (Nyl.) Vain. Adj. Lich. Lapp. II (1883) p. 53.

Exs. Anzi Lich. Ven. IV (1863) n. 170, s. n. *Lecidea tumida* Mass. — Arnold Lich. Exs. (1879, 1880) n. 807, (1882—89) n. 1008 a, b. — Arnold Lich. Mon. (1892) n. 242. — Flot. Lich. Siles. II, n. 168, s. n. *Lecidea albocoerulescens* Flk., sec. Nyl. Lich. Pyr. Orient. obs. nov. (1891) p. 64. — Johns. North Engl. Lich. Herb. IX (1900) n. 349. — Mudd Lich. Brit. II (1861) n. 181, s. n. *Lecidea albocaerulescens*. — Suza Lich. Boh. Slov. (1930) n. 130. — Zwackh Lich. Exsic. n. 541 et a.

Thallus limitatus, tartareus, tenuis vel modice incrassatus, rimis tenuibus, flexuosis, reticulatis divisus vel distincte rimoso-areolatus, areolae 0.3—0.5 mm latae, rarius p. p. subdiscretae. Thallus hinc inde in soredia fatiscens. Soredia (saepe inconspicua) parva, rotundata, limitata, diam. 0.2—0.3 (—1.0) mm, dispersa vel deinde interdum numerosa et approximata usque confluentia, albida vel albido-cinerea vel deinde obscurata, granulosa, leviter supra thallum elevata vel in thallo excavata. Thallus albidocinerascens vel plumbeo-cinerascens vel albidus, opacus, laevigatus vel (sub lente) minute scabridus, isidiis destitutus, epruinosus. Hypothallus ater, secundum marginem thalli et inter areolas subdiscretas distincte visus.

Apothecia (non semper evoluta) supra thallum dispersa, pauca vel numerosa, hinc inde quin etiam confluentia et eam ob causam angulosa, majuscula, diam. 1—2 (—3) mm,

1). By B. Lyngé.

primo arcte adnata, plana et thallum aequantia, deinde interdum convexa et magis elevata. Discus ater, plus minusve intense caesio-pruinosis, margine distincto, sed haud elevato, subpersistenti, cinctus. Excipulum intense fuligineum, etiam cum hypothecio. Hymenium normaliter 100—125  $\mu$  altum, in apotheciis convexis interdum usque ad 250  $\mu$  altum, superne olivaceo-fuligineum. Paraphyses cohaerentes, graciles, in apice leviter incrassatae, 2—2.5  $\mu$  crassae. »Asci clavati vel inflato-clavati, sporae ellipsoideae vel oblongo-ellipsoideae, 14—21  $\times$  6—12  $\mu$ », sec. Th. Fr. Lich. Scand. p. 497, »15—22  $\times$  7—9  $\mu$ », sec. Nyl. Pyr. Orient. obs. nov. p. 64.

»Pycnoconidia recta, 6—8  $\mu$  longa», sec. Nyl. Pyr. Orient. obs. nov. p. 64.

Medulla J distincte caerulescens, KOH et  $\text{CaCl}_2\text{O}_2$  non tineta. Hymenium J persistenter caerulescens.

*Distr.* Ab.: Kultaranta in Naantali (Vain.). N.: Mäkiinpäälys in Suursari (Vain.). Ik.: Perkjärvi (Kihlman). Ta.: Myllykylä in Tammela (Kullhem). Asikkala (Norrlin). Vieru et Kirkonkylä in Padasjoki (Vain.). Jutinsalo in Luhanka (Vain.). Päiväkunta et Rutalahti in Korpilahti (Vain.). Kl.: Jamilahti in Sortavalala (Vain.). K. Ol.: Vosnessenje (Elfving). Sb.: Neulaniemi in Kuopio (Linkola). Kb.: Koli in Pielisjärvi (Räsänen). Lieksa (Vain.). Lipinlahti in Nurmes (Vain.). K. On.: Jalguba (Kullhem). Tiudie (Norrlin). Ob.: Rovaniemi (Räsänen).

*F. renudata* Vain. Adj. Lich. Lapp. II (1883) p. 53.

»Thallus albidus vel cinereo-albidus vel plumbeo-cinerascens, areolis contiguis vel dispersis, passim parce sorediosus. Apothecia nuda vel in eodem specimine primo tenuissime pruinosa. Sporae majores, circ. 14  $\times$  6—8  $\mu$ . — In rupe subumbrosa ad Lipinlahti in par. Nurmes Kareliae borealis. — Epithecium olivaceo-fuligineum A f. *sorediza* vix nisi apotheciis nudis differt.» (Vain. l. c.).

*Distr.* Kb.: Lipinlahti in Nurmes (Vain.). Ob.: Simo (Räsänen). K. On.: Schungu (Norrlin). Lischma (Kullhem).

*F. meiosporoides* (Norrl.) A. Zahlbr. Cat. Lich. III (1925) p. 691. *Lecidea speirea* Ach. var. *meiosporoides* Norrl. Flora Kareliae Ongensis II Lichenes (1876) p. 33—34. *Lecidea confluens* Ach. f. *sorediza* (Nyl.) \*f. *meiosporoides* Norrl. Vain. Adj. Lich. Lapp. II (1883) p. 54.

»Thallus plumbeo- vel albido-cinerascens albidusve, esorediosus. Apothecia pruinosa. Sporae majores (sicut in f. *sorediza*). Vix a f. *sorediza* distingui potest.

Ad saxa in pineto prope Lipinlahti in par. Nurmes Kareliae borealis (Vain. l. c.).»

In Vainio's manuscript the editor found one sheet named *Lecidea confluens* and another named *Lecidea sorediza*, with some scattered notes. He concluded from this that Vainio regarded the two species as distinct and that he reserved the species name *Lecidea sorediza* Nyl. for the latter species.

The spores of *Lecidea sorediza* are considerably larger than those of *Lecidea confluens*. The difference is sufficient to constitute a different curve of variation for the two species, and generally it is sufficient for the determination of fertile plants. But Vainio found a f. *connectens* (Adj. Lich. Lapp. II p. 53), esorediate, with intermediate spores, larger than the normal spores of *Lecidea confluens*:  $12-14 \times 5-7 \mu$ . In doubtful plants of that kind the presence or absence of soredia must be the distinctive character.

Vainio attributes spores of  $6-10 (-12) \times 4-5 (-7) \mu$  to *Lecidea confluens* f. *vulgaris* (Adj. Lich. Lapp. l. c.). Th. Fries found broader spores:  $7-9 \times 5-7 \mu$  (Lich. Scand. p. 485). In Norwegian plants the editor generally found the same size as Th. Fries. — The editor sectioned several apothecia of *Lecidea sorediza*, he found only few spores, size  $17-20 \times 9-10 \mu$ .

The name *Lecidea sorediza* Nyl. has been generally accepted by lichenologists, also by Zahlbrückner in Cat. Lich. III p. 690. In Lich. fränk. Jura p. 163—164 Arnold refers Massalongo's *Lecidea tumida* as a forma to *Lecidea sorediza* Nyl. The present editor cannot control this. He has no access to a type plant of *Lecidea tumida*, and Anzi Lich. Ven. No. 170 is lacking in the Oslo herbarium. There is, however, no reason to doubt of Arnold's statement, which has also been accepted by Zahlbrückner, Cat. Lich. III p. 691. If that is so, *Lecidea tumida* Mass. 1852 is an older species name than *Lecidea sorediza* Nyl. 1873. In this work the editor has felt it necessary to follow Vainio's opinion, if expressed in his manuscript. — Magnusson who has examined Anzi Lich. Ven. No. 170 is of opinion that this plant is not specifically distinct from *Lecidea sorediza* Nyl.

Obs. There was no mention of *Lecidea speirea* L. \**subconfluens* in Vainio's manuscript. But Th. M. Fries records some Finnish plants which he referred to this subspecies, viz. from »Asikkala Tavastlandiae (J. P. Norrlin), Sotkamo (A. Chydenius), loco non indicato Ostrobotniae austr. (A. J. Malmgren), atque Karelia orientali (Suosaari: A. Kullhem)» (Lich. Scand. II (1874) p. 487).

The editor has seen the two last mentioned plants, but he has been unable to get to sight the other plants.

The plants from Suosaari are distinctly sorediated, though the soredia are not always equally well developed. The editor can find

no other place for them than *Lecidea sorediza*. These plants were firstly named »*Lecidea contigua* f. *meiospora* Nyl.«, evidently by Nylander himself. According to a herb. note by Vainio one of them (Nyl. herb. No. 15623) is the type of »*meiosporoides* Norrl.« The »*meiosporoides* Norrl.« is, accordingly, only a *Lecidea sorediza* with small and inconspicuous soredia.

The plants from »Ostrobothnia australis« were referred to »*Lecidea contigua* Fr.« by Nylander. A herb. note by Vainio from 1919 referred it to »*Lecidea confluens* Ach. f. *connectens* Vain.« But its spores are as large as  $15-16 \times 7-8 \mu$  (herb. note by Vainio). These spores are too long and narrow for *Lecidea confluens*.

There are some dark scar-like maculae on the areolae. The maculae which the editor sectioned did not resemble aborted apothecia, but rather initiating soredia, checked in development by a more or less corticated surface. In one of them he found structures, resembling aborted pycnides.

As stated by Th. M. Fries, his *Lecidea subconfluens* is »saepe in soredia albida fatiscens«. In his herb. there are some sorediated plants which must be referred to *Lecidea sorediza*. — In this case where the soredia are often so inconspicuous the editor is not quite convinced of their specific importance. It might be better to base *Lecidea sorediza* on its chemical reaction, black hypothecium, and large spores, and to admit a certain variation from no visible soredia through indistinct minute soredia to distinct and conspicuous soredia. A f. *meiosporoides* Norrl. would then represent the first mentioned modification.

When Th. M. Fries gave his name »*subconfluens*« he overlooked the older name *Lecidea subconfluens* Anzi. Zahlbrückner therefore renamed Th. M. Fries's species, calling it *Lecidea subconfluescens* A. Zahlbr. Cat. Lich. III, p. 698. The editor has no access to Anzi's type plant. Anzi Lich. Lang. No. 354 (»*Lecidea subconfluens* Anzi n. sp«, in herb. Oslo) consists of two plants, either of them with a »medulla J caerulea, KOH +«. They are evidently esorediated, but the plants were not quite intact. The editor found very few spores, in the left plant  $9-10 \times 4.5 \mu$ . These spores are too narrow for *Lecidea confluens*, and too small for *Lecidea sorediza*. Habitus and spore size suggest *Lecidea lapicida*, or a nearly related species, the hypothecium is, however, very dark, almost fuligineous, as are also the tips of the rather thick and clavately incrassated paraphyses.

#### Sectio *Lecidea silacea*.

Thallus pallidus, hypothecium pallidum vel (demum) fuscescens. Hyphae medullares eximie amyloideae.

52. **L. silacea** Ach.<sup>1)</sup>.

Ach. Meth. Lich. (1803) p. 48, Lich. Univ. (1810) p. 164, Syn. Lich. (1814) p. 22; Wahlbg. Lich. Lapp. (1812) p. 474, Flora Suec. (1826) p. 901; Schaeer. Spicil. Lich. (1828) p. 148, Enum. Lich. (1850) p. 116; Th. Fr. Lich. Scand. II (1874) p. 487; Leight. Lich. Flora Great Brit. Ed. III (1879) p. 288; Elenk. Lich. Flora Ross. Med. (1911) p. 397; A. L. Smith Brit. Lich. II (1911) p. 74. *Lichen silaceus* Ach. Prodr. Lich. (1798) p. 24. *Lecidea lapicida* f. *silacea* Nyl. Prodr. Lich. Gall. (1857) p. (132) 378, Lich. Scand. (1861) p. 226. *Lecidea lapicida* Fr. Lich. Eur. (1831) p. 306 p. p., etiam al. aut. vet.

*Exs.* Anzi Lich. Lang. IV (1861) n. 159. — Arnold Lich. Exs. n. 629. Fries Lich. Suec. XIV (1825) n. 408. — Havås Lich. Norv. (1911) n. 420. — Lojka Lich. Hung. II (1882) n. 75. — Malme Lich. Suec. XXIV (1916) n. 596. — Migula Crypt. Germ. XLVII—XLVIII (1928) n. 206. — Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 340. — Schaer. Lich. Helv. VIII (1828) n. 191. — Zahlbr. Krypt. Exs. XXIX (1925) n. 2869.

Thallus limitatus, crassus vel crassiusculus, verrucosus vel verrucoso-bullatus, verrucae subcontiguae, rotundatae vel subangulatae, diam. 0.5—1.0 mm, minute rugulosae. Thallus hydrate ferrico tinctus, pruinosus, sorediis isidiisque destitutus, rarissime griseo-luridus. Hypothallus ater inter verrucas visus.

Apothecia in margine verrucarum formata, mediocria, diam. 0.8—1.0 (—1.5) mm., numerosa, dispersa vel interdum magis congesta, sessilia, discus vulgo leviter supra thallum elevatus. Discus ater, diu vel persistenter planus (deinde interdum depresso-convexus), opacus, epruinosus, minute rugulosus, margine persistenti vel deinde interdum excluso, nitido, elevato, integro vel flexuoso cinctus. Excipulum in parte exteriore nigricans, praeterea incoloratum vel pallide cinerascens. Hypothecium incoloratum vel plus minusve sordidum. Hymenium 75—80  $\mu$  altum, superne intense fuligineum et irregulariter ruptum, praeterea incoloratum. Paraphyses distinctae, validae, apice bene clavatae (usque ad 5  $\mu$ ), caeruleo-fuligineae et cohaerentes, praeterea plus

<sup>1)</sup>. By B. Lyngé.

minusve laxe cohaerentes. Ascii clavati, 10—12  $\mu$  crassi, octospori. Sporae late ellipsoideae vel globoso-ellipsoideae, 8—11  $\times$  5—6  $\mu$ .

Thallus J caerulescens, sed neque KOH neque  $\text{CaCl}_2\text{O}_2$  coloratur. Hymenium J intense caerulescit.

*Distr.* Ad saxa rupesque, praecipue ferruginosa. Ut videtur haud infrequens. Ab.: Malm in Pargas (Vain.). Kakskerta (Linkola). Ad Aboam (c. J. Arrhenius, F. Elfving). Ispoinen et Iso-Heikkilä prope Aboam (Vain.). N.: Rödbergen in Helsingforsia (W. Nylander). Sat.: Sastmola (Malmgren). Ta.: Saksala in Padasjoki (Vain.). Lemmettylä in Luopioinen (Leopold). Oa.: Simsiö in Lapua (Räsänen). Sb.: Kehvonsalo in Kuopio (Linkola). Li.: Lentolahti in Inari (Silén).

Var. *griseolurida* (Nyl.) Th. Fr. Th. Fr. Lich. Scand. II (1874) p. 488. *Lecidea lapicida* var. *griseolurida* Nyl. in Malmgr. Fört. Lafvar, Not. Sällsk. F. et Fl. Fenn. VI (1861) p. 82, Lich. Scand. (1861) p. 226.

Thallus pallide cinerascens vel griseo-luridus, verrucis saepe inaequalibus, crassis. Hypothecium saltem superne sordidum.

*Distr.* Satakunta: Sastmola (Malmgr.). Aboa: Pahaniemi (Vain.) et Naantali ad Kultaranta (Vain.), in scopolis erraticis.

*Obs.* *Lecidea subsilacea* Nyl. Flora 1872 p. 357, Hue Add. II p. 196. Medulla J caerulescente a Nyl. distincta, sed poster. Nyl. ipse observavit etiam *L. silaceam* Ach. orig. sic reagere (sec. hb. Nyl.). *Lecidea silacea* f. *subsilacea* Nyl.: Oa.: Simsiö in Lapua (Räsänen).

### 53. *L. rhagadiella* (Nyl.) Th. Fr.

Lich. Scand. II (1874) p. 488 (273); Zahlbr. Cat. Lich. Un. III (1925) p. 684. *Lecanora rhagadiella* Nyl. Flora 1869 p. 409; Hue Addend. (1886) p. 110. *Pachyspora* Arn. Flora 1870 p. 470. *Aspicilia* Hue.

Thallus crassus aut sat crassus, continuus aut rimoso-diffractus, albus, opacus, inaequalis, KOH non reagens, sore-diis destitutus, medulla jodo caerulescente, hypothallo albido aut passim nigro- vel obscuro-limitato. Apothecia thallo immersa, difformia, lat. 0.3—1.5 mm, disco plano aut leviter concavo, nigro, nudo, opaco, margine sat tenui, prominente, albido aut subcinerascente, subpruinoso, lecideino et gonidiis destituto, fere mox aut demum circumscisso. Hypothecium

albidum pallidumve, hyphis suberectis. Epithecum subolivaceo-nigricans. Paraphyses arcte cohaerentes. Sporae ellipsoideae aut subglobosae, long. 0.012—0.021, crass. 0.009—0.013 mm.

*Distr.* LENONT.: Ad saxa in fluvio Kilpisjoki in reg. subalpina (J. P. Norrlin).

Facie externa aspicilioidea, *Lecanoram phaeopidem* Nyl. referens, sed perithecio lecideino praedita. Thallus partim superficie crebre rimulosa, »CaCl<sub>2</sub>O<sub>2</sub> non reagens» (Th. Fr.), strato corticali tenui, ex hyphis erectis formato, partim subevanescente, medulla impellucida (hyphae granulis in H<sub>2</sub>SO<sub>4</sub> crystalla acicularia elongata formantibus incrustatae). Apothecia vulgo crebra, margine anguloso aut leviter flexuoso, thallum non superante. Peritheciun impellucidum albidum, parte marginali obscurata, superne strato tenui decolorato, subdestructo obducta. Hypothecium hyphis conglutinatis, tenue, circ. 0.035—0.050 mm crassum, strato thallino, gonidiis destituto, albo impositum. Hymenium circ. 0.110—0.120 mm crassum, »jodo caerulescens, deinde nonnihil vino rubens» (sec. Nyl.). Paraphyses gelatinosae, superne parce ramoso-connexae, ceterum simplices, tubulis 0.001—vix 0.0015 mm latis, in apicibus parum dilatatis. Ascii sat late clavati, in apice membrana vulgo bene incrassata. Sporae 8:næ aut abortu pauciores (etiam 4:næ et 2:næ), distichae, apicibus rotundatis aut obtusis, membrana vulgo gelatinoso-incrassata. Conidangia »conceptaculo parte immersa incolore»; conidia recta utrumque versus apicem fusiformia (vel solum apice altero fusiformia), »long. 0.008—0.010, crass. 0.001 mm» (sec. Nyl.). Gonidia cystococcaceae, globosa et subglobosa et ellipsoidea, interdum etiam autosporas plures continentia.

#### 54. *L. tessellata* Floerk.

Deutsch. Lich. 4 (1821) p. 5, n. 64 (sec. Th. Fr.); Schaeer. Lich. Eur. (1850) p. 112. *Lichen tessellatus* Sm. Engl. Bot. VIII (1799) t. 533? *Lecidea spilota* Fr. Syst. Orb. Veg. I (1825) p. 286, Lich. Eur. Ref. (1831) p. 297, Lich. Suec. Exs. XIV (1833) n. 409 (in hb. Nyl.), Sched. Crit. XIV (1833) p. 13. (*L. pantosticta* δ *spilota* Ach. K. Vet. Ak. N. Handl. 1808, p. 230, Lich. Un., 1810, p. 154 nunc herbario Ach. deest). *Lecidella spilota* Koerb. Syst. Lich. Germ. (1855) p. 237. *Bialora cyanea* Hepp Flecht. Eur. IX (1860) n. 490. *Lecidea cyanea* Th. Fr. Lich. Scand. II (1874) p. 489 sec. spec. cit. (Röhling Deutschl. Fl. III 2, 1813, p. 32?, Rabenh. Krypt. Sachs., 1870, p. 170?; nec *L. tapicida* β *L. cyanea* Ach. Meth. Lich., 1803, p. 38, nec Lich. Un., 1810, p. 160, nec Syn. Lich., 1814, p. 14 ad

*L. pantherinam* pertinens); Zahlbr. Cat. Lich. Un. III (1925) p. 553 p. p. (non *L. lithophila* f. *cyanea* Zahlbr. l. c. p. 621). *L. lapicida* β var. *cyanea* Vain. Adj. Lich. Lapp. II (1883) p. 56.

*Exs.* Floerk. Deutsch. Lich. 4 (1821) n. 64 (etiam sec. descr., n. 15899 in hb. Nyl. colla vituperat). — Fr. Lich. Suec. Exs. XIV (1833) n. 409 (15889 in hb. Nyl.). — Anzi Lich. Rar. Langob. III (1861) n. 124 (»*L. spilotata*», hb. Nyl.). — Arn. Lich. Exs. (1863) n. 260 (»*L. spilotata*», in Ind., 1900, p.? »*L. tessellata*», hb. Nyl.). — Rabenh. Lich. Eur. Exs. XXXIII (1871) n. 899 (Mus. Fenn.).

Thallus sat crassus aut modice incrassatus, areolatus aut rarius areolato-diffractus, areolis circ. 1—0.4 (0.3—1.2) mm latis, contiguis, angulosis, planis aut depresso-convexus, laevigatis aut sat laevigatis, albidis aut subcinereo-albidis, KOH non reagentibus, medulla jodo reagente, sorediis destitutus, hypothallo nigricante. Apothecia innata, thallum subaequantia, saepe p. p. contigua confertave, haud raro angulosa, lat. 0.6—1.2 mm, disco plano aut raro demum depresso-convexo, primum tenuiter vel tenuissime pruinoso, demum saepe denudato nigroque, opaco, margine tenui, non aut leviter prominente, nigro, nudo, anguloso aut flexuoso aut subintegro, subpersistente. Hypothecium albidum aut pallidum, in parte superiore crassa hyphis erectis, in parte inferiore maculis aërem continentibus disjunctis. Peritheciun intus albidum, extus anguste fuligineum, subtus parte fuliginea strato thallino adnato et medio deficiente. Epithecium nigricans aut olivaceo-nigricans. Paraphyses arcte cohaerentes, crass. 0.0015 mm. strato gelatinoso tenui disjunctae, apicibus paululum incrassatis. Sporae ellipsoideae et parce oblongae, long. 0.008—0.010, crass. 0.005—0.006 mm, subglobosis et globosis (diam. 0.006—0.007 mm) immixtae.

*Distr.* In rupibus sat rara toto territorio. Al.: In rupe granitica (A. Wahlberg a. 1899). Ab.: Supra lapidem graniticam ad agrum in Ispoisten in par. Mariae (Vain.). N.: Ad rupem graniticam in Somerikonyvuoret in Suursaari vel Hoglandia (»var. *plumbescens* Vain.«). Ka.: Kyrkslätt (A. Kullhem), ad saxa granitica (Nyl., Vain.). Ad saxa granitica in Papula, Tervaniemi et Uuras Viburgi (»*L. lapicida*« Vain. Lich. Vib. p. 67). Ta.: In lapidibus gneissaceis et graniticis ad Hersala in Hollola (Vain.), ad saxa granitica in Padasjoki (J. P. Norrlin 821, 15980 in hb. Nyl.), in Virmaila in Padasjoki

(Vain.). LTul.: Eemilintunturi in Pummanni in Petsamo (L. Kari), ad Kola (N. I. Fellman).

Facie externa similis est *L. pantherinae* f. *cyaneae* (Ach.), sed thallo KOH non reagente ab ea differens. A *L. lapicida* praesertim apotheciis primum pruinosis, non prominentibus distinguitur. Thallus opacus, non pruinosus, medulla jodo violascente. Apothecia saepe in series irregulares conferta, in KOH guttulas materia incognita formatas abundanter dissolventia, basi non constricta. Hypothecium jodo caerulescens, in parte inferiore hyphis irregulariter contextis. Perithecium hyphis tenuibus, subirregulariter radiantibus, sat leptodermaticis, cavitatibus 0.002—0.005 mm latis, sat crebre septatis, extus KOH subolivaceum. Hymenium circ. 0.060 mm crassum, jodo caerulescens. Paraphyses simplices, haud distincte septatae. Asci clavati, in apice membrana modice incrassata, in KOH leviter incrassata. Sporae 8:næ, distichæ, simplices. Conidia »bacilliformia, recta, long. circ. 0.010—0.012 mm» sec. Th. Fr. Gonidia cystococcacea, globosa, etiam autosporis visa.

*Obs. 1.* *Lecidea caesia* Ach., Syn. Lich. (1814) p. 17, sec. specim. orig. e Suecia thallo instructa est caesio-cinereo, continuo aut rimuloso, sat tenui, laevigato, KOH non reagente, jodo bene caerulescente, apotheciis primum immersis, demum adnatis, disco primum tenuissime pruinoso aut mox nudo, margine nigro aut interdum cinerascente (»hypothecio leviter, saltem pro parte, rufescente» sec. Nyl. Lich. Scand. p. 227, ipse hypothecium non eximinavi). Sec. Th. Fr. l. c. p. 493 ad *L. lapicidam* pertinet, sed disco primum pruinoso immersoque cum *L. tessellata* congruit, colore hypothecii ab ea differens.

### 55. *L. cyanea* (Ach.) Vain.<sup>1)</sup>

*Lecidea lapicida* β *L. cyanea* Ach. Meth. Lich. (1803) p. 38 (non Th. Fr. Lich. Scand. (1874) p. 489). *Lecidea laetea* Floerk. apud Schaeer. Lich. Helv. Spic. III (1828) p. 127, IV (1833) p. 193, Lich. Exs. VIII (1828) n. 176, En. Lich. Eur. (1850) p. 114; Nyl. Lich. Scand. (1861) p. 230; Arn. Lich. Münch. (1891) p. 76. *L. lapicida* β *pantherina* Ach. Lich. Univ. (1810) p. 159 p. p. (non *Verrucaria pantherina* Hoffm. Deutschl. Fl. II, 1796, p. 184, Plant. Lichenos. III, 1801, p. 9 tab. 57 f. 2, conf. etiam Arn. l. c. p. 77). *Lecidea pantherina* Th. Fr. Lich. Scand. II (1874) p. 491; Vain. Adj. Lich. Lapp. II (1883) p. 56 (excl. v. *pseudopilati*); Zahlbr. Cat. Lich. Un. III (1925) p. 647 p. p. *L. polycarpa* Fr. Lich. Eur. Ref. (1831) p. 305 p. p. (sec. Th. Fr.); Nyl. Lich. Lapp. Or. (1866) p. 160, Lich. Pyr. Or. (1891) p. 47 (non Floerk. in Sommerf. Suppl. Fl. Lapp., 1826,

1). Exsiccati by B. Lyngé, the rest by Vainio.

p. 149, sec. Th. Fr. Lich. Spitsb. p. 39, Lich. Scand. p. 492, et sec. Arn. Lich. Münch. p. 77). *Lecidella polycarpa* Koerb. Syst. Lich. Germ. (1855) p. 237 (salt. max. p., sec. Th. Fr.). *Lecidea lericida* \**L. polycarpa* Nyl. Lich. Scand. (1861) p. 226. *L. ambigua* Fr. Lich. Suec. Exs. XIV (1833) n. 407 (in hb. Ach.); Stenh. Sched. Crit. XIV (1833) p. 11 (non Ach., sec. Th. Fr. Lich. Scand. p. 608). *L. variegata* Fr. Lich. Suec. Exs. XIII (1827) n. 387 (herb. Nyl.), Sched. Crit. XIII (1827) p. 22, Lich. Eur. (1831) p. 303, (in Syst. Orb. Veg., 1825, p. 287, nomen nudum, incertum sec. Th. Fr. l. c. p. 493); Th. Fr. Lich. Arct. (1860) p. 211.

*Exs.* Anzi Lich. Ital. sup. VI (1865) n. 270, s. n. *Lecidea variegata*: Med. J caerulea et KOH rub., hb. Oslo. — Anzi Lich. Lang. IV (1861) n. 157, s. n. *Lecidea lactea*: med. J caer., KOH rub., hb. Oslo. — Arnold Lich. Exs. n. 804, s. n. *Lecidea lactea*, sec. Vain. Adj. Lich. Lapp. II (1881) p. 56: »*Lecidea pantherina* a var. *Achariana*.» — Fellman Lich. Arct. Lapp. orient. n. 189, s. n. *Lecidea polycarpa*, according to a note by Vainio in the present manuscript. — Fries Lich. Suec. XIII (1824) n. 387, s. n. *Lecidea variegata*, et XIV (1833) n. 407, s. n. *Lecidea ambigua*, sec. Th. Fries Lich. Scand. II p. 491. — Havås Lich. Norv. (1901) n. 33 et (1902) n. 135, var. *Achariana*: med. J caer., KOH rub., hb. Oslo. — Hepp Flecht. Eur. V (1857) n. 245, s. n. *Biatora variegata*: med. J caer., KOH rub., hb. Oslo. — Johnson North Engl. Lich. Herb. IX (1900) n. 351, s. n. *Lecidea lactea*, sec. — A. L. Smith Brit. Lich. II (1911) p. 78. — Leight. Lich. Brit. X (1858) n. 301, s. n. *Lecidea lactea*: med. J caer., KOH rub., hb. Oslo. — Lojka Lich. Hung. II (1882) n. 70 et n. 71, s. n. *Lecidea lactea*, sec. Vainio Adj. Lich. Lapp. II (1881) p. 56. *Lecidea pantherina* a var. *Achariana*. — Malme Lich. Suec. VI (1909) n. 148, XV (1913) n. 370: var. *polycarpa*, XXXVII (1924) n. 923: var. *subauriculata*. — Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 339 a et b, s. n. *Lecidea polycarpa*: med. J. caer., KOH rub., hb. Oslo.

Thallus modice incrassatus aut sat tenuis aut raro sat crassus, continuus rimulosusque aut areolatus, areolis contiguis aut raro dispersis, planis aut rarius convexis, vulgo laevigatis, cinerascentibus aut albidis aut raro obscuratis aut rarissime partim ochraceis, sorediis destitutus, totus aut intus aut maculatim KOH lutescens deindeque rubescens, medulla jodo caerulescens, hypothallo nigricante. Apothecia saepe p. p. contigua aut dispersa, lat. 0.5—1.5 mm aut rarius minora majorave. Apothecia innata persistentia aut saepius demum emergentia adnatave, basi non constricta aut demum leviter

constricta, disco plano aut raro demum convexo, nigro, nudo aut pruinoso, opaco, margine tenui aut sat tenui, nigro, nudo aut pruinoso, saepe leviter prominente, vulgo persistente. Hypothecium hyphis erectis, superne anguste albidum, medio fuscescens, basi albidum, aut totum plus minus impure albidum, aërem inter hyphas continens. Peritheciun nigricans aut subaeruginoso-nigricans, strato interiore pallidiore parum evoluto. Epithecium aeruginoso-nigricans. Paraphyses arcte cohaerentes, simplices, apice parum incrassatae. Sporae ellipsoideae oblongae, long. 0.009—0.015 crass. 0.005 (0.004—0.007) mm.

F. Achariana Vain. *L. pantherina* α var. *Achariana* Vain. Adj. Lich. Lapp. II (1883) p. 56, Lich. Exp. Vegae Pitlekai (1909) p. 142. *L. lactea* f. *Achariana* Harm. Cat. Lich. Lorr. (1899) p. 394.

Exs. Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 339 b (hb. Vain.).

Thallus areolis contiguis, planis, cinerascentibus aut albidis. Apothecia disco nudo.

Distr. Al.: Collecta ab E. Nyl., Lafö in Saltvik (H. Hollmén et V. Sederholm), Bärö in Kumlinge (Hollm. et Sederh.). Ab.: Collecta a F. Elfving, Ruissalo (Vain.), Katariinanlaakso (V. Räsänen), Kultaranta (Vain.). N.: Tvärminne (F. Elfving, H. Rancken). Helsingforsia (Lång). »Frequentissima in Hoglandia» (*L. polycarpa*) in Brenner Bidr. Hogl. Lafv. p. 103), collecta a M. Brenner in Vähä-Somerikko, Ylikäytävä, Majakallio (nom. *L. lactea*), Mäkiennpäälys (Vain.), Kyrkslätt (A. Kullhem), Träskoplan in Esbo (Vain.), Toivola (Vain.), Punavuoret (Vain. a. 1873), Degerö (Vain.) et alibi prope Helsingforsiam (Norrl. II. L. F. n. 339 b), Drumsö (Nyl.), Mjölö (Vain.), conf. infra (obs. 1). Ka.: Karhula in Kymi (Räsänen). »Supra saxa et lapides in littore marino prope Papula, Uuras et Tervaniemi» prope Viburgiam (*L. polycarpa*) Vain. Lich. Vib. p. 67). St.: Merikarvia (*L. polycarpa* passim) sec. A. J. Malmgren Fört. Lafv. Sat. p. 83). Ta.: Mustiala (A. Kullhem), ad Arakoski in Padasjoki (*L. polycarpa*) sec. Nyl. in Norrl. Bidr. Sydöstr. Tav. Fl. p. 190), Paljakko in Korpilahti (*L. polycarpa*) sec. Nyl. in Vain. Fl. Tav. Or. p. 116). KOn.: »Ad saxa dioritica in Schungu» (*L. polycarpa*) sec. Nyl. in Norrl. Fl. Kar. Oneg. II p. 14, specim. e Niihisaari a Simming collecta non vidi). Oa.: Kristinestad (A. J. Malmgren). Om.: Praedium sacerdotis in Lappajärvi (*L. pantherina*) sec. G. Lång in Backman Fl. Lappaj. p. 131). Sb.: Kuopio (G. Lång Lich. Sav. Bor. p. 36). Ob.: »Frequenter ad lapides apertas supra juga et montes praesertimque locis elevatis ad oram maris» sec. Räsänen

(Flecht. Ostr. Bor. p. 333). OKaj.: In rupe granitica littorali ad templum in Kianta (Vain. Adj. Lich. Lapp. II p. 57). Kuus.: Modif. *Sudetica* ad rupem graniticam in reg. subalp. montis Nuorunen (Vain. l. c.). LIn.: In rupe syenitica in reg. subalp. ad Königas prope Mare glaciale (Vain. l. c.). LTul.: »Passim usque ad Mare glaciale, ins. Kildin» (*»L. polycarpa»* in Fellm. Lich. Arct. n. 189, Nyl. Lich. Lapp. Or. p. 160), specim. n. 15483 in hb. Nyl., *»L. lapicida»* nominatum (thallo »K rub.» sec. adn. Nyl.) a Fellm. forsitan ad Kola collectum est.

*Obs. 1.* Modificatio *Sudetica* (*Lecidea Sudetica* Koerb. Syst. Lich. Germ., 1855, p. 254, Zahlbr. Cat. Lich. Un. III p. 704, *L. pantherina* α var. *Achariana* subv. *Sudetica* Vain. Adj. Lich. Lapp. II p. 57), thallo sordide cinerascente aut cinereo-fuscescente nimis vase a f. *Achariana* differens, collecta locis sequentibus: Alandia (E. Nyfander), Tvärminne prope Ekenäs (F. Elfving), Raseborg in Snappertuna (H. Kullhem), Kyrkslätt (Kullh.), Kyrkslätt (Kullh.), Alppila Helsingforsiae (H. Hollmén), Liikolanmäki ad Kirjavalahti in Sortavala (*»L. polycarpa»* sec. Nyl. in Norrl. Symb. Fl. Lad.-Karel. p. 30), Nuorunen in Kuusamo (Vain. l. c.).

*Obs. 2.* Modificatio *composita* (*»L. polycarpa* var. *composita*) Vain. Lich. Vib., 1878, p. 67, Zahlbr. Cat. Lich. Un. III p. 673), apotheciis e parte compositis vel perithecio in discum penetrante, e parte simpli-cibus, areolis thalli planis, modice incrassatis. In Uuras Viburgi, ad saxa granitica littoralia, qualibus locis etiam prope Helsingforsiam lecta. — Thallus jodo caerulescens, KOH primum lutescens, dein rubescens. Apothecia saepe in series conferta, tota jodo caerulescentia. Hypothecium hyphis erectis, aërem inter hyphas continens, superne anguste albidum, inferne fuscescens, basi albidum. Peritheciun nigricans aut subaeruginoso-nigricans, strato interiore pallidiore vix distincto, strato obscurato ad latera apothecii sub hypothecium non aut leviter continuatum. Hymenium circ. 0.055 mm crassum. Paraphyses septatae, cellulis oblongis (in  $H_2SO_4$  visae), leviter gelatinosae, crass. 0.0015 mm, apice vix aut paullo crassiores. — *L. sympecta* Nyl., Fl. 1872 p. 358, sec. specim. orig. thallo crasso (*»1—2 mm»*), verrucoso-areolato, areolis convexis a modif. *composita* differt.

*Obs. 3.* *L. lapicida* β *L. cyanea* Ach., Meth. Lich. (1803) p. 38, sec. specim. orig. e Suecia in hb. Ach. thallo intus praesertimque in zona gonidiali KOH lutescens deindeque rubescens, disco tenuiter pruinoso instructa, ad *»L. pantherinam»* Th. Fr. evidenter pertinet et facie externa similis est *»L. cyaneae»* Th. Fr. (= *L. tessellatae* nostrae).

F. *polycarpa* (Nyl.) Vain. *Lecidea polycarpa* Nyl. in Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 339 a (hb. Vain.). *L. pantherina* γ var. *polycarpa* Vain. Adj. Lich. Lapp. II (1883) p. 57.

Thallus areolis convexis rugosisve. Apothecia nuda. Hypothecium inferne impure albidum.

*Distr.* Ab.: Ad saxum graniticum in Katariinankaakso in Kaarina (V. Räsänen). N.: Supra rupem porphyricam in Mäkienvälllys in Suursaari v. Hoglandia (Vain.), in latere aprico rupis gneissaceae ad Helsingforsiam (Norrl. H. L. F. n. 339 a). Ka.: Supra lapides graniticos in littore marino prope Tervaniemi Viburgi (»*L. polycarpa*« (Vain. Lich. Vib. p. 67).

Thallus interdum materiam KOH rubescentem tantum parcissime continens. Sic in H. L. F. n. 339 a. thallus et basis apothecii in KOH tantum parca puncta rubescentia formant. In hoc specimine thallus cinerascens (in spec. Viburgensi albidus), hypothecium hyphis erectis, superne albidum, inferne subcinerascens, aërem praesertim in parte inferiore inter hyphas continens, peritheciū extus nigricans, intus pallidum et impellucidum et hyphis irregulariter contextis, epithecium aeruginoso-fuligineum, KOH subnigricans, paraphyses apice leviter incrassatae, parce gelatinosae, asci clavati, in apice membrana modice incrassata aut in KOH turgescente, apothecia primum plana deindeque convexa, primum immersa, dein emergentia, basi non constricta, margine tenui, persistente aut demum excluso.

*F. hypophaeiza* Vain. Thallus areolis convexis rugosisve. Apothecia nuda. Hypothecium inferne fuscescens aut pallido-fuscescens.

*Distr.* N. In rupe granitica ad Helsingforsiam (Vain.). Ka.: Supra lapides in littore marino in Uuras et Papula Viburgi (»*L. polycarpa*« Vain. Lich. Vib. p. 67). Ta.: Ad lapidem graniticum prope Hersala in Hollola (Vain.), in latere lapidis prope Templum in Padasjoki (Vain.). KOn.: Supra saxa dioritica ad Schungu (»*L. polycarpa*« sec. Nyl. in Norrl. Fl. Kar. II p. 34).

*Obs. 4.* Modif. *sympelta* (*L. sympelta* Nyl. Fl. 1872 p. 358, Zahlbr. Cat. Lich. Un. III (1925) p. 707, *L. polycarpa* \**L. sympelta* Hue Add. II (1888) n. 1251, *L. pantherina* f. *sympelta* Blomb. et Forss. En. Pl. Scand. (1880) p. 87, conf. Th. Fr. Lich. Scand. p. 492), apotheciis compositis, perithecio in hymenium penetrante, e parte simplicibus a f. *hypophaeiza* differens, ad scopulum erraticum graniticum prope Kultaranta (Ab.) collecta est. — Thallus crass. 1—0.5 mm, albido-cinerascens, KOH rubescens, areolis majore parte convexis, contiguis. Apothecia demum leviter emergentia. Hypothecium superne sat anguste albidum, inferne cinereo-nigricans vel obscure cinerascens.

*F. dispersella* Vain. Thallus areolis minutis, lat. circ. 0.15—0.5 mm, dispersis et parce subcontiguis, planis et parce depresso-convexus. Apothecia parva, lat. 0.5—0.9 mm, nuda. Hypothecium inferne fuscum.

*Distr.* N.: Ad lapidem graniticam prope Abrahamsby in Kyrkslätt (Vain. 1874, a Nyl. determ. »*L. declinans*«).

Habitu quasi ad stirpem *L. goniophilae* pertinens. Thallus albus, sat tenuis, KOH demum dilute rubescens, medulla jodo caerulescente, hypothallo tantum ad ambitum parce evolutus, nigricans. Apothecia adnata, basi non constricta, disco plano aut saepe demum convexo aut depresso-convexo, margine tenui. Epithecium aeruginoso-fuligineum. Paraphyses arcte cohaerentes. Hypothecium superne anguste albidum, inferne crassius fuscum. Sporae ellipsoideae parvae.

*F. lactea* (Floerk.) Vain. *Lecidea lactea* Floerk. apud Schaeer. Lich. Helv. Exs. VIII (1828) n. 176, Lich. Helv. Spic. III (1828) p. 127, IV (1833) p. 193, En. Lich. Eur. (1850) p. 114. *L. pantherina* var. *lactea* Vain. Adj. Lich. Lapp. II (1883) p. 57. *L. Vogesica* Schaeer. l. c. (1850) p. 115 (sec. Arn. Lich. Tirol XXIII, 1887, p. 85).

Apothecia disco pruinoso aut demum denudato.

*Distr.* Al.: Ad Djupviken in Väster-Geta (K. Linkola), ad saxum gneissaceum in Ålandia (»*L. Swartzioidea*« Nyl. Not. Cr. Scand. p. 240, conf. infra). Ab.: In scopulo granitico ad Kultaranta (Vain.). N.: In rupe porphyrica ad Välikallio in Hoglandia (»*L. lactea*« sec. Nyl. in Brenner Bidr. Hogl. Lafv. p. 103 »frequenter», n. 15505, 15527 hb. Nyl.), in rupe granitica ad Helsingforsiam (Vain.), Degerö, Mjölö, Kyrkslätt (A. Kullhem). Ka.: »Passim supra rupes et lapides secus littora marina» ad Viburgum (»*L. polycarpa* \**L. lactea*« Vain. Lich. Vib. p. 67), collecta ad Papula, Tervaniemi et Vanhaviipuri (Vain.). LIn.: In regione pinifera ad Edlehäjärvi (F. Silén). LTul.: Jeretik (H. Hollmén). LMurm.: Kljatnji (»*L. lapicida* v. *declinans*« sec. det. Nyl., coll. N. I. Fellm.).

Thallus areolis planis aut raro parce convexis, contiguis, saepe albidis aut albis. Hypothecium inferne plus minus intense fuscescens.

*Obs. 5.* »*L. lithophila* var. *pallidocinerea* Floerk., Flot., Zw.« in Nyl. Lich. Scand. (1861) p. 227, »vix aliter differens a *L. lithophila* quam apotheciis statu hunido non rufescens, sec. specim. ad Helsingforsiam a Nyl. collectum ad *L. cyanam* f. *lactea* pertinet (zona gonidiali thalli KOH rubescente, disco tenuissime pruinoso). Sec. Malmgren Fört. Lafv. Sat. och Södra Österb. p. 83 »passim» in ejus territ. obvenit. Commemoratur etiam in Koerb. Syst. Lich. Germ. (1855) p. 236. *L. lapicida* v. *pallidocinerea* (Floerk.) Flot. Lich. Exs. (1829) n. 156 exactius determinata non est (Zahlbr. Cat. Lich. Un. III p. 623).

*Obs. 6.* *L. pantherina* \**L. peralbida* Th. Fr. Lich. Scand. (1874) p. 494 (*L. Swartzioidea* Nyl., supra indicata, *L. contigua* \**Swartzioidea* Nyl. H. M. F., 1859, p. 90, *L. lapicida* v. *Swartzioidea* Nyl. Lich. Scand., 1860, p. 226), margine apotheciorum interdum pruinoso differt a f. *lactea* nostra.

*F. oxydata* (Koerb.) Vain. (*Lecidella polycarpa* f. *oxydata* Koerb. Syst. Lich. (1855) p. 237, *Lecidea pantherina* f. *oxydata* Anzi Cat. Lich. Sondr. (1860) p. 80, Zahlbr. Cat. Lich. Un. III (1925) p. 673).

Thallus partim ochraceus. Apothecia nuda.

56. **L. lapicida** Ach.<sup>1)</sup>.

Meth. Lich. (1803) p. 37 (excl. syn. et var.), Lich. Univ. (1810) p. 159 p. p. Syn. Lich. (1814) p. 13 p. p.; Vain. Adj. Lich. Lapp. II (1883) p. 54 (excl. v. *tessellata* et v. *cyanea*), Exp. Veg. Pitlekai (1909) p. 141; Zahlbr. Cat. Lich. Un. III (1925) p. 605. *Lichen lapicida* Ach. Lich. Suec. Prodr. (1798) p. 61 (excl. syn.) sec. hb. Ach. (conf. infr.). *Lecidea pantherina* \**L. lapicida* Th. Fr. Lich. Scand. II (1874) p. 493.

*Exs.* Anzi Lang. IV (1861) n. 149 s. n. *Lecidea ochromela*, et X (1863) n. 399 s. n. *Lecidea polycarpa* f. *ecrustacea* (medulla J +, KOH -), et = X (1863) n. 400, s. n. *Lecidea polycarpa* f. *oxydata* (hb. Oslo). — Arnold Lich. Exs. n. 468 s. n. *Lecidea ochromela*, n. 553 s. n. *Lecidea lapicida* var. *ochromela*, sec. Arnold Lich. Tirol XX p. 8 (358), *Lecidea declinascens* f. *ochromeliza*, 716 a, b; b. s. n. *Lecidea declinans* f. *ecrustacea*, 717 s. n. *Lecidea polycarpa* var. *ecrustacea*, sec. Arnold Index *Lecidea declinans* f. *ecrustacea*, n. 801 et 802 s. n. *Lecidea declinascens* f. *subterluens*, n. 806 s. n. *Lecidea polycarpa*?, sec. Arnold Index *Lecidea declinascens* f. *ecrustacea*, n. 1236 s. n. *Lecidea declinans* var. *subterluens*: *ochromelaena*, vide Arnold Lich. Tirol XXIV p. 10 (258), n. 1527 s. n. *Lecidea declinascens* f. *ochromeliza*. — Fellman Lich. arct. Lapp. n. 187, 188 s. n. *Lecidea lapicida* var. *declinans*. — Havás Lich. Norv. (1913) n. 431. — Johnson Lich. Herb. X (1900) n. 350 et X (1906) n. 387, var. *ochromela*, sec. A. L. Smith Brit. Lich. II (1911) p. 75. — Krypt. Exs. Vindob. XXIII (1915) n. 2267, f. *ochromela*, et XXIX (1925) n. 2868. — Malme Lich. Suec. XIII (1913) n. 324, et XXXVII (1924) n. 924. — Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 337, s. n. *Lecidea declinans* f. *ochromela*.

*Lecidea lapicida* is a species that has been limited very differently by many authors. In the above enumeration the editor has only quoted exsiccata where the species was presumably limited in the same manner as in the present work, and exsiccata, quoted by very reliable authors. For full bibliographical reference see Lyngé Index Exs. II (1920) p. 172 (*Lecidea lapicida* et f. f.) and p. 165 (*Lecidea declinans* et f. f. and *Lecidea declinascens* et f. f.).

<sup>1)</sup>). Exsiccati by B. Lyngé, the rest by Vainio.

Thallus modice incrassatus aut sat tenuis aut raro sat crassus, areolatus, areolis planis aut raro convexis, laevigatis, cinerascentibus (aut raro subalbidis) aut ochraceis, KOH non distincte reagentibus, aut raro evanescens, sorediis destitutus, medulla jodo caerulescente, hypothallo nigricante saepe distincto. Apothecia p. p. contigua, p. p. dispersa, lat. circ. 0.7—1.2, rarius —2 mm, adnata aut raro primum innata, basi non constricta aut raro demum leviter constricta, disco plano aut demum depresso-convexo, nigro, nudo, opaco, margine sat tenui, nigro aut nigricante, nudo, opaco, vulgo leviter prominente, persistente aut raro demum excluso. Hypothecium superne album, inferne fuscescenti-pallidum aut rarius impure pallidum aut totum album, hyphis erectis, in parte inferiore aërem inter hyphas continens. Peritheciun extus subaeruginoso-fuligineum, intus subalbidum, strato subalbido angusto ad latera apothecii infra stratum obscuratum hypothecii continuatum. Epithecium subaeruginoso-nigricans. Paraphyses arcte cohaerentes, simplices, apice incrassatae. Sporae ellipsoideae aut p. p. oblongae, long. 0.008—0.013, crass. 0.005—0.006 (—0.004) mm.

*F. declinans* Nyl. Lich. Scand. (1861) p. 226; Vain. Lich. Exp. Amdrup (1905) p. 138, Lich. Exp. Vegae Pitlekai (1909) p. 141.

Thallus bene aut sat bene evolutus, areolis planis, cinerascentibus aut raro subalbidis. Hypothecium inferne plus minus intense fuscescens aut fuscescenti-pallidum.

*Distr.* Al.: Hasterboda in Föglö (A. Wahlberg). Ab.: Vepsänsaari (Vain.), Muhkurimäki (Vain.), Merimasku (P. A. Karsten, hb. Nyl.). N.: Kotimäki, Mäkienväylä, Somerikongvuoret, Lounatpuoli in Suursaari vel Hoglandia (Vain.), ad Helsingforsiam pluribus locis (Vain.), Kuckubacka in Sibbo (Vain.), Tvärminne (Elfving). Ka.: Ad lapides et saxa in littore marino in Uuras, Papula et Tervaniemi Viburgi (Vain. Lich. Vib. p. 67). Ta.: Kaila (»*L. confluens* var. *declinans*« Nyl. in Norrl. Bidr. Sydöstr. Tav. Fl. p. 190, Norrl. n. 356), Evo (Vain.), prope templum in Padasjoki (Vain.), Mustiala (A. Kullhem), Jutinsalo in Luhanka, Haukkavuori et Sutoinen in Korpilahti (»*L. declinans*« sec. det. Nyl. in Vain. Fl. Tav. Or. p. 116). Sa.: Lauritsala et Taipalsaari (E. Nylander). KL.: Kurkijoki (Räsänen). Sb.: Kehvonsalo, Mustamäki ad Haminanmäki in Kuopio (K. Linkola). Kb.: In rupibus in Lieksa et Nurmes passim (»*L. lapicida* var. *declinans* f. *declinascens*« Vain. Adj. Lich. Lapp. II

p. 55). OKaj.: Kajaani (K. P. Malmgren), Selkäsaari in Kuhmo, Kianta (»passim in toto territorio» sec. Vain. l. c.). Ob.: Simo (Räsänen). Kuus.: »Passim» sec. Vain. l. c., collecta in Näränkävaara et Ukonvaara (Vain.), ad Kitkajoki (F. Silén). IKem.: »Passim» sec. Vain. l. c. (collecta ab E. Nyl., in Pyhäntunturi ab E. Häyrén). LENont.: Hetta (701 et 702, »*L. lithophila*» sec. Nyl. in Norrl. Ber. Torn. Lappm. p. 339, Naimakka (»*L. confluens*» sec. Nyl. in Norrl. l. c.). LIm.: Porjeguba (G. Selin, »*L. lithophila*» sec. det. Nyl. et postea »*L. tessellata*», 15897 in hb. Nyl.

Thallus strato corticali non evoluto, KOH non reagens aut intus saepe dilutissime et vix distincte lutescens, microscopio visus crystalla rubra non formans. Apothecia rotundata aut angulosa aut raro lobulata aut confluentia, vulgo modice incrassata, sed saepe etiam sat crassa, raro sat tenuia. Hypothecium in parte inferiore stratum plus minus album obscuratum aut tantum in sectione crassa obscuratum, sed in lamina tenui impure vel cinerascenti pallidum. Peritheciun in parte exteriore hyphis radiantibus, in parte interiore subalbida saepe hyphis sat irregulariter contextis; in parte inferiore apothecii stratum obscuratum subfuscescens aut pallens, in medio apothecii deficiens. Epithecium KOH leviter dilutescens. Paraphyses gelatina parca disjunctae, in aqua visae vulgo septis haud distinctis, sed in  $H_2SO_4$  aut KOH observatae plus minus abundanter septatae, crass. vulgo 0.001 mm et apice sensim incrassato crass. 0.003—0.004 mm. Ascii clavati, in apice membrana modice aut leviter incrassata. Sporae 8:nae, distichae, apicibus rotundatis obtusis, lateribus convexis. Conidia »filiformia, recta, long. 0.009—0.012, crass. 0.0005—0.0006 mm» sec. adn. Nyl. in n. 16273 e Pyren., »*L. declinascens*» Nyl. (Lich. Pyr. Or. Obs. Nov., 1891, p. 47, ubi conidia indicantur »long. 0.009—0.014, crass. 0.0006 mm»). Gonidia cystococcaceae, globosa, diam. vulgo 0.012 mm.

*Obs. 1.* *L. lapicida* nostra a Nyl. in duas species divisa est, *L. declinantem* et *L. declinascensem*, in FI. 1878 p. 243. »In *L. declinante* Nyl. notam optimam sistunt paraphyses articulatae. Datur in Anzi Lich. Rar. Langob. Exs. IX (1863) n. 358 A» (*L. pruinosa* Anzi), qui autem sec. n. 16255 in hb. Nyl. apotheciis primum pruinosis deindeque denudatis, primum thallo immersis et demum emergentibus, hypothecio superne anguste albido, subtus fusco-nigricante et habitu *L. tessellatae* a *L. lapicida* differt et certe ad eam non pertinet. Thallo KOH non reagente differt a *L. lactea*. *L. lapicida* var. 3 *declinans* Nyl., Lich. Scand. (1861) p. 226, »ad saxa granitica in Scandinavia passim (in hb. Ach. sub »confluente« subsumpta observatur), sec. specim. n. 16256 in hb. Nyl., Holmiae a. 1852 a Nyl. collectum, thallo instructa est KOH non reagente, medulla J caerulescente, apotheciis nudis, totis jodo caerulescentibus, hypothecio superne

albido, inferne fuscescenti-pallido, KOH paullo intensius fuscescente, perithecio extus aeruginoso-nigricante (hyphis radiantibus), subitus olivaceo aut pallescente (in medio hac zona deficiente), intus impellucido, subpallido albidove, partim irregulariter contexto, aërem inter hyphas continentem et infra partem obscuratam hypothecii continuato. Paraphyses simplices, gelatina parca dis junctae, septis increbris jam in aqua distinctis, crass. 0.005, apice 0.003—0.004 mm, apicem versus sensim incrassatae. Hymenium circ. 0.060 mm crassum, jodo caerulescens. Ascii clavati, in apice membrana modice incrassata. Epithecum sordide aeruginoso-nigricans, KOH dilutescens. »Sporae long. 0.009—0.013, crass. 0.005—0.006 mm». Conidangia »tuberculosa, nigra». Conidia »filiformia, recta, long. 0.009—0.014, crass. 0.0006 mm» (sec. adn. Nyl.). — *L. declinascens* Nyl. sec. Nyl. l. c. »similis *L. declinanti* et nisi ejus subspecies, differens praecipue paraphysibus non articulatis (apice caerulescenti-nigricante). Sporae long. 0.010—0.014 mm, crass. 0.005—0.006 mm. Paraphyses quidem obsolete articulatae, sed non ita distincte ut in *L. declinante*. In alpibus Tyrolensisbus (F. Arnold) et Hungariae (Lojka) et Pyrenaeorum.» Specimen e Pyren. n. 16273 ad *L. confluentem* f. *connectentem* pertinet.

*Obs. 2.* *L. declinans* var. *subterluens* Nyl., Fl. 1878 p. 243 (Hue Addend. II, 1888, p. 196, Zahlbr. Cat. Lich. Un. III, 1925, p. 559), »hypothecio incolore vel subincolore, qualis in Scandinavia raro occurrit.» Secund. specim. orig. in hb. Nyl. (ad rupem graniticam prope Helsingforsiam a J. P. Norrlin collectum, n. XCVII, 16265 in hb. Nyl.), hypothecio superne albido, inferne subrufescens-pallido et maculis parvis obscurius coloratis aërem continentibus crebre insperso, »sporis long. 0.010—0.014, crass. 0.005—0.006 mm» (Nyl.) instructa est. — *L. declinascens* var. *subterluescens* Nyl., Fl. 1878 p. 243 (Hue Addend. II, 1888, p. 196, Zahlbr. Cat. Lich. Un. III, 1925, p. 560, *L. lapicida* a var. *declinans* f. *declinascens* sf. *subterluescens* Vain. Adj. Lich. Lapp. II, 1883, p. 55), »hypothecio incolore vel subincolore» descripta. In specim. orig. n. 16284 in hb. Nyl. (Arn. n. 144 e Tirolia) thallus albido-cinerascens, maculis ochraceis, hypothecium hyphis erectis, superne albidum, inferne rufescens-pallidum (et maculis aërem continentibus parcis) aut (in sectione tenuissima visum) subalbidum (maculis aërem continentibus numerosis), peritheciū extus aeruginoso-nigricans, intus impellucidum, albicans, aërem inter hyphas continens, epithecium aeruginoso-fuligineum, paraphyses increbre septatae, 0.0015 mm crassae, apicibus 0.003—0.004 mm crassis, »sterigmata parce ramosa et parce articulata (sicut in *Cladoniis*), conidia recta, long. 0.010—0.014, crass. 0.0005—0.0006 mm, sporae long. 0.010—0.013, crass. 0.005—0.006 mm» (sec. adn. Nyl.). In speciminibus orig. n. 16282 et 16283 thallus adhuc magis ochraceus. In Vain. Adj. Lich. Lapp. II (1883) p. 56 indicatur e Pyssy-

vaara in Nurmes (Kb.), e Hiidenvaara in Kuhmo (OKaj.), e monte Nuorunen in Kuusamo. Sicut »var. *subterluescens*« Nyl. plantae his locis lectae ad statum inter f. *declinantem* et f. *pseudospeireizoidem* intermedium pertinent.

*Obs. 3.* *Lecidea lapicida* Ach. Meth. Lich. (1803) p. 37 (*Lichen lapicida* Ach. Lich. Suec. Prodr., 1798, p. 61 »excl. syn.« sec. Ach.), sec. specimen originale in lap. granit. collectum in hb. Ach. thallo instructa KOH non reagente, jodo bene caerulescente, apotheciis nudis, hypothecio hyphis erectis, superne sat anguste pallido in sectione tenui (fuscescens-pallido in sectione crassiore), epithecio aeruginoso-fuligineo, paraphysibus partim distinete septatis (articulis oblongis), crass. 0.005 mm, apice 0.003—0.004 mm.

*F. pseudospeireiza* Vain. *L. pantherina* \**L. lapicida* B) *pseudospeirea* Th. Fr. Lich. Scand. II (1874) p. 494 p. p. (excl. specim. thallo ochraceo). *L. pericarpoides* Nyl. Fl. 1881 p. 539 p. p. (conf. infra).

Thallus bene aut sat bene evolutus, areolis planis, cinerascentibus aut raro subalbidis. Hypothecium albidum aut inferne pallidum aut subcinerascens.

*Dislr.* LKem.: In reg. alp. montis Lompolotunturi (»*L. tessellata*« sec. Nyl. in Norrl. Ber. Torn. Lappm. p. 339, »hypothecio albido« sec. Nyl. in n. 15903 in hb. Nyl.). LEnont.: In reg. alp. ad Naimakka in Suecia (»*L. tessellata*« sec. Nyl. in Norrl. I. c.). LIm.: Porjeguba (G. Selin, n. 15910 in hb. Nyl. »*L. lithophila*« et postea »*L. tessellata*« a Nyl. nominata. LPon.: Ad saxum schistosum in ostio fl. Aatscherek (165, 15905 in hb. Nyl.) et ad rupem graniticam prope Orlov (144 = 15904 in hb. Nyl., 351, 352, »*L. tessellata*« sec. Nyl. in Kihlm. N. Beitr. Flecht. Kola p. 58), ad Ponoj (Fellm. Lich. Arct. 1864, n. 190, »*L. lithophila*« Nyl. Lich. Lapp. Or., 1866, p. 160, conf. infra).

*Obs. 4.* Fellm. Lich. Arct. n. 190 in Mus. Fenn. thallo instructus cinerascente, hypothecio superne albido, inferne impure pallido, medulla jodo caerulescente, KOH non reagente, disco nigro, nudo, proximus est f. *pseudospeireizae*.

*Obs. 5.* *L. lapicida* f. *plumbescens* (*L. tessellata* f. *plumbescens* Nyl. in Brenner Bidr. Hogl. Lafv., 1885, p. 104, *L. cyanea* f. *plumbescens* Zahlbr. Cat. Lich. Un. III, 1925, p. 556), thallo plumbeo-cinereo macula una ochracea instructa, est modificatio f. *pseudospeireizae* in f. *ochraceam* transiens. Thallus sat tenuis, rimulosus aut areolatus, opacus, intus jodo caerulescens, KOH non reagens. Hypothecium superne albidum, inferne pallidum aut subalbidum, maculis aërem continentibus cinerascentibus (crebris in infima parte). Epithecum nigricans aut subolivaceo-nigricans. Sporae ellipsoideae, long. 0.006—0.010, crass. 0.006 (—0.004) mm. Habitu est insignis. Supra rupem porphyricam in Somerikonvuoret in Suursaari v. Hoglandia legi a. 1875.

*F. ochromeliza* (Nyl.) Harm. *L. declinascens* f. *ochromeliza* Nyl. Fl. 1878 p. 243; Ilue Addend. II (1888) p. 196; Zahlbr. Cat. Lich. Un. III (1925) p. 559. *L. lapicida* v. *declinans* f. *ochromeliza* Harm. Cat. Lich. Lorr. (1899) p. 396. *L. confluens* ♂ *L. ochromela* Ach. Meth. Lich. (1803) p. 41 (tantum p. p., male e graeco derivata). *L. lapicida* var. 4) *ochromela* Nyl. Lich. Scand. (1861) p. 226, *L. declinans* f. *ochromela* Zahlbr. l. c. p. 558.

Thallus bene aut sat bene evolutus, totus aut maculatim ochraceus. Hypothecium inferne plus minus intense fuscescens aut fuscescenti-pallidum.

*Distr.* Al.: Päntsärnäs in Geta (K. Linkola), Kallas in Föglö (A. Wahlberg). Ab.: Muukurimäki (Vain.) ad Aboam etiam F. Elfving, Merimasku (P. A. Karsten, »*L. tessellata* f. *daphoena*« sec. Nyl., conf. Th. Fr. I. c. p. 494), Hylkmys ad Uusikaupunki (H. Hollmén). Sammatti (G. Selin). N.: Ad rupem porphyricam in Mäkiennäällys et Somerikonvuoret (Vain.), Majakallio et Selkäpajanlahti (»*L. declinans* f. *ochromela*« sec. Nyl. in Brenner Bidr. Hogl. Lafv. p. 103). Kyrkslätt (A. Kullh.), in rupibus graniticis et gneissaceis ad Helsingforsiam (W. Nyl., Vain.). Ka.: Ad lapides et saxa in littore marino in Uuras, Papula et Tervaniemi Viburgi (Vain. Lich. Vib. p. 67). Sat.: Kumo (A. J. Malmgren). Ta.: Mustiala (Kullh.), »sat rare in Tav. austr.-or.« (»*L. confluens* v. *ochromela*« Norrl. Bidr. Sydöstr. Tav. Fl. p. 190), Asikkala et Evo (Norrl.), »sat frequenter ad rupes et lapides locis apriis in Tav. or.« (Vain. Fl. Tav. Or. p. 116). Sa.: Ad Nyslott (O. Carlenius, 16258 in hb. Nyl.). KLad.: Ad Kirjavaalahti (Norrl.). Tb.: »Sat frequenter in rupibus« (Vain. I. c.). Sb.: Mikkeli (Norrl. II. L. F. n. 337). Kb.: »In rupibus passim in toto territorio« (Vain. Adj. Lich. Lapp. II p. 55), collecta in rupe gneissacea ad Mujejärvi in Nurmäe (Vain.). OKaj.: Kajaani (K. P. Malmgren) »in rupibus passim in toto territorio« (Vain. I. c.) Kuus.: In rupe gneissacea et chloriticoschistosa in reg. subalp. montis Nuurunen collecta, »passim in toto territorio« adnotata (Vain. I. c.). Ob.: Haukipudas (M. Brenner), Jaatalanvaara in Rovaniemi (M. Brenner), Ylitornio (Norrl. 15588 in hb. Nyl.). LKem.: In alpe Keimiötunturi (Norrl. n. 819, »*L. tessellata* var. *ochracea*« sec. Nyl. in Norrl. Ber. Torn. Lapp. p. 339), ad Venejoki in Kittilä (G. Lång). LEnont.: Leutsovaara (Norrl.), in reg. pinifera ad Karesuanto (»*L. confluens*« sec. Nyl. in Norrl. I. c.), ad Kelottijärvi (*L. tessellata* f. *ochracea*) sec. Nyl. in I. c., 15887 in hb. Nyl., Norrl. 829, postea a Nyl. »*L. mesotropa* f.« nominata, conf. etiam Th. Fr. Lich. Scand. p. 490). LIm.: Porjeguba (G. Selin, 15883 in hb. Nyl., ab eo nominata »*L. lithophila* f. *ochracea*«), Umba (G. Selin, 16259 in hb. Nyl., Lich. Lapp. Or. p. 160, A. O. Kihlman n. 517).

*Obs. 6.* *L. declinascens* f. *ochromeliza* Nyl. Fl. 1878 p. 243 (Hue

Addend. II, 1888 p. 196, Zahlbr. Cat. Lich. Un. III, 1925, n. 559) spectat ad Arn. Lich. Exs. (1873) n. 553 (16288 in hb. Nyl.), qui thallo instructa est areolato, bene ochraceo, hypothecio superne albido, inferne subrufescente (subfuscescente in sectione crassiore), paraphysibus crass. vix 0.0015 mm, apice 0.003—0.004 mm, increbre septatis. — *L. declinans* f. *ochromelaena* Nyl. Fl. 1878 p. 243 (Hue Addend. II, 1888, p. 196) sec. specim. orig. n. 16264 in hb. Nyl. (Arn. Lich. Exs., 1871, n. 468) thallo instructa est rimoso, bene ochraceo, hypothecio superne albido, inferne impure pallido (partim fuscescenti-pallido in sectione crassiore) et aërem inter hyphas erectas continens. »*L. tessellata* var. *ochracea* Nyl.» in Norrl. Ber. Torn. Lappm. (1873) p. 339, in Keimiötunturi in Kittilä (LKem.) a Norrl. collecta (819), thallo instructa est pallido-ochraceo, hypothecio toto albido, in parte inferiore aërem inter hyphas contiente, hyphis erectis, paraphysibus 0.0015 mm crassis (apice crassioribus), parce et in aqua parum distincte septatis.

*Obs. 7.* *L. pericarpoides* Nyl. Fl. 1881 p. 539 (Hue Addend. II, 1888, p. 198, Zahlbr. Cat. Lich. Un. III, 1925, p. 666, *L. polycarpoides* Nyl. Fl. 1875 p. 105, nec *Biatora polycarpoides* Müll. Arg. 1870 p. 259, nec *Lecidea polycarpoides* Müll. Arg. Fl. 1871 p. 402, Zahlbr. l. c. p. 674, nec *L. paratropa* \**L. polycarpoides* Nyl. in Hue Addend. II, 1888, p. 195, n. 1240), his verbis descripta: »Forsitan varietas *Lecideae tessellatae* Floerk., quacum reactionibus convenit, sed sectione apothecii sicut in *L. spilotica* i. e. perithecio portionem medullae involvente. Occurrit etiam ferro tincta. In Lapponia late distributa (Selin et Norrlin).» Sec. hb. Nyl. specimina orig. hujus sunt n. 15887, ad Kelottijärvi in Enontekiö (LENONT.) collect. (Norrl. n. 829, »*L. tessellata* v. *ochracea*» sec. determ. Nyl. in Norrl. Ber. Torn. Lapp., 1873, p. 339, »*L. pantherina* \**L. lapicida* B) *pseudospeirea*» (Th. Fr. Lich. Scand. p. 494, 490), thallo instruct. intense ochraceo, hypothecio toto albido, in parte inferiore aërem inter hyphas contiente, hyphis erectis, paraphysibus 0.0015 mm crassis (apice crassioribus), parce (jam in aqua visis distincte) septatis, — n. 15883, ad Porjeguba in LIm. a G. Selin collect. habitu subsimilis (»*L. lithophila* f. *ochracea*» a Nyl. primum nominata), — n. 15885, in reg. alp. ad Naimakka ad fl. Könkämä (in LENONT., in Suecia), »*L. lessellata* Floerk.» sec. determ. Nyl. in Norrl. l. c. p. 339 nominata, thallo cinereo et hypothecio pallido et partim albido, in parte inferiore aërem inter hyphas sat parce contidente, hyphis erectis, perithecio intus impure albido, impellucido, epitheccio nigricante (leviter in subaeruginosum vergente), paraphysibus 0.0015 mm crassis (apicibus crassioribus) sat distincte abundantque septatis (»sporis long. 0.010—0.012, crass. 0.005—0.006 mm», conidiis »rectis long. 0.007—0.014, crass. 0.0006 mm» sec. adn. Nyl.). N. 15886 (Norrl. n. 813),

a Nyl. nominata etiam »*L. spilota* Fr. var.« et primum »*L. mesotropa* Nyl. Fl. 1867 p. 328«, una cum n. 15885 collecta (conf. Th. Fr. l. c. p. 490), nec ab ea differt. — »*L. tessellata* var. *spilota* Ach.«, sec. determ. Nylandri in Vain. Fl. Tav. Or. (1878) p. 116 commemorata, in latere rupis granitiae in Haukkavuori in Korpilahti (Ta.) collecta (16321 in hb. Nyl.), margine in limite disci linea alba ornata, apothecis confluentibus, hypothecio inferne rufescente vel fuscescente, thallo disperso instructa, vix est distinguenda a f. *declinante*, ad quam referenda etiam est »*L. lapicida* v. *tessellata* (Nyl.)« in Vain. Adj. Lich. Lapp. II p. 56, apotheciis p. p. confluentibus margineque saepe sinuato instructa, in reg. subalp. montis Nuorunen, in Kuusamo collecta.

F. *ochracea* (Nyl.) Vain. *L. tessellata* var. *ochracea* Nyl. in Norrl. Ber. Torn. Lappm. (1873) p. 339 (Mus. Fenn.). *L. pantherina* \**L. lapicida* B. *pseudospeirea* Th. Fr. Lich. Scand. II (1874) p. 494 p. p. *L. pericarpoides* Nyl. Fl. 1881 p. 539 p. p.; Zahlbr. Cat. Lich. Un. III (1925) p. 666 p. p. *L. cyanea* f. *ochracea* Zahlbr. l. c. p. 556.

Thallus bene aut sat bene evolutus, ochraceus. Hypothecium albidum aut inferne pallidum.

*Distr.* LKem.: In Keimiötunturi in Kittilä (»*L. tessellata* var. *ochracea*« sec. determ. Nyl. in Norrl. l. c., n. 819, conf. supra). LENont.: Ad Kelottijärvi in Enontekiö (»*L. tessellata* var. *ochracea*« sec. Nyl. in Norrl. l. c., n. 829, »*L. pericarpoides*« Nyl. sec. n. 15887 in hb. Nyl., conf. supra). LIm.: Ad Porjeguba (G. Selin, »*L. lithophila* f. *ochracea*« sec. det. Nyl. et »*L. pericarpoides*« sec. n. 15883 in hb. Nyl., conf. supra).

*Obs.* 8. *L. lapicida* b. *oxydata* Rabenh., Deutschl. Krypt. II (1845) p. 84, ad *L. silaceam* pertinere videtur.

F. *ecrustacea* Anzi apud Arn. Fl. 1872 p. 153; Bagl. et Car. Anacr. Lich. Vals. (1881) p. 269; Vain. Lich. Ferghana (1904) p. 247; Zahlbr. Cat. Lich. Un. III (1925) p. 607. *L. declinans* f. *ecrustacea* Nyl. apud Arn. Lich. Tirol XVIII (1878) p. 283 (conf. Nyl. Fl. 1878 p. 243). *L. lapicida* a var. *declinans* f. *ecrustacea* Vain. Adj. Lich. Lapp. II (1883) p. 56.

Thallus evanescens aut tantum infra hypothecium conspicuus.

*Distr.* Sb.: In latere rupis granitiae in Taivaanpankko prope Kuopio (K. Linkola). Kb.: Supra rupem graniticam in Pyssyvaara in Nurmes (Vain.). LENont.: In reg. pinifera prope Kaaresuanto (»*L. confluens* f. *ecrustacea*« sec. Nyl. in Norrl. Ber. Torn. Lapp. p. 339, n. 16251 et 16254 in hb. Nyl.). LIn.: Ins. lacus Inari (A. W. Granit et B. R. Poppius). LPon.: Ponoj (N. J. Fellm., »*L. lithophila* sub*ecrustacea*« p. p. in Nyl. Lich. Lapp. Or. p. 160). LTul.: Ins. Kildin (Fellm., »*L. lapicida* v. *declinans* *ecrustacea*« sec. Nyl. in Mus. Fenn.).

Est forma inconstans, in eodem specimine quoque in f. *declinans* aut f. *ochromelizam* transiens. Habitus subsimilis *L. enteromorphae* (*L. planae*), sed thallo infra apothecia evoluto jodo bene caerulescente ab ea differens. Hypothecium totum albidum aut in eodem apothecio quoque inferne subfuscescens.

*F. verrucifera* Vain.; Harm. Cat. Lich. Lorr. (1899) p. 396; Zahlbr. Cat. Lich. Un. III (1925) p. 608. *L. lapicida* a v. *declinans* f. *verrucifera* Vain. Adj. Lich. Lapp. II (1883) p. 55, Lich. Cauc. (1899) p. 327.

Thallus areolis convexis vel verrucaeformibus, cinerascentibus aut subalbidis.

Distr. N.: Helsingforsia (Räsänen). LKem.: Keimiötunturi in Muonioniska (J. P. Norrlin). LIm.: Umba (G. Selin, »*L. lapicida*« Nyl. Lich. Lapp. Or. p. 160).

### 57. *L. theiodes* Sommerf.<sup>1)</sup>

Suppl. Fl. Lapp. (1826) p. 145, K. Norske Vid. Skr. II 2 (1827) p. 54; Fr. Lich. Eur. Ref. (1831) p. 325; Hornem. Dansk Oek. Pl. II (1837) p. 569; Schaeer. En. Lich. Eur. (1850) p. 115; Th. Fr. Lich. Arct. (1860) p. 220 (320), Lich. Scand. II (1874) p. 495; Nyl. Lich. Scand. (1861) p. 228; Vain. Adj. Lich. Lapp. II (1883) p. 58; Zahlbr. Cat. Lich. Un. III (1925) p. 709. *Lecidella theiodes* Koerb. Syst. Lich. Germ. (1855) p. 241, Par. Lich. (1865) p. 203.

Thallus crassitudine mediocris vel satis crassus, primo rimoso-areolatus, deinde magis discrete areolatus. Areolae rotundatae, diam. 0.5—1.5 (—2.0) mm, bene limitatae, plus minusve verrucosae, rimis reticulatis in areolis minutis (diam. 0.2—0.3 mm.) divisae et eam ob causam rugoso-granulatae. Thallus opacus, sulphureus vel glauco-virescens, sorediis isidiisque destitutus.

Apothecia numerosa vel numerosissima, usque confluentia, rotundata vel mutua pressione angulosa, diam. 0.5—1.0 (—1.5) mm., innata, thallum aequantia, inter areolas sita. Discus planus vel subconcavus, laevigatus, nitidulus, ater, interdum in juventute levissime caesio-pruinosus, margine elevato, concolori, integro vel flexuoso cinctus. Excipulum nigricans, saltem in parte exte-

<sup>1)</sup>). Literary references by Vainio, the rest by B. Lynge.

riori. Hypothecium fulvo-fuscescens, in parte inferiori obscurius, in parte superiori pallidius coloratum. Hymenium superne aeruginoso-nigrescens vel olivaceo-smaragdulum, altum: 100—110  $\mu$  altum. Paraphyses plus minusve cohaerentes, satis distinctae, in apice haud incrassatae. Ascii clavati, octospori. Sporae (raro evolutae) breviter ellipsoideae: (8—) 9.5—13  $\times$  5—7  $\mu$ .

Pycnides frustra quaesitae.

Medulla J intense caerulea, KOH e flavo sanguinea,  $\text{CaCl}_2\text{O}_2$  non rubescens. Hymenium J caerulescens.

Vainio distinguished two varieties from Finland:

Var. *reperta* Vain. Adj. Lich. Lapp. II (1883) p. 58.

Thallus glauco-virescens vel flavescens, subdispersus vel areolatus.

*Distr.* Ks.: Vaskikallio in Kuusamo (Vain.).

Var. *Kuusamoënsis* Vain. Adj. Lich. Lapp. II (1883) p. 58.

Thallus flavescens, areolatus.

*Distr.* Ks.: Vaskikallio in Kuusamo (Vain.).

*Obs.* In the type plant of Sommerfelt the editor found the reaction »hymenium J persistenter caerulescens vel caeruleo-nigrescens». Vainio writes (l. c.) var. *reperta*: »gelatina hymenialis jodo persistenter caerulescens, ascis demum violascentibus», and var. *Kuusamoënsis*: »gelatina hymenialis jodo, praecedente caerescentia, obscure vinose rubens.» — In the same plant the editor found an almost uncoloured hypothecium.

Sommerfelt suggested an affinity with *Lecidea viridialra*, which is quite probable. In Lich. Scand. Th. M. Fries placed it in his *Lecidea silacea*-section, on account of its reaction with J. Vainio did the same in Adj. Lich. Lapp.

The editor is not inclined to attribute so much importance to the reaction with J for generic subdivision as Th. M. Fries did. He might call attention to its habitual resemblance with some species of the *Lecidea armeniaca*-section. *Lecidea theiodes* is, however, distinct from them in its thick dark excipulum.

### 58. **L. Kittilensis** Vain. (n. sp.).

Thallus modice incrassatus aut sat tenuis, areolatus, areolis planis aut p. p. depresso-convexis, laevigatis aut p. p. demum irregulariter inaequalibus, colore variegatis, obscure et dilute cinerascentibus et pallidis albidisque, KOH non

reagens, sorediis destitutus, medulla jodo caerulescente, hypothallo nigricante. Apothecia in hypothallo aut inter areolas sita aut primum thallo immersa et demum adnata, lat. 1—0.3 mm, sat tenuia, basi non constricta, disco plano, nigricante, nudo, leviter nitido, margine sat tenui, nigricante aut primum obscure cinerascente, subnitido, integro laevigatoque, prominente, persistente. Hypothecium fuscum, hyphis erectis. Epithecum fusco-fuligineum. Paraphyses arcte cohaerentes. Ascii late clavati. Sporae 8:næ, subglobosæ ellipsoideææve, long. 0.0045—0.007, crass. 0.003—0.005 mm.

*Distr.* Ad saxa dioritica. LKem.: Keimötunturi in Kittilä (L. Kari).

Habitu subsimilis *L. leucophææ*, sed margine apotheciorum prominente, hypothecio fusco, medulla thalli jodo caerulescens ab ea bene differens. Thallus KOH addito  $\text{CaCl}_2\text{O}_2$  non reagens, areolis 0.8—0.3 mm latis, angulositatem aut rotundatam aut difformibus, contiguis et p. p. dispersis, hypothallo nigricante partim inter areolas conspicuo et saepe demum minutissime areolato-diffracto. Perithecum fusco-fuligineum. Hymenium circ. 0.070 mm crassum, jodo caerulescens. Epithecum strato decolorato non obductum. Paraphyses crass. 0.001—0.0015 mm, apice clavato-capitato, 0.003 mm crasso. Ascii in apice membrana bene incrassata. Sporae plures novellæ visae. Conidia non visa. Gonidia cystococcaceæ.

Vainio compared this species with *Lecidea leucophææ*. The editor referred it to the *Lecidea silacea* section, on account of its positive reaction with J. In Vainio's herb. it has the number 3988; No. 3989 is *Lecidea Keimioeënsis* and 3990 *Lecidea deusta*.

#### Sect. *Lecidea lithophila*.

Thallus pallidus, apothecia saltem primitus planiuscula. Hyphae medullares non vel passim parce amyloideæ.

#### 59. *L. lithophila* Th. Fr.<sup>1)</sup>

Lich. Scand. II (1874) p. 495; Vain. Adj. Lich. Lapp. II (1883) p. 59 p. p.; Arn. Lich. Fränk. Jur. (1884) p. 553, Lich. Tirol XIII (1887) p. 122, Lich. Münch. (1891) p. 77; Nyl. Lich. Par. (1896) p. 91; Zahlbr. Cat. Lich. Un. III (1925) p. 618 p. p.. *L. lapicida* \**L. lithophila* Nyl. Lich. Scand. (1861) p. 226 p. p. *Verrucaria*

<sup>1)</sup>). Exsiccati by B. Lyngé, the rest by Vainio.

*multipuncta* Hoffm. Deutschl. Fl. (1796) p. 135?. *Lecidea pantosticta* var. *spilota* Ach. K. Vet. Ak. N. Handl. (1808) p. 230? *Patellaria variabilis* var. *patellaris* Wallr. Fl. Crypt. Germ. III (1831) p. 364 (sec. Zahlbr. I. c. p. 619). *Lecidella pruinosa* Koerb. Syst. Lich. Germ. (1855) p. 235 (?); Arn. Lich. Tirol XIII (1874) p. 239 (9)?.

*Exs.* Anzi Lich. Lang. IX (1863) n. 358 A (non B, quae est *Lecidea lacea*, sec. Arnold Tirol XXIV p. 5 (253). — Arnold Lich. Exs. n. 800 a (f. *pruinosa*) et b (f. *umbrosa*), vide Arnold Tirol XXI p. 42 (134), n. 1052 (f. *minuta*), n. 1238 (f. *minuta*). — Arnold Lich. Mon. (1897) n. 480. — Claud. et Harm. Lich. Gall. I (1903) n. 45. — Crombie Lich. Brit. II (1877) n. 183. — Fellman Lich. arct. Lapp. n. 190. — Fries Lich. Suec XIII (1824) n. 374, n. 375 p. p. (s. n. *Lecidea albocaerulescens*), sec. Th. Fries Lich. Scand. II p. 496. — Havås Lich. Norv. (1902) n. 132 (f. *subnuda*). — Hepp Flecht. Eur. IX (1860) n. 490 (s. n. *Bialora cyanea*), sec. Th. Fries Lich. Scand. II p. 496. — Kern. Flora Austr.-Hung. VIII (1886) n. 1551 (f. *umbrosa*, vide Arnold Tirol XXVI p. 32 (132)). — Malme Lich. Suec. XVIII (1914) n. 450, XXIV (1916) n. 597, XXXIII (1920) n. 822. — Zwackh Lich. Exs. 130 B (et A?). — *Lecidea pruinosa*, vide Lynge Index II (1920) p. 181.

Thallus tenuis aut raro modice incrassatus, continuus aut rimosus aut demum areolato-diffractus, sat laevigatus aut leviter inaequalis, cinerascens aut rarius subalbidus aut ochraceus, opacus, nec KOH, nec jodo reagens, sorediis destitutus, hypothallo nigricante passim conspicuo. Apothecia partim crebra aut sat crebra, partim dispersa, lat. 0.7—1.3 mm, semiimmersa vel emergentia aut immersa persistentia, sat tenuia, basi non constricta, disco plano aut raro demum depresso-convexo, tenuiter aut tenuissime pruinoso aut demum denudato, margine tenui aut primum parum conspicuo, nigricante aut raro leviter ochraceo. Hypothecium albidum, in parte superiore hyphis erectis, in parte inferiore aërem inter hyphas continens. Peritheciun extus nigricans, intus sordide pallescens. Epitheciun subolivaceo-fuscescens, KOH distinctius fuscescens. Paraphyses arcte cohaerentes, strato gelatinoso tenui disjunctae. Sporae ellipsoideae aut p. p. oblongae, »long. 0.009—0.014, crass. 0.004—0.006 mm» (sec. adn. Nyl. in n. 15994, 15997 et 15967).

*Distr.* Praesertim ad saxa gneissacea humilia in campis aut aliis locis apricis crescit. Sb.: Pitkälähti in Kuopio (O. Lönnbohm). Kb.: Ad lapidem graniticum in campo olim deusto ad Jakokoski in Kon-

tiolahti (Vain.), »passim in Kar. bor.» sec. Vain. in Adj. Lich. Lapp. II p. 59, collecta ad templum in pag. Lieksa (Vain.) et ad lapidem graniticum supra rupem prope Piironen in Nurmes (Vain.). OKaj.: »Frequenter in Kuhmo et sat frequenter in Kianta» (Vain. l. c.). Kuus.: »Passim in Kuusamo» (Vain. l. c.). Ob.: In lapide granitico in Hupisaari prope Oulu (M. E. Huimonen), in lapide granitico in alpe Keimiötunturi in Muonioniska (Norrl. Ber. Torn. Lappm. p. 339, n. 15961 in hb. Nyl.). LIn.: In reg. subalp. jugi Suoloselkä et ad lapidem graniticum in reg. subalp. montis Hammastunturi (Vain. l. c. p. 60). Kaamasjoki in Inari (Silén). L. Murm.: Jeretik (Hollmén).

A *L. enteromorpha* disco saltem primum pruinoso et epithecio KOH fuscescente et apotheciis minus prominentibus distinguitur. Apothecia (in speciminibus Tirolicis) interdum conferta contiguave, rotundata aut interdum angulata aut sublobata, disco opaco, margine leviter aut non prominente, subpersistente. Hypothecium tenue, inferne tenuiter sat irregulariter contextum, totum jodo caerulescens. Peritheciun extus KOH subfuscens, infra hypothecium non aut anguste continuatum, ex hyphis formatum radiantibus, tenuibus, sat leptodermaticis, conglutinatis, cavitatibus sat brevibus. Hymenium circ. 0.055 mm crassum, jodo persistenter caerulescens. Paraphyses simplices, crass. 0.001 mm, apice crass. 0.002—0.0025 mm obscurataeque. Sporae 8:nae, distichae, simplices. Conidia »filiformia, recta, long. 0.014—0.018, crass. 0.0005 mm» sec. adn. in n. 15967 ex Heidelberg in hb. Nyl. (»subrecta, long. 0.012—0.015 mm» sec. Th. Fr. l. c. p. 497).

*Obs. 1.* *L. lithophila* \*f. *ochracea* Arn. (Vain. Adj. Lich. Lapp II, 1883, p. 60 p. p., *L. lithophila* f. *ochracea* Arn. Lich. Tirol IV, 1869, p. 614, non *L. daphoena* β *L. ochracea* Ach. Syn. Lich., 1814, p. 337, Lich. Un., 1810, p. 166, quae sec. specim. n. 274 e Pyrenaeis in hb. Ach. ad hanc speciem non pertinet) thallo vage ochraceo distincta, collecta ad lapides graniticos prope Piironen in Nurmes (Vain.) et in reg. subalp. montis Hammastunturi in LIn. (Vain.) et in alpe Keimiötunturi in Muonioniska (Norrl.). Saepe in eodem specimine thallus partim ochraceus et partim albidus.

*Obs. 2.* *Lecidea lapicida* var. *lithophila* Ach. K. Vet. Ak. N. Handl. 1808 p. 233 p. p., Lich. Un. (1810) p. 160, *Lecidea lithophila* Ach. (1814) p. 14, sec. specim. n. 386, 430 et 825 in Helvetia et Suecia collecta, apotheciis nudis, hypothecio albido, thallo jodo non reagentibus instructa, ad *L. lithophilam* nostram non pertinet, sed alias species amplectitur (conf. Th. Fr. l. c. p. 497), quare nomen antiquissimum hujus speciei adhuc non est certe cognitum.

60. **L. enteromorpha** (Flot.) Vain.<sup>1)</sup>.

*Lecidea atroalba* var. *enteromorpha* Flot. Lich. Exs. Schles. (1829) n. 178, p. 8 (in hb. Nyl.). *Lecidella plana* Lahm apud Koerb. Par. Lich. 3 Lief. (1861) p. 211; Arn. Lich. Tirol XV (1876) p. 6. *Lecidea plana* Nyl. Flora 1872 p. 552, Lich. Par. (1896) p. 91; Th. Fr. Lich. Scand. II (1874) p. 497; Arn. Lich. Tirol. XVII (1877) p. 535; Vain. Adj. Lich. Lapp. II (1883) p. 60; Arn. Lich. Fränk. Jur. (1884) p. 554, Lich. Münch. (1891) p. 78; Zahlbr. Cat. Lich. Un. III (1925) p. 668.

Exs. Arnold Lich. Exs. n. 759 a, b (var. *perfecta*), n. 799 (f. *elevata*), n. 939, n. 1470. — Flotow Lich. Exs. Schles. II (1829) n. 178, s. n. *Lecidea atroalba* var. *enteromorpha*. — Leight. Lich. Brit. V (1854) n. 157, s. n. *Lecidea lapicida*, sec. Arnold Flora 1861: *Lecidea polycarpa*, sec. A. L. Smith Brit. Lich. II (1911) p. 76: *Lecidea plana* = *Lecidea enteromorpha* (Flot.) Vain. — Koerber Lich. sel. Germ. II (1856) n. 46, s. n. *Lecidella polycarpa*, sec. Th. Fries Lich. Scand. p. 498 et Arnold Lich. Tirol XVII p. 3 (535): *Lecidea plana* = *Lecidea enteromorpha* (Flot.) Vain. — Lojka Lich. Hung. II (1882) n. 69 (f. *perfectior*). — Lojka Lich. Univ. IV (1886) n. 181 (f. *elevata*). — Malme Lich. Suec. XXIII (1916) n. 572 et XXXIX (1926) n. 966 (var. *ecrustacea*). — Mudd Lich. Brit. II (1861) n. 178, s. n. *Lecidea lapicida*, sec. Nyl. *Lecidea lithophila*, sec. A. L. Smith Brit. Lich. II (1911) p. 76: *Lecidea plana* = *Lecidea enteromorpha* (Flot.) Vain. — Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 338 a, b. — Zwackh Lich. Exs. n. 540.

Thallus tenuis aut sat tenuis aut raro sat crassus, areolatus aut partim subverrucosus aut raro continuus, plus minus inaequalis, cinereo-albidus aut subalbidus aut raro ochraceus, opacus, nec KOH, nec jodo reagens, interdum evanescens, sorediis destitutus, hypothallo nigricante aut vulgo indistincto. Apothecia partim crebra aut sat crebra, partim increbra, lat. 0.5—1.5 mm, modice incrassata aut raro sat tenuia, late adnata, basi demum leviter constricta, disco plano aut raro demum convexo, nigro, nudo, opaco, margine tenui aut sat tenui, nigro, nudo, persistente aut rarius demum excluso. Hypothecium albidum, hyphis erectis, in parte infima aërem inter hyphas continens et irregulariter contexum. Peritheciun extus nigricans, intus albidum. Epithe-

<sup>1)</sup>. Exsiccati by B. Lyngé, the rest by Vainio.

cium nigricans, KOH subcaerulescenti-nigricans aut vix mutatum (non fuscescens). Paraphyses arcte cohaerentes, strato gelatinoso tenui disjunctae. Sporae oblongae aut ellipsoideae, long. 0.007—0.01 mm (»—0.013 mm» sec. adn. Nyl.), crass. 0.003—0.005 mm.

Thallus interdum fere obsoletus, vulgo areolis contiguis aut dispersis. Apothecia interdum p. p. confluentia (f. *aggregatula* Nyl.), rotundata aut raro p. p. difformia aut angulosa aut interdum lobata, margine non aut leviter prominente, integro. Hypothecium jodo caerulescens. Peritheciumparte exteriore nigricante KOH parum reagente aut subolivaceo, infra hypothecium anguste continuatum, ex hyphis formatum subradianibus, sat leptodermaticis, conglutinatis, sat crebre septatis, cavitatibus 0.002—0.003 mm latis. Hymenium circ. 0.045—0.055 mm crassum, jodo caerulescens. Paraphyses simpllices, haud distincte septatae, crass. 0.001 mm, apice 0.002—0.003 mm. Asciclavati, in apice membrana modice incrassata. Sporae 8:nae, distichiae. Conidia »filiformia, recta, long. 0.010—0.013, crass. 0.0005—0.0006 mm» (sec. Nyl. in n. 19992).

F. *perfecta* (Arn.) Vain. *Lecidella plana* f. *perfecta* Arn. Lich. Tirol XV (1876) p. 358, XVII (1877) p. 535, Lich. Exs. (1878) n. 759 a, b (hb. Nyl.). *Lecidea plana* f. *perfecta* Nyl. Fl. 1881 p. 539; Vain. Adj. Lich. Lapp. II (1883) p. 61; Arn. Lich. Fränk. Jura (Fl. 1884) p. 160; Zahlbr. Cat. Lich. Un. III (1925) p. 670.

Thallus tenuis aut sat tenuis, hypothallo indistincto. Apothecia plana (aut raro p. p. demum convexa).

Distr. Ab.: Ad lapides graniticos prope Vanha-hautausmaa in Maaria (Vain.), ad Aboam (F. Elfving). N.: Kyrkslätt (A. Kullhem), Helsingforsia (J. P. Norrlin). IK.: Ad Perkjärvi in Muola (A. O. Kihlman). Ta.: Hollola (Vain.), ad lapidem graniticum supra rupem Haukkavuori et ad lapidem graniticum in Piililä in Korpilahti (Vain. Fl. Tav. Or.). Tb.: In rupe granitica ad Laurinniemi in par. Jyväskylä (Vain. l. c.). Sb.: Ad latus apricum rupis graniticae in Pieksämäki (Norrl. et Nyl. Herb. Lich. Fenn. VII, 1882, n. 338a). Sb.: Ad rupem graniticam in Harjulanmäki in Kuopio (K. Linkola). Kb.: Supra lapidem graniticum ad Niska in Enontaipale (Vain.). OKaj.: Ad lapidem graniticum in campo deusto prope Saunaniemi et ad lapidem chloriticum in campo deusto prope Lakso in Kianta (Vain. l. c.). Ob.: In par. Ii (M. Brenner). LKem.: Lainiokangas in Kittilä (G. Lång). LENont.: Ad saxa granitica in Ounastunturi (»*L. lithophloides* Nyl.« in Norrl. Ber. Torn. Lappm. p. 339) in Enontekiö.

Obs. F. *oxydata* (And.) Vain. (*Lecidea plana* f. *oxydata* And. Hedwigia LXV, 1924, p. 70, Zahlbr. Cat. Lich. Un. III, 1925, p. 669),

thallo passim ferrugineo-ochraceo instructa, collecta supra lapidem gneissaceum in Evo in Ta. (J. P. Norrlin), ad lapidem graniticum in Pieksämäki (Norrl., 15855 in hb. Nyl.), supra lapidem in latere viae ad Jännevaara in Enontaipale et ad lapidem gneissaceum in Kalliovaara in Lieksa in Kb. (Vain.). — Thallus jodo non reagens. Apothecia non pruinosa. Epithecium nigricans aut subaeruginoso-nigricans, KOH non fuscescens. Hypothecium albidum. Hypothallus nigricans in specim. e Kalliovaara conspicuus.

F. *perfectior* (Nyl.) Vain. *Lecidea plana* f. *perfectior* Nyl. Fl. 1881 p. 539; Vain. Adj. Lich. Lapp. II (1883) p. 61; Arn. Lich. Fränk. Jura Fl. 1884 p. 160; Hue Addend. II (1888) p. 200 (n. 1267); Zahlbr. Cat. Lich. Un. III (1925) p. 670. *L. plana* var. *incommoda* Vain. l. c.

Thallus modice incrassatus, aut sat crassus, rimoso-areolatus et verrucosus. Apothecia plana aut p. p. demum leviter convexa.

*Distr.* N.: Ad rupem graniticam in Drumsö prope Helsingforsiam (H. Lindberg). Klad.: Ad saxum gneissaceum prope Sortavala (Fr. Nylander). Kb.: Ad lapidem gneissaceum in Jaakimvaara (F. Nylander). Sb.: Ad latus apricum rupis graniticae in Pieksämäki (Norrl. et Nyl. Herb. Lich. Fenn. VII, 1882, n. 338 b). OKaj.: Ad saxa gneissacea humilia in campo deusto prope templum in Kuhmo (»*L. lithophila* var. *lithophiliza*« in Vain. l. c. p. 60), supra saxum graniticum in campo deusto ad Saunaniemi in Kianta (»*L. plana* v. *incommoda* Vain. l. c. p. 61).

F. *sublumida* Vain. *L. plana* f. *sublumida* Vain. Adj. Lich. Lapp. II (1883) p. 61; Zahlbr. Cat. Lich. Un. III (1925) p. 670.

Thallus modice incrassatus aut sat crassus, areolatus aut partim verrucosus, hypothallo indistincto. Apothecia primum plana, demum bene convexa aut p. p. depresso-convexa.

*Distr.* Ab.: Ad rupem gneissaceam in Merimasku (P. A. Karsten, »*L. lapicida*« sec. Nyl. in Mus. Fenn.). OKaj.: Ad lapidem dioriticam in campo deusto prope Tervasalmi in Kuhmo (»*L. lapicida* \*f. *subterluescens*« in Vain. l. c. p. 55), ad saxa chloritica in campo deusto prope Lakso in Kianta (Vain. l. c. p. 61). Ob.: Ad saxum chloriticum in par. Ii (M. Brenner, »*L. lithophila*« sec. Nyl. in Mus. Fenn.).

F. *ecrustacea* Vain. *L. plana* f. *ecrustacea* Vain. Adj. Lich. Lapp. II (1883) p. 60; Zahlbr. Cat. Lich. Un. III (1925) p. 669.

Thallus parum evolutus, e verruculis parcissimis, minutis, dispersis, cinerascentibus constans, hypothallo nigro inter apothecia radiante. Apothecia plana.

*Distr.* N.: In rupe granitica prope Helsingforsiam (J. P. Norrlin). Kb.: Prope Koriseva in par. Lieksa (Vain. l. c.). OKaj.: Ad Kylmälä et supra lapidem graniticum in ericeto prope templum in

Kuhmo, supra lapidem graniticum in campo deusto prope Saukko in Kianta (Vain. l. c.).

*Obs.* *Lecidella plana* var. *ecrustacea* Nyl. in Arn. Lich. Tirol XVIII (1878) p. 287 sec. specim. orig. n. 15841a in hb. Ach. hypothallo indistincto et apotheciis minoribus & habitu *L. goniophilae f. pungentis* (Koerb.) a planta nostra differt.

61. **L. subplanata** Vain.

Adj. Lich. Lapp. II (1883) p. 61; Zahlbr. Cat. Lich. Un. III (1925) p. 702.

Thallus evanescens, vix nisi infra apothecia conspicuus, albidos, neque KOH nec J reagens, hypothallo nigro parum evoluto. Apothecia adnata, basi bene constricta, interdum parce conferta, lat. 0.5—1.5 mm, sat tenuia, saepe angulosa aut subflexuosa, disco plano, nigro, nudo, opaco, margine tenui, non aut parum prominente. Hypothecium decoloratum pallidumve, hyphis irregulariter contextis, tenue. Excipulum fuligineum, KOH solutionem violaceam non effundens. Epithecium aeruginoso-fuligineum, KOH parum mutatum. Paraphyses arcte cohaerentes, gelatinosae. Sporae ellipsoideae, long. 0.10—0.012 (—0.014), crass. 0.005—0.007 mm.

*Distr.* LIN: In latere rupis graniticae in regione pinifera prope Veskoniemi (Vain.).

Proxima est *L. enteromorphae* (Flot.) Vain., sed sporis crassioribus ab ea differens. Hypothecium in parte superiore jodo reagens, KOH non reagens, circ. 0.100—0.120 mm crassum, inter hyphas passim leviter aërem continens. Peritheciun hyphis radiantibus, modice pachydermaticis, in parte marginali aeruginoso-fuligineum, in parte inferiore olivaceo-, fuscescenti- et impure subviolasceni-nigricans, KOH parum reagens. Hymenium circ. 0.050—0.060 mm crassum, jodo caerulescens, dein obscure vinose rubens. Epithecium KOH dilutius coloratum et subolivaceum. Paraphyses sat parce gelatinosae, tubulis circ. 0.0005—0.001 mm crassis, apice leviter incrassatis. Asci clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae, apicibus rotundatis, lateribus convexis.

62. **L. Pilati** (Hepp) Koerb.

Par. Lich. 3 Lief. (1861) p. 223; Th. Fr. Lich. Scand. II (1874) p. 498; Vain. Adj. Lich. Lapp. II (1883) p. 62, Arn. Lich. Tirol

XXV (1893) p. 377; Zahlbr. Cat. Lich. Un. III (1925) p. 667. *Biatora Pilati* Hepp Flecht. Eur. II (1857) n. 261. *Lecidella botryosa* Hepp in Arn. Lich. Tirol VI (1871) p. 1109 (= *L. proludens* sec. ann. Nyl.). *L. proludens* Nyl. Flora 1872 p. 359, 1885 p. 41; Hue Addend. II (1888) p. 187.

*Exs.* Hepp Flecht. Eur. V (1877) n. 261 (hb. Nyl., »*L. proludens*« sec. Nyl. in Stizenb. Lich. Helv. II, 1883, p. 192, »*L. parasema ecrustacea saxicola*« sec. Nyl. Fl. 1855). — Havaas Lich. Exs. Norv. (1904) n. 204 (Vain. determ.). — Arn. Lich. Exs. (1873) n. 555 (hb. Nyl.). — Magnusson Lich. sel. Scand. IV (1931) n. 87.

Thallus verruculosus aut subareolatus, sat tenuis, albidus, nec jodo nec KOH reagens, dispersus, aut evanescens, hypothallo indistincto. Apothecia adnata, basi constricta, sat crebra aut dispersa, lat. 0.5—1.8 mm, disco plano aut rarius demum convexo, nigro, nudo, opaco, margine tenui aut sat tenui, atro, nudo. Hypothecium pallescens aut partim sordide pallido-fuscescens, in parte superiore hyphis erectis, in parte inferiore irregulariter contextum et jodo non reagens, nec KOH mutatum. Peritheciun extus fusco-nigrum fuligineumve, intus plus minus dilutescens, KOH solutionem violaceam effundens. Epitheciun aeruginoso-fuligineum aut nigricans, KOH non reagens. Paraphyses arcte cohaerentes, bene gelatinosae. Sporae oblongae aut ellipsoideae, long. 0.006—0.011, crass. 0.003—0.004 (—0.005) mm.

*Distr.* LIn.: Ad latus saxi granitici in insula prope Tscharminniemi in reg. pinifera paroeciae Inari (Vain. l. c.).

Thallus subareolatus saepe inaequalis, dispersus, sub apothecia jodo non reagens, sorediis destitutus. Apothecia basi vulgo demum bene constricta, saepe demum flexuosa, margine non aut leviter prominente aut demum excluso. Hypothecium superius hyphis erectis et jodo leviter caerulescens, in parte inferiore hyphis irregulariter contextis, passim leviter aëre disjunctis. Peritheciun hyphis radiantibus, intus albidum aut pallidum aut dilute coloratum, corpuscula chrysea aut chryseo-fuscescētia continens, solutionem violaceam, demum granula minutissima formantem effundens jodo non reagens, strato exteriore obscurato sub apothecia continuata, medio deficiente. Hymenium circ. 0.080 mm crassum, indistincte limitatum, jodo caerulescens. Paraphyses subsimplices, parcissime ramoso-connexae, apicibus interdum furcatis, tubulis 0.001 mm latis, apicibus parum incrassatis. Asci clavati, in apice membrana modice incras-

sata. Conidia »bacillaria, recta, long. 0.006—0.007, crass. 0.0005—0.0006 mm» (sec. adn. Nyl. in »*L. proludente*» Nyl., hb. Nyl. 15921, Arn. Lich. Exs., 1873, n. 505). Sporae 8:næ, distichæ.

*Obs. 1.* In specim. orig. *Bialorae Pilati* Hepp Flecht. Eur. II n. 261 (hb. Nyl.) thallus infra apothecia jodo non reagens, hypothecium superne pallido-subrufescens, KOH rubricoso-violascens, jodo caerulescens, hyphis erectis, inferne fusco-rufescens, perithecium parte exteriore fuligineum, intus dilutius coloratum, KOH solutionem rubricoso-subviolaceam effundens, hymenium superius dilutissime aut sat dilute aeruginosum, epithecio fuligineo, KOH non reagente.

*Obs. 2.* *L. Pilati* var. *Hardangerina* Vain. (»*L. auriculata* var. *Hardangerina* Vain.» in Havaas Lich. Exs. Norv., 1901, n. 58), ad Granvin in Hardanger in Norvegia collecta, a *L. Pilati* margine apotheciorum extus subrufescente, modice incrassato differt. Thallus sat tenuis, subdispersus, jodo non reagens (nec. infra apothecia reagens). Perithecium extus fusco-fuligineum, intus dilutius coloratum et corpusculis obscuratis inspersum, KOH solutionem rubricoso-violaceam effundens. Hypothecium corpusculis chryseo-fuscescentibus (KOH solutionem rubricoso-violaceam effudentibus) abundantanter (praesertim in parte inferiore) inspersum, ceterum subpallidum, parte inferiore irregulariter contextum et jodo non reagens. Epithecium olivaceum. Sporae long. 0.007—0.010, crass. 0.003—0.004 mm. Non sit autonoma species.

*Obs. 3.* »*L. Pilati*» in Arn. Lich. Exs. n. 805 b (in Mus. Fenn.), ad Paneveggio in Tirolia collecta, ad *Lecideam Tirolicam* Vain. (n. sp.) pertinet, reactionibus thalli et apotheciorum a *L. Pilati* differens. Thallus infra apothecia jodo caerulescens, KOH non reagens. Apothecia margine modice incrassato. Hypothecium (in sectione tenuissima) pallidum, punctis parvis fuscis (fuscescens apparet in sect. crassiore), zonæ irregulariter contextæ, albidae, fere impellucidae, jodo caerulescenti, KOH rubescenti (demum crystalla aciculæ, brevia, rubra formanti), impositum. Perithecium extus sub-aeruginoso-fuligineum, intus sordide subfuscescenti-dilutescens, jodo caerulescens, KOH rubescens (demum crystalla aciculæ rubra formans). Epithecium subaeruginoso-fuligineum, KOH non reagens. Conf. cum descr. *L. Pilati* in Arn. Lich. Tirol XXV (1893) p. 376, 377. A *L. pantherina* reactione thalli differt.

*Obs. 4.* *Lecidea proludens* Nyl., Fl. 1872 p. 359 (Hue Addend. II, 1888 p. 187) sec. specim. n. 15925 e Tirolia (1870) thallo infra apothecia sito jodo non reagente (nec KOH distincte reagente), perithecio extus fuligineo, intus dilutescente et corpuscula obscura abundantanter continente, KOH solutionem violaceam effundente, hypothecio inferiore irregulariter contexto, pallido et corpuscula obscu-

rata abundanter continente, jodo non reagente, KOH solutionem violaceam effundente, hypothecio superiore hyphis erectis instructo, subpallescidente, jodo dilute caerulescente, paraphysibus modice gelatinosis. A *L. Pilati* non est distinguenda. Specimen in Lauterbrunnen a Metzler collectum, a Nyl. item indicatum, a me non examinatum.

### 63. *L. phylliscina* Nyl.

Nyl. Flora 1873 p. 21; Th. Fr. Lich. Scand. II (1874) p. 499; Hue Addend. II (1888) p. 213 (n. 1343); A. L. Smith Mon. Brit. Lich. II (1911) p. 80; Oliv. Bull. Géogr. Bot. XXV (1915) p. 116, 167; Zahlbr. Cat. Lich. Un. III (1925) p. 667.

Thallus albidus, opacus, nec KOH, nec J reagens, parum evolutus aut evanescens, hypothallo indistincto. Apothecia adnata, basi bene constricta, conferta aut confluentia, parcus solitaria, lat. 1—2 mm, disco plano, nigro, nudo, opaco, margine crasso, prominente, persistente, nigro, nudo, opaco. Hypothecium fusco-nigrum, crassum. Peritheciun KOH solutionem rubricosam effundens. Epithecium dilute fuscescens, KOH non reagens. Paraphyses arcte cohaerentes, bene gelatinosae. Sporae non evolutae.

*Distr.* KOn.: In latere praerupto petrae erraticae prope pagum Selki (Norrl. Fl. Kar. Oneg. II p. 34).

Thallus non sorediosus, sat laevigatus. Apothecia sat crassa, crass. circ. 0.5 mm (sec. Nyl.), saepe phyllicoideo confluentia eamque ob causam ambitu sublobulato. Hypothecium superne hyphis erectis. Peritheciun hyphis irregulariter subradiantibus, sat crassis, membranis sat modice incrassatis, conglutinatis, intus dilutius coloratum, extus fusco-nigricans. Paraphyses parce ramoso-connexae, tubulis 0.0005—0.001 mm crassis, apice parum incrassato. Hymenium circ. 0.090—0.100 mm crassum, »jodo intense caerulescens, thecae deinde vinose rubentibus» (sec. Nyl.). Asci clavati, in apice membrana modice incrassata. Sporae non bene evolutae. Ad *Lecideam Pilati* non pertinet.

### 64. *L. pseudopilati* Vain.

*L. pantherina* var. *Achariana* subvar. *pseudopilati* Vain. Adj. Lich. Lapp. II (1883) p. 57. *L. pantherina* f. *pseudopilati* Zahlbr. Cat. Lich. Un. III (1925) p. 650.

Thallus evanescens aut parcissime evolutus, areolatus, areolis contiguis aut dispersis, sat planis, obscure cinerascentibus, opacis, KOH non reagentibus, jodo intense caerule-scentibus, sorediis destitutus, hypothallo nigro passim conspicuo. Apothecia aggregata et partim dispersa, lat. 1--0.5 mm, adnata, saepe leviter subangulosa, basi leviter constricta, disco plano, tenuissime pruinoso aut partim fere denudato nigricanteque, margine mediocri, nigro, nudo, prominente, persistente. Hypothecium hyphis erectis, superne anguste albidum, inferne fuscum, aërem inter hyphas non continens. Peritheciun extus aeruginoso-fuligineum, KOH non reagens, strato interiore albido crasso, KOH rubescente. Epitheciun aeruginoso-fuligineum, KOH non reagens. Paraphyses arcte cohaerentes, simplices, gracillimae, apice incrassatae. Sporae ellipsoideae et p. p. oblongae, long. 0.009—0.012, crass. 0.004—0.005 mm.

Distr. Kuus.: Ad rupem graniticam in reg. subalp. montis Nuorunen (Vain. l. c.).

Autonoma est species, colore thalli, hypothecii et peritheci a *L. Pilati* differens. Neque thallus infra apothecia situs KOH reagens. Maculae parvae ochraceae parce inter apothecia observantur. Apothecia modice incrassata, disco opaco, margine sat opaco, saepe leviter flexuoso, non lobato. Peritheciun usque ad 0.280 mm crassum, totum ex hyphis radiantibus, cavitatibus angustissimis, membrana modice incrassata instructis, strato albido jodo reagente, aërem inter hyphas continentem, ad latera (sicut etiam strato obscurato) infra hypothecium fuscum continuato, parte exteriore aeruginoso-fuliginea KOH non reagente. Hymenium circ. 0.070 mm crassum. Paraphyses parce gelatinosae, crass. 0.001 mm, apice clavato 0.003—0.004 mm crasso. Ascii clavati, in apice membrana modice incrassata. Sporae 8:næ, distichæ.

Obs. In his first diagnosis of *Lecidea pantherina* var. *Achariana* subvar. *pseudopilati* (Adjum. l. c.) Vainio writes: »Thallus obsoletus vel solum hypothallinus, ubi distinctior hydrate kalicu rubescens sicut etiam pars albidus excipuli.» In the present work Vainio writes: »Areolis . . . KOH non reagentibus.» — The editor was unable to find any positive reaction with KOH in the medulla of the type plant from Nuorunen (Herb. Fennicum, Helsingfors).

65. **L. auriculata** Th. Fr.

Lich. Arct. (1860) p. 213, Lich. Spitsb. (1868) p. 39, Lich. Scand. II (1874) p. 499; Vain. Adj. Lich. Lapp. II (1883) p. 63, Lich. Exp. Vegae Pitlekai (1909) p. 142; Tuck. Syn. North Am. Lich. II (1888) p. 68; Arn. Lich. Fragm. XXIX, Miquelon (1888) p. 16, XXXV, Neu Fundl. (1896) p. 27; Zahlbr. Cat. Lich. Un. III (1925) p. 526.

Thallus albidus aut albido-cinerascens, KOH non reagens, jodo non distinete reagens (tantum infra apothecia caerule-scens), sat crassus aut evanescens, sorediis destitutus, hypothallo indistincto. Apothecia adnata, basi leviter aut bene constricta, vulgo sat crebra aut aggregata, lat. circ. 0.7—2.5 mm (»raro usque ad 4 mm» sec. Th. Fr.), saepe demum irregularia lobatave, disco plano aut demum depresso-convexo, nigro, nudo (conf. infra), opaco, margine sat tenui, non aut leviter prominente, nigro, nudo. Hypothecium fusco-nigricans, hyphis erectis, zonae albidae (irregulariter contextae, jodo caerulescenti), peritheciim impositum. Perithecium intus albidum, KOH non reagens, extus fuligineum. Epithecium aeruginoso-fuligineum, KOH non reagens. Paraphyses arcte cohaerentes. Sporae »long. 0.006—0.011, crass. 0.0025—0.0035 mm» (sec. Th. Fr.).

Var. *evoluta* Th. Fr. Lich. Scand. II (1874) p. 499.

*Exs.* Fellm. Lich. Arct. (1864) n. 187 (hb. Nyl.).

Thallus bene evolutus.

Teste Th. Fr. (l. c. p. 500) in Merimasku in Reg. Ab. (P. A. Karsten), et Edlehjärvi (436) Pielbajärvi (F. Silén, n. 384). Kvarken (A. J. Malmgren), et in Jaakkima et Sortavala (F. Nylander). LTul.: Kola (N. I. Fellman, l. c. n. 187).

In specimine n. 384 thallus verrucosus, dispersus, jodo non distinete reagens, (sed fragmenta thallina, infra apothecia sita, jodo caerulescentia), hypothecium fuscescenti-nigricans, inferne KOH rubricosum, perithecium extus aeruginoso- et subviolaceo-fuligineum, intus albidum, KOH non reagens, jodo caerulescens hyphis radiantibus, conglutinatis, limite zonae albidae et fuligineae fuscescente et KOH purpureo, zona albida infra hypothecium continuata ibique irregulariter contexta et passim aërem inter hyphas continente, zona fuliginea item infra apothecium continua et medio deficiente, hymenio circ. 0.050—0.060 mm crasso, paraphysibus increbre septatis, non distinete gelatinosis, 0.0015 mm crassis, apicibus clavato-incrassatis, sporis oblongis, long. 0.012

crass. 0.003 mm, aut ellipsoideis brevioribusque. — In specim. e Merimasku thallus areolatus modice incrassatus, medulla jodo non distincte caerulescente, sporae »long. 0.007—0.011, crass. 0.003—0.0035 mm» (sec. adn. Nyl. in n. 16250), apothecia paullo minora tenuioraque, hypothecium fuscum, hyphis erectis, strato sordide pallescenti, tenui, jodo caerulescenti, impositum, perithecium extus subcaeruleo-fuscescenti-fuligineum, sub apothecium continuatum (medio deficiens), partes obscuratae in parte inferiore apothecii KOH rubricosae (etiam solutionem rubricosam parce effundentes), epithecium fuligineum, inferne leviter in aeruginosum vergens, KOH parum mutatum, paraphyses arcte cohaerentes, simplices, non distincte gelatinosae, crass. 0.002 mm, apice clavato-incrassatae, crass. 0.003—0.004 mm., sporae distichae, »fusiformi-oblongae, long. 0.008—0.010, crass. 0.0035 mm» (sec. adn. Nyl.).

*Obs. 1.* *L. auriculata* var. *subinops* Vain. (Adj. Lich. Lapp. II, 1883, p. 64) est status intermedius inter var. *evolutam* et var. *diducentem*, in codem specimine thallo sat tenui, areolato et thallo evanescente instructa. LIN.: Ad rupem granuliticam in reg. subalp. jugi Suoloselkä (Vain. l. c.). LPON.: In lapillis graniticis tundrae prope Orlov (»*L. auriculata*» sec. Nyl. in Kihlm. Neue Beitr. Flecht. Kola p. 58, n. 372). In codem specimine p. p. thallo modice incrassato, areolato-rimoso, tantum infra apothecia caerulescens, hypothecium fuscum, strato albido, jodo caerulescenti, impositum (var. *evoluta*), p. p. thallo evanescente (infra apothecia distincto, jodo caerulescente), apotheciis flexuosis, majore parte contigue aggregatis (sed non confluentibus, nec proliferis).

*Obs. 2.* *Lecidea confoederans* Nyl., Fl. 1873 p. 296, sec. specim. orig. e Scotia (15691 in hb. Nyl.) est forma abnormis (*L. auriculata* v. *diducens* f. *confoederans* Blomb. et Forss. En. Pl. Scand., 1880, p. 88), apotheciis proliferis et confluentibus, thallo evanescente, infra apothecium jodo caerulescente, KOH non reagente. In apothecio simplice hypothecium fuscum, hyphis erectis, KOH non reagens, strato impure albido, irregulariter contexto, parce aërem continentis, jodo bene caerulescenti, impositum, perithecium extus subfuscescens (KOH sordide subpurpureum), intus dilutescens (KOH dilute sordide subpurpureum), epithecium aeruginoso-fuligineum, KOH parum mutatum, paraphyses arcte cohaerentes, leviter gelatinosae, apicibus clavato-incrassatis, sporae oblongae, long. 0.010—0.011, crass. 0.002 mm. Cum hac forma specimina sat congruentia collecta sunt in LKem. ad saxum dioriticum in reg. alp. montis Lompolotunturi in Kittilä (Norrl. Ber. Torn. Lapp. p. 339, n. 684, »*L. auriculata* f. *paupera*», sporis oblongis, long. 0.008—0.011, crass. 0.0035 mm» sec. adn. Nyl. in n. 15714) et in LIN., ad rupem granuliticam prope Edlehjärvi in Inari (F. Silén, n. 396).

*Obs. 3.* In *L. auriculata* f. *subpruinosa* Vain., Lich. Exp. Vegae Pitlekai (1909) p. 143, discus apotheciorum est tenuissime cinereo-pruinosis.

Var. *diducens* (Nyl.) Th. Fr. Lich. Scand. II (1874) p. 499, On Lich. Pol. Exp. (1879) p. 362; Vain. Lich. Exp. Vegae Pitlekai (1909) p. 143; Zahlbr. Cat. Lich. Un. III (1925) p. 527. *Lecidea diducens* Nyl. Fl. 1865 p. 148. *L. auriculata* var. *paupera* Th. Fr. Lich. Spitsb. (1867) p. 39; Nyl. En. Lich. Fret. Behr. (1888) p. 12, 35 (58). *L. lapicida* var. *declinata* Nyl. Lich. Lapp. Or. (1866) p. 177.

*Exs.* Arn. Lich. Exs. (1891) n. 1528 (hb. Nyl.). — Malme Lich. Suec. Exs. XXXVI (1924) n. 898 (Mus. Fenn.).

Thallus evanescens, infra apothecia leviter evolutus.

*Distr.* LEnont.: Ad saxa granitica in reg. pinifera prope Hetta et in reg. alpina prope Kilpisjärvi (»*L. auriculata*« sec. Norrl. Ber. Torn. Lappm. p. 339). LIn.: Ad rupem granuliticam in reg. subalp. jugi Suoloselkä in Inari (cum var. *subinope*, Vain. Adj. Lich. Lapp. II p. 64), ad rupem graniticam in Edehoier (Edlehoivi), n. 381 et 422 (F. Silén). LTul.: Kola (N. I. Fellman, »*L. lapicida* var. *declinata*« Nyl. l. c., 15723 in hb. Nyl.).

Thallus infra apothecia situs jodo caerulescens. Apothecia demum basi bene constricta, simplicia aut raro nonnulla confluentia. Hypothecium fusco-nigricans, KOH non reagens, hyphis erectis, strato albido peritheci, irregulariter contexto, aërem inter hyphas passim continent, jodo bene caerulescenti, KOH non reagenti, impositum. Perithecium extus fuligineum, ad hymenium anguste aeruginoso-fuligineum, aut subviolaceo-fuligineum, KOH parum mutatum, inferne fusco-fuligineum, hyphis radiantibus, zona fuliginea infra apothecia late continuata, medio deficiens, intus albidum, hyphis subradiantibus, conglutinatis, in limite zonae fuligineae et albidae sordide purpureum, KOH parum mutatum. Hymenium 0.040 mm crassum. Epithecium aeruginoso-fuligineum, KOH non reagens. Ascii anguste clavati, in apice membrana modice incrassata. Sporae distichae, oblongae.

*Obs. 1.* *Lecidea diducens* Nyl. (Fl. 1865 p. 148) parum differt a var. *paupera* Th. Fr., sec. specim. orig. ex ins. Jersey a Larbalestier collectum (15704 in hb. Nyl.).

## 66. *L. inops* Th. Fr.

Lich. Scand. II (1874) p. 501. *L. promiscens* Nyl. f. *inops* Nyl. in Hue Lich. Exot. (1892) p. 214; Zahlbr. Cat. Lich. Un. III (1925) p. 676.

Thallus sat tenuis, dispersus et partim subcontinuus, leviter inaequalis, impure albidus, KOH non reagens, medulla leviter vel parum jodo caerulescens, aut partim evanescens, hypothallo indistincto. Apothecia tota adnata, basi non constricta, lat. 0.7—2 mm, disco plano aut demum depresso-convexo, atro, nudo, margine tenui aut sat tenui, atro, nudo. Hypothecium fusco-nigrum, inferne dilutescens aut subalbidum, superne hyphis erectis. Perithecium extus subcyanescens- aut subolivaceo-fuligineum, intus impure albidum, KOH non reagens. Epithecum subcyanescens-fuligineum, KOH non reagens. Paraphyses arcte cohaerentes. Sporae oblongae, »long. 0.006—0.007, crass. 0.002 mm» (sec. adn. Nyl., »long. 0.009—0.011, crass. 0.003—0.004 mm» sec. Th. Fr.).

*Distr.* LPon.: In rupe micacco-schistosa ad ostium fluminis Aatscherok (»*L. promiscens*« sec. determ. Nyl. in Kihlm. Neue Beitr. Flecht. Kola p. 58).

Thallus non sorediosus. Apothecia sat crebra aut irregulariter conferta, disco subnitido, margine subnitido, integro aut leviter flexuoso, saepe leviter prominente, persistente aut demum excluso. Hypothecium inferne irregulariter contextum, parte superiore fusco-nigra circ. 0.130—0.180 mm crassa. Perithecium in parte interiore vulgo subalbidum, in limite partis exterioris fuscescens, parte fuliginea etiam infra stratum subalbidum hypothecii continuata, tantum medio deficiente (»thallum subjacentem subcingente», ut Nyl. indicat). Perithecium in parte interiore strati obscurati fusco-fuligineum totum, hyphis sat distincte radiantibus, conglutinatis, cavitatibus saepe oblongis. Hymenium circ. 0.050 mm crassum, »jodo caerulescens, ascis demum violascentibus» (Th. Fr.). Paraphyses simplices, crass. 0.0015 mm, increbre septatae, apice obscure gelatinoso. Asci clavati. Sporae distichiae.

*Obs.* Sec. specim. orig. e Pyrenaeis orient. (n. 15946) *L. promiscens* Nyl. Flora 1872 p. 358, 1874 p. 12, 313, Lich. Pyr. Or. p. 48; Arn. Lich. Tirol XXIV p. 258, XXV p. 382, 383; Arn. Lich. Exs. n. 681 a, b, 682 a, b, 718, 1237, 1588, medulla thalli jodo bene caerulescente, epithecio olivaceo-nigricante, strato obscurato hypothecii tenuiore (crass. circ. 0.100—0.120 mm), dilutius colorato, rufo-fuscescente, hymenio crassiore (crass. 0.070—0.080 mm) et sporis paullo majoribus (»long. 0.008—0.014, crass. 0.003—0.004 mm» sec. Nyl.) a *L. inope* differt. Conidia »cylindrica, recta, long. 0.007—0.011, crass. 0.0005—0.0007 mm» sec. adn. Nyl. in n. 15934 e Tirolia (conidia, »long. 0.009—0.014 mm»

in Nyl. Lich. Pyr. Or. p. 48 descripta, in specimine Mont-Doriensi, in Lamy Cat. Lich. Mont-Dore p. 120 indicato, n. 15940 in hb. Nyl., ad hanc speciem non pertinente, observata sunt).

#### Sectio **Lecidea panaeola**.

Thallus pallidus, hypothecium nigricans, sporae majusculae vel magnae. Hyphae medullares non amyloideae. Species saxicolae.

#### 67. **L. panaeola** Vain. (nov. comb.<sup>1)</sup>).

*Lecidea panaeola* Ach. in K. Vet.-Ak. N. Handl. 1808 p. 267 (excl. specim. fert., conf. infra), Lich. Un. (1810) p. 201 p. p., Syn. Lich. (1814) p. 33 p. p.; Sommerf. Suppl. Fl. Lapp. (1826) p. 162 p. p.; Fr. Nov. Sched. Crit. (1827) p. 16 p. p., Lich. Eur. Ref. (1831) p. 314 p. p.; Schaeer. Lich. Helv. Spic. III (1828) p. 130 p. p. IV—V (1833) p. 195 p. p., En. Lich. Eur. (1850) p. 111 p. p.; Th. Fr. Lich. Arct. (1860) p. 207 p. p. (excl. *L. elegante*), Lich. Scand. II (1874) p. 502 p. p.; Zahlbr. Cat. Lich. Un. III (1925) p. 646 p. p. (excl. *L. elegante* Th. Fr. et *L. praeconti ua* Nyl.).

*Ex.* Anzi Lich. Lang. II (1861) 83. — Arn. Lich. Exs. (1880?) n. 841 (hb. Nyl.). — Fries Lich. Suec. XIII (1824) n. 380 (hb. Oslo). — Somrft Pl. crypt. Norv. I n. 51 (hb. Oslo).

Thallus substrato bene adfixus, modice incrassatus. Areolae verrucosae vel convexae, in centro plus minusve arcte contiguae, angulosae vel rotundatae, 0.5—0.7 (—1.0) mm latae, peripheriam versus vulgo discretae et rotundatae. Areolae subnitidulae, minute rugulosae, (sub lente) pruinosa, saepe sorediis isidialibus instructae, albido-cinereae vel griseae vel carneocinerascentes. Cephalodia cinereo-fuscescentia vel obscure fusca, areolis thalli magis concoloria quam in *Lecidea elegante*, diam. 0.5—1.0 mm, granulosa, (depresso) globosa, thallum subaequantia vel superantia. Hypothallus ater.

Apothecia rara, inter areolis sita, arcte adnata, thallum aequantia vel leviter superantia, parva, diam.

<sup>1)</sup> Literary references and (in part) exsiccati by Vainio, the rest by B. Lynge.

0.5—0.7 (—1) mm, vulgo dispersa. Discus ater, epruinosus, minute rugulosus, margine crasso subpersistenti cinctus. Excipulum fusco-carbonaceum, etiam cum hypothecio. Hymenium altum, usque ad 150  $\mu$ , superne anguste fusco-nigrescens, strato amorpho tenui granulato tectum. Paraphyses arcte cohaerentes, graciles, in apice non vel leviter solum incrassatae. Ascii late clavati, octosporae, saepe steriles. Sporae ellipsoideae, pachydermaticae, in ascis compacte dispositae et eam ob causam interdum plus minusve angulatae, 22—27  $\times$  9—15  $\mu$ .

»Spermatia breviter aciculares, recta, 7—10  $\times$  1  $\mu$  (sec. Th. Fries Lich. Scand. II p. 503).

Thallus  $\text{CaCl}_2\text{O}_2$  bene rubescens, KOH et J non mutatur. Hymenium J persistenter caeruleo-nigrescens.

Distr. Al.: Kallas in Föglö (A. Wahlberg). N.: Kyrkslätt (Lång). Helsingforsia (Nylander). Ta.: Mustiala in Tammela (Kullhem). Tiirismaa in Hollola (Vain.). Koski (Vain.). Kirkonkylä et Jokioinen in Padasjoki (Vain.). Ob.: Rovaniemi (Räsänen). Alkkula (E. Nylander). Ks.: Paanajärvi (Karsten). L. Torn.: Leikuvaara in reg. alp. (Norrlin).

Obs. Vainio found it possible to distinguish specifically between this species and *Lecidea elegans*. The distinctive characters are the thicker, well fertile thallus, and the larger pruinose apothecia of the latter species.

In the Finnish herbaria there were several plants, which Vainio had not referred to either of these species. The editor often found it difficult to distinguish between them, and he did not always venture a determination of such plants. The enumeration of the localities is, therefore, not exhaustive.

#### 68. *L. elegans* (Th. Fr.) Vain.<sup>1)</sup>

*L. panaeola*  $\beta$  *elegans* Th. Fr. Lich. Aret. (1860) p. 207, Lich. Scand. II (1874) p. 502; Vain. Adj. Lich. Lapp. II (1883) p. 77; Zahlbr. Cat. Lich. Un. III (1925) p. 647.

Exs. Havaas Lich. Norv. Exs. (1902) n. 133 (Mus. Fenn.).

Thallus substrato laxe adfixus, crassus, in centro usque ad 2 mm., areolato-diffractus. Areolae tumi-

<sup>1)</sup> Literary references and exsiccati by Vainio, the rest by B. Lynge.

dulae vel bullato-verrucosae, usque ad 1—1.5 mm. latae, saepe fissuris flexuosis plus minusve divisae, contiguae et varie angulatae vel marginem versus magis discretae et rotundatae. Areolae subnitidae, firmae, rugulosae, sorediis isidiisque destituta vel rarius sorediis isidialibus instructae, albido-cinereae vel griseae vel carneocinerascentes. Cephalodia rufescens vel carnofuscescentia, majuscula, diam. 1—2 (—3) mm., granulosa, globosa, thallum superantia, *Gloeocapsam Magmam* (Bréb.) Kütz. continentia vel interdum *Stigonemam* vel *Chroococcum* (sec. Forssell). Hypothallus ater.

Thallus vulgo bene fertilis. Apothecia inter areolis sita, arce adnata, thallum aequantia, majuscula, diam. 1—2 mm., saepe contigua vel etiam confluentia et angulosa. Discus ater, caesio-pruinosus, rugulosus, diu planus et crasse, sed leviter solum elevate marginatus, deinde interdum depresse convexus, immarginatus. Excipulum fusco-carbonaceum, etiam cum hypothecio. Hymenium altum, usque ad 180  $\mu$ , superne anguste fusconigrescens, strato tenui amorpho granulato tectum. Paraphyses arce cohaerentes, graciles, in apice non vel leviter solum incrassatae. Asci late clavati, octosporae (saepe steriles). Sporae ellipsoideae, pachydermatici, in ascis compacte dispositae et eam ob causam interdum plus minusve angulatae, 20—30  $\times$  10—16  $\mu$ .

Thallus  $\text{CaCl}_2\text{O}_2$  bene rubescens, KOH et J non mutatur. Hymenium J persistenter caeruleascens, praecipue asci, gelatina interdum p.p. plus minusve vinosum.

*Distr.* Ta.: Hersala in Hollola (f. *subdenudata*) (Vain.). Tianen in Korpilahti (Vain.). Kb.: Riihivaara in Nurmies (Vain.). K. On.: Niihisaari (Simming). O. Kaj.: Kajaani (Malmgren). Kk.: Susijärvi (Fellman). L.kem.: Kittilä (Lång). Li.: Solojärvi in Inari (Silén).

*Obs.* Variat: a. Discus bene pruinosus, f. *lypica*, et b. Discus minus intense pruinosus vel subnudus, f. *subdenudata* Vain. in herb.

69. **L. pelobotryon** (Wahlenb.) Leight.

*Lecidea pelobotrya* Leight. Lich. Great Brit. (1871) p. 298; Lyngé Lich. Bear Isl. (1926) p. 19. *Urceolaria pelobotriion* Wahlenb. in Ach. Meth. Lich. Suppl. (1803) p. 31; Ach. Lich. Un. (1810) p. 333. *Lichen pelobotryus* Wahlenb. Fl. Lapp. (1812) p. 413. *Urceolaria pelobotrya* Ach. Syn. Lich. (1814) p. 138. *Parmelia pelobotrya* Hepp Flecht. Würzb. (1824) p. 43; Fr. Lich. Eur. Ref. (1831) p. 189. *Lecanora* Sommerf. Suppl. Fl. Lapp. (1826) p. 99; Nyl. Lich. Scand. (1861) p. 155; Th. Fr. Lich. Scand. (1871) p. 278, 504; Zahlbr. Cat. Lich. Un. V (1928) p. 337. *Amygdalaria* Norm. Nyt Mag. Naturv. VII (1853) p. 230. *Aspicilia* Th. Fr. Lich. Aret. (1860) p. 135; Hue Lichen. Morph. et Anat. (1912) p. 114. *Aspicilia panaeola* Koerb. Par. Lich. 2 Lief. (1860) p. 97 (sec. Th. Fr. l. c. p. 279).

*Exs.* Malme Lich. Suec. Exs. XI (1912) n. 271, XXXVII (1924) n. 921 (Mus. Fenn.).

Thallus crassus aut sat crassus aut modice incrassatus, areolato-diffractus aut rarius areolatus, areolis planis aut rarius convexis, laevigatis aut inaequalibus, impure albidis aut cinerascenti-pallidis, parathallis (cephalodiis) instructus, sorediis destitutus. Apothecia thallo immersa aut demum leviter emergentia, lat. 0.5—1.5 mm, disco nigricante aut rarius fusco-nigricante, nudo, opaco, parathecio fusco-nigricante, tenui, primum thallo immerso et extus inconspicuo, saepe demum denudato et marginem lecideinum distinctum formante. Hypothecium fusco-nigrum, in parte superiore hyphis suberectis, in parte inferiore hyphis irregulariter contextis. Epitheciun fuscescens. Paraphyses arcte cohaerentes. Sporae 4:nae aut 8:nae, long. circ. 0.020—0.030, crass. 0.012—0.016 mm (long. »usque ad 0.035 mm» sec. Nyl.).

*Distr.* »In rupibus irrigatis alpinis» (sec. Th. Fr. l. c. Sc. p. 279). In Rastekaisse (Wahlenb. l. c.), Berlevaag, Skarsvaag et Mortensnaes (Th. Fr. l. c.) in Finmarkia Norvegiae. Inter Kilpisjärvi et Lyngen in Tromsö Norvegiae (J. P. Norrlin, Nyl. determ.).

Thallus subpruinosus aut denudatus, opacus aut passim subnitus, KOH dilute lutescens, etiam addito  $\text{CaCl}_2\text{O}_2$  (» $\text{CaCl}_2\text{O}_2$  rubescens» sec. Th. Fr. Lich. Scand. p. 504, quod autem incertum est, quia haec species a pluribus auctoribus cum *L. panaeola* commixta est), »jodo non reagens» (Th. Fr.), hyphis erectis, strato corticali evanescente, in superficie thalli apicibus hypharum clavatis, pallidis, erec-

tis, constipatis et partim dispersis, hypothallo obscurato interdum distincto. Parathalli (= cephalodia, conf. Vain. Lich. Ins. Philipp. III p. 94 cet.) verrucaeformes, scabrosi, lat. circ. 0.4—1 mm, albidi deindeque obscurati, gonidia nostocacea (ut videtur) continentia. Apothecia saepe cerebra. Hypothecium crassum, gonidiis destitutum, hyphis conglutinatis. Parathecium fusco-fuligineum, saepe circ. 0.045 mm crassum, hyphis sat tenuibus, oblique suberectis, conglutinatis, cavitatibus angustis. Hymenium circ. 0.180—0.240 mm crassum, »jodo caerulescens» (Th. Fr.). Paraphyses gelatinosae, increbre ramoso-connexae, tubulo 0.001—0.0015 mm lato, in apice parum dilatato. Epithecium passim parce dilute fuscescens, saepe zona tenui subdecolorata obductum. Asci cylindrici aut subcylindrico-clavati, in apice membrana bene incrassata. Sporae monostichae aut distichae in eodem apothecio, membrana tenui aut gelatinoso-incrassata (in eodem apoth.), decoloratae, simplices, ellipsoideae. Gonidia globosa aut subglobosa, membrana tenuissima (sed conspicua), interdum autosporas 2—4 continentia.

*Obs. 1.* *Lecanora Rhaelica* var. *hyperborea* Nyl. Flora 1862 p. 82 (Hue Lich. Exot. p. 156, *Lecidea Zahlbr.* Cat. Lich. Un. III, 1925 p. 683), »sporis long. 0.032—0.042, crass. 0.017—0.021 mm» descripta, sec. specim. orig. n. 15751 e Groenlandia (»CaCl<sub>2</sub>O<sub>2</sub> + »sec. adn. Nyl.) ad *L. pelobotryam* pertinet.

#### 70. *L. steriza* (Ach.) Vain.

Lich. Exp. Vegae Pitlekai (1909) p. 144. *L. confluens* γ *L. steriza* Ach. Meth. Lich. (1803) p. 40 sec. hb. Ach. (Vain. Lich. Cauc., 1899, p. 328). *Patellaria macrocarpa* D. C. apud Lam. et D. C. Fl. Fr. ed. 3 II (1805) p. 347. *Lecidea macrocarpa* Th. Fr. Lich. Scand. II (1874) p. 505 (em.); Vain. Adj. Lich. Lapp. II (1883) p. 66; Zahlbr. Cat. Lich. Un. III (1925) p. 626 (em.). *L. platycarpa* Ach. Lich. Un. (1810) p. 173; Arn. Lich. Fränk. Jur. (Flora 1884) p. 167, Lich. Münch. (1891) p. 78. *L. contigua* Th. Fr. Lich. Arct. (1860) p. 208.

»Thallus hydrate kalico fere immutatus, medulla jodo haud caerulescente. Apothecia magna vel mediocria, primo plana marginaque elevato et saltem in apotheciis majoribus crasso. Hypothecium fusco-nigrum. Excipulum crassum, nigricans (hydrate kalico fusco-nigricans). Paraphyses distinctae, arete — sat arete cohaerentes. Sporae sat magnae, vulgo circ. 16—20 × 7—10  $\mu$  vel etiam majores, in nonnullis formis minores. Gelatina hymenialis jodo persistenter caeru-

lescens, ascis demum vinose rubentibus. Hymenium vulgo crassum (ca. 100—120  $\mu$ ), solum parte superiore coloratum, epithecio obscurius vel dilutius fuscescente vel olivaceo.» (After Vain. Adj. Lich. Lapp. II p. 66.)

F. *macrocarpa* (D. C.) Vain. *L. platycarpa* Ach. l. c. *L. contigua*  $\beta$  *L. platycarpa* Fr. Lich. Eur. Ref. (1831) p. 300; Nyl. Lich. Scand. (1861) p. 224. *L. contigua* \**platycarpa* Nyl. Flora 1872 p. 552, Obs. Lich. Pyr. Or. (1873) p. 23, Lich. Pyr. Or. (1891) p. 47. *L. macrocarpa*  $\alpha$  *platycarpa* Th. Fr. Lich. Scand. II (1874) p. 505; Vain. Adj. Lich. Lapp. II (1883) p. 68; Lynge Lich. Nov. Zeml. (1928) p. 77.

Exs. Malme Lich. Suec. XXII (1915) No. 548.

Thallus evanescens aut tenuis, subcinerascens. Apothecia magna mediocriave, saepe lat. circ. 1.5—3 mm, atra, nuda, disco sat plano, margine vulgo crasso.

Distr. Al.: »*L. contigua*» (veris. ad f. *platycarpam* spectat) frequenter sec. E. Nylander (Ål. Lafveg. p. 91), collect. ad Kallas in Föglö (A. Wahlberg). Ab.: Collecta ad Kultaranta (Vain.) ad rupem graniticam in Simonby in Pargas (Fr. Elfving). N.: Prope Suurkylä in Hoglandia (sec. Nyl. in Brenner Bidr. Hogl. Lafv. p. 101), ad Helsingforsiam (»*L. contigua* frequenter» sec. Nyl. Fl. Hels. p. 67, veris. praecipue ad f. *platycarpam* spectans). Ka.: »Sat frequenter» ad Viburgum (Vain. Lich. Vib. p. 67). IK.: Ad lapidem graniticum prope Pällilä in Muola (A. O. Kihlman). St. et Oa.: »Passim» (A. J. Malmgren Fört. Lafv. Sat. p. 82). Ta.: In rupe gneissacea ad Kuusto in Tammela (A. Kullhem), »pluribus locis» (Norrl. Bidr. Sydöstr. Tav. Fl. p. 190), collecta ad Hersala cet. (Vain.), »frequenter in Lubanka et Korpilahti» (Vain. Fl. Tav. Or. p. 115 et sec. adn.). Sa.: »*L. contigua*» (veris. praecipue ad f. *platycarpam* spectans) »frequentissime» (E. Nylander Lafveg. Sav. p. 74). KLad.: Prope Sortavala (Vain.), »*L. contigua* sat frequenter» (Nyl. Fl. Kar. p. 178), supra saxa quartzosa in Ruskeala (Norrl., 16099 hb. Nyl.). KOI.: Ad Petrosawodsk (A. Kullhem sec. Norrl. Fl. Kar. II p. 33). KOn.: »Supra lapides et lapillos pluribi ad Suojärvi pogost» (sec. Nyl. in Norrl. l. c.). Om.: Lappajärvi (»*L. macrocarpa*» Backman Fl. Lappaj. p. 132 praecipue ad f. *platycarpam* spect. vid.). Tb.: Frequenter in par. Jyväskylä (sec. Vain. l. c. et adn.). Sb.: Kuopio (G. Lång Lich. Sav. bor. p. 36), in latere rupis gneissaceae ad Vuorilampi. Kb.: Frequenter in Lieksa et Nurmes (sec. Vain. Adj. Lich. Lapp. II p. 68 et adn.). Ob.: »Passim locis altioribus, in lateribus lapidum majorum locis inferioribus» (Räsänen Flecht. Ostr. bor. p. 334). OKaj.: Frequenter in Kuhmo et Kianta (sec. Vain. l. c. et adn.). Kuus. et KKer.: »Frequenter in toto territorio» (sec. Vain. l. c., exactius non adnot.). LKaj.: »Collecta locis numerosis in toto territorio» (sec. Norrl. Ber.

Torn. Lappm. p. 338), »frequenter in Lapponia» (sec. adn. et Vain. l. c.). LENONT.: »Locis numerosis collecta in toto territorio» (Norrl. l. c.), ad lapidem graniticum ad Saarenpää in Kelottijärvi in Enontekiö (L. Kari). LIN.: »Frequenter in toto territorio» (sec. Vain. l. c. et adn.). LPON.: »Obvenit usque ad Ponoj, inde Fellm. Lich. Arct. n. 186» (sec. Nyl. Lich. Lapp. Or. p. 159)

Hypothallus interdum parce evolutus, nigricans. Apothecia dispersa, lat. 0.7—3 mm, adnata, basi constricta. Hypothecium superius tenue album (circ. 0.030 mm), hyphis sat erectis, ramoso-connexis, tenuibus, inferius intense fuscum, KOH non reagens, hyphis sat irregulariter contextis et crebre ramoso-connexis, inferne medio dilutius aut dilute subfuscens. Peritheciun fuscum, KOH non reagens, hyphis irregulariter radiantibus, sat parce ramoso-connexis. Hymenium circ. 0.100 mm crassum. Epithecium subfuscens, KOH non reagens. Paraphyses vix 0.0015 mm crassae, leviter gelatinosae, gelatina in KOH leviter turgescente, passim parce ramoso-connexae, apicibus leviter incrassatis (—0.002 mm), non clavatis, saepe ramulosis, crebre articulatis. Ascii clavati, in apice membrana modice incrassata. Sporae 8:næ, distichæ, saepe strato gelatinoso indutæ, »long. 0.015—0.030, crass. 0.008—0.01 mm» (sec. Nyl. Lich. Pyr. Or. p. 47), ovoideo-oblongæ aut p. p. oblongæ, apicibus obtusis aut altero apice rotundato, lateribus convexis.

*F. sterizella* Vain. *L. confluens* γ *L. steriza* Ach. Meth. Lich. (1803) p. 40. *Biatora platycarpa* β *steriza* Hepp Flecht. Eur. V (1857) n. 265 (hb. Vain.). *Lecidea contigua* f. *steriza* Nyl. Lich. Scand. (1861) p. 224. *L. macrocarpa* f. *steriza* Vain. Adj. Lich. Lapp. II (1883) p. 68; Zahlbr. Cat. Lich. Un. III (1925) p. 631.

Thallus evanescens, subcinerascens. Apothecia mediocria aut majora, lat. circ. 1—2 mm, atra, nuda, disco demum convexo, margine sat tenui aut mediocri, demum vulgo excluso.

*Distr.* Al.: In latere lapidis granitici ad Pantsarnäs in Geta (K. Linkola). Ab.: Ad lapidem graniticum in Hietakuoppa prope Sepulcretum Aboae. St.: Prope Kynijoki (A. J. Malmgren Fört. Lafv. Sat. p. 82). Ta.: In lapide granitico ad Vanha-Jutila in Luhanka et ad Pohjola in Korpilahti (Vain.). Tb.: Norola in Jyväskylä (Vain. Fl. Tav. Or. p. 116). Sb.: Kuopio (Lång Lich. Sav. bor. p. 36), ad lapidem graniticum prope Mustalahti et Kettulanlahti prope Kuopio (K. Linkola). Kb.: In latere lapidis granitici ad Jännevaara in Enontaipale (Vain.): LKem.: »*L. platycarpa* f. *steriza*» Nyl. in Norrl. Ber. Torn. Lappm. p. 338). LEN.: In reg. alp. ad Kilpisjärvi in Enontekiö (Norrl.). »Passim in toto territorio» (h. e. e Lieksa usque ad Mare Glaciale) sec. Vain. Adj. Lich. Lapp. II p. 68.

*F. subconvexa* Vain. Lich. Exp. Vegae Pitlekai (1909) p. 145. *L. macrocarpa* f. *subconvexa* Vain. Adj. Lich. Lapp. II (1883) p. 69; Lynge

Lich. Nov. Zemlj. (1928) p. 77. *L. macrocarpa* v. *steriza* f. *subconvexa* Zahlbr. Cat. Lich. Un. III (1925) p. 632.

Thallus tenuis aut sat tenuis (aut fere modice incrassatus), verruculoso-areolatus, areolis contiguis aut dispersis, subcinerascentibus aut subalbidis. Apothecia minora aut mediocria, lat. circ. 0.8—1 (—1.5) mm, atra, nuda, disco demum convexo, margine tenui, demum excluso.

*Distr.* N.: In rupe micaceo-schistosa ad Helsingforsiam (Vain., 286). Ka.: Ad lapidem graniticum littoralem in Vanhaviipuri Viburgi (Vain.). Ta.: Ad lapidem graniticum in sepulcreto in Hollola (Vain.). Kb.: Ad lapidem dioriticum in littore prope Niska in Enonttaipale (Vain.). OKaj.: Ad lapidem gneissaceum in campo deusto prope Tervasalmi in Kuhmo (Vain.), ad lapides graniticos in campo deusto ad Saunaniemi in Kianta (Vain. l. c.). LKem.: Sirkankylä in Kittilä (L. Kari). LEnont.: In rupe micaceo-schistosa in Sarvioivi prope Kelottijärvi (L. Kari).

Apothecia adnata. Hypothecium superne anguste albidum, ceterum fusco-nigrum. Peritheciun fusco-nigrum, KOH non reagens. Hymenium circ. 0.075—0.100 mm crassum, »jodo caerulescens, ascis demum vinose rubentibus» (Vain. l. c.). Epitheciun »subaeruginos-nigricans aut subolivaceo-nigricans» (in specim. orig.) aut fusco-nigricans. Paraphyses »arcte cohaerentes, parce gelatinosae, crass. 0.001 mm, apice clavatae (0.003—0.004 mm), non ramulosae, septatae» (in specim. orig.). Sporae »p. p. strato gelatinoso tenui indutae, long. 0.015—0.022, crass. 0.008—0.009 mm» (in specim. orig.).

*F. caesiococonvexa* Vain. Lich. Exp. Veg. Pitlekai (1909) p. 145. *L. macrocarpa* f. *caesiococonvexa* Vain. Adj. Lich. Lapp. II (1883) p. 68. *L. macrocarpa* v. *steriza* f. *caesiococonvexa* Zahlbr. Cat. Lich. Un. III (1925) p. 632. *L. contigua* f. *caesiococonvexa* Harm. Cat Lich. Lorr. (1899) p. 399.

Thallus evanescens aut sat tenuis, verruculoso-areolatus, areolis contiguis aut dispersis, subcinerascentibus aut impure albidis. Apothecia minora aut mediocria, lat. circ. 0.5—1.5 mm, disco tenuiter pruinoso, demum convexo, margine vulgo tenui, nigro, nudo aut raro ad discum pruinoso, demum excluso aut rarius persistente.

*Distr.* N.: In rupe micaceo-schistosa in Helsingforsia (Vain. a. 1872, »*L. contigua* \*meiospora sec. determ. Nyl., n. 914), Östersundom (Räsänen). Ta.: In latere rupis quartziticae in Tiurismaa in Hollola (Vain.). Sa.: Savonlinna (O. Carlenius). Tb.: Ad lapidem graniticum in rivulo prope Norola in Jyväskylä (Vain., cum f. *sterizella*). Sb.: Suovu et Heinäsenvuori in Kuopio (K. Linkola). Kb.: Ad lapidem graniticum in campo deusto prope Koriseva in Lieksa (Vain. Adj. Lich. Lapp. II p. 68). Ob.: Ad rupem actinoliticam in Talkkunamaa in Kiiminki (Räsänen Flecht. Ostr. bor. p.

334). LENONT.: Ad Kelottijärvi (Norrl., 846) et Karesuanto (f. *sterizas* sicc. determ. Nyl. in Norrl. Ber. Torn. Lapp. p. 338) in Enontekiö. LIN.: In reg. subalp. montis Hammastunturi (Vain. l. c.).

Epitheciun sordide fuscescens aut olivaceo-fuscescens. Sporae long. 0.015—0.020, crass. 0.007—0.010 mm (in specim. e Tiirismaa).

*F. pruinosa* Vain. *L. macrocarpa* f. *pruinosa* Vain. Adj. Lich. Lapp. II (1883) p. 68; Zahlbr. Cat. Lich. Un. III (1925) p. 68. Non *L. contigua* B I *pruinosa* Fr. Lich. Suec. Exs. (1817) n. 377, ad \**L. cinereoatram* Ach. pertinens.

Thallus evanescens aut tenuis, subcontinuus aut dispersus, impure albidus. Apothecia mediocria aut majuscula aut sat parva, lat. 2—0.7 mm, disco tenuiter pruinoso, plano, margine crasso, nigro, nudo, persistente.

*Distr.* N.: Ad rupem graniticam in Rödbergen (O. Collin a. 1874) et in rupe micaceouschistosa Helsingforsiae (Vain., cum n. 286). Ka.: Ad lapidem graniticum in Tervaniemi Viburgi (Vain.). Ta.: In rupe gneissacea ad Kuusto in Tammela (A. Kullhem), ad lapidem graniticum in Tiirismaa in Hollola (Vain.). Kb.: Ad lapidem prope Jännevaara in Enontaipale et prope pag. Lieksa in par. ejusdem nominis. Ob.: In Rakankallio in Muho et in Kalkkima in Tornio (Räsänen Flecht. Ostr. Bor. p. 334).

Est forma intermedia inter *L. sterizam* et *L. albocaerulescentem*. Apothecia adnata, basi constricta, margine integro. Epitheciun subfuscescens. Sporae long. 0.018—0.023, crass. 0.008—0.011 mm.

*F. contigua* (Nyl.) Vain. *L. contigua* Nyl. Lich. Lapp. Or. (1866) p. 159 (excl. f. et v.) et in Norrl. Bidr. Sydöstr. Tav. Fl. (1870) p. 190 (neq. Hoffm. Deutschl. Fl. II, 1796, p. 184. nec Pl. Lich. t. LXII, conf. etiam Arn. Lich. Fraenk. Jur. p. 162). *L. macrocarpa* f. *contigua* Vain. Adj. Lich. Lapp. II (1883) p. 67. *L. macrocarpa*  $\beta$  *superba* Th. Fr. Lich. Scand. II (1874) p. 505 p. p.; Zahlbr. Cat. Lich. Un. III (1925) p. 633 p. p.

Thallus bene evolutus, modice incrassatus aut sat crassus, subcinerascens aut impure albidus. Apothecia medioocria aut magna, lat. circ. 0.6—2.5 mm, atra, nuda, disco vulgo plano, margine crasso aut modice incrassato.

*Distr.* Frequenter »ad lapides in pratis, silvis et campis, sed locis apertis aliquot rario» (Räsänen Flecht. Ostr. bor. p. 334).

Thallus continuus aut rimosus aut areolato-diffractus, verrucosus-aut verruculosus-inaequalis, hypothallo nigricante saepe partim limitatus. Apothecia dispersa, adnata aut interdum thallo crassitudine accrescente demum apothecia altitudine aequantia, basi constricta. Hypothecium superius tenuissime album (circ. 0.015—0.020 mm), hyphis sat erectis, ramoso-connexis, tenuibus, inferius fusco-nigrum, KOH non reagens, crassum, hyphis irregulariter contextis et ramoso-

connexis, KOH non turgescentibus. Peritheciū fusco-nigrum, KOH non reagens. Hymenium vidi 0.080 mm crassum. Epitheciū subae-ruginoso-nigricans, KOH subolivaceo-nigricans. Paraphyses parce gelatinosae, crass. 0.001 mm, passim parce ramoso-connexae, apice non incrassatae et p. p. ramuloso-connexae. Ascii clavati, in apice membrana modice incrassata. Sporae 8:næ, distichæ, membrana saepe leviter gelatinoso-incrassata, long. 0.015—0.017 (»0.018—0.024» sec. Nyl.), crass. 0.007—0.008 (»0.009—0.011» sec. Nyl.) mm, oblongæ aut ovoideo-oblongæ, lateribus convexis.

*F. phialaea* (Norm.) Vain. *Lecidea phialaea* Norm. Bot. Not. 1868 p. 191. *L. macrocarpa* f. *phialaea* Vain. Adj. Lich. Lapp. II (1883) p. 67; Zahlbr. Cat. Lich. Un. III (1925) p. 631 (Th. Fr. Lich. Scand. II, 1874, p. 505).

Thallus modice incrassatus aut sat tenuis, verrucoso-inaequalis, albus. Apothecia adnata, vulgo magna aut mediocria, lat. 2—0.8 mm, basi constricta, atra, nuda, dispersa, disco plano (aut interdum demum convexo in specim. ex Engelberg in Helvetia), margine crasso aut modice incrassato, saepe persistente. Arenicola.

*Distr.* KOn.: Ad terram subarenosam detritam in ins. lacus Tumasjärvi (J. P. Norrlin, 5197). OKaj.: Ad terram arenariam nudam in jugo aprico prope templum in Kuhmo (Vain. l. c.).

Hypothallus indistinctus. »Hymenium circ. 0.100—0.090 mm crassum. Sporae long. 0.013—0.016, crass. 0.008—0.010 mm» (Vain. l. c.).

*F. praetoria* (Th. Fr.) Vain. *L. macrocarpa* f. *praetoria* Th. Fr. Lich. Scand. II (1874) p. 506; Vain. Adj. Lich. Lapp. II (1883) p. 67; Zahlbr. Cat. Lich. Un. III (1925) p. 631; Lynge Lich. Nov. Zemlj. (1928) p. 76.

Thallus sat tenuis aut modice incrassatus, laevigatus, subcontinuus aut rimulosus, albidos. Apothecia mediocria aut majuscula aut p. p. minora, lat. 1—1.5 (—0.8) mm, disco plano aut demum depresso-convexo, nudo, margine tenui aut demum excluso.

*Distr.* Ka.: Supra lapidem graniticum littoralem in Vanha-Viipuri Viburgi (Vain.).

In f. *contiguam* transit. Hypothallus nigricans saepe distinctus. Epitheciū impure olivaceum. Sporae long. 0.017—0.022, crass. 0.009—0.010 mm. Apothecia adnata, basi constricta.

*F. superba* (Koerb.) Vain. *Lecidea superba* Koerb. Syst. Lich. Germ. (1855) p. 248, Lich. Sel. Germ. II (1856) n. 48 (hb. Nyl.), Par. Lich. 3 Lief. (1861) p. 220; Nyl. Prodr. Fl. Gall. (1856) p. 377; Jatta Fl. It. Cr. III (1911) p. 625. *L. macrocarpa* β *superba* Th. Fr. Lich. Scand. II (1874) p. 505 p. p.; Zahlbr. Cat. Lich. Un. III (1925) p. 633 p. p.

Thallus crassus aut sat crassus, verrucosus aut subverrucoso-inaequalis, subcontinuus aut dispersus, albus. Apothecia mediocria

aut majuscula, lat. 0.8—2.3 mm, atra, nuda, disco plato aut rarius demum depresso-convexo, margine crasso aut modice incrassato.

*Distr.* N.: Kotikalio in Hoglandia (M. Brenner, »*L. contigua*« sec. Nyl.). Ka.: In latere rupis graniticae in littore marino in Vanha-Viipuri Viburgi (Vain.). KOn.: Perttiniemi (A. Kullhem). Ta.: Letku in Tammela (A. Kullhem). Sb.: Nyslott (O. A. J. Carlenius). Kuus.: Ad Paanajärvi (F. Silén, n. 129). 1.Kem.: In alpe Olostunturi in Muonioniska (J. P. Norrlin, 731, »*platycarpa* thallo evoluto», postea »*superba*« a Nyl. determinata). 1.Lenont.: In reg. betulina (subalp.) ad Kelottijärvi (Norrl., »*platycarpa*« sec. Nyl.). LPon.: Ad prom. Orlov (A. O. Kihlman, »*L. contigua*« sec. Nyl.).

Apothecia adnata, basi constricta, margine saepe primum bene prominente, persistente. Epithecum olivaceo-fuscescens. Sporae vulgo »0.018—0.021, crass. 0.009—0.011 mm» sec. adn. Nyl. — In Koerb. Lich. Sel. Germ. n. 48 thallus verrucosus, albidus, apothecia disco plato, nudo, margine crasso, persistente, »epithecio luteo-fuscescente, sporis long. 0.021—0.025, crass. 0.009—0.011 mm» (sec. adn. Nyl.).

*F. phaea* (Flot.) Vain. *Biatora phaea* Flot. apud Koerb. Par. Lich. 2 Lief. (1860) p. 150. *Lecidea macrocarpa* & *platycarpa* f. *phaea* Th. Fr. Lich. Scand. II (1874) p. 506 (Arn. Fl. 1871 p. 486). *L. macrocarpa* f. *phaea* Stein apud Cohn Krypt. Schles. II (1879) p. 251; Vain. Adj. Lich. Lapp. II (1883) p. 68; Zahlbr. Cat. Lich. Un. III (1925) p. 630. *L. platycarpa* Arn. Lich. Fränk. Jur. (Fl. 1884) p. 162, Lich. Münch. (1891) p. 78.

Thallus tenuis. Apothecia majuscula aut mediocria, lat. 1—2.4 mm, disco fuscescente, nudo, plato aut demum depresso-convexo, margine sat crasso aut tenui, atro.

*Dislr.* Ab.: Hermala in Isosaari in Lohja (Ch. E. Boldt). Ta.: Tiirismaa in Hollola (Vain. 1872), in latere rupis gneissaceae umbrosae ad Sikolahti in Luhanka (»*L. platycarpa* \**L. phaea*« in Vain. Fl. Tav. Or. p. 116). Sb.: Kettulanlahti in Kuopio (K. Linkola).

Thallus impure subglaucescens. Apothecia adnata, basi constricta, dispersa. Hypothecium parte superiore albida circ. 0.040 mm crassa, parte inferiore fusca, crassa, KOH non reagente. Perithecium fusco-nigrum, KOH non reagens. Hymenium circ. 0.100 mm crassum. Epithecum dilute fuscescens, KOH non reagens. Paraphyses arcte cohaerentes, parce gelatinosae (gelatina in KOH parum turgescens), tantum simplices visae, crass. 0.001 mm, apicibus 0.002 mm crassis, parce crebre septatis, breviter ramulosis et partim simplicibus (ramoso-connexas non vidi). Asci clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae, long. 0.017—0.022, crass. 0.008—0.010, membrana modice aut leviter incrassata. Conidia »filiformia, recta, long. 0.007—0.009, crass. 0.0005 mm» sec. adn. Nyl. (in specim. e Tatra).

*F. lignatilis* (Nyl.) Vain. *L. macrocarpa* f. *lignatilis* Nyl. in Mus. Fenn., Vain. Adj. Lich. Lapp. II (1883) p. 67; Vain. in Norrl. et Nyl. Herb. Lich. Fenn. cont. (1921) n. 759; Zahlbr. Cat. Lich. Un. III (1925) n. 630.

Thallus sat tenuis (aut interdum tenuissimus), verruculoso-inaequalis, impure albidus. Apothecia adnata, vulgo medioeria aut magna, raro minora, lat. 2—0.7 mm, basi constricta, nigra, nuda, vulgo dispersa, disco vulgo plano, interdum demum convexo, margine sat crasso aut sat tenui, persistente aut demum excluso. Lignicola.

*Distr.* N.: Ad lignum putridum in Tali prope Helsingforsiam (Nyl., 16096). Ta.: Mustiala et prope templum (A. Kullhem), supra tectum ligneum in Koski (»*L. contigua* f. *steriza*« Nyl. in Norrl. Bidr. Sydöstr. Tav. Fl. p. 190, n. 433), ad truncum in littore prope Hersala (Vain., 916, aliud specim. n. 159 a Nyl. nominatum »*L. contigua* \**phaea* Flot.) et ad lignum vetustum prope Upila (Norrl. H. L. F. cont. n. 759) in Hollola, ad trabes molae aquariae in Asikkala (»*L. contigua*« in Norrl. Bidr. Sydöstr. Tav. Fl. p. 190, n. 432), ad radices pini in Evo (Norrl. n. 467), supra trabes inundatas molae aquariae in Kurkoja in Luhanka (»*L. platycarpa*« sec. det. Nyl. in Vain. Fl. Tav. Or. p. 115). Sb.: Nyslott (O. Carlenius, 5154 b. in hb. Nyl., »*L. contigua* sporis minoribus, long. 0.007—0.015, crass. 0.006—0.007 mm, conidiis filiformibus, rectis, long. 0.01—0.014 mm« sec. adn. Nyl.). Kb.: Pag. Lieksa (Vain. Adj. Lich. Lapp. II p. 67). Kuus.: Siikaluoma (F. Silén, errat. typogr. in Vain. I. c.). Ob.: Supra truncum prolapsum piceae in rivulo Anteroinen in Simo (Räsänen Flecht. Ostr. bor. p. 334), Alkula (Norrl.). LKem.: Ad arborem prolapsam in prato prope Sattanen in Sodankylä (Vain. I. c., err. typ.).

Thallus interdum linea hypothallina nigricante limitatus. Hypothecium fusco-nigrum. Hymenium circ. 0.09—0.10 mm crassum, interdum totum dilute aeruginosum. Epithecium fuscescens aut olivaceo-aeruginosum aut nigricans. Sporae »long. 0.016—0.019, crass. 0.009—0.011 mm« (sec. adn. Nyl.) aut minores (conf. supra). Apotheciis convexis interdum non differt a f. *sterizella* (sic in H. L. F. cont. n. 759). In specimine ex Asikkala p. p. similis est f. *meioporellae*, qualis nominetur f. *xylomeiospora* Vain.

*F. oxydata* (Koerb.) Vain. *Lecidea platycarpa* f. *oxydata* Koerb. Syst. Lich. Germ. (1855) p. 249. *L. macrocarpa* f. *oxydata* Vain. Adj. Lich. Lapp. II (1883) p. 630; Zahlbr. Cat. Lich. Un. III (1925) p. 630. *L. contigua* f. *oxydata* Harm. Cat. Lich. Lorr. (1899) p. 399.

*Exs.* Arn. Lich. Exs. (1897) n. 1733 (hb. Nyl.).

Thallus bene evolutus, modice incrassatus, ochraceus. Apothecia mediocria aut majuscula, lat. circ. 0.9—2 mm, atra, nuda, disco plano aut demum depresso-convexo, margine sat tenui aut modice incrassato.

*Distr.* N.: Supra Kotikallio in Hoglandia (»*L. contigua* f. *flavicina*« sec. Nyl. in Brenner Bidr. Hogl. Lafv. p. 100, »passim«, quod non sit rite). St. et Oa. »frequens« (certe non rite indicatur in A. J. Malmgren Bot. Resa Sat. S. Österb. p. 82). Ta.: Mustiala et Saukoniemi in Tammela (A. Kullh.). Sa.: Nyslott (O. A. Carlenius). KOn.: »Supra lapides dolomit. ferrosos in Suojärvi (»*L. contigua* f. *flavicina*« sec. Nyl. in Norrl. Fl. Kar. Oneg. II p. 33). Sb.: Kuopio (G. Lång Lafv. Sav. Bor. p. 36). Ob.: »Supra lapides in jugis et silvis passim« (Räsänen Flecht. Ostr. Bor. p. 334). Kuus.: Ad rupem dioriticam in reg. subalp. montis Ukonvaara (Vain. l. c.), ad rupem gabroensem in Pyhitysvaara prope Taivalkoski (W. Brenner). LKem.: Kittilä (E. Nylander n. 1856).

Facie externa vix differt a *L. lericida* f. *ochromeliza* (Nyl.) et f. *ochracea* (Nyl.). Medulla jodo non reagens. Hypothecium superne anguste albidum (0.020—0.025 mm), crebrius ramoso-connexum, inferne crasse fusco-nigrum, KOH non reagens. Peritheciun fusco-nigrum, KOH non reagens. Hymenium crass. circ. 0.070—0.090 mm. Epithecium olivaceo-nigricans, KOH non reagens. Paraphyses leviter gelatinosae (gelatina in KOH demum sat turgescente), crass. circ. 0.001 mm, passim parce ramoso-connexae, apicibus non incrassatis, aliquot flexuosis, p. p. parce ramulosis et ramoso-connexis. Sporae long. 0.011—0.015, crass. 0.008—0.009 mm aut »long. 0.015—0.022, crass. 0.006—0.010 mm« (sec. A. Kullh.), membrana leviter subgelatinoso-incrassata. Conidia »filiformia, recta, long. 0.008—0.010, crass. 0.001 mm« (sec. adn. Nyl. in Arn. Lich. Exs. n. 1733).

F. *subflavicunda* Vain. *Lecidea macrocarpa* f. *subflavicunda* Vain. Adj. Lich. Lapp. II (1883) p. 69; Zahlbr. Cat. Lich. Un. III (1925) p. 631.

Exs. Arn. Lich. Exs. (1880) n. 809 a, b (»*L. albocaerulescens* f. *flavocaerulescens*«), hb. Nyl., n. 810 (»*L. platycarpa* f. *flavicunda*« hb. Nyl.).—Magnusson Lich. Scand. I (1927) n. 12.

Thallus tenuis, sat obsoletus, impure ochraceus. Apothecia medicoria aut minora, lat. circ. 0.7—1.5 mm, disco convexo, tenuiter pruinoso, margine tenui, persistente.

*Distr.* N.: Ylikäytävä in Hoglandia (M. Brenner). KOI.: Petro-savodsk (A. Kulhem, »*L. platycarpa*« sec. Nyl.). Ta.: Ad saxum gneissaceum in Tiirismaa in Hollola (Vain. l. c., n. 917 specim. orig.). LKem.: (E. Nyl., »*ochromela*« sec. Nyl.). LIn.: Syrminiemi in Inari (F. Silén).

Thallus saepe dispersus, hypothallo nigricante leviter evoluto. Apothecia dispersa et saepe p. p. tuberculato-conferta, adnata. Sporae in specim. in LKem. collecto sec. adn. Nyl. »long. 0.015—0.021, crass. 0.008—0.011 mm».

F. *pachysteriza* Vain.

Thallus sat crassus, albus aut impure albidus. Apothecia majuscula, lat. 2—1 mm, disco convexo aut plano, tenuiter pruinoso, margine sat tenui, persistente.

*Distr.* LEnont.: In regione betulina (= subalp.) ad Kelottijärvi in Enontekiö (J. P. Norrlin, n. 846).

Thallo subnitido, non pruinoso, inaequali a *L. albocaerulescens* differt. Medulla jodo non caerulescens. Apothecia adnata. Hypothecium superne album, crass. circ. 0.025 mm, inferne fusco-nigrum, crassum. Hymenium crass. circ. 0.100 mm. Peritheciun fusco-nigrum. Paraphyses gelatinosae, apice non incrassatae. Sporae long. 0.015—0.020, crass. 0.007—0.011 mm.

*F. planior* Vain. *Lecidea macrocarpa* var. *hydropophila* f. *musiva*  
\*f. *planior* Vain. Adj. Lich. Lapp. II (1883) p. 73.

Thallus subverrucosus, aut areolatus, verrucis areolisque circ. 0.6—0.15 mm latis, convexis aut parcus planis, sat crassis aut modice incrassatis, contiguis, caesio- aut cinereo-albicantibus. Apothecia sat crebra, adnata, lat. 1—0.5 mm, basi leviter constricta, disco plano, parce demum convexo, fusco-nigricante, nudo, margine tenui aut sat tenui, atro, nudo, raro demum excluso. Sporae long. 0.017—0.023, crass. 0.009—0.012 mm.

*Distr.* Kb.: Ad saxa dioritica littoralia in ins. Kynsisaari lacus Pielisjärvi (Vain. l. c.).

Habitu tantum apotheciis planis differt a f. *submusiva*. Thallus opacus. Apothecia disco opaco, margine non prominente. Hypothecium superne anguste albidum, parte inferiore crassa fusco-nigrum (in limite summa subrubicōsum), KOH demum subrubicōso-fuscēscens. Peritheciun fusco-nigrum (in limite ad hymenium subrubicōsum), demum KOH subrubicōso-fuscēscens. Hymenium circ. 0.120 mm crassum. Epithecium subrubicōso-fuscēscens et partim dilute impure subrubicōsum, KOH non reagens. Paraphyses arête cohærentes, simplices et partim parce ramoso-connexae, leviter gelatinosae (gelatina in KOH leviter turgescente), tubulis 0.0005—0.001 mm. apice 0.002—0.003 mm crassae, partim parce ramosae. Ascii clavati, in apice membrana modice incrassata. Sporae 8:næ, distichæ, membrana modice incrassata.

*F. hydalea* Vain. (conf. Vain. Adj. Lich. Lapp. II, 1883, p. 72).  
*L. macrocarpa* var. *hydropophila* f. *aquatalis* Nyl. in Vain. l. c. p. p. (excl. specim. a Nyl. determinato).

Thallus modice incrassatus, minute rimoso-diffractus areolatusve, areolis circ. 0.6—0.2 mm latis, planis aut subplanis, cinereis aut cinerascentibus. Apothecia lat. 0.5—0.8 (—1.3) mm, adnata, basi leviter constricta, disco primum plano, dein convexo, nigro, nudo, margine tenui, nigro, nudo, saepe demum excluso. Sporae long. 0.016—0.020, crass. 0.008—0.010 mm.

*Distr.* Kb.: »Multis locis ad saxa littoralia inundata lacum et fluminum (Vain. I. c.), collecta ad lapides dioriticos littorales prope Niska in Enontaipale et ad Pyssyvaara in Nurmes. OKaj.: Ad lapidem in rivulo prope Pietari in Kianta (Vain. I. c.).

A f. *subconvexa* praesertim thallo magis et pulchrius evoluto differt. Thallus non pruinosis, hypothallo parum evoluto. Apothecia dispersa aut p. p. conferta, disco opaco, margine non aut parum prominente. Hypothecium superne anguste albidum, 0.020 mm crassum, inferne fusco-nigrum, KOH non reagens et partim subrubricosofuscescens. Peritheciun fusco-nigrum, KOH non reagens. Hymenium circ. 0.090 mm crassum. Epitheciun subaeruginoso-olivaceum aut fusco-nigrum et tunc KOH fuscescens. Paraphyses arcte cohaerentes (in KOH sat laxae), leviter gelatinosae, crass. 0.0015 mm, apicibus 0.002—0.003 mm crassis et parce ramulosae, ceterum simplices. Ascii clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae, non gelatinosae, long. 0.014—0.020, crass. 0.006—0.010 mm.

*Obs.* Specimen ad lapidem graniticum in rivulo prope Lipinlahti in Nurmes collectum thallo alutaceo-pallescente (et partim cinerascente) *L. aquatili* (Nyl.) congruens, sporis majoribus (long. circ. 0.018, crass. 0.009 mm), apotheciis marginatis et apotheciis nigris ab ea differt.

*F. ferrosa* Vain. *L. macrocarpa* var. *hydropila* f. *ferrosa* Vain. Adj. Lich. Lapp. II (1883) p. 72. *L. convexa* var. *hydropila* f. *ferrosa* Zahlbr. Cat. Lich. Un. III (1925) p. 548.

Thallus sat tenuis aut modice incrassatus, continuus aut rimosus vel areolato-diffractus, ochraceus. Apothecia lat. 0.8—1 (1.5) mm lata, adnata, basi leviter constricta, disco primum plano, demum convexo, fusco-nigro aut nigro (aut levissime subferrugineo), margine tenui, nigro, nudo, saepe demum excluso. Sporae long. 0.019—0.024, crass. 0.009—0.015 mm.

*Distr.* N.: In rupe porphyrica supra Mäkiinpäälys in Suursaari v. Hoglandia (Vain. 909, ad f. *oxydatam* accedens). KOn.: Suojärvi (J. P. Norrlin). Sb.: Ad lapidem in Laukaanjoki in Vehmasmäki prope Kuopio (K. Linkola). Kb.: Ad lapidem graniticum in rivulo Viekkijoki in Lieksa (Vain., 908). OKaj.: Ahola, Vuokki, prope tempium, Yläjoki, Pietari, Saukko, Kiannanniemi, Saarimylly, Saarijärvi, Hossa in Kianta (Vain. adn., »passim—sat frequ.» sec. Vain. I. c.). Ob.: Ad Viantiejoki in Simo (Räsänen Flecht. Ostr. bor. p. 334). Kuus.: »Passim — sat frequenter» sec. Vain. I. c., ad Iijoki et Poussu (Vain. adn.).

Thallus laevigatus, intensius aut dilutius hydrate ferrico coloratus, hypothallo nigricante limitatus. Apothecia saepe sat crebra, margine non prominente. Epitheciun fuscescens.

*F. obliterata* Vain. *Lecidea macrocarpa* var. *hydropila* f. *ferrosa*

\*f. *obliterata* Vain. Adj. Lich. Lapp. II (1883) p. 72. *L. convexa* var. *hydropithila* f. *obliterata* Zahlbr. Cat. Lich. Un. III (1925) p. 548.

Thallus parum evolutus, tenuis, dispersus, areolatus, areolis minutis, partim contiguis, ochraceis et partim pallidis et cinerascentibus, planis. Apothecia lat. 0.5—0.8 mm, adnata, basi non constricta, nigra, nuda, disco primum plano, demum convexo, margine tenui, demum saepe excluso. Sporae long. circ. 0.018, crass. 0.009 mm.

Distr. LIn.: Ad rupem granuliticam subinundatam in reg. subalp. jugi Suoloselkä (Vain. l. c.).

Hypothallus indistinctus. Apothecia dispersa. Peritheciun fusco-nigrum cum hypothecio confluens. Epitheciun fusco-nigrum.

F. *meiosporella* Vain. *Lecidea macrocarpa* var. *meiosporella* Vain. Adj. Lich. Lapp. II (1883) p. 69.

Exs. Fries Lich. Suec. Exs. XIII (1817) n. 377.

»Thallus sat tenuis, albicans, saepe saltem p. p. subdispersus areolatusque, hypothallo caeruleo-nigricante saepe distincto. Apothecia adnata, minora (circ. 1 millim. vel paullo minora), nuda, atra, sat tenuiter marginata, planiuscula vel demum etiam convexiuscula — convexa, sat dense evoluta. Sporae vulgo mediocres, longitudine vulgo circ. 16—18 (aliae 12—21)  $\mu$ , crassitudine 7—10  $\mu$ . Hymenium crassum, circ. 110  $\mu$ . Gelatina hymenialis jodo persistenter caerule-scens, ascis demum vinoze rubentibus. Epitheciun fuscescens, obscure vel dilute. Thallus saepe e areolis minutis convexisque constans vel etiam subcontinuus» (Vainio 1883, l. c.).

Distr. Al.: Supra lapidem micaceo-schistosam ad Kallas in Föglö (A. Wahlberg). Ab.: Ad rupem graniticam in Kakskerta (Vain.), in lapide gneissaceo in ins. Lehmänmaa in Taivassalo (H. Hollmén et V. Sederholm), in lapide gneissaceo ad Aboam (F. Elfving). N.: Ad lapidem diabasicum in Pohjoiskallio Hoglandiae (»*L. contigua*« sec. Nyl., leg. M. Brenner), ad rupem porphyricam in Kotikallio Hoglandiae (M. Brenner), in rupe granitica in Esbo (H. Lindberg), Helsingforsiae (J. P. Norrlin, »*L. meiospora*« sec. Nyl. in n. 16207), ad saxa gneissacea prope Helsingforsiam (O. Collin), in lapide gneissaceo prope templum in Vihti (A. Kullhem). 1K.: Supra lapidem graniticum ad Pällilä in Muola (A. O. Kihlman). KOI.: In lapide arenario ad Nikola (»*L. meiospora*« Nyl. in Elfv. Ant. Veg. Svir 169). St.: Merikarvia (A. J. Malmgren). Oa.: Böttom (A. J. Malmgren). Ta.: In lapide gneissaceo ad Mustiala (A. Kullhem). KLad.: In rupe diabasica ad Vaavalalhti (Vain.), ad lapidem graniticum in Paksumiemi (Vain.) et in rupe granitica in Haukkariutta (Vain.) in Sortavala. KOn.: In lapide granitico in Suojärvi (»*L. meiospora*« Nyl. in Norrl. Fl. Kar. On. II p. 33), Perttiniemi (A. Kullhem). Tb.: In lapide granitico ad Norola (Vain., 756) et in lapide gneissaceo ad Äijälä in par. Jyväskylä (»*L. meiospora*« Nyl. in Vain. Fl. Tav. Or. p. 116, »fre-

quentius — sat frequens» ibi indicatur, quod ad f. *meiosporellam* et f. *cinerereoalram* spectat). Sb.: Pieksämäki (»*L. meiospora*« sec. Nyl. in H. L. F. n. 336, leg. Norrl.), in rupe granitica in Kumpusaari et Suovu prope Kuopio (K. Linkola). Kb.: In lapidibus graniticis ad Jännevaara et Niska in Enontaipale (Vain.), ad lapidem graniticum in Pyssyvaara (Vain.) et ad rupem gneissaceam in Hiidenportti in Nurmes (Vain. Adj. Lich. Lapp. II p. 70, »veris. multis locis«). OKaj.: Ad saxum graniticum in Kajana (K. P. Malmgren), ad lapidem graniticum in Lehtovaara in Kianta (Vain. I. c.). Ob.: Ad Kemi et in Jaatilanvaara in Rovaniemi (M. Brenner). Kuus.: In rupe dioritica in Iivaara (Vain. I. c. p. 74). Kker.: In lapide granitico ad Knjäsha et Soukelo (Fellm. Lich. Arct. n. 185 p. p.). LKem.: In lapide granitico prope templum in Muonioniska (Norrl. n. 730, »\**L. meiospora*« sec. Nyl.), Ollostunturi (Norrl., »\**L. meiospora*« sec. Nyl.). LEnont.: Pyhäkero (L. Kari) et Karesuanto (Norrl., n. 823, »\**L. meiospora*« sec. Nyl.). LIm.: In rupe dioritica ad Imantero (Fellm.), ad saxa diabasicia riparia in alpe Luja-urt (»*L. meiospora*« Nyl. in Kihlm. N. Beitr. Flecht. Kola p. 58, n. 83 p. p.). LTul.: Nääventunturi in Pummanki in Petsamo (E. Häyrén). LMur.: Jeretik (H. Hollmén).

*F. submusiva* Vain. *Lecidea macrocarpa* var. *hydropila* f. *musiva* Vain. Adj. Lich. Lapp. II (1883) p. 72. *L. convexa* var. *musiva* Zahlbr. Cat. Lich. Un. III (1925) p. 548 p. p.

Thallus subverrucosus aut areolatus, verrucis areolisque circ. 0.6—0.2 mm latis, convexis, sat crassis, contiguis aut raro dispersis, albidis aut impure albidis. Apothecia sat crebra aut partim dispersa aut partim parce conferta, adnata, lat. circ. 1 mm (0.5—1.8 mm), basi parum constricta, novella plana, dein mox disco convexo, fusco-nigricante aut nigricante, nudo, margine tenui, nigricante, nudo, demum excluso. Sporae long. 0.014—0.018, crass. 0.009—0.010 mm.

*Distr.* KL.: Ad rupem dioriticam in Haukkariutta in Sortavala (Vain.). Kuus.: Ad saxa dioritica littoralia subinundata rivuli ad Sirkeliä prope Viekipuro in reg. coniferarum mixtarum collecta et alibi ad Paanajärvi adn. (Vain. I. c. p. 73). LTul.: Ad rupem diabasiciam littoralem prope scolam in Pummanki in Petsamo (E. Häyrén).

Thallus hypothallo nigricante interdum limitatus. Apothecia disco opaco, margine non aut parum prominente. Hypothecium strato albido nullo distincto, totum fusco-nigrum, crassum, in parte superiore hyphis erectis, in parte inferiore hyphis irregulariter contextis. Peritheciun fusco-nigrum. Hymenium 0.090—0.110 mm crassum. Epitheciun fuscum, partim dilute fuscescens. Paraphyses arete cohaerentes, leviter gelatinosae, simplices, crass. 0.0005—0.001 mm, apicibus circ. 0.002 mm crassis, non flexuosis, partim ramis parcis. Ascii clavati, in apice membrana leviter incrassata. Sporae

8:nae, distichae, long. 0.014—0.018, crass. 0.009—0.010 mm, membrana modice incrassata, in  $H_2SO_4$  bene gelatinoso-turgescente.

*F. ochrocarpella* Vain

Thallus modice incrassatus, areolatus, areolis contiguis, lat. circ. 0.5—0.3 (—1) mm, depresso-convexis, cinereo-albidis. Apothecia lat. circ. 0.5—0.8 mm, adnata, basi leviter constricta, sat crebra, disco plano aut demum leviter convexo, ochraceo-pruinoso, margine tenui, nigricante, non prominente, demum subexcluso. Sporae parce evolutae, visae long. 0.010, crass. 0.006 mm.

*Distr.* In rupe granitica loco subirrigato in ins. Kotiluoto in Sортавала (Vain.).

Affinis est f. *submusivae* Vain. et f. *hydaleae* Vain. Epithecum fulvescens, KOH non reagens.

71. *L. albocaerulescens* (Wulf.) Floerk.<sup>1)</sup>

in Schrad. N. Journ. Bot. IV (1810) p. 25, Ges. Nat. Berl. Magaz. IV (1810) p. 233; Zahlbr. Cat. Lich. Un. III (1925) p. 504 p. p. *Lichen albocaerulescens* Wulf. apud Jaqu. Coll. Bot. II (1788) p. 184, tab. XV f. 1 (Hoffm. Pl. Lich. I, 1790, t. XIV f. 2, sec. spec. a Wulf. missum), conf. Arn. Zur Erinn. Wulf. (1882) p. 149. *Lecidea contigua* var. *albocaerulescens* Nyl. Lich. Scand. (1861) p. 224 p. p. *L. macrocarpa* \**L. albocaerulescens* Th. Fr. Lich. Scand. II (1874) p. 508 p. p.

*Exs.* Anzi Lich. Ital. sup. VI (1865) n. 282, 283. — Arnold Lich. Exs. n. 808, 894. — Claud. et Harm. Lich. Gall. IX (1908) n. 446. — Flora Hung. VIII n. 712. — Hepp Flecht. Eur. V (1857) n. 243. — Johns. North Engl. Lich. Herb. n. 506. — Koerber Lich. sel. Germ. VIII (1861) n. 224. — Merrill Lich. Exs. Ser. I, fasc. VIII (1912) n. 178. — Rabenh. Lich. Eur. IX (1857) n. 232. — Schaer. Lich. Helv. VIII (1828) n. 185.

Thallus modice incrassatus aut sat crassus, glaucescenti-aut subcaesio-albidus, vulgo laevigatus, nec KOH nec jodo reagens, sorediis destitutus. Apothecia dispersa aut partim crebra, vulgo tota adnata (primum immersa in v. *vulgaris* Schaer.: Hepp Flecht. Eur. n. 243), basi non aut demum leviter constricta, lat. 2—0.8 (3—0.5) mm, disco bene caesio-pruinoso aut raro demum p. p. denudato nigricanteque (submorbouse), margine sat crasso aut demum extenuato,

<sup>1)</sup> Exsiccati by B. Lyngé, the rest by Vainio.

nigro, nudo. Hypothecium subhymeniale tenue rufescens (non albidum), ceterum hypothecium totum fusco-nigrum, hyphis sat erectis. Perithecium extus fusco-nigrum. Epithecum pallidum aut in eodem apothecio partim etiam fuscescens. Paraphyses sat arcte cohaerentes, leviter gelatinosae, apice non clavatae. Sporae long. circ. 0.016—0.024, crass. 0.008—0.012 mm, sec. adn. Nyl. »long. 0.014—0.027, crass. 0.008—0.012 mm.»

*F. alpina* Th. Fr. Lich. Scand. II (1874) p. 508, 509 p. p. (excl. *L. soredizode*). Forsan Schaeer. Lich. Helv. Exs. VIII (1828) n. 185, Lich. Helv. Spic. 3 (1828) p. 143, En. Lich. Helv. (1850) p. 119; Zahlbr. Cat. Lich. Un. III (1925) p. 503.

Apothecia majuscula, simplicia, adnata, disco pruinosa. Epithecum pallidum aut in eodem apothecio partim etiam fuscescens.

*Distr.* N.: Supra rupem porphyricam in Mäkiinpäälys in Suursaari vel Hoglandia (Vain. in Brenner Bidr. Hogl. Lafv. p. 101). KLad.: In latere abrupto montis dioritiae in Lahentausta ad Kirjavalahti in Sortavala (Vain.). KOn.: Jalguba (A. Kullhem). LIm.: Porjeguba (Kullh.), Umba (A. O. Kihlman, 512).

Autonoma est species, hypothecio subhymeniali rufescente (nec albido) et aliis magis vagis notis a *L. steriza* (= *L. macrocarpa*), etiam ab ejus proximis formis (*pruinosa* et *caesiococonvexa*) differens. Thallus vulgo continuus, raro demum areolatus, raro etiam verrucoso-inaequalis, leviter nitidus aut rarius opacus, hypothallo indistincto. Apothecia disco plano aut p. p. demum convexo, margine saepe crebre tenuissime transversim ruguloso. Hypothecium KOH demum subrubricoso-fuligineum, pars subhymenialis KOH demum subrubricosum. Perithecium intus fuscescens aut fuscescenti-pallidum, totum KOH demum subrubricoso-fuscescens. Hymenium circ. 0.120—0.130 (—0.140) mm crassum, jodo caerulescens. Epithecum granulosum, KOH dilutescens. Paraphyses crass. 0.001 (et vix 0.0015) mm, apicem versus sensim leviter incrassatae, sed nec capitatae, nec clavatae, simplices, parce septatae, pressione faciliter disjunctorae, quam in *L. steriza* (*L. macrocarpa*). Asci clavati, in apice membrana saepe sat bene incrassata. Sporae 8:nae, distichae. Conidia »filiformia, recta, long. 0.007—0.010, crass. 0.0005—0.0006 mm» sec. adn. Nyl. in n. 15398 (ex Anglia), »long. 0.006—0.011, crass. 0.0007 mm, recta» sec. Nyl. in specimine partim ad f. *prolificantem* pertinente e Suursaari. Gonidia cystococcaceae, subglobosa et globosa et ellipsoidea in eodem thallo.

*F. prolificans* Vain.

Apothecia prolifera, adnata, basi non constricta. Thallus sorediis destitutus. Epithecum fuscescens.

*Distr.* N.: Supra rupem porphyricam in Mäkiensälllys in Suursaari vel Hoglandiae (Vain.) una cum f. *alpina* et in eam transiens. A Nyl. false nominata est »*L. phaeenterodes*».

*F. lividoatra* Vain. *L. albocaerulescens* var. *vulgaris* sf. *lividoatra* Vain. Adj. Lich. Lapp. II (1883) p. 76.

Apothecia p. maj. p. minora, 0.4—1 (—1.5) mm lata, adnata, basi leviter constricta, disco vulgo livido- vel caesio-pruinoso, vulgo plano, margine modice incrassato, nigro, nudo.

*Distr.* Kuus.: Ad rupem inundatam in fl. Mäntyjoki (Vain. l. c.).

Thallus modice incrassatus, continuus, p. p. areolatus, glaucescens, subnitidus, hypothallo indistincto. Apothecia sat crebra, p. p. disco nigricante nudoque, p. p. demum convexo, margine laevigato, raro demum subexcluso. Epithecium fuscescens. Sporae ellipsoideae et parce dacryoideae, long. 0.018—0.024, crass. 0.009—0.014 mm. Hymenium circ. 0.130—0.040 mm crassum.

## 72. *L. soredizodes* (Nyl.) Vain.

*Lecidea phaeenterodes* var. *soredizodes* Nyl. Fl. 1875 p. 363; Hue Addend. II (1888) p. 192 (nec *L. meiospora* \**L. crustulata* var. *soredizodes* Lamy Exp. Lich. Cauter., 1884, p. 78, nec *L. crustulata* var. *soredizodes* Lamy apud Nyl. Fl. 1883 p. 534, Zahlbr. Cat. Lich. Un. III (1925) p. 553, nec *L. soredizodes* Lindau Flecht. (1913) p. 66). *L. albocaerulescens* var. *soredizodes* Zahlbr. l. c. p. 509. *L. albuginosa* Nyl. Fl. 1877 p. 227; Hue Addend. II (1888) p. 194; Zahlbr. l. c. p. 510 p. p. (excl. var. *cinereofuscescente* Hue). *L. albocaerulescens* var. *soralifera* Vain. in Havaas Lich. Exs. Norv. (1907) n. 370; Havaas Berg. Mus. Aarbog 1909 n. 1 p. 29.

*Exs.* Anzi Lich. Min. Rar. VI (1865) n. 283 (»*L. albocaerulescens* var. *alpina*, forsitan non Schaefer.) in hb. Nyl. — Arn. Lich. Exs. (1879) n. 808 (»*L. albocaerulescens* var. *alpina*) in Arn. Index, 1894, p. 14), hb. Nyl. — Havaas l. c.

Thallus modice incrassatus aut sat crassus, glaucescenti-albidus aut subcinereo-glaucescens, vulgo laevigatus, nec KOH, nec jodo reagens, sorediis numerosis aut parcis. Apothecia vulgo dispersa, adnata, basi demum leviter aut sat bene constricta, lat. 0.6—2.5 mm, disco caesio- aut livido-pruinoso, margine sat crasso aut modice incrassato, nigro, nudo. Hypothecium subhymeniale e fuscescente superne sensim pallescens, ceterum hypothecium (maturum) subpallescens superne et inferne strato fusco-nigro obductum,

hyphis erectis, inferne sat irregulariter contextis. Perithe-  
cium extus fusco-nigrum. Epithecium olivaceum aut fusce-  
scens (aut »sordide lutescens» sec. Nyl.). Paraphyses sat  
arcte cohaerentes, leviter gelatinosae, apice leviter incrassa-  
tae. Sporae long. 0.017—0.030, crass. 0.009—0.012 mm.

*F. albuginosa* (Nyl.) Vain. *Lecidea albuginosa* Nyl. l. c.

Apothecia simplicia.

*Distr.* KLad.: In rupe dioritica in Lahentausta ad Kirjavalahti et ad Vatka et ad Vaavalahdi (Vain.) et ad Aniala (G. Ekman) in Sortavala. LMur.: In rupe dioritica ad Jeretik (H. Hollmén).

Thallus continuus aut raro dispersus, raro inaequalis, leviter nitidus aut opacus, hypothallo nigricante saepe conspicuo. Apothecia disco plano aut p. p. demum convexo, margine saepe crebre tenuissime transversim ruguloso, regulari aut varie flexuoso, saepe prominente, vulgo persistente. Hypothecium KOH non reagens. Perithe-  
cium KOH non reagens. Hymenium circ. 0.090 mm crassum, saepe dilutissime aeruginosum, »jodo caerulescens» (sec. Nyl.). Paraphyses pressione sat facile disjunctae, crass. 0.0015 mm, apicem versus sensim leviter incrassatae, apice circ. 0.002 (—0.004) mm crasso, simplices, vix conspicue septatae. Asci clavati, in apice membrana modice incrassata. Sporae 8:nae aut abortu pauciores, distichae aut partim monostichae, saepe strato gelatinoso modice incrassato induitae, vulgo oblongae, apicibus obtusis aut interdum acutis, lateribus convexis. Conidia »bacillaria» (filiformia), »recta, long. 0.011—0.015, crass. 0.0005—0.0006 mm» (sec. Nyl.). — Apothecia a Nyl. false descripta sunt.

*F. phaeenterodes* (Nyl.) Vain. *Lecidea phaeenterodes* Nyl. Fl. 1875 p. 363 (sec. specim. orig. n. 15394 e Suecia), Fl. 1878 p. 248; Huc Addend. II (1888) p. 192.

Apothecia prolifera.

*Distr.* KLad.: In lateribus abruptis rupium dioriticarum ad Vaavalahdi et Vatka in Sortavala (Vain.).

In specim. orig. thallus est sorediosus. Sporae sec. adn. Nyl. »long. 0.014—0.022, crass. 0.008—0.012 mm». Apothecia prolifera et pro minore parte simplicia.

### 73. *L. flavocaerulescens* (Hornem.) Ach.<sup>1)</sup>

Syn. Lich. (1814) p. 23; Jatta Mon. Lich. It. Mer. (1889) p. 165, Fl. It. Cr. Lich. (1911) p. 630. *Lichen flavocaerulescens* Hornem. Fl. Dan. VIII (1810) t. 1431 f. 1. *Lecidea albocaerulescens* ♂ *flavo-  
caerulescens* Schaer. Lich. Helv. Spic. III (1828) p. 143; Arn. Lich.

<sup>1)</sup> Exsiccati by B. Lyngé, the rest by Vainio.

Tirol XIV (1875) p. 444, XVIII (1878) p. 258; Vain. Adj. Lich. Lapp. II (1883) p. 76; Zahlbr. Cat. Lich. Un. III (1925) p. 508; Lynge Lich. Nov. Zeml. (1928) p. 79. *L. macrocarpa* \**L. albocaerulescens* f. *flavocaerulescens* Th. Fr. Lich. Scand. II (1874) p. 509. *L. flavicunda* Ach. Lich. Un. (1810) p. 166 (sec. hb. Ach.).

*Exs.* Elenkin Lich. Ross. III (1904) n. 134, s. n. *Lecidea albocoerulescens* var. *flavocoerulescens* (non vidimus). — Havås Lich. Norv. (1904) n. 206. — Hepp Flecht. Eur. V (1857) n. 244, s. n. *Biatora flavocoerulescens*. — Malme Lich. Suec. XXVII (1917) n. 667, s. n. *Lecidea albocoerulescens* var. *flavocoerulescens* (paraphyses apice clavatæ). — Schaefer. Lich. Helv. VIII (1828) n. 186, s. n. *Lecidea albo-caerulescens* ♂ *flavo-caerulescens*. — Zahlbr. Krypt. Exsic. Vindob. V (1900) n. 450, s. n. *Lecidea albocoerulescens* var. *flavocoerulescens*.

*Obs.* Ochraceous plants of the *Lecidea macrocarpa*-section have been distributed in several exsiccati, under different names, cf. Lynge Index Exsic., vol. II. The editor has contented himself with the citation of the above few exsiccati. A bibliographical citation would in this case be too misleading.

Vainio has called attention to the clavate paraphyses of *Lecidea flavocaerulescens*. The paraphyses are very coherent at their apices, and not easily isolated. The editor has found that the apothecia of *Lecidea flavocaerulescens* are more adnate, more persistently plane, and more pruinose than they are in the ochraceous formæ of *Lecidea steriza*.

Thallus modice incrassatus aut sat crassus, ochraceus aut ochraceo-pallescens, laevigatus, nec KOH nec jodo reagens. Apothecia dispersa aut partim conferta, lat. circ. 1—1.5 (0.8—3) mm, tota adnata aut basi leviter constricta aut primum thallo immersa, disco cinereo-pruinoso aut demum denudato nigroque aut rarius mox nigro aut tantum parce primum subpruinoso, margine sat crasso aut tenui, nigro, nudo. Hypothecium subhymeniale anguste subrufescens aut parte summa albidum, ceterum hypothecium totum fusco-nigrum, hyphis sat erectis, inferne irregulariter contextis. Peritheciun fusco-nigrum. Epitheciun fusco-nigrum. Paraphyses arcte cohaerentes, leviter gelatinosae, apice distincte clavatae. Sporae long. 0.010—0.023, crass. 0.0075—0.012 mm.

*Distr.* N.: Ad rupem dioriticam in Lounatpuoli in Suursaari vel Hoglandia (Vain.) et alibi sec. Nyl. in Brenner Bidr. Hogl. Lafv. p. 101. KLad.: In rupe gneissacea ad Kirjavalalahti in Sortavala (A. Kullhem), ad Lahentausta (»*L. contigua* f. *flavicunda*«) sec.

Nyl. in Norrl. Symb. Fl. Lad.-Kar. p. 30). Oa.: Bötom (»*L. contigua* v. *flavicunda*« sec. Nyl. in Malmgren Fört. Lafv. Sat. S. Österb. p. 82). Kuus.: In reg. abiet. montis Näränkävaara, in reg. subalp. montium Nuorunen (in rupe dioritica) et Mäntytunturi (in rupe gabroitica) et ad rupem dioriticam in Ruskeakallio (Vain. l. c.). Ob.: Alapenikka in Simo, Ounasvaara in Rovaniemi (Räsänen Flecht. Ostr. Bor. p. 334), in »Lapp. Tornensi« (Edv. Nylander, »*L. lericida* var. *silacea*« sec. Nyl. in H. M. F., 1859, p. 90). LKem.: Pyhäntunturi (E. Häyrén) et alio loco ab Edv. Nylandro coll. (»*ochromela*« sec. W. Nyl.). LEnont.: In rupe gneissacea in reg. alp. ad Kilpisjärvi (»\**L. meiospora* f. *flavicunda*« sec. Nyl. in Norrl. Ber. Torn. Lappm. p. 339). LIn.: In latere rupis granitiae in Vesknemi (Vain. l. c.), ad lapidem graniticum in Kaunispää (V. Räsänen), in rupe granitica in Syrminniemi (F. Silén, 238).

Etiam paraphysibus apice clavatis a *L. albocaerulescente* et *L. steriza* (*L. macrocarpa*) differt, neque in eas distincte transit. Thallus plus minus intense ochraceus, etiam maculis non ochraceis interdum instructus, continuus aut raro dispersus aut rimosus aut raro areolatus, areolis planis aut raro convexis aut verrucaeformibus, opacus, hypothallo indistincto. Apothecia disco plano aut demum convexo, opaco, margine laevigato, saepe elevato, raro demum excluso. Hypothecium KOH non reagens, parte subhymeniali jodo caerulescente et hyphis 0.003—0.004 mm crassis. Peritheciun fusco-nigrum, KOH non reagens, hyphis subradiatim irregulariter contextis, cavitatibus oblongis, 0.0015 mm latis, membranis modice incrassatis, conglutinatis. Hymenium circ. 0.100—0.140 mm crassum. Epithecium fusco-nigrum, KOH non reagens, demum dilutius fuscescens. Paraphyses simplices, crass. 0.001—0.0005 mm, apice 0.003—0.004 mm crasso. Asci clavati, in apice membrana modice aut sat bene incrassata, in KOH turgescente. Sporae 8:nae, distichae, »long. 0.015—0.021, crass. 0.008—0.01 mm» (sec. adn. Nyl.), etiam long. 0.011, crass. 0.009 mm. Conidia »filiformia, recta, long. 0.007—0.011, crass. 0.0005—0.0006 mm» sec. adn. Nyl. in Flot. Lich. Exs. n. 170 A.

#### 74. *L. cinereoatra* Ach.<sup>1)</sup>

Lich. Univ. (1810) p. 167. Th. Fries Lich. Scand. II (1874) p. 509, ubi syn. crit. *Lecidea macrocarpa* var. *cinereoalra* (+ ff.) Vain. Adj. Lich. Lapp. II (1883) p. 70—71. Vide etiam Zahlbr. Cat. Lich. Un. III (1925) p. 533.

*Exs.* Havás Lich. Norv. (1902) n. 137. — Malme Lich. Suec.

<sup>1)</sup>). Literary references, exsiccati and diagnosis by B. Lynge, distribution by Vainio.

XXXVII (1924) n. 925. -- (verisimiliter distributa in al. exs. s. n *Lecidea contigua* vel *Lecidea macrocarpa*, cfr. Lyngé Index Exsic. II p. 163).

Thallus modice incrassatus, tenuis vel sat crassus, rimoso-areolatus vel plus minusve disperse areolatus. Areolae 0.4—0.6 (—0.8) mm. latae, subplanae vel vulgo plus minusve convexae usque tumidulae, minute reticulato-rimulosae et rugulosae. Areolae albidae vel glaucocinerascentes vel cinereo-virescentes, epruinosaes, sorediis isidiisque destitutae. Hypothallus ater inter areolas discretas distincte visus.

Apothecia numerosa, vulgo dispersa et rotundata, rarius contigua et mutua pressione angulosa, parva vel mediocria, diam. 0.5—1.0 mm., in margine areolarum sita, thallo arcte adpressa vel etiam subinnata. Discus e planiusculo diu planus et crasse elevate et subpersistente marginatus, rarius demum convexus et immarginatus. Discus ater, vulgo glauco-pruinosis, margo nudus. Excipulum carbonaceum, nigrum. Hymenium 70—100  $\mu$  altum, in parte superiori nigricans vel olivaceo-nigricans vel fusco-nigricans. Epitheciun granulosum, ruptum. Paraphyses arcte cohaerentes, validae, in apice haud incrassatae (KOH addito). Asci late clavati, octospori. Sporae parce evolutae, quam in *Lecideam sterizam* minores, 12—18, rarius usque ad 21  $\mu$  longae, 6—8 (—9)  $\mu$  crassae.

Thallus J, KOH et  $\text{CaCl}_2\text{O}_2$  non coloratur. Gelatina hymenialis J persistenter caerulescens, asci demum vinose rubentes.

Distr. Ab.: In insula prope Rahi in Kustavi (H. Hollmén et V. Sederholm), ad rupem in Kaukasalo in Finby (Vain.). Pargas: Malm (Räsänen). N.: Ad rupem porphyricam in Lounatkorkia in Suursaari vel Hoglandia (M. Brenner, »\**L. meiospora*« sec. Nyl.), ad rupem porphyricam in Mäkiennäällys (Vain.), in rupe granitica ad Kilo (A. Chydenius) et in lapide gneissaceo ad Abrahamsby (Vain.) in Esbo, Helsingforsia (O. Collin a. 1874). Ka.: »Sat frequenter» ad Viburgum (»*L. contigua* \**L. meiospora*« Vain. Lich. Vib. p. 67). St.: In saxo granitico ad Pengonpohja in Ylöjärvi (A. So'a). Ta.: Ad lapidem graniticum in pineto prope Lahti et

Taaveli (Vain.) et in lapide gneissaceo ad Upila (Vain.) in Hollola, in rupe granitica prope templum in Padasjoki (Vain.), in lapide granitico in Janakkala (F. Elfving), »frequentius — sat frequenter in Luhanka et Korpilahti», sec. Vain. Fl. Tav. Or. p. 116 (»\**L. meiospora* p. p.), collecta ad Peuha et Tianen in Korpilahti (Vain.). Sa.: Ad lapidem graniticum in Savonlinna (Vain., E. Nylander). Klad.: Ad rupem graniticam in Pekanvuori in Impilahti (Vain.). KOn.: Ad Jänkäjärvi (Norrl., »*L. contigua*» sec. Nyl.), Suunu (»\**L. meiospora*» sec. Nyl. in Norrl. Fl. Kar. Oneg. II p. 33). Om.: Kaisankallio in Alajärvi et Mäkitalo in Evijärvi (Backm. Fl. Lappaj. p. 132). Tb.: In lapide granitico ad Heramäki in Saarijärvi (Rabbe Elfving). Sb.: Ad rupes gneissaceas in Neulamäki et Räimänmäki (K. Linkola). Kb.: »Sat frequenter in toto territorio, praesertim ad lapides in silvis crescens» sec. Vain. Adj. Lich. Lapp. II p. 71, collecta ad pag. Lieksa (Vain.). Ob.: »Frequenter ad lapides in silvis, praesertim in territorio littorali, etiam in Talkkunamaa in Kiiminki» sec. Räsänen Flecht. Ostr. Bor. p. 334, in lapide granitico ad Kaarkoski in Alkkula (Ylitornio, E. Nylander). Kuus.: »Sat frequens in toto territorio, praesertim ad saxa in silvis crescens» sec. Vain. I. c., collecta in rupe dioritica in Vaskikallio (Vain.). KKer.: Soukelo (Fellm. Lich. Arct. n. 185 p. min. part., Mus. Fenn., etiam p. p. disco subochraceo). LKem.: In saxis in Lainiokangas et Rovaselkä in Kittilä (G. Lång). LIn.: Ad saxum graniticum littorale in ins. Tervasaari in Inari (Vain., conf. etiam I. c.). LIm.: Ad saxa diabasic riparia in alpe Lujaur-urt (»*L. meiospora*» sec. Nyl. in Kihlm. N. Beitr. Flecht. Kola p. 58, n. 83 p. p.).

*F. subinnata* Vain.<sup>1)</sup>. *Lecidea macrocarpa* var. *meiosporella* f. *subinnata* Vain. Adj. Lich. Lapp. II (1883) p. 70; Zahlbr. Cat. Lich. Un. III (1925) p. 631.

Thallus modice incrassatus, subcontinuus aut rimulosus aut areolatus, sat laevigatus, albidus. Apothecia crebra aut partim parce contigua, innata, thallum non aut parum superantia, lat. circ. 0.3—0.9 mm, disco plano aut demum leviter depresso-convexo, nigro, nudo, margine tenui, nigro, aut indistincto. Hymenium 70—75  $\mu$ , epithecium fuscescenti-nigricans. Sporae long. circ. 0.012—0.016, crass. 0.006—0.009 mm.

*Distr.* Al.: Bärö in Kumlinge (H. Hollmén et V. Sederholm). Ab.: Parainen (L. Kari, 53). N.: Hoglandia (Edv. Nylander a. 1851), Helsingforsia (Nyl.). Ta.: Mustiala (in f. *meiosporellam* transiens, A. Kullhem), Hersala in Hollola (Vain., 654, »*L. meiospora*» sec. det. Nyl., n. 21309).

*Obs.* It was evident from Vainios manuscript that he regarded

<sup>1)</sup> By Vainio.

*Lecidea cinereoatra* a proper species, distinct from his *Lecidea steriza*. He had arranged the localities for *Lecidea cinereoatra* (without reference to its formae), but not literature, exsiccati or diagnosis, which have been prepared by the editor. The editor has not attempted a full citation of literature and exsiccati for this critical species, he has only quoted such works and collections where he felt convinced that the author had limited the species in the same manner as Vainio would have done in the present paper. — »*Lecidea contigua*« in Fries Lich. Suec. No. 377 is var. *meiosporella*, according to Vainio Adjumenta p. 69. In the present paper Vainio has referred this var. to his *Lecidea steriza*, in spite of its small spores, evidently on account of its high hymenium. — In the present paper the editor has referred the *subinnata* to *Lecidea cinereoatra*. In Adjumenta Vainio described it as a forma of var. *meiosporella*. But f. *subinnata* has small spores and a low hymenium. The editor does not know how to separate *Lecidea cinereoatra* from *Lecidea steriza*, if f. *subinnata* should be referred to the latter species.

The editor's diagnosis of *Lecidea cinereoatra* in the present paper is based on some Finnish plants in herb. Vainio in Åbo, and on Havås' and Malme's exsiccati.

In Adj. Lich. Lapp. II (1883) p. 70—71 Vainio described the following formae of *Lecidea cinereoatra*, which he there referred to *Lecidea macrocarpa* (DC.) Th. Fr.:

Var. *cinereoatra* (Ach.).

The type of the present species: »Thallus sat tenuis vel mediocris, vulgo areolato-diffractus vel areolatus, cinerascens-albidus. Apothecia dense evoluta, subinnata-innata, in forma typica diu thallum aequantia planaque, minora: circ. 0.8—1 mm lata, demum planiuscula vel convexiuscula, saltem primitus disco pruinoso. Hymenium circ. 80—100  $\mu$  crassum. Epithecium nigricans (olivaceo-nigricans) vel rarius fuscescens. Paraphyses distinetae, arete cohaerentes. Sporae vulgo minores, vulgo 14—16 (12—17, raro usque ad 21)  $\times$  6—8  $\mu$ . Gelatina hymenialis J persistenter caerulescens, ascis demum vinoise rubentibus.

Sat frequens in toto territorio, praesertim ad saxa in silvis crescens.»

F. *tumidior* Vain.

»Thallus harum est sat crassus, areolatus vel etiam verrucosο-areolatus, albidus vel caesio-cinerascens. Apotheciis demum convexis immarginatisque, pruinosis vel saltem primo pruinosis.

Multis locis, velut ad Koriseva in par. Lieksa, ad Pyssyvaara et in insula Kynsisaari in par. Nurmes, in regione subalpina montis Iivaara in par. Kuusamo et montis Hammastunturi in Lapponia Inarensi.»

*F. extenuata* Vain.

»Thallus tenuissimus, maculaeformis. Thallus hujus olivaceo-cinerascens. — Apothecia plana, disco pruinosa, margine elevata. Hymenium circ. 70  $\mu$  crassum, sporae 15—11  $\times$  7—7.5  $\mu$ .

In rupe micaceo-schistosa in regione subalpina montis Mänty-tunturi in par. Kuusamo.»

### 75. *L. crustulata* (Ach.) Vain.<sup>1)</sup>

*L. macrocarpa* \**L. crustulata* Th. Fr. Lich. Scand. II (1874) p. 511; Vain. Adj. Lich. Lapp. II (1883) p. 73, Lich. Exp. Vegae Pitlekai (1909) p. 145; Harm. Cat. Lich. Lorr. V (1899) p. 400. *Lecidea parasema*  $\delta$  *crustulata* Ach. Lich. Un. (1810) p. 176 (emend.). *L. crustulata* Spreng. Syst. Veg. IV (1827) p. 258; Schaeer. En. Lich. Eur. (1850) p. 128; Th. Fr. Lich. Arct. (1860) p. 511; Zahlbr. Cat. Lich. Un. III (1925) p. 549. *L. nitidula* Fr. Lich. Eur. Ref. (1831) p. 308 max. p. (sec. Th. Fr.).

Exs. Anzi Lich. Lang. XII (1866) n. 479 (var. *macrospora* Kbr). — Arnold Lich. Exs. (1899) n. 1795. — Claud. et Harm. Lich. Gall. Exs. IV (1903) n. 192. — Flot. Lich. Exs. 187—189. — Hepp Flecht. Eur. III (1853) n. 130, et V (1857) n. 264 ( $\beta$  *macrocarpa*, s. n. *Biatora*). — Johns. North England Lich. Herb. n. 507. — Kbr Lich. sel. Germ. VIII (1857) n. 225 (*a vulgaris*), et XIV (1873) n. 406 (var. *oxydata*). — Leight. Lich. Brit. XI (1858) n. 333, s. n. *Lecidea prominula* Borr. — Malme Lich. Suec. X (1912) n. 249, s. n. *Lecidea macrocarpa* \**crustulata* (Ach.) Kbr. — Mudd Lich. Brit. II (1861) n. 177. — Zahlbr. Krypt. Vindob. V (1900) n. 449 et b.

Thallus tenuissimus aut sat tenuis, cinereo-glaucescens aut albidus aut raro ferrugineus ochraceusve, nec KOH, nec jodo reagens, sorediis destitutus, hypothallo nigricante saepe evoluto. Apothecia sat crebra, minora aut parva, lat. 1—0.3 mm, adnata, basi leviter constricta, disco vulgo plano, rarius demum convexo, nigro, nudo, margine tenui, vulgo leviter prominente, nigro, nudo (aut raro ochraceo). Hypothecium subhymeniale albidum, tenue, ceterum hypothecium fusco-nigrum, hyphis irregulariter contextis. Peritheciun totum fusco-nigrum, KOH non reagens. Epitheciun olivaceum aut fuscescens aut nigricans, KOH non reagens. Paraphyses arcte cohaerentes, gelatina hymeniali KOH bene

<sup>1)</sup>. Exsiccati by B. Lynge, the rest by Vainio.

turgescente, simplices aut parce ramoso-connexae, apicibus parum aut leviter incrassatis, interdum ramulosis. Sporae ellipsoideae aut fusiformi-ellipsoideae, long. 0.012—0.016 (0.010—0.020), crass. 0.005—0.007 (—0.009) mm.

*F. vulgaris* Koerb. Syst. Lich. Germ. (1855) p. 249; Arn. Lich. Tirol VI (1871) p. 1111. Apothecia minora aut sat parva, disco plano aut demum depresso-convexo. Thallus nec ochraceus, nec ferrugineus.

Distr. Al.: Geta (Vain.). Ab.: Ruissalo ad Aboam (K. Linkola), ad praedium Tuorila prope Aboam (Räsänen); in lapide ad Ispoinen in Maaria (Vain.), ad lapides in Hietakuoppa in Maaria (Vain.), ad Rakkaudenlähde in Luonnonmaa in Naantali (Vain.). N.: In valle ad Veteljärvi (M. Brenner, »\**L. meiospora subecrustacea* 11—14 × 6—7 μ» n. 16144 sec. Nyl., »*L. contigua* \**crustulata*» sec. Nyl. in Brenn. Bidr. Hogl. Lafv. p. 102), et in Suurkylä (Brenn., »*L. platycarpa*» sec. det. Nyl., in Mustjyrkänuori, »\**L. crustulata*» in Brenn. J. c.) in Hoglandia, Skallotaholm in Tvärminne (Fr. Elfving). Ka.: Ad lapidem graniticum in campo deusto ad Tervaniemi, ad Hietala et in Uuras Viburgi (Vain. Lich. Vib. p. 67). Ta.: Ad Kuivajärvi, Mustiala et Saukonиеми in Tammela (A. Kullhem), Janakkala (Elf.), ad Hiersala (Vain., 654, »\**L. meiospora*» sec. Nyl.) et alibi in Hollola (Vain., 16167 in hb. Nyl.), ad Rauvala in Asikkala (»*L. parasema* f. *nitidula*» Nyl. in Norrl. Bidr. Sydöstr. Tav. Fl. p. 190), in lapide argillaceo-schistoso ad Tammijoki in Luhanka (Vain. Fl. Tav. Or. p. 116). KLad.: Jamilahden-lepokoti in Sortavala (Vain.), ad rupem argillaceo-schistosam in Nykymäki in Suistamo (Vain.). Tb.: Ad lapidem in Norola in par. Jyväskylä (Vain. l. c.). Sb.: Ad lapidem gneissaceum in Taivalharju, ad lapidem graniticum in Suova, ad lapidem quarziticum in Jynkkä, Kurkimäki prope Kuopio (K. Linkola). Kb.: »Ad lapides et saxa, praesertim granitica locis apries in toto territorio sat frequenter» sec. Vain. Adj. Lich. Lapp. II p. 74, collecta in lapide quarzitico in campo deusto prope Koriseva in Lieksa (cum f. *convexella*) et in latere rupis gneissaceae in Hiidenportti in Nurmes (Vain.). OKaj.: »Sat frequ.» sec. Vain. l. c., collecta ad Lehtovaara et Hossa in Kianta (Vain.). Ob.: In lapidibus in Simo (Räsänen Flecht. Ostr. Bor. p. 334). Kuus.: »Sat frequ. in toto terr.» sec. Vain. l. c., collecta in lapide granitica in monte Iivaara (Vain.), ad Mäntyjoki (Vain.), ad Kitkajoki (F. Silén). LKem.: Prope templum in Muonioniska (Norrl. 704, »\**L. platycarpa* f. *steriza*» sec. Nyl. 16118), Hirvaslahti prope Pallasjärvi et ad Sirkankylä in Kittilä (L. Kari). LENont.: In Pyhäkerro et ad templum in Enontekiö (L. Kari). LIn.: In insula lacus Inarijärvi (B. Poppius). LTul.: Eemilintunturi in Pummanki in Petsamo (E. Häyrén), Kola (N. J. Fellman). LPon.: Triostroff

(Fellm.), ad lapides arenarios prope Ponoj (Kihlm. N. Beitr. Flecht Kola p. 58).

Thallus tenuis aut sat tenuis, continuus aut areolatus, areolis contiguis aut dispersis, laevigatus aut rarius leviter inaequalis, cinereo-glaucescens aut rarius albidus, opacus, hypothallo nigricante saepe limitatus aut inter areolas plus minus evoluto. Apothecia lat. 0.4—0.8 mm, KOH non reagentia, disco vulgo opaco, margine nigro, nudo, leviter nitido aut opaco, persistente. Hypothecium subhymeniale circ. 0.010 mm crassum, aequaliter fusco-nigrum, hyphis conglutinatis. Peritheciun hyphis subirregulariter radiantibus, conglutinatis, membranis modice incrassatis, cavitatibus tenuibus. Hymenium vulgo 0.070 mm crassum, »jodo persistenter caerulescens, ascis demum vinose rubentibus» (Vain. I. c.), aut totum demum vinose rubens »*L. macrocarpa* \**L. subcrustulata*» Vain. I. c. p. 75). Paraphyses simplices et passim parce ramoso-connexae, crass. 0.0005—0.001 mm, apicibus parum aut leviter incrassatis, p. p. parce ramulosis. Conidia »bacilliformia, long. 0.011—0.013, crass. 0.0007 mm» (sec. Nyl. Lich. Nov. Zel. p. 105), »recta, long. 0.012, crass. 0.001 mm» (sec. Arn. Lich. Tirol VIII, 1872, p. 298).

*Obs. 1.* »*L. macrocarpa* \**L. crustulata* sf. *atrocaerulea*» Vain. Adj. Lich. Lapp. II (1883) p. 74, hypothallo caeruleo-nigricante bene evoluto, inter areolas thalli 0.1—0.2 mm latas, depresso-convexas, cinereo-albidas, dispersas conspicuo, hymenio jodo caerulescente, ascis demum vinose rubentibus, sporis long. 0.013—0.015, crass. 0.0065—0.008 mm, in latere rupis quarzitiae ad Tscholkka in Repola collecta est. Ab hac non differt »*L. crustulata* c. *variegata*» Flot. Lich. Exs. (1829) n. 188 (hb. Nyl. 1613 b), Lich. Schles. (1829) p. 9, quae non est *L. variegata* Fr. Sched. Crit. XIII (1827) p. 27, Lich. Suec. Exs. XIII (1827) n. 387 (ad *L. pantherinam* sec. Th. Fr. pertinens), nec sit *L. variegata* Fr. Syst. Orb. Veg. (1825) p. 287 (conf. Th. Fr. Lich. Scand. p. 493).

*Obs. 2.* *L. macrocarpa* \**L. subcrustulata* Vain. Adj. Lich. Lapp. II (1883) p. 75, hymenio toto jodo intense caerulescente deindeque vinose rubente *L. crustulata* Ach. differens, forsan non est vera forma systematica. Collecta ad lapides parvos graniticos in fossa arenaria ad sepulcretum Aboae in Kaarina (Vain.), ad lapides graniticos loco aprico prope Saukko in Kianta (OKaj.). — *F. lignicola* (*L. crustulata* f. *lignicola* Sands. Abh. Nat. Ver. Brem. XXI, 1912, p. 80, Zahlbr. Cat. Lich. Un. III, 1925, p. 552) in saepimento ligneo prope Nevala in Lieksa (Kb.), reactione jodetica hymenii cum \**L. subcrustulata* congruens. Specimina ad lignum in Savonlinna (Sa.) ab O. Carlenio et ad corticem Betulae ad Alkkula in Ylitornio (Ob.) ab E. Nylandro (16440 in hb. Nyl). collecta reactione non sunt cognita. — *F. subminutissima* (\**L. subcrustulata* f. *sub-*

*minutissima* Vain. l. c. p. 75), habitu apotheciorum similis est. f. *minutissimae* Vain., sed reactione jodetica sicut in \**L. subcrustulata*. Thallus tenuissimus, laevigatus, partim continuus, partim dispersus, maculas parvas vel majores formans, impure albidas vel subpallidas, hypothallo nigricante passim conspicuo. Apothecia minutissima, lat. usque ad 0.3 mm. Hypothecium fusco-nigricans. Hymenium 0.070—0.080 mm crassum, jodo caerulescens deindeque obscure vinoze rubens. Epithecium sat dilute olivaceum aut olivaceo-nigricans. Paraphyses gelatinam sat copiosam percurrentes. Sporae long. 0.014—0.020, crass. 0.007—0.009 mm. Ad lapides parvos prope Vaskikallio in Kuusamo (Vain.).

F. *convexella* Vain. *L. macrocarpa* \**L. crustulata* f. *convexella* Vain. Adj. Lich. Lapp. II (1883) p. 74. *L. contigua* \**L. crustulata* f. *convexella* Harm. Cat. Lich. Lorr. V (1899) p. 400. *L. crustulata* f. *convexella* Zahlbr. Cat. Lich. Un. III (1925) p. 551.

Apothecia demum aut jam mature convexa immarginataque.

Distr. IK.: In lapide gneissaceo ad Perkjärvi in Muola (A. O. Kihlman). Ta.: In rupe gneissacea ad Tampere (A. Sola), Mustiala et alibi in Tavastia (Norrl. n. 511, n. 16169 hb. Nyl.). KOn.: Suojärvi (»*L. contigua* f. *platycarpa*« sec. Nyl. in Norrl. Fl. Kar. On. II p. 33 p. p.), Perttiniemi (Norrl., »*L. contigua* fere f. *steriza*« sec. Nyl.). Kb.: In lapide quarzitico in campo prope Koriseva in Repola (Vain. l. c., errat. topogr.). LENont.: Ad rupem gneissaceam prope templum in Enontekiö (L. Kari). LTul.: Kola (N. I. Fellm., »*L. contigua* v. *meiospora*« sec. adn. Nyl., »v. *crustulata*« Nyl. Lich. Lapp. Or. p. 159).

In specimine ad Koriseva collecto thallus est tenuis, verruculosus, verruculis circ. 0.05—0.15 mm latis, depresso-convexus, dispersis et partim subcontiguis, albidis, partim hypothallo nigricante limitatus, hypothallo raro inter verruculas evoluto. Apothecia sat crebra, circ. 0.5—0.8 mm lata, p. p. minora. Hypothecium et peritheciun fusco-nigra, KOH non reagentia, hypothecium subhymeniale parum evolutum, subalbidum pallescensve. Hymenium circ. 0.070—0.080 mm crassum. Epithecium fusco-nigricans, KOH dilutescens. Paraphyses arcte cohaerentes, simplices, fere 0.001 mm crassae, apice parum aut leviter incrassato (fere 0.002 mm), gelatina in KOH turgescente, jodo persistenter caerulescente (»ascis demum vinoze rubentibus», Vain. l. c.). Asci clavati, membrana in apice modice incrassata. Sporae 8:nae, distichae, long. 0.012—0.016, crass. 0.005—0.007 mm.

Obs. 3. Ad Herala in Hollola (Ta.) status in f. *minutissimam* transiens collectus est (Vain.).

F. *minutissima* Vain. *L. macrocarpa* \**L. crustulata* f. *minutissima* Vain. Adj. Lich. Lapp. II (1883) p. 74. *L. contigua* \**L. crustulata* f. *minutissima* Harm. Cat. Lich. Lorr. V (1899) p. 400. *L. crustulata* f. *minutissima* Zahlbr. Cat. Lich. Un. III (1925) p. 552.

Apothecia plana, marginata, minutissima, lat. circ. 0.3—0.4 mm.

*Distr.* Ab.: Ad lapillos graniticos prope sepulcretum Aboae in Kaarina (Vain.). OKaj.: In latere rupis argillaceo-schistosae ad Saarikoski in Kianta (Vain. l. c.). De »\**L. subcrustulata* f. *subminutissima*» vide supra.

Thallus tenuis, verruculosus, dispersus, albidus, parum evolutus, hypothallo indistincto. Apothecia sat crebra, KOH non reagentia. Hypothecium rubricoso-nigricans. Peritheciun fusco-rubricoso-nigricans. Hymenium circ. 0.070—0.080 mm crassum. Epithecium olivaceo-vel impure subviolaceo-nigricans. Paraphyses gelatinam sat copiosam percurrentes. »Gelatina hymenialis jodo persistenter caerule-scens, ascis vinose rubentibus» (Vain. l. c.). Sporae long. circ. 0.015, crass. 0.007 mm.

F. *ferruginea* Krempelh. *L. crustulata* \**ferruginea* Krempelh. Lich. Bay. (1861) p. 190; Zahlbr. Cat. Lich. Un. III (1925) p. 551.

Thallus ferrugineo-ochraceus.

*Distr.* Ta.: Ad saxum gneissaceum in fossa arenaria in Sysmä (E. W. Blom). Kb.: In lapide in campo deusto ad Jakokoski in Kontiolahti (Vain.).

Thallus sat tenuis aut tenuis, areolatus, areolis contiguis, vulgo laevigatis planisque aut partim convexis, opacis linea hypothallina nigricante interdum partim limitatus. Apothecia sat crebra, lat. 1—0.4 mm, adnata, basi leviter constricta, KOH non reagentia, disco nigro, nudo, opaco, plano aut vulgo demum convexo, margine tenui, nigro, nudo aut raro dilute ochraceo, leviter prominente, saepe demum excluso. Hypothecium subhymeniale partim distinctum, tenue, impure albidum, ceterum hypothecium fuligineum. Hymenium circ. 0.060 mm crassum. Epithecium olivaceo-nigricans. Paraphyses arete cohaerentes, simplices, crass. circ. 0.001 mm, apicem versus saepe crebre septatae et crass. circ. 0.0025 mm. Ascii late clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae, long. 0.010—0.013, crass. 0.005—0.006 mm (numerosas a me visae).

F. *oxydata* Rabenh. *L. crustulata* f. *oxydata* Rabenh. Flecht. Eur. XXV (1863), n. 698, Arn. Lich. Fränk. Jura (1885) p. 163, Lich. Münch., (1891), p. 78, Zahlbr. Cat. Lich. Un. III, (1925) p. 552.

Thallus partim pallido-ochraceus.

*Distr.* LKem.: Supra lapidem gneissaceum ad ostium fl. Pyhäjoki in Kittilä (L. Kari).

A f. *ferruginea* distingui potest. Thallus tenuis. Paraphyses simplices, apice leviter incrassato. Sporae 8:nae, distichae, parce etiam monostichae, oblongae aut ellipsoideae, long. 0.010—0.014 mm, etiam globosis immixtae, diam. 0.009 mm. Conidia »recta, long. 0.012, crass. 0.001 mm» (sec. Arn. Lich. Tirol VII, 1872, p. 285).

76. **L. albosuffusa** Th. Fr.<sup>1)</sup>

Bot. Notis. 1865 p. 110; Krempelh. Fl. 1866 p. 153; Vain. Adj. Lich. Lapp. II (1883) p. 64; Zahlbr. Cat. Lich. Un. III (1925) p. 509 p. p. *Lecidea petrosa* Th. Fr. Lich. Scand. II (1874) p. 511 p. p. (excl. *L. petrosa* Arn.).

*Exs.* Arn. Lich. Exs. n. 358 a, b et n. 1179, s. n. *Lecidea petrosa*. — Haväs Lich. Norv. Exs. (1911) n. 422.

Thallus sat tenuis aut tenuis, verruculoso-inaequalis, albidus, nec jodo, nec KOH reagens, aut evanescens, hypothallo indistincto. Apothecia adnata, basi constricta, vulgo sat crebra, rarius dispersa, lat. circ. 0.5—0.8 mm, disco plano aut rarius demum convexo, nigro aut caesio-pruinoso, margine tenui aut raro modice incrassato, saepe prominente, persistente aut rarius demum excluso, nigro, nudo (aut raro pruinoso), saepe leviter nitido. Hypothecium totum nigricans aut fusco- vel subviolaceo-nigricans, in parte superiore hyphis erectis. Peritheciun totum fuligineum, KOH non solutionem violaceam effundens. Epitheciun cyanescenti- aut rarius aeruginoso- aut fuscescenti- aut subviolaceo-fuligineum, vulgo strato gelatinoso, decolorato, tenui obductum. Paraphyses arcte cohaerentes, leviter gelatinosae. Sporae ellipsoideae oblongaeve, magnae, long. 0.016—0.029, crass. 0.009—0.012 mm, aut globosis immixtae, diam. 0.011—0.012 mm.

Var. *glaucocarpa* (Arn.) Vain. Adj. Lich. Lapp. II (1883) p. 65; Zahlbr. Cat. Lich. Un. III (1925) p. 510. *Lecidea petrosa* var. *glaucocarpa* Arn. Fl. 1868 p. 36, tab. I f. 21 (sec. specim. orig. in hb. Nyl.). *L. cyaniza* Nyl. Fl. 1872 p. 359 (hb. Nyl.); Hue Addend. II (1888) p. 187. *L. petrosa* ♂ *albosuffusa* Th. Fr. Lich. Scand. II (1874) p. 512 (*L. albosuffusa* Th. Fr. Bot. Not. 1865 p. 110).

Apothecia disco pruinoso.

*Distr.* In saxis calcareis et raro talcaceis et micaceo-schistosis et arenariis et graniticis in regione calcarea sat rara in territorio nostro. KLad.: Ad lapicidinam marmoream in Ruskeala (»*L. cyaniza*« Norrl. Symb. Fl. Lad.-Kar. p. 30) KOn.: Suojärvi (»pluribi, *L. cyaniza*« Norrl. Fl. Kar.-Oneg. II p. 34, saltem n. 15773 in hb. Nyl. hue pertinens), Mundjärvi (»*L. cyaniza*« n. 15781 in hb. Nyl., Norrl. I. c., specim. e. Lischmajärvi non vidi). Sa.: Nyslott (O. A. J. Carle-

<sup>1)</sup>). Exsiccati by B. Lyngé, the rest by Vainio.

nus, *L. cyaniza* Nyl. Fl. 1872 p. 359, conf. infra). Sb.: Jynkän Kalkkilouhos prope Kuopio (K. Linkola, f. *albomarginata*). Ob.: ad lapidem calcareum in Simo (Räsänen). Kuus.: In rupe talcacea prope Sirkelä (Vain. l. c.). LKem.: In rupe granitica prope Kalkkiavaara in Sodankylä (Vain. l. c.).

Thallus subcontinuus aut dispersus, sorediis destitutus, nequidem infra apothecia jodo caerulescens (sec. specim. orig. »*L. cyanizae*« Nyl., hic descriptae). Apothecia tenuia, sat crebra, disco pruinoso (apotheciis nudis immixta). Hypothecium fuligineum, KOH (post tempus longius) violascens. Peritheciun fuligineum, KOH demum (post tempus longius) violascens. Hymenium circ. 0.090 mm crassum, jodo caerulescens. Epitheciun cyanescens-fuligineum, KOH demum olivaceo-fuscens (violascens post tempus longius), strato tenui decolorato obductum, parce granulosum. Paraphyses tubulis 0.001 mm crassis aut tenuioribus, apice parum aut paullum incrassatis. Ascii late clavati aut subventricoso-clavati, in apice membrana bene incrassata. Sporae 8:nac, distichae, »long. 0.018—0.024, crass. 0.009—0.012 mm» (sec. Nyl.), ellipsoideae, globosis, diam. 0.011—0.012 mm, in eodem apothecio immixtae. — In specim. orig. »*L. petrosae* var. *glaucocarpa* Arn. e Schlern in Tirolia (hb. Nyl. 15799) apothecia lat. 0.5—0.8 mm, tenuia, disco pruinoso (apotheciis nudis immixta), sat crebra, epithecium olivaceo-fuligineum, hypothecium olivaceo-fuligineum, sporae (sec. adn. Nyl.) »long. 0.018—0.023, crass. 0.009—0.011 mm», conidia »bacilliformia, recta, long. 0.006—0.007 mm, crass. 0.0005 mm». Non pertineat ad *L. Jurana* Schaefer.

*Obs.* F. *albomarginata* Vain., disco et margine pruinoso instructa, in rupe calcarea prope Kuopio (K. Linkola). Thallus tenuis. Epitheciun aeruginoso-fuscens.

Var. *inferior* (Nyl.) Vain. *Lecidea inferior* Nyl. Fl. 1869 p. 411, Fl. 1883 p. 108; Hue Addend. II (1888) p. 187. *L. petrosa* Arn. Fl. 1868 p. 36 p.p. (excl. var. *glaucocarpa* Arn.). *L. albosuffusa* var. *petrosa* Vain. Adj. Lich. Lapp. II (1883) p. 65. *L. petrosa* a *nuda* Th. Fr. Lich. Scand. II (1874) p. 511.

Apothecia disco nudo.

*Distr.* In saxis calcareis et raro talcaceis et micaceo-schistosis et graniticis in regione calcarea sat rara. Ab.: Karjalohja (J. P. Norrlin, »*L. cyaniza*« 15779 in hb. Nyl., »*L. inferior*« Nyl. Fl. 1883 p. 108, 15763 hb. Nyl.). KLad.: Kirjalahti (»*L. cyaniza*« Norrl. Symb. Fl. Lad.-Kar. p. 30, 15771 hb. Nyl.), Ruskeala (»*L. cyaniza*« Norrl. l. c., 15775 p. p., hb. Nyl.). KON.: Suojärvi (»*L. cyaniza*« Norrl. Fl. Kar.-Oneg. II p. 34, 15777, 15778, hb. Nyl.), Mundjärvi (»*L. cyaniza*« Norrl. l. c., Mus. Fenn.). Sb.: Jynkän Kalkkilouhos prope Kuopio (una cum f. *albomarginata*, K. Linkola), Kuopio (E. Nylander »s. n. *L. contigua platycarpa* W. Nyl.« sec. Th. Fr. l. c. p. 512).

Kuus.: Ad Kitkajoki (F. Silén, »v. petrosa« Vain. Adj. Lich. Lapp. II. p. 65), ad rupem talcaceam prope Sirkelä (»v. petrosa« Vain. l. c.). LKem.: In latere rupis graniticae ad Kalkkivaara (»v. petrosa« Vain. l. c.). LEnont.: Ad lapides calcareos in Gunnarinkorva (»L. inferior« Nyl. Fl. 1869 p. 411, Norrl. Ber. Torn. Lappm. p. 339). LIm.: Ad Imandram (N. I. Fellman, »L. contigua« Nyl. Lich. Lapp. Or. p. 159 p. p.) sec. Th. Fr. l. c.). LPon.: Ad lapides calcareos inductos ad promontorium Orlov (»L. petrosa?« sec. determ. Nyl., Kihlm. Neue Beitr. Flecht. Kola p. 58).

Saepe in eodem specimine apothecia nuda et pruinosa observantur (conf. etiam Th. Fr. l. c. p. 513). Thallus nequidem infra apothecia jodo reagens. Apothecia lat. 0.5—0.8 mm. Hypothecium fuligineum aut fusco- aut purpureo-nigricans, KOH purpureum violascensve. Peritheciun fuligineum, KOH demum purpureum. Hymenium circ. 0.100—0.140 mm crassum, jodo caerulescens. Epithecium subaeruginoso- aut olivaceo- aut subcyanescenti-nigricans, KOH demum partim violascens (strato tenui decolorato obductum aut hoc strato parum distincto). Paraphyses tubulis tenuissimis, apicibus parum incrassatis, simplices et parcissime ramoso-connexae. Conidia »bacilliformia, recta, long. 0.005—0.006, crass. 0.0006—0.0007 mm» (sec. adn. Nyl. in »L. cyaniza«, n. 15779), et »long. 0.005, crass. 0.0005—0.0006 mm» (in »L. inferiore«, n. 15763, Fl. 1883 p. 108).

*Obs. 1.* *Lecidea inferior* Nyl., Fl. 1869 p. 411, sec. specim. orig. n. 15764 e Lapponia apotheciis nudis, saepe demum depresso-convexus, margine tenui, epithecio subaeruginoso-nigricante, KOH demum partim violascente, partim immutato, zona decolorata parum distincta obducto, hypothecio fusco-nigro, KOH violaceo-purpureo, in parte superiore hyphis erectis instructa, evidenter ad *L. albosuffusam* var. *nudam* (Th. Fr.) pertinet.

*Obs. 2.* *Lecidea petrosa* Arn. Lich. Exs. (1867) n. 358 a, b (hb. Nyl.), (1886) n. 1179 (hb. Nyl.). Fl. 1868 p. 36, 38, tab. I f. 20, Fl. 1870 p. 231, Fl. 1874 p. 453, Lich. Tirol V (1870) p. 539, VI (1871) p. 1129, XV (1876) p. 366, XXIII (1887) p. 123, 127, 131, XXVIII (1897) p. 224, Nyl. Fl. 1883 p. 108, proxima est *L. Juranae* Schaer. En. Lich. Eur. (1850) p. 123 et a *L. albosuffusa* var. *inferiore* differt apotheciis crassioribus latioribusque (usque ad 1.5 mm latis), margine crassiore, paraphysibus magis gelatinosis et crassioribus atque ramoso-connexis. In Arn. Lich. Exs. n. 358 (a) epithecium est violaceo-fusecens, KOH violaceo-purpureum (f. *epiporphyrea* Vain.), »sporae long. 0.016—0.022, crass. 0.009—0.011 mm, conidia recta, long. 0.006—0.010 mm» (sec. adn. Nyl.). In n. 1179 epithecium est cyanescenti-fuligineum, strato decolorato obductum (f. *epicyanescens* Vain.). Sporae long. 0.027—0.029, crass. 0.010 mm.

*Obs. 3. Lecidea inferior* f. *subgyrosa* Nyl. in Norrl. Ber. Torn. Lappm. (1873) p. 339 (*L. subgyrosa* Nyl. in Stizenb. Lich. Hyperb., 1876, p. 46), sicut a Th. Fr., Lich. Scand. II (1874) p. 531, rite indicatur, ad *Lecideam trochodem* (Tayl.) Leight. pertinet. »Sporae long. 0.018—0.026, crass. 0.011—0.016 mm, conidia bacilliformia, recta, long. 0.0035, crass. 0.0005 mm» sec. adn. in n. 13080 in hb. Nyl.

*Obs. 4. Lecidea caerulea* Krempehl., Fl. 1857 p. 372, Koerb. Par. Lich. 3 Lief. (1861) p. 226, Arn. Lich. Fragm. IV (Fl. 1868) p. 36, 38, tab. I fig. 15, 16, Lich. Tirol VI (1871) p. 1129, XX (1879) p. 376, XXIII (1887) p. 139, Nyl. Fl. 1881 p. 539, Zahlbr. Cat. Lich. Un. III (1925) p. 531 p. p. (commixta cum *Bacidia caerulea* Koerb.), proxima est *L. Juranae* Schaer.

### 77. *L. Dicksonii* (Gmel.) Ach.

Meth. Lich. (1803) p. 55; Th. Fr. Lich. Scand. II (1874) p. 516; Arn. Lich. Tirol XXV (1893) p. 362; Vain. Lich. Exp. Vegae Pitlekai (1909) p. 139; Zahlbr. Cat. Lich. Un. III (1925) p. 562. *Lichen Dicksonii* Gmelin Syst. Nat. II pars 2 (1791) p. 1363; Ach. Lich. Suec. Prodr. (1798) p. 76. *Lecanora cinerea* \**L. Dicksonii* Nyl. Lich. Scand. (1861) p. 155. *Lecanora gibbosa* \**L. Dicksonii* Nyl. Lich. Lapp. Or. (1866) p. 137. *Lecidea sincerula* f. *Dicksonii* Nyl. apud Cramb. Lich. Kerg. (1876) p. 190, Nyl. in Brenner Bidr. Hogl. Lafv. (1885) p. 104. *Lecanora Dicksonii* Nyl. En. Lich. Fret. Behr. (1888) p. 31. *Gyalecta atrata* Ach. Vet. Ak. Handl. 1808 p. 229, Lich. Un. (1810) p. 152. *Lecidea melanophaea* Fr. Vet. Ak. Handl. 1822 p. 259. *Aspicilia melanophaea* Koerb. Syst. Lich. (1855) p. 159. *Lecidea laclea* var. *melanophaea* Nyl. Herb. Mus. Fenn. (1859) p. 90.

*Exs.* Schaer. Lich. Helv. Exs. V (1826) n. 123 (sec. Arn. l.c.). — Flot. Lich. Exs. II (1829) n. 165 (Arn.). — Zwackh. Lich. Exs. (1850) n. 25 (Arn.). — Leight. Lich. Brit. Exs. (1853) n. 127 (Arn.). — Koerb. Lich. Sel. Germ. I (1856) n. 7 (Arn.). — Arn. Lich. Exs. (1861) n. 142. — Fellm. Lich. Arct. (1864) n. 120 (Mus. Fenn.). — Anzi Lich. Exs. Min. Rar. It. (1865) n. 213 (Arn.). — Erb. Critt. It. II (1869) n. 168 (Arn.). — Cramb. Lich. Brit. Exs. (1874) n. 72 (hb. Nyl.). — Johns. North Engl. Lich. Herb. IV (1895) n. 149 (Lynge). — Malme Lich. Suec. Exs. XVII (1914) n. 421 (Mus. Fenn.).

Thallus sat tenuis, crebre areolato-diffractus aut raro areolatus, laevigatus, ferrugineus aut ochraceo-ferrugineus, opacus, nec KOH, nec jodo reagens, hypothallo nigro. Apothecia sat crebra, lat. 0.2—0.5 mm, primum thallo immersa, dein vulgo mox emergentia, disco concavo planove, nigro,

nudo, opaco, margine sat tenui, integro, demum aut vulgo mox bene prominente, nigro aut raro ochraceo, persistente. Hypothecium inferne fuligineum aut fusco-nigricans, KOH purpurascens. Peritheciun (in sectione) fuligineum, KOH solutionem purpuream effundens. Paraphyses abundanter gelatinosae, ramoso-connexae. Sporae vulgo ellipsoideac, long. 0.009—0.016, crass. 0.005—0.009 mm, raro subglobosis et globosis immixtae.

Var. *melanophaea* (Fr.) Vain. *Lecidea melanophaea* Fr. I.e. *Aspicilia melanophaea* Koerb. I.c. *Lecidea lactea* var. *melanophaea* Nyl. I.c.

Apothecia habitu lecideina, margine nigro, nudo, mox bene prominente, instructa.

Distr. N.: In latere abrupto rupis porphyrycae ad Ruokolahen-järvi (»*L. sincerula* f. *Dicksonii*« Nyl. in Brenner Bidr. Hogl. Lafv. p. 104) et in rupibus porphyrycis cet. in Somerikongvuoret (Brenner, Vain.) in Hoglandia, Helsingforsia (1858, »*L. lactea* v. *melanophaea*« Nyl. H M. F. p. 90). Ob.: In lapidibus rivularibus ad Syvälahden-joja in Simo (V. Räsänen Flecht. Ostr. Bor. p. 335). Kuus.: Ad rupem in reg. subalp. montis Ukonvaara (Vain. Adj. Lich. Lapp. II p. 77). KKer.: Ad rupem gabbroensem in reg. subalp. montis Päänuorunen (Vain. I.c.). LKem.: Sodankylä (E. Nylander, Nyl. Lich. Scand. p. 155). LIn.: Ad Leutolahti in Inari et in reg. alp. infer. in Edlehoivi (F. Silén). Lps.: Petsamo (Häyrén). LTul.: Ad Kola et Sinum Kolaensem et in insula Kildin (N. I. Fellman). LPon.: Ad Ponoj (Fellm. Lich. Arct. n. 120, »f. macra, hypothallo praedominante« sec. adn. Nyl.).

Thallus raro dispersus. Hypothecium inferius KOH solutionem purpuream effundens, superne dilutius coloratum aut anguste decoloratum, hyphis irregulariter contextis. Peritheciun hyphis conglutinatis, cavitatibus cellularum angustis. Hymenium circ. 0.070—0.080 mm crassum, jodo intense caerulescens, »dein vinose rubens« (sec. Nyl.) aut fulvo-fuscescens. Epithecium olivaceo-fuscescens aut impure aeruginoso-fuligineum aut partim dilute coloratum. Paraphyses tubulis tenuibus aut tenuissimis, apicibus parum incrassatis. Ascii late clavati aut leviter ventricosi, in apice membrana sat modice incrassata. Sporae 8:nae, distichae, decoloratae. Conidia »cylindrico-oblonga vel medio paullo angustiora, long. 0.002—0.003 mm« (sec. Th. Fr.). Gonidia cystococcaceae.

Var. *immergens* Vain.

Apothecia habitu aspicilioidea, margine demum thallum leviter superante, extus ochraceo, thallo concolore aut paullo obscuriore, aut immerso persistente.

*Distr.* Al.: In latere abrupto rupis graniticae in Gripö in par. Föglö abundantissime una cum *Gyrophora polyphylla* cet.

Facie externa subsimilis est *Lecanorae (Aspiciliae) obiectae* Vain. et *L. diamartae* (Ach.), sed hypothecio fusco-nigricante et perithecio intus fuligineo cum *Lecidea Dicksonii* congruens, et vix sit autonoma species aut subspecies ejus. Thallus jodo non reagens, crebre areolato-diffractus, areolis irregularibus, planis, laevigatis, ochraceo-ferrugineis, opacis, lat. circ. 0.15—0.5 mm, hypothallo nigricante, tenuissimo. Apothecia sat crebra, lat. 0.2—0.4 mm. Hypothecium fusco-nigrum et partim subpurpureo-fuligineum, KOH partim distinctius subpurpureum. Perithecium fuligineum, KOH subfuscens et partim subpurpureum. Epitheciun sordide et dilute aeruginosum aut subdecoloratum et subochraceo-granulosum, KOH non reagens. Paraphyses gelatinosae, ramoso-connexae, sat crebre septatae. Ascii sat late clavati, in apice membrana modice incrassata. Sporae ellipsoideac, long. circ. 0.012—0.018, crass. 0.006—0.007 mm, subglobosis et globosis immixtae, diam. 0.006 mm aut long. 0.008 et crass. 0.005 mm. Gonidia cystococcaceae.

#### Sectio *Lecidea leucophaea*.

Thallus cinerascens vel virescenti-straminea, apothecia obscure rufescens, fuscescentia vel nigricantia, hypothecium pallidum, paraphyses apicem versus coloratae, sporae mediocres vel minutae, pycnoconidia (ubi visa) longa, acicularia. Hyphae medullares non amyloideae.

The editor has formerly separated the species with a brown or a dark brown thallus from this section and referred them to a sectio *Lecidea aenea*. [Lich. Nov. Zemlya (1928) p. 107]. *Lecidea aenea* itself has not been found in Finland.

Th. M. Fries was of opinion that *Lecidea fuscens* Somrft was a *Lecidea* of the *leucophaea* section [Lich. Scand. II (1874) p. 461], but Vainio referred it to the genus *Lecanora*.

#### 78. *L. luteoatra* Nyl.

Flora 1873 p. 299; Hue Addend. II (1888) p. 184; Zahlbr. Cat. Lich. Un. III (1925) p. 795. *Bialora viridiatra* Stenh. in Fr. Lich. Eur. Ref. (1831) p. 457 (sec. Th. Fr. Lich. Scand. II, 1874, p. 457); Stenh. in Fr. Sched. Crit. XIV (1833) p. 8, n. 403. *Lecidea viridiatra* Schaeer. En. Lich. Eur. (1850) p. 108 (non Floerk. Deutsch Lich. IV, 1819, p. 4, conf. Vain. L. F. II p. 283); Th. Fr. l.c. *Bialora leucophaea* var. *genuina* f. *viridiatra* Koerb. Par. Lich. & Lief. (1860) p. 148.

*Lecanora varia* var. *intricata* f. *viridiatra* Nyl. Lich. Scand. (1861) p. 164 (sec. spec. orig. in Mus. Fenn.). *Lecanora polytropa* \**viridiatra* Nyl. Fl. 1872 p. 251.

*Exs.* Fr. Lich. Suec. *Exs. XIV* (1833) n. 403 (hb. Nyl.). — Norrl. et Nyl. Herb. Lich. Fenn. VII (1885) n. 333. — Havaas Lich. Norv. *Exs.* (1904) n. 212 (Vain. determ.). — Malme Lich. Suec. *Exs. VII* (1910) n. 170 (Mus. Fenn.).

Thallus sat crassus aut modice incrassatus, areolatus, areolis supra hypothallum nigricantem dispersis aut partim contiguis, planis aut demum convexis, flavescentibus aut impure virescenti-stramineis aut rarius cinereo-glaucoscentibus, vulgo laevigatis. Apothecia thallo innata, dein mox emergentia prominentiave, basi non constricta, lat. 0.5—0.8 mm, disco plano, demum convexo, nigro, nudo, laevigato, opaco, margine tenui, integro, nigro aut nigricante, nudo, opaco, demum excluso. Hypothecium pallidum albidumve, in parte superiore crassa hyphis erectis. Peritheciun fuligineum. Epithecium caeruleo- et olivaceo-fuligineum, non granulosum. Paraphyses arcte cohaerentes. Sporae 8:nae, distichae, ellipsoideae, »long. 0.011—0.014, crass. 0.006—0.007 mm» (sec. adn. Nyl. in n. 16506).

*Distr.* Locis apricis in rupibus graniticis et silaceis in parte meridionali Fenniae sat rara. Al.: Badhusberget prope Mariehamn et ad Öfverby in Jomala (Vain.). Ab.: Pääskyvuoret et prope Hautausmaa in Kaarina (Vain.), Artukainen in Raisio (Vain.), Talkkunamäki in Finby (Vain.). N.: Mäkiensälllys et Somerikonvuoret (Vain.) et »passim» etiam alibi in Suursaari vel Hoglandia sec. Brenner (Bidr. Hogl. Lafv. p. 96), velut Tervamäki, Mustjyrkänvuori, Välikallio, Murronkallio et Mäkiensälllys, olim (saltem usque ad 1896) pluribus locis et abundanter prope Helsingforsiam (Vain., Nyl., Norrl. H. L. F. n. 333), Domarböle (R. Frey), Kyrkslätt (A. Kullhem). Ta.: Supra rupem silaceam in Tiirismaa in Hollola (Vain.). Oa.: Simsio in Lapua (Räsänen).

Ex opinione Nylandri ad stirpem *Lecideae parasemae* pertinens (sec. Brenner l.c.) aut *L. leucophaeae*, ut a Lamy (Exp. Lich. Cauter., 1884, p. 76) indicatur. Thallus KOH non reagens (»lutescens» sec. Th. Fr. l.c. et adn. Nyl. in n. 16506), nec distincte reagens addito  $\text{CaCl}_2\text{O}_2$ , »jodo non caerulescens» (Th. Fr.), areolis circ. 0.3—1 mm latis aut p.p. minoribus, saepe leviter nitidis (aut morbose opacis), difformibus, saepe angulosis aut p.p. parce subcrenatis, aut rotun-

datis, raro inaequalibus, sorediis destitutus (conf. f. *subleprodes*), non pruinosus. Apothecia dispersa aut sat crebra. Hypothecium hyphis conglutinatis, in parte inferiore irregulariter contextis. Peritheciun hyphis tenuibus, radiantibus, conglutinatis, fusco-nigricans aut in summo margine olivaceo-nigricans, in basi apothecii deficiens. Hymenium »jodo caerulescens, KOH non reagens» (Th. Fr.). Paraphyses leviter gelatinosae, crass. 0.002—0.005 mm, apice parum incrassatae. Conidangia »immersa, ostiolis nigricantibus», conidia »longa, acicularia, curvata» (sec. Th. Fr.), »long. 0.020—0.032, crass. 0.0005—0.0006 mm» (sec. adn. Nyl. in hb. suo). Gonidia cystococcaceae. — Sporae raro bene evolutae, long. 0.009, crass. 0.004 mm a me visae.

*Obs.*: *L. luteoatra* f. *subleprodes* Nyl. in Brenner Bidr. Hogl. Lafv. (1885) p. 96 (nomen nudum) in Mus. Fenn. non reperi. Si sorēdiis instructa sit, ad *L. luteoatram* non pertinet.

### 79. *L. tumidior* Nyl.

*Lecanora tenebrosa* \**tumidior* Nyl. Lich. Delph. (1863) p. 399 (sec. specim. orig. in hb. Nyl.). *Lecidea tenebrosa* \**L. tumidior* Nyl. in Stizenb. Lich. Helv. I (1882) p. 199; Lamy Suppl. Cat. Lich. Mont-Dore (1882) p. 18. *L. tumidior* Vain. Adj. Lich. Lapp. II (1883) p. 88. *L. tenebrosa* f. *tumidior* Nyl. in Hue Addend. II (1888) p. 210. *L. subplumbea* Anzi Anal. Att. Soc. It. Nat. XI (1868) p. 16 (169) (sec. specim. orig. n. 16540 a in hb. Nyl.); Nyl. Fl. 1881 p. 534; Vain. Adj. Lich. Lapp. II (1883) p. 80. *Lecidella inserena* var. *subplumbea* Arn. Lich. Tirol XIV (1875) p. 442; Zahlbr. Cat. Lich. Un. III (1925) p. 600. *Lecidea inserena* f. *subplumbea* Arn. l.c. XXV (1893) p. 383. *L. inserena* Nyl. Fl. 1869 p. 84 (sec. specim. orig. n. 16530 in hb. Nyl.); Arn. l.c. XXX (1897) p. 25; Zahlbr. l.c. p. 599. *Lecidella inserena* Arn. l.c. XIII (1874) p. 239, XIV (1875) p. 442. *Lecidea obnubila* Th. Fr. Lich. Scand. II (1874) p. 459 (sec. ann. Nyl.).

*Exs.* Anzi Lich. Langob. XIV (1873) n. 573 (sec. Arn. l.c. XIV p. 10). — Arn. Lich. Exs. (1877) n. 714 et (1878) n. 757 (hb. Nyl.).

Thallus crassus aut sat crassus, areolatus, areolis circ. 0.3—2.5 mm latis, contiguis aut raro dispersis, vulgo depresso convexis, rarius bene convexis et verrucaeformibus, verruculoso-inaequalibus, livido- vel subcaesio-cinereis aut subfuscescenti-cinereis, KOH non reagens, sorediis destitutus, hypothallo nigricante. Apothecia primum emergentia, dein late adnata, lat. circ. 0.5—1.2 mm, tenuia, vulgo p. p. conferta, saepe angulosa, basi non constricta, disco plano, laevigato,

atro, nudo, leviter nitido, margine tenui, atro, nitido. Hypothecium albidum pallidumve, in parte inferiore crystalla obscurata continens, hyphis in parte superiore erectis, in parte inferiore irregulariter contextis. Epithecum aeruginoso-fuligineum. Paraphyses arcte cohaerentes. Ascii clavati. Sporae 8:nae, oblongae ellipsoideaeve, long. 0.009—0.013, crass. 0.005—0.006 mm (»long. 0.012—0.018, crass. 0.006—0.008 mm» in »*L. inserena*» sec. ann. Nyl.). Conidia filiformia, arcuata (conf. infra).

*Distr.* LIN.: Ad rupem graniticam in reg. subalp. montis Hammastunturi (»*L. subplumbea*» in Vain. I.c. p. 80). LENONT.: Simili loco prope templum in Enontekiö (L. Kari).

Affinis est *L. leucophaeae*, nec *L. atrocinereae* (*L. tenebrosae*). Thallus nec KOH nec  $\text{CaCl}_2\text{O}_2$  reagens, sed his solutionibus conjunctis intus leviter (parum distincte) diluteque fulvo-subroseus, jodo non reagens, opacus, non pruinosis, strato corticali ex apicibus hypharum formato incrassatis (crass. 0.003—0.005 mm), constipatis conglutinatisque, obscuratis, strato decolore non obtecto. Apothecia gonidiis et strato myelohyplico destituta, disco laevigato, margine non aut leviter prominente, subpersistente. Hypothecium jodo caerulescens, in parte inferiore hyphis crassioribus et magis pachydermaticis. Perithecum hyphis radiantibus, conglutinatis, tenuibus, membranis leviter vel parum pachydermaticis, intus pallidum vel dilute fuscescens, extus fuscescens, KOH leviter rubricosum, infra hypothecium late continuatum. Hymenium circ. 0.070—0.090 mm crassum, jodo caerulescens, ascis sordide vinose rubentibus. Paraphyses crass. vix 0.0015 mm, apice leviter incrassato, vix distincte gelatinosae. Epithecum non granulosum (olivaceo-fuscescens in »*L. inserena*», ab Arn. collecto), KOH non reagens,  $\text{HNO}_3$  violascens. Ascii in apice membrana incrassata. Sporae distichae. Gonidia pleurococcoidea, globosa et p.p. subglobosa (et parce ellipsoidea), simplicia, diam. 0.006—0.012 mm, parce 2-cellulosa, membrana leviter incrassata.

*Obs. 1.* In specim. orig. »*\*lumidioris*» (n. 14045 in hb. Nyl.) thallus areolis planis et apotheciis p.p. minus prominentibus, quam in specim. orig. »*L. subplumbea*» Anzi (quae tamen partibus junioribus ab ea parum differt). Hypothecium in parte inferiore crystalla obscurata continens. Perithecum exterius fuscum, infra hypothecium late continuatum.

*Obs. 2.* In »*L. subplumbea*» Anzi (sec. orig. n. 16540 in hb. Nyl.) thallus areolis planis aut demum leviter convexis, difformibus, laevigatis, cinereis, 0.4—1.8 mm latis, apothecia lat. 0.5—0.8 mm, adnata

aut demum inter areolas immersa, sporae long. 0.011—0.014, crass. 0.005—0.006 mm», conidia »bene aut leviter areuata, long. 0.022—0.030, crass. 0.007—0.008 mm» sec. ann. Nyl.

*Obs. 3.* In »*L. inserena*» Nyl. conidia »arcuata, long. 0.019—0.020, crass. 0.0005 mm» sec. ann. Nyl., »long. 0.024—0.027 mm», conidangia »punctiformia, thalli areolis impressa» sec. Arn. Lich. Tirol XIV p. 442.

*Obs. 4.* *Lecidea plumbea* Garov. in Anzi Lich. Langob. Exs. IV (1861) n. 154 (Nyl. Fl. 1881 p. 187) sec. specim. in hb. Nyl. ad *Lecanoram (Aspiciliam)* pertinet, apotheciis thallo immersis, immarginatis instructa.

#### 80. *L. distensa* Vain.

Vain. Adj. Lich. Lapp. II (1883) p. 81.

Thallus crassus, areolatus et verrucosus, areolis circ. 1—1.5 mm latis, p. p. etiam minoribus, dispersis et p. p. subcontiguis, convexis, demum verruculoso-inaequalibus, lividis vel subfuscescienti- aut subcaesio-cinereis, demum laxe affixis, sorediis destitutus, KOH non reagens, hypothallo nigro, demum indistincto. Apothecia inter areolas thalli sita easque vix superantia, in acervulos aggregata prolificantiave, vulgo rotundata, lat. circ. 0.7—1 mm, sat tenuia, basi non constricta, disco plano aut rarius demum leviter convexo, atro, nudo, opaco, margine tenui, atro, opaco, demum saepe excluso. Hypothecium albidum, in parte inferiore crystalla plus minus obscurata continens, hyphis in parte superiore erectis, in parte inferiore irregulariter contextis. Epithecum aeruginoso- aut cyaneo-fuligineum. Paraphyses arcte cohaerentes. Asci clavati. Sporae 8:nae, oblongae, long. 0.013—0.015, crass. 0.005—0.006 mm.

*Distr.* Kb.: Ad rupem gneissaceam prope Mujejärvi in Nurmes (Vain. I.c.).

Forsitan in *L. tumidiorem* non transit, areolis thalli magis inaequalibus, laxe affixis, apotheciis inter areolas sitis ab ea differens. Thallus nec KOH, nec  $\text{CaCl}_2\text{O}_2$ , nec his solutionibus conjunctis, nec jodo reagens, opacus, non pruiniosus, strato corticali ex apicibus hypharum formato 0.003—0.004 mm crassis, obscuratis, constipatis conglutinatisque, strato decolore non aut parum evoluto (supra stratum corticale). Apothecia gonidiis et strato myelohyplico de-

stituta, disco laevigato, margine non prominente. Hypothecium jodo caerulescens, hyphis tenuibus, sat leptodermaticis, in parte inferiore saepe crystalla obscurata continens. Peritheciun hyphis radiantibus, tenuibus, conglutinatis, membranis leviter aut parum pachydermaticis, intus pallidius, extus fuscescens, KOH non reagens aut partim rubricosum, infra hypothecium late continuatum. Hymenium circ. 0.060—0.080 mm crassum, jodo caerulescens. Paraphyses crass. 0.0015 mm, apice leviter incrassatae, vix distincte gelatinosae. Epithecium non granulosum, KOH distinctius smaragdulum aut subfuscescens,  $\text{HNO}_3$  violascens. Ascii in apice membrana incrassata. Sporae distichae. Gonidia globosa et subglobosa, diam. 0.007—0.014 mm, tantum simplicia visa (in thallis vetustis lichenum divisio gonidiorum minus saepe observatur).

81. **L. subdita** Nyl.

Flora 1876 p. 236; Hue Addend. II (1888) p. 199; Zahlbr. Cat. Lich. Un. III (1925) p. 700.

Thallus sat crassus, verrucosus, verrucis dispersis, convexis, demum verruculoso-tuberculatis, albido-cinerascentibus, KOH non reagentibus, sorediis destitutus, hypothallo indistincto. Apothecia thallo adnata, lat. 0.8—1.5 mm, simplicia, sat tenuia, basi non aut leviter constricta, disco primum subplano, demum convexo, atro, nudo, nitido, margine tenui, atro, nitido, demum excluso. Hypothecium pallidum, in parte infima stratum myelohypthicum tenue, KOH non reagens, continens, in parte superiore hyphis erectis, ceterum irregulariter contextis. Epithecium subcaerulescens et parte summa sordide subviolascens, strato gelatinoso, decolore, sat distincto obductum. Paraphyses arcte cohaerentes. Ascii clavati. Sporae oblongae, »long. 0.011—0.014, crass. 0.0045—0.0055 mm» (sec. Nyl.).

*Distr.* Supra saxum micaceo-schistosum in reg. subalp. in monte Naimakka in Lapponia Tornensi in territorio Suecico (J. P. Norrlin).

Proxima sit *L. distensae*. Hypothallo indistincto, verrucis thalli convexioribus, apotheciis stratum myelohypthicum continentibus et perithecio dissimili a *L. leucophaea* differt. Thallus laxe affixus, sat opacus, jodo non reagens. Apothecia crass. circ. 0.350 mm, gonidiis destituta, crystalla parum continentia, margine integro, non promi-

nente. Hypothecum jodo intense caerulescens, hyphis sat tenuibus, sat leptodermaticis. Peritheciun partim dilute sordide violaceens v. fuscescens partim subdecoloratum, hyphis radiantibus, sat tenuibus, conglutinatis, leviter pachydermaticis, infra hypothecium late continuatum, jodo non reagens. Hymenium circ. 0.070 mm crassum, jodo caerulescens, dein vinoise rubens. Paraphyses graciles, tenuiter gelatinosae, apice leviter aut parum incrassatae, simplices. Epitheciun non granulosum. Gonidia cystococcaceae, globosa, simplicia.

*Obs. 1.* *Lecidea mesotropa* Nyl., Fl. 1867 p. 328 (Hue Addend. II, 1888, p. 198, A. L. Smith Mon. Brit. Lich. II, 1911, p. 77), sec. specim. orig. n. 15891 et 15892, in Scotia collecta, facie externa subsimilis est *L. subditae*, epithecio fuscescente ab ea differens. Specimen n. 15886 in Naimakka in LEnot. in territ. Suec. a Norrl. collectum, »*L. mesotropa*« et postea »*L. spilota*« a Nyl. nominatum (n. 813 in herb. Norrl.), revera ad *L. tessellatam* (*L. spilotam* Fr.) pertinet (conf. etiam Th. Fr. Lich. Scand. II p. 490).

*Obs. 2.* *Lecidea mesotropiza* Nyl., Fl. 1873 p. 20 (Zahlbr. Cat. Lich. Un. III p. 638 et denuo 798), apotheciis bene convexis, sat opacis, immarginatis et »thallo KOH flavescente, sporis long. 0.010—0.014, crass. 0.006—0.0075 mm» (sec. adn. Nyl.) differt a *L. subdita* Nyl. Planta» apotheciis planis planiusculisve, margine tenui elevato cinctis» descripta in Th. Fr. Lich. Scand. p. 458 huc non pertinet.

*Obs. 3.* *Lecidea mesotropoides* Nyl., Fl. 1872 p. 359, apotheciis opacis, convexis, immarginatis, »epithecio fuscescente aut nigricante, sporis long. 0.009—0.011, crass. 0.006—0.007 mm, conidiis rectis, long. 0.007—0.010, crass. 0.001 mm, thallo KOH flavescente» instructa (sec. adn. Nyl. in specim. orig. e Scotia), his speciebus habitu subsimilis est.

## 82. *L. leucophaea* (Floerk.) Nyl.

Flora 1870 p. 35; Th. Fr. Lich. Scand. II (1874) p. 459 (emend.); Vain. Adj. Lich. Lapp. II (1883) p. 43, Lich. Exp. Vegae Pitkäei (1909) p. 123; Zahlbr. Cat. Lich. Un. III (1925) p. 789. *Bialora leucophaea* Floerk. in Koerb. Syst. Lich. Germ. (1855) p. 194 (non *Lichen leucophaeus* Vahl in Fl. Dan. t. 955 f. 2 (1787), nec Retz., Fl. Scand. ed. alt. (1795) p. 278, nec Dicks. Fase. 2 Cr. Britt. (1790) p. 20 sec. Ach. Meth. Lich. p. 78 et Schaer. Spic. Lich. Helv. p. 111); Arn. Lich. Tirol XIV (1875) p. 486, Arn. Lich. Fragm. XXXV, Neufundl. (1896) p. 24; Tuck. Syn. North Am. Lich. II (1888) p. 24. *Lecanora* Nyl. in Cromb. Lich. Brit. (1870) p. 51; Hedl. Krit. Bem. Lec. Micar. (1892) p. 42. *Bialora panaeola* Fr. Lich. Eur. Ref. (1831) p. 273 p. p. (sec. Th. Fr.), non Ach. *Lecidea panaeola* Nyl. Ess. Class. Lich. II (1855) p. 182. *L. panaeoloides* Nyl. Lich. Scand. (1861) p. 193 (sec. Th. Fr.). *Bialora consanguinea* Anzi Manip. (1862?) p. 152 (23) (sec.

orig. in hb. Nyl.). *Lecidea incongrua* Arn. Lich. Tirol XVII (1877) p. 551 (sec. specim. in hb. meo), non Nyl.

*Exs.* Koerb. Lich. Sel. Germ. II (1856) n. 43 (sec. Lynge). — Anzi Lich. Exs. Langob. IX (1863) n. 351 (hb. Nyl.). — Erb. Crit. Ital. XXII (1863) n. 91 (1091) sec. Th. Fr. — Cromb. Lich. Brit. Exs. I (1874) n. 63 (hb. Nyl.), 64 (»*Lecan. nigroglomerata* Leight.«, hb. Nyl.). — Arn. Lich. Exs. (1875) n. 620 (hb. Vain.). — Zwackh Lich. Exs. (1881) n. 668 A, B, (1883) n. 784 (hb. Vain.). — Lojka Lich. Univ. II (1885) n. 82 (hb. Vain.). — Malme Lich. Suec. Exs. XXVI (1917) n. 646.

Thallus sat crassus aut sat tenuis, areolatus, areolis planis aut p. p. convexis, laevigatis aut verruculoso-inaequalibus, cinereo-albidis aut cinerascentibus aut fuscescentibus, KOH non reagens, sorediis instructus aut destitutus, hypothallo nigro aut indistincto. Apothecia thallo adnata, lat. 0.3—1.2 mm, sat tenuia, basi non aut parum constricta, disco plano aut demum depresso-convexo, atro aut fuscescente, nudo, leviter nitido, margine tenui, fuscescente atrove aut pallido-fuscescente, nitido, subpersistente. Hypothecium pallidum aut partim albidum, crystalla nulla continens, hyphis in parte superiore erectis, in parte inf. irreg. contextis. Epitheciun aeruginoso-fuligineum aut rarius fuscescens rufescensve, strato gelatinoso decolore plus minusve distincto obductum. Paraphyses arce cohaerentes. Ascii clavati. Sporae 8:nae, oblongae ellipsoideaeve, long. 0.008—0.014, crass. 0.004—0.007 mm.

*Distr.* Ad saxa granitica et porphyrica et quarzitica in Fennia boreali et Lapponia et in ins. Suursaari v. Hoglandia, in Ajonpää ad Naantaali (Vain.), ad Mariehamn et Geta Alandiae (Vain.), locis tribus poster. ster.

*Obs. 1.* Thallus typice est sorediosus, sorediis (soraliis) numerosis aut parcis, evolutione regressiva rarius etiam sorediis omnino destitutus.

*Obs. 2.* *Lichen leucophaeus* Vahl et Ach. ad hanc speciem non spectat, sed quia hoc nomen alii speciei non adhibitur, prioritatem *L. panaeoloides* Nyl. autores agnoscere noluerunt.

Var. *genuina* (Koerb.) Vain. Adj. Lich. Lapp. II (1883) p. 123; Th. Fr. Lich. Scand. II (1874) p. 459 (emend.). *Bialora leucophaea* a *genuina* Koerb. Syst. Lich. Germ. (1855) p. 195 (sec. Th. Fr.). *L. panaeoloides* Nyl. Lich. Scand. (1861) p. 193 (nomen hybridum).

Thallus bene evolutus, areolis contiguis aut partim dispersis, cinereo-albidis aut cinerascentibus, sorediis destitutus. Apothecia disco atro. Epithecium aeruginoso-fuligineum aut aeruginoso-olivaceum.

*Distr.* Al.: In montibus Getabergen (Vain.). N.: In montibus in ins. Suursaari v. Hoglandia (Vain.). Kuus.: In reg. subalp. montis Mäntytunturi (»*L. leucophaea* var. *griseoaltra*« Vain. I. c.).

Gonidia tantum simplicia vidi in specim. Alandico.

Var. *sorediosa* Vain. *Lecidea leucophaea* f. *sorediosa* Vain. in Brenn. Bidr. Högl. Lafv. (1885) p. 96. *L. leucophaea* v. *genuina* f. *sorediosa* Vain. Adj. Lich. Lapp. II (1883) p. 123, Lich. Exp. Vegae Pitlekai (1909) p. 123.

Thallus bene evolutus, areolis contiguis aut dispersis, cinereo-albidis cinerascentibusve, sorediis instructus. Apothecia disco atro. Epithecium aeruginoso-fuligineum.

*Distr.* Al.: Badhusberget in Mariehamn ster. et Getabergen ster. (Vain.). Ab.: Ajompää in Naantali ster. (Vain.). N.: Suursaari v. Hoglandia, velut in Somerikonvuoret, Kotimäki, Mäkinenpäälys (Vain.). LTul.: Petsamo (L. Kari.).

Thallus areolis circ. 0.2—2.2 mm latis, contiguis aut dispersis, nitidis aut opacis, nec  $\text{CaCl}_2\text{O}_2$  (sec. Th. Fr.), nec jodo reagentibus, sorediis (soraliis) numerosis aut parcissimis, subtilissime farinosis, nigricantibus aut cinereis, parum prominentibus, granulis sorediorum diam. circ. 0.016—0.020 mm, gonidia pleurococcaceae, globosa aut parce subglobosa, simplicia et 2—3-cellulosa, saepe leviter pachydermatica, hyphis p. p. obscuratis crebre obducta, continentibus. Apothecia rotundata, interdum lobulata, dispersa aut sat crebra, raro aggregata, margine vulgo integro, atro. Hypothecium pallidum, interdum partim (praesertim in latere) rubricosum, jodo bene caerulescens, hyphis tenuibus, sat leptodermaticis, conglutinatis, gonidiis et strato myelohyphico et crystallis destitutum. Peritheciun hyphis radiantibus, tenuibus, conglutinatis, leviter pachydermaticis, intus pallescens, extus fuscescens, KOH non reagens, infra hypothecium anguste continuatum. Hymenium circ. 0.060—0.080 mm crassum, jodo caerulescens. Paraphyses crass. 0.001 mm, apice 0.003—0.0045 mm et KOH subolivaceae, simplices. Epithecium parum granulosum. Ascii clavati, apice pachydermatici. Sporae distichae.

Var. *sanguineella* Vain.

Thallus bene evolutus, areolis contiguis, laevigatis, cinereo-albidis aut cinerascentibus, sorediis instructus. Apothecia disco fuscescente aut fusco-nigricante, margine subconcolore. Epithecium fuscescens rufescensve.

*Distr.* OKaj.: Ad lapides quarziticos in Lehtovaara in Kianta (»*L. leucophaea* f. *propagulifera*« Vain. Adj. Lich. Lapp. II p. 43). Kuus.: Ad. rupem graniticam in reg. subalp. montis Nuorunen

(»v. *genuina*« Vain. l. c.). LKem.: Himmelrik in Pallastunturit in Kittilä (L. Kari).

Var. *rugosa* Vain.

Thallus bene evolutus, areolis contiguis, impure albidis, verruculoso-inaequalibus, sorediis instructus. Apothecia disco subfusco, margine saepe paullo pallidiore. Epitheciun subfuscescens.

Distr. N.: In rupe quarzitica in Lounatpuoli in ins. Suursaari v. Hoglandia (Vain.).

Thallus KOH non reagens, partim sorediis destitutus.

Var. *dispersa* Vain.

Thallus minus evolutus, areolis parvis, sat tenuibus, dispersis, subalbidis, sorediis destitutus. Apothecia disco cinereo-fuscescente, margine subconcolore.

Distr. N.: Loco subumbroso in latere rupis porphyricae in Somerikonyvuoret in ins. Suursaari v. Hoglandia (Vain.).

Thallus KOH non reagens, hypothallo indistincto. Apothecia minora.

Var. *propagulifera* Vain. *Lecidea leucophaea* var. *griseoatra* f. *propagulifera* Vain. Adj. Lich. Lapp. II (1883) p. 43.

Thallus bene evolutus, areolis laevigatis, obscure cinereis, sorediis nigricantibus instructus. Apothecia disco atro. Epitheciun aeruginosum (aut p. p. sordide violascens in eodem apothecio).

Dislr. Ab.: Ad rupem graniticam in Pääskyvuoret in Kaarina ster. (Vain.). KLad.: Insula Kotiluoto in Laatokka ster. (Vain.). Kuus.: Ad rupem graniticam in reg. subalpina montis Nuorunen (Vain. l. c.). LIn.: Edlehjärvenpahta (F. Silén).

Peritheciun extus aeruginosum. Epitheciun strato gelatinoso, hyalino obductum.

Var. *perrugosa* Vain.

Thallus bene evolutus, areolis obscure cinereis, demum p. p. minute crebreque verruculoso-inaequalibus, sorediis nigricantibus instructus. Apothecia disco nigricante aut fusco-nigricante, margine concolore aut demum excluso. Epitheciun sordide violascens (aut p. p. rubricosum in eodem apothecio).

Distr. Kuus.: Ad rupem graniticam in reg. subalpina montis Nuorunen (Vain.).

Thallus jodo non reagens, areolis sat crassis, demum laxe affixis. Apothecia crebra numerosaque in partibus sorediis destitutis, demum depresso-convexa. Hypothecium pallidum. Peritheciun extus violaceo-fuscescens. Paraphyses arcte cohaerentes. Epitheciun strato hyalino leviter evoluto.

Var. *obscurescens* Vain. *Lecidea leucophaea* var. *griseoatra* Th. Fr. Lich. Scand. II (1874) p. 460; Vain. Lich. Exp. Vegae Pitlekai (1909) p. 123 (non Flot., conf. infra.).

Thallus bene evolutus, areolis obscure cinereis aut nigricantibus, sorediis destitutus. Apothecia disco atro, margine concolore. Epithecum aeruginoso-fuligineum aut aeruginoso-fuscescens.

*Distr.* Kuus.: Supra rupem graniticam in reg. subalp. montis Nuorunen (»v. *griseoatra* Vain. Adj. Lich. Lapp. II p. 43). LKem.: Himmelrik in Pallastunturit (L. Kari).

Var. *consanguinea* Vain.

Thallus bene evolutus, areolis cinerascentibus albidisve, sublaevigatis, sorediis destitutus. Apothecia disco nigro, margine concolore. Epithecum fusco-nigricans aut violaceo-fuligineum.

*Distr.* LEnont.: In rupe granulitica in Pyhäkero in Enontekiö (L. Kari).

Hoc specimen a *L. leucophaea* differt strato gelatinoso epithecium obtegente tenuiore aut vix ullo et strato fusconigro perithecii infra hypothecium partim late continuato. Hypothecium albidum, hyphis irregulariter contextis, in parte summa angusta erectis. Paraphyses arcte cohaerentes. Ascii clavati. Sporae distichae, long. 0.007—0.013, crass. 0.005—0.006 mm. Apothecia tenuia, crebra. Thallus areolis contiguis et p. p. dispersis, hypothallo nigro inter areolas conspicuo.

*Obs. 1.* In specimine orig. *Bialorae consanguinea* Anzi in hb. Nyl. thallus est sorediis destitutus, et »hypothecio pallido, ascis clavatis, sporis long. 0.010, crass. 0.004 mm» haec planta ab Anzi descripta est.

*Obs. 2.* *Lecidea disjecta* Nyl., Fl. 1881 p. 184, Zwackh Lich. Exs. (1881) n. 668 A et B, est var. *L. leucophaea*, areolis thalli subalbidis (KOH non reagentibus), hypothallo parum conspicuo et margine apotheciorum pallidiore a v. *consanguinea* differens.

*Obs. 3.* In *L. leucophaea* in Paneveggio in Tirolia ab Arn. collecto conidia sec. annot. Nyl. »filiformia, arcuata, long. 0.016—0.020, crass. 0.0005 mm».

*Obs. 4.* *Lecidea panaeola* var. *griseoatra* Flot., Bot. Zeit. 1828 p. 675, Lich. Schles. (1829) p. 10, Lich. Exs. (1829) n. 210 (*L. griseoatra* Schaer. En. Lich. Eur., 1850, p. 101), sec. Nyl. Fl. 1881 p. 186 (Hue addend. II, 1888, p. 184) autonoma est species, paraphysibus arcte cohaerentibus gelatinosisque a *L. atrocinerea* (*tenebrosa*) et hypothecio rubricoso-rufescente a *L. leucophaea* differens (ut in specim. orig. n. 16460 a in hb. Nyl. observavi). In Fennia non collecta est.

*Obs. 5.* *Lecidea leucophaeiza* Nyl. in Hue Addend. II (1888) p. 183 (*Lecanora* Nyl. Fl. 1874 p. 308), in Scotia collecta, »thallo KOH leviter flavescente et gel. hym. jodo non reagente, thecis solis tinctis» a Nyl. distinguitur. In Getabergen in Al. specimen thallo KOH dilute lutescente, hymenio et hypothecio jodo caeruleamente instratum a me collectum est.

*Obs. 6.* *Lecidea discolorella* Nyl., Fl. 1877 p. 459 (Hue Addend. II p. 183), subsimilis est *L. leucophaeae*, sed sec. specim. orig. in hb. Nyl. autonoma est species, thallo albido, areolis subnitidis, planis, KOH flavescentibus, »addito  $\text{CaCl}_2\text{O}_2$  erythrino rubentibus» sec. Nyl.), apotheciis leviter prominentibus, totis adnatis, disco fusco, nudo, subnitido (conidiis »filiformibus, arcuatis, long. 0.020, crass. 0.0005 mm» sec. Nyl.) instructa.

83. ***L. tenebricans* Nyl.**

in Hue Addend. II (1888) p. 183; Zahlbr. Cat. Lich. Un. III (1925) p. 708. *Lecanora tenebricans* Nyl. Fl. 1874 p. 7.

Thallus sat tenuis aut modice incrassatus aut partim sat crassus, verruculosus verrucosusve aut areolatus, areolis bene convexis aut p. p. planis, dispersis aut p. p. contiguis aut confluentibus, fuscouscentibus aut cinereo-fuscouscentibus, opacis, sorediis destitutus, KOH non reagens, medulla jodo non reagente, hypothallo indistincto. Apothecia primum verruculis immersa, demum lecanorina aut subzeorina, lat. 0.8—0.4 mm, disco nigricante, humido fusco, nudo, opaco, interdum demum protruso sublecidinoque, margine thallino thallo concolore, sat tenui, integro aut rarius verruculosocrenulato, vulgo non prominente, persistente. Hypothecium albidum pallidumve, hyphis erectis, conglutinatis. Epitheciun fuscum, KOH sordide purpureum. Paraphyses sat arcte cohaerentes. Ascii late clavati. Sporae 8:nae, distichae, ellipsoideae, »long. 0.009—0.012, crass. 0.005—0.006 mm» (sec. Nyl.), in eodem apothecio ascoque etiam globosae, diam. 0.006—0.007 mm.

*Distr.* Ta.: Supra lapidem gneissaceum graniticumque in silva deserta prope Nyystölä in Padasjoki a. 1872 legi (a Nyl. determinata). Cum *Rhizocarpo badioatro* collecta.

Affinis sit *Lecanorae* (*Aspiciliae*) *complanatae* (praesertim f. *coracodi*), perithecio saepe demum in uno latere apothecii evoluto et areolis nec subsquamulis, nec crenulatis, nec pruinosis ab ea differens. Discus humidus non rubricosus. Peritheciun fuscum aut inferne dilutius coloratum pallidumve, saepe 0.025 mm crassum. Margo thallinus gonidia continens, strato myelohyphico aërem continentem hyphisque irregulariter contextis. Hypothecium gonidiis destitutum, jodo bene caerulescens. Epitheciun strato decolorato nullo obduc-

tum. Paraphyses gelatinosae (quod in KOH bene videtur), simplices, crass. 0.0015—0.0017 mm, apice 0.002 mm, increbre septatae aut ad apicem erebrius septatae. Asci in apice membrana bene incrassata. Conidia incognita. Gonidia cystococcaceae, etiam autosporis visa.

*Obs.* Nylander wrote: »Forsan affinis *Lecideae leucophaeae*» (Hue Addenda l. c.).

#### 84. **L. submilvina** Vain.<sup>1)</sup>.

Vain. Adj. Lich. Lapp. II (1883) p. 43.

Tab. III, fig. 1.

Areolae thalli supra hypothallum dispersae vel subdispersae, verrucosae, peltatae, rotundatae, interdum crenatae, diam. circiter 0.5 mm, nitidiusculae, pruina, sorediis isidiisque destitutae, cinereo-albican tes vel cinereae. Hypothallus ater, crassus, filamentosus, crustam fere formans diffracto-areolatam.

Apothecia in centro vel deinde magis versus marginem areolarum immersa, in aetate plus minusve emergentia, diam. 0.3—0.5 (sec. Vainio usque ad 0.7) mm. Discus ater, made factus obscure fuscescens, nitidiusculus, epruinosus, rugulosus, ab initio planus, deinde depresso-convexus, margine inconspicuo concolori demum evanescenti circumdatus. Ex cipulum in margine fusco-fuligineum, praeterea incoloratum, hypothecium incoloratum. Hymenium angustum, 45—50  $\mu$  altum, in parte superiori olivaceo-fuscescens vel olivaceo-fuligineum, strato amorpho incolorato tenui tectum, in parte inferiori hypothecio concolor. Paraphyses arcte cohaerentes, increbre ramosae, (addito KOH) capitato-incrassatae. Asci late clavati vel subsaccati, octospori. Sporae ellipsoideae vel oblongae, 9—12  $\times$  4—5  $\mu$ .

Pycnoconidia ignota.

Hymenium J caerulescens, asci persistenter caeruleo-nigricantes vel sec. Vain. l. c. vinoze rubentes, gelatina hymenialis sordide decoloratur. Medulla J  $\div$ , KOH  $\div$ ,  $\text{CaCl}_2\text{O}_2 \div$ .

<sup>1)</sup>. By B. Lyngé.

*Distr.* »In rupe granitica littorali ad lacum Inarijärvi in regione pinifera Lapponiae Inarensis. Habitu est quasi *Lecanorae milvina* vel *Lecidea atroalba*, sed *Lecidea leucophaea* maxime affinis videtur» (Vain. l. c. p. 44), leg. Vain.

Its pyenoconidia are unknown, but its other characters agree so well with those of *Lecidea leucophaea* that the editor has found the specific distinction difficult enough. It may be a *Lecidea leucophaea*, affected by frequent irrigation.

85. **L. Lulensis** (Hellb.) Stizenb.

Ind. Lich. Hyperb. (1876) p. 43. *Bialora Lulensis* Hellb. Sv. Vet. Ak. Förh. 1865 p. 463. *Lecidea leucophaea* f. *Lulensis* Th. Fr. Lich. Scand. II (1874) p. 460. *L. leucophaeoides* Nyl. Flora 1870 p. 35, 1881 p. 187; Hue Addend. II (1888) p. 180; A. L. Sm. Mon. Brit. Lich. II (1911) p. 56.

*Exs.* Malme Lich. Suec. Exs. XVIII (1914) n. 449.

Thallus modice incrassatus aut crassus, areolatus, areolis plus minus convexis aut planis, laevigatis aut verruculosoinaequalibus, albidis aut rarius cinerascentibus, KOH lutescentibus deinque rubescens, sorediis destitutus, hypothallo nigro. Apothecia thallo adnata, lat. 0.5—1.2 mm, confluentia etiam latiora, tenuia aut modice incrassata, basi non aut parum constricta, disco plano aut demum凸, fusco-nigricante aut rarius atro, nudo, nitido aut rarius opaco, margine tenui, concolore, vulgo nitido, saepe demum excluso. Hypothecium pallidum decoloratumve, in parte infima angusta crystalla obscura et stratum myelohypthicum KOH rubescens continens, in parte summa angusta hyphis erectis, ceterum hyphis irregulariter contextis. Epithecium fusco-rubricosum aut raro glaucescens, strato gelatinoso decolore plus minus distincto obductum. Paraphyses arcte cohaerentes. Asci clavati. Sporae 8:næ, oblongæ ellipsoideæ, »long. 0.010—0.017, crass. 0.004—0.006 mm» (sec. Nyl.).

*F. leucophaeoides* Vain.

Thallus albidus. Epithecium fusco-rubricosum fuscescensve.

*Distr.* Kuus.: In monte Rukavaara (F. Silén), ad rupem granit. in reg. subalp. montis Nuorunen (Vain. Adj. Lich. Lapp. II p. 44). LTul.: In rupibus dioriticis et argillaceo-schistosis ad Vaitolahti in Petsamo (L. Kari).

Thallus areolis circ. 1.5—0.2 mm latis, opacis, contiguis aut dispersis, sicut etiam basis hypothecii KOH praecipitatum granulosum rubrum formans. Apothecia crebra, simplicia aut confluentia, stratum myelohypthicum, KOH demum rubescentem et crystalla obscurata in parte interiore peritheciis continentia, margine non prominente, integro. Hypothecium jodo caerulescens, hyphis tenuibus, sat leptodermaticis. Peritheciis hyphis radiantibus, tenuibus, conglutinatis, leviter pachydermaticis, subviolaceo-fuscescens aut in basi extus tenuiter pallescens, infra hypothecium sat late continuatum. Hymenium circ. 0.060—0.070 mm crassum, jodo caerulescens, dein v. a-scens. Paraphyses tenues, apice leviter incrassatae, tantum simplifices visae. Epitheciun non granulosum, KOH non reagens. Asci clavati, apice pachydermatici. Sporae distichae. Conidia »filiformia, elongata, arcuata, sicut in *L. leucophaea*» (sec. Nyl.).

*F. cinerella* Vain. Thallus cinereus. Epitheciun glaucescens et fuscescens in eodem apothecio quoque.

*Distr.* LTul.: In rupe argillaceo-schistosa ad Vaitolahti in Pet-samo (L. Kari).

Thallus sat crassus, KOH lutescens deindeque rubescens, areolis contiguis, planis aut leviter convexus, opacis, strato corticali non evoluto, hypothallo nigro. Apothecia contigua aut dispersa, disco plano aut demum convexo, nigrante, nitido, margine tenui, saepe demum excluso. Hypothecium pallidum, crystallis obscuratis stratum myelohypthicum impletentibus. Peritheciun fuscescens. Epitheciun sordide dilute caerulescenti-virescens et partim fuscescens, strato gelatinoso hyalino obductum. Paraphyses arcte cohaerentes, tenuiter gelatinosae, apice leviter incrassatae. Asci clavati, apice saepe pachydermatico. Sporae distichae, ellipsoideae, long. 0.008—0.011, crass. 0.004—0.006 mm. Gonidia pleurococcoidea, globosa aut subglobosa, diam. 0.006—0.010 mm, simplicia et parce 2—3-cellulosa.

*Obs. 1.* *F. Transsylvanica* (Nyl.) Vain. (*Lecidea Transsylvanica* Nyl. Fl. 1881 p. 450, Hue Addend. II, 1888, p. 182) f. *cinerellae* Vain. est proxima, thallo glaucescenti- vel pallido-albido ab ea differens (sec. hb. Nyl.). »Epitheciun et peritheciun glauco-obscurata, acido nitrico rosello-tincta, sporae oblongae vel oblongo-ellipsoideae, long. 0.010—0.015, crass. 0.005—0.006 mm, spermatia (conidia) leviter curvata, long. 0.018—0.023, crass. 0.0005 mm» sec. Nyl. l. c. In Transsylvania collecta est.

*Obs. 2.* *L. Lulensis* f. *epichlora* Vain., Lich. Nov. Semlj. (Hedwigia 1898) p. 86, epithecio aeruginoso-fuligineo instructa est.

86. **L. Nylanderi** (Anzi) Th. Fr.

Lich. Scand. II (1874) p. 462. *Biatora Nylanderi* Anzi Cat. Lich. Sondr. (1860) p. 75; Arn. Lich. Münch. (1891) p. 72, Lich. Tirol XXX (1897) p. 23. *L. fuscescens* \**L. Nylanderi* Vain. Adj. Lich. Lapp. II (1883) p. 44. *L. fuscescens* var. *leprodea* Nyl. Lich. Scand. (1861) p. 213. *L. leprodea* Nyl. in Norrl. Bidr. Sydöstr. Tav. Fl. (1870) p. 190, Nyl. Lich. Paris (1896) p. 80. *Biatora Kullh.* Lich. Rar. Must. (1871) p. 275. *L. fuscescens* Nyl. Herb. Lich. Par. III (1855) n. 133, Prodr. Lich. Gall. (1857) p. 117 (363) p. p. (haud Sommerf. sec. Nyl.); Koerb. Par. Lich. (1860) p. 157.

*Exs.* Nyl. Herb. Lich. Par. III (1855) n. 133 (herb. Nyl.). — Anzi Lich. Langob. Exs. V (1861) n. 172. — Rabenh. Lich. Eur. Exs. XXXII (1870) n. 853. — Arn. Lich. Exs. (1872) n. 499 a, b, (1877) n. 711, (1892) n. 1525, p. p., Lich. Monac. (1892) n. 239. — Zwackh Lich. Exs. (1881) n. 662. — Zahlbr. Krypt. Exs. Vindob. II (1896) n. 167. — Malme Lich. Suec. Exs. VI (1909) n. 141. (Sec. cit.).

Thallus tenuis aut modice incrassatus, totus sorediosus aut simul verruculis parcis instructus, soraliis confluentibus aut rotundatis dispersisque, subtiliter farinosis, cinerascentibus aut subfuscescienti- vel glaucescenti-cinereis, hypothallo cyaneo-nigricante saepe evoluto. Apothecia raro evoluta, sat dispersa, sat parva aut fere mediocria, adnata, basi constricta, disco plano aut rarius demum convexo, rufo-fusco aut nigricante, opaco, haud pruinoso, margine sat tenui, pallido-fuscescente, persistente aut demum excluso. Hypothecium irregulariter contextum, decoloratum. Epithecium fuscescens. Paraphyses arcte cohaerentes. Sporae 8:nac, globosae, diam. 0.004 —0.006 mm.

*Distr.* Ad corticem Juniperi, Betulae, Pini cet. et ad ligna vetusta passim in prov. meridionalibus et mediis Fenniae. Ab.: Prope Rakkaudenlähde et Ajonpää (fert.) in Luonnonmaa (par. Naantaali) et Littoinen (Vain.). N.: Ingels in Kyrkslätt (A. Kullhem). Ka.: Vanha-Viipuri et Uuras (fert., Vain. Lich. Vib. p. 65). KLad.: Himo-hirsi in Kurkijoki (V. Räsänen). KOL.: Gorki (F. Elfving Ant. Veg. Svir p. 169). KOn.: Perttiniemi (Kullh.). Ta.: Mustiala (Kullh. Lich. Rar. Must. p. 275), Hälvälä (Norrl. Bidr. Sydöstr. Tav. Fl. p. 190), Hersala (fert., Vain.), Messilä in Hollola (Vain.), Evo (Norrl. l. c.), Nyystölä in Padasjoki (Vain.), Judinsalo et Kesäin in Luhanka, Piililä in Korpilahti (Vain. Fl. Tav. Or. p. 115). Tb.: Norola in Jyväskylä (Vain.). Kb.: Pag. Lieksa et Koriseva in par. Lieksa (Vain.).

Adj. Lich. Lapp. II p. 45). OKaj.: Kylmälä in Kuhmo (fert., Vain. l. c.).

Apothecia lat. 0.3—0.9 mm, gonidiis destituta, margine saepe leviter prominente. Hypothecium jodo non reagens, hyphis ramoso-connexis, conglutinatis, in parte superiore leptodermaticis, in parte inferiore pachydermaticis, cavitatibus oblongis, 0.001 mm latis. Perithecium in margine rufescens aut intus pallidum, parum pachydermaticum, hyphis radiantibus, ceterum pallidum, pachydermaticum, in KOH turgescens et hyphis distinctius ramoso-connexis, jodo non reagens, cavitatibus elongatis, 0.001 mm latis. Hymenium circ. 0.050 mm crassum, jodo caeruleascens deindeque vino rubens. Epitheciun KOH non reagens,  $HNO_3$  roseo-violascens. Paraphyses simplices, crass. 0.0015 mm, apice 0.002—0.004 mm, increbre septatae, membrana tenui, gelatina hymeniali vix conspicua. Sporae 8:næ, distichæ, »diam. usque ad 0.007 mm» sec. Th. Fr., membrana leviter incrassata. Conidia »filiformia, subrecta aut leviter arcuata, long. 0.014—0.016, crass. 0.0005 mm» (sec. Nyl. Lich. Paris p. 80). Gonidia pleurococcoidea, globosa aut partim subglobosa, diam. 0.010—0.014 mm, etiam simplicia et 2-cellulosa visa, membrana gelatinoso-incrassata, sorediis inclusa et hyphis fere impellucidis obducta (»syngonidia» secundum terminologiam Nylandri, l. c.).

*Obs.* 1. Nomen hujus speciei rectius scriberetur »*L. Nylandri*», quia »Alexander» in genitivo est »*Alexandri*» nec »*Alexanderi*», sed nomen ab Anzi datum ab omnibus lichenologis abhibitur. Nomen »*L. leprodea*» ab Nyandro ipso præfertur, quia nomen Anzianum »etiam ali datu[m] est in tribu *Lecano-Lecideorum*» (Nyl. Lich. Paris p. 81).

*Obs.* 2. Huic speciei proxima *L. Ghisleri* (Anzi Lich. Langob. Exs. n. 380, Arn. Lich. Exs. n. 415 a—c, 1525 p. p. sec. auct. ipsum, Zwackh Lich. Exs. n. 463) »sporis ovalibus oblongisve» sec. Arn. Lich. Tirol XXV p. 397 ab ea differt.

### 87. *L. pullata* (Norm.) Th. Fr.

Lich. Scand. II (1874) p. 471. *Bialora pullata* Norm. Vet. Ak. Förh. 1870 p. 803; Arn. Lich. Tirol XXV (1893) p. 397, XXX (1897) p. 23. *L. perobscurans* Nyl. Fl. 1875 p. 11 (Hue Addend. II, 1888, p. 135). *L. amauropoda* Nyl. Fl. 1881 p. 184 p. p. (error typogr. pro »*L. porphyrospoda*» Anzi, quæ autem est diversa species); Vain. Adj. Lich. Lapp. II (1883) p. 45.

*Exs.* Zwackh Lieb. Exs. (1883) n. 776 (in herb. meo). — Arn. Lich. Exs. (1892) n. 1526 a, b (sec. Arn.). — Zahlbr. Krypt. Exs. Vindob. XIII (1905) n. 1228. — Havås Lich. Norv. Exs. n. 525. — Suza Lich. Boh-Slov. Exs. IV (1929) n. 99.

Thallus sat tenuis aut modice incrassatus, verruculis verrucisque dispersis aut partim contiguis, depressis planiusculisve aut convexis, cinerascentibus fuscescentibusve aut obscuratis, maxima parte demum in soredia concoloria aut partim albida, farinosa fatiscentibus, hypothallo cyaneo-nigricante bene evoluto aut evanescente. Apothecia fere mediocria aut sat parva, vulgo tota adnata neque basi constricta, disco convexo, livido-nigricante, tenuissime pruinosa, aut rarius nigra nudaque, opaca, immarginata aut primum margine tenuissimo, concolore instructa. Hypothecium pallidum aut partim dilute subolivaceum, in parte superiore hyphis erectis. Epithecum pallidum aut sordide pallescens vel subolivaceum aut caerulecens aeruginosumve. Paraphyses arcte cohaerentes. Sporae 8:nae, ellipsoideae oblongaeve, long. 0.006—0.012 (—0.019), crass. 0.004—0.007 mm. vel »long. 0.009—0.015, crass. 0.004—0.007 mm» (sec. Th. Fr. Lich. Scand. II (1874) p. 471).

*Distr.* Ad corticem Betulae in silvis (et *Pini montanae* sec. Zwackh l. c.) et ad lignum putridum in turfoso collecta. Ta.: Soima (»*L. perobscurans* sec. determ. Nyl. in Vain. Fl. Tav. Or. p. 111) et Piililä (»*L. pullata*» sec. determ. Nyl. l. c.) in Korpilahti. OKaj.: Pictari in Kianta (»*L. amauropoda*» in Vain. Adj. Lich. Lapp. II p. 45).

*F. perobscurans* (Nyl.) Vain.

Hypothallus cyaneo-nigricans bene evolutus. Epithecum typice pallescens vel subcinereo-pallescens, hymenium ceterum decoloratum.

*Distr.* Ad corticem Betulae putridae loco umbroso in silva ad Soima in Korpilahti (supra indicata).

Thallus sorediis rotundatis, crebris (aut partim demum subconfluentibus), lat. circ. 0.2—0.5 mm, verruculis esorediatis — 0.05 mm, hypothallo obscurato vulgo disjunctis. Apothecia lat. 0.3—1.2 mm, dispersa confertave, gonidiis destituta, depresso (aut bene) convexa, livido-nigricantia, tenuissime pruinosa. Hypothecium jodo maxima parte superiore jodo caerulecens, ab hymenio haud distinete limitatum, cellulis rotundatis, 0.002—0.005 mm latis, sat leptodermaticis, in seriebus verticalibus dispositis, hyphis tenuissimis, item verticalibus, cavitate oblonga angustissimaque instructis, intermixtis, in parte infima sat tenui cellulis sat pachydermaticis, irregulariter dispositis, cavitatibus rotundatis, 0.002—0.003 mm latis. Perithecum

pallidum aut decoloratum, jodo non reagens, crass. 0.070 mm aut tenuius, hyphis radiantibus, conglutinatis, membranis parum incrassatis, cavitatibus circ. 0.001 mm latis, oblongis. Hymenium jodo caerulescens. Epitheciun impellucidum (in  $\text{HNO}_3$  demum pellucidum et corpuscula subfiliformia saepe curvata, pallida formans), pallescens vel sordide pallescens ( $\text{HNO}_3$  non reagens) aut raro in apotheciis obscurioribus (in eodem specimine) partim parceque dilutissime caerulescens (et  $\text{HNO}_3$  violascens). Paraphyses simplices, apice haud incrassatae, increbre septatae, cavitate 0.001 mm lata, membrana gelatinosa sat tenui. Sporae 8:næ, distichæ, simplices, long. 0.006—0.019, crass. 0.004—0.007 mm. Gonidia globosa, diam. 0.006—0.010 mm.

Var. *Normani* Vain. *Bialora pullata* Norm. I. c.

Hypothallus cyaneo-nigricans, bene evolutus. Hymenium totum aut parte superiore intense diluteve cyanescens aeruginosumve.

*Distr.* Ad lignum putridum trunci delapsi in littore stagni in palude turfoso prope Pietari in Kianta (supra indicata).

In hoc specimine partim thallus hypothallusque evanescentes, partim bene evoluti. Apothecia nigra nigricantiae, nuda, bene convexa. Peritheciun partim dilute sordide violascens. Hymenium epitheciunve KOH dilute aeruginosum,  $\text{HNO}_3$  demum violascens.

Var. *impullata* Vain.

Hypothallus evanescens aut parum evolutus subcinerascensque. Hymenium partim dilute cyanescens, epithecio pallescente.

*Distr.* Ad corticem Betulae in Piililä in Korpilahti (supra indicata).

Thallus sat crassus. Apothecia nigricantia, haud pruinosa, goniidiis destituta. Hypothecium pallidum.

*Obs.* In his manuscript Vainio had finished his description of *L. pullata* on one sheet, and started his description of *L. porphyrospora* on the same sheet. This suggests a definitive arrangement. The long conidia of the latter species refer it to the *leucophaea* section. The conidia of *L. pullata* are unknown, accordingly we do not know whether it belongs to that section or to the *erythrophaea* section. — The editor concludes from Vainio's arrangement that he referred *L. pullata* to the *leucophaea* section. Th. M. Fries referred it to the *erythrophaea* section (Lich. Scand. p. 471).

#### 88. *L. porphyrospoda* (Anzi) Th. Fr.

Lich. Scand. II (1873) p. 463 (haud »*L. amauropoda*« Nyl. Fl. 1881 p. 184, error typogr. pro »*L. porphyrospoda*«). *Bialora porphyrospoda* Anzi Lich. Langob. Exs. IX (1863) n. 339, Symb. Lich. Rar. (1864) p. 13. *Bialora leprosula* Arn. Lich. Exs. (1873) n. 545, Lich.

Tirol XIV (1875) p. 462, 489, XV (1876) p. 378, XXV (1893) p. 397.  
*Lecidea rufofusca* var. *planior* Nyl. in Zwackh Lich. Exs. (1883) n. 775. *L. rufofusca* \**planior* Nyl. in Lojka Lich. Hung. Exs. IV (1884) n. 188.

Thallus sat tenuis, verruculis dispersis contiguisque, convexis, pallido- aut albido-glaucescentibus, maxima parte demum in soredia rufidulo-pallescentia, farinosa fatiscentibus, hypothallo inconspicuo aut parce evoluto obscuratoque. Apothecia sat parva, late adnata, basi leviter constricta, disco rufo aut fusco-rufescente, primum plano, demum convexo, saepe leviter nitido, nudo, margine sat tenui, concolore aut paullo pallidiore, leviter prominente, demum excluso. Hypothecium decoloratum, irregulariter contextum. Epithecum rubricoso-rufescens. Paraphyses arete (in KOH laxius) cohaerentes. Sporae 8:nae, ellipsoideae oblongaeve, parce etiam subglobosae, long. 0.009—0.016 (—0.007), crass. 0.006—0.007 mm, sec. Anzi long. 0.0189—0.0223, crass. 0.0086—0.0103 mm.

*Distr.* In Fennia nondum collecta est, ad corticem vetustum in Härjedalen et Jämtland in Suecia obveniens sec. Th. Fr. l. c.

Sec. Zwackh L. E. n. 775 hanc speciem descriptissimus. Apothecia lat. 0.5—0.8 mm, sat dispersa, gonidiis destituta. Hypothecium jodo caerulescens, pachydermaticum, hyphis ramoso-connexis, cavitatisbus 0.001 mm latis, oblongis elongatisve. Peritheciun circ. 0.080 mm crassum, extus rufescens aut pallido-rufescens, hyphisque radiantis et leviter pachydermaticis, intus decoloratum et hyphis pachydermaticis, ramoso-connexis, cavitatisbus elongatis, 0.001 mm latis, jodo non reagens. Hymenium non granulosum, circ. 0.070 mm crassum, jodo caerulescens, dein partim vinoce rubens. Epitheciun KOH non reagens. Paraphyses simplices, haud distincte gelatinosae, circ. 0.0005 mm crassae, apicibus clavatis, circ. 0.003 mm crassis. Gonidia globosa, diam. 0.005—0.012 mm, cystococcoidea. Conidia »filiformia, arcuata, long. 0.020, crass. 0.0005 mm» sec. annot. in herb. Nyl.

#### 89. *L. hypopta* Ach.

Meth. Lich. (1803) p. 61 (sec. specim. orig.); Nyl. Flora 1872 p. 249; Th. Fr. Lich. Scand. II (1874) p. 463; Hue Addend. II (1888) p. 142; Zahlbr. Cat. Lich. Un. III (1925) p. 783. *Lecidea luteola* η *hypopta* Ach. Vet. Ak. Handl. 1808 p. 266, Lich. Univ. (1810) p. 196. *Lecanora subfuscata* var. *biatorea* Nyl. Ad Veg. Lich. Hels. (Not. Sällsk. F. et

Fl. Fenn. IV, 1859) p. 230 (sec. orig. n. 21354 in herb. Nyl.), Lich. Scand. (1861) p. 161. *L. vulpinaris* Nyl. Flora 1869 p. 410 (sec. specim. orig.), conf. Th. Fr. Lich. Scand. II (1874) p. 438.

*Exs.* Malme Lich. Suec. Exs. IV (1898) n. 94. — Norrl. et Nyl. Herb. Lich. Fenn. Cont. (1921) n. 742.

Thallus tenuissimus aut evanescens, macula albida indiciata aut verruculis minutissimis, albidis aut cinereo-glaucescentibus, vulgo dispersis, inspersus, hypothallo indistincto. Apothecia parva aut partim vulgo numerosa et crebra vel sat crebra, sat parva vel minutissima, tota adnata, basi haud constricta, vulgo hemisphaerica, disco vulgo bene convexo, fusco-nigro aut rarius nigricante rufescenteve, haud pruinoso, vulgo leviter nitido, primum tenuissime marginata margineque concolore, dein immarginata. Hymenium parte inferiore et hypothecium subhymeniale vulgo subrufescens, ceterum hypothecium decoloratum pallidumve, irregulariter contextum chondroideumque. Epithecium dilute fuscescens aut subrufescens. Paraphyses arcte cohaerentes. Sporae 8:nae, fusiformi-oblongae aut oblongae, long. 0.008—0.011, crass. 0.0035—0.005 mm.

*Distr.* Ad ligna vetusta pinea in littoribus lacuum et in ripis rivulorum et interdum ad lignum truncorum locis humidis crescents sat rare aut passim in Fennia obvenit. Ab.: Qvidja in Pargas (F. Elfving). N.: Helsingforsiae (Nyl.), Meilans prope Helsingforsiam (Vain.), Vihti (»*L. subfusca* v. *bialorea*« Nyl. I. c.). Ik.: Sakkola (Räsänen). Ta.: Ronni in Lammi (C. Leopold), Hollola (Norrl., 21349 in herb. Nyl., H. L. F. Cont. n. 742), Asikkala (Norrl.), Nyystölä, Kivistö in Padasjoki (Vain.), ad templum (Norrl.) et ad Tyystjoki et Soima n. 98 (Vain. Fl. Tav. Or. p. 110) in Korpilahti. Tb.: Norola et Laurinniemi in par. Jyväskylä et ad oppid. Jyväskylä (Vain. I. c.). KOn.: Pyhäniemi (Norrl. Fl. Kar. Oneg. II p. 29, n. 21356 in herb. Nyl.). Kb.: Ad pag. Lieksa, Nevala, Matovaara et Pankajärvi in par. Lieksa (Vain. Adj. Lich. Lapp. II p. 45), Petäinen in Nurmes (Vain.). OKaj.: Lenttiira in Kuhmo, ad templum, Saarenkoski (Vain. I. c.), Suomula et Saukko (»*L. brachysperma*« Vain. I. c. p. 102) in Kianta. Kuus.: Ad Paanajärvi (P. A. Karsten, »*L. turgidula*« in Mus. Fenn.; F. Silén, n. 166 »*L. minuta* var. *sarcoploides*« sec. det. Nyl.). Ob.: Alkula (»*L. vulpinaris*« Nyl. in Norrl. Ber. Torn. Lappm. p. 346, »*L. hypopta* f. *insequens*« sec. det. Nyl. in Norrl. I. c., n. 21348 in herb. Nyl.). KKer.: Soukelo (P. A. Karsten

sec. Th. Fr. l. c. p. 464). LKem.: Muonio (»*L. hypopta* f. *insequens*» Nyl. in Norrl. l. c. p. 335, n. 750, 21350 in herb. Nyl.). LIn.: Prope basin montis Hammastunturi (Vain.).

*F. biatorea* (Nyl.) Vain. *Lecanora subfusca* v. *biatorea* Nyl. (vide supra).

Apothecia fusco-nigra aut fuscescentia. Hypothecium subhymeniale fuscescens. Epithecium dilute fuscescens.

Est forma typica et maxime distributa hujus speciei. Apothecia lat. 0.4—0.6 (0.3—0.7) mm., gonidiis destituta, medio crass. circ. 0.230 mm. Hypothecium jodo non reagens, hyphis pachydermaticis, conglutinatis, ramoso-connexis, cavitatibus oblongis, 0.0005—0.001 mm latis. Peritheciun decoloratum aut extus dilute fuscescens pallidumve, jodo non reagens, hyphis radiantibus, plus minus pachydermaticis, conglutinatis, cavitatibus vulgo oblongis, angustis (circ. 0.001 mm latis). Hymenium circ. 0.055 mm crassum, jodo caeruleoscens, dein obscuratum. Epithecium nec granulosum, nec gelatinoso-obducum, KOH dilutius coloratum, demum decoloratum. Paraphyses simplices, tenues, apice leviter incrassatae (circ. 0.0015—0.0025 mm crassae), membrana haud distincte gelatinoso-incrassata. Sporae distichae, simplices. Conidia »bacilliformia, recta, long. 0.0045, crass. 0.001 mm» sec. adnot. in n. 21354 in herb. Nyl. (brevia etiam ipse vidi, conf. infra), »acicularia, arcuata, long. 0.014—0.018 mm» sec. Th. Fr. l. c., »filiformia, parum arcuata, long. 0.011—0.012, crass. 0.0005 mm» in »*L. insequente*» sec. Nyl. in Flora 1868 p. 142, »filiformia, arcuata, long. 0.010—0.012, crass. 0.0005 mm» in specim. Helsingforsiae a Nyl. collecto sec. adn. ejus. Conidia duarum formarum igitur in hac specie observata sunt. Gonidia cystococcaceae, globosa.

*F. ruficeps* Vain.

Apothecia rufescens. Hypothecium subhymeniale intense pallidum. Epithecium rufum.

*Distr.* Ad truncum pineum vetustum in lacu prope oppid. Jyväskylä (supra indicata, »*L. hypopta*» sec. determ. Nyl.).

»*Lecanoram paroptoidem*» Nyl. in memoriam revocans, sed textura apotheciorum omnino similis *Lecideae hypoptae*. Apothecia crebra numerosissimaque, simplicia aut parce duo confluentia, bene convexa, gonidiis destituta, haud distincte marginata. Peritheciun ciliolatum aut partim extus rufescens. Hypothecium chondroideum, hyphis pachydermaticis conglutinatis, irregulariter contextis, ramoso-connexis. Sporae simplices, »long. 0.008—0.010, crass. 0.0035—0.0045 mm» sec. annot. Nyl.

*F. insequens* Nyl. in Norrl. Ber. Torn. Lapp. (1873) p. 335, 346. *L. insequens* Nyl. Flora 1868 p. 474, Hue Addend. II (1888) p. 142.

Apothecia atra aut parce etiam fusco-nigra. Hypothecium superius sordide pallidum aut dilute subfuscens. Epithecium fuscum.

*Distr.* Ta.: Ad lignum trunci pinei vetusti in Soima in Korpilahti (n. 98, Vain. Fl. Tav. Or. p. 111). OKaj.: Ad lignum in rivulis prope Suomula et Saukko in Kianta (»*L. brachysperma*« Vain. Adj. Lich. Lapp. II p. 102). Ob.: Ad alveum ligneum molae in Alkula (Norrl. Ber. Torn. Lappm. p. 346). LKem.: Ad lignum pineum vetustum in Muonio (Norrl. l. c. p. 335, n. 750). LIn.: Ad lignum pineum prope basin montis Hammastunturi (Vain.).

Perithecium extus fuscescens, intus decoloratum pallidumve. Paraphyses apice distinctius clavatae, clava fuscescente, 0.002—0.003 (—0.005) mm lata. Sporae »long. 0.007—0.010, crass. 0.003—0.004 mm» (sec. Nyl.). Conidia supra indicata. Apothecia textura sicut in f. *biatorea*.

*Obs.* *Lecidea brachysperma* Vain. Adj. Lich. Lapp. II (1883) p. 101 (in Zahlbr. Cat. Lich. Un. III, 1925, p. 529 false »*saxicola*« indicatur), ad lignum in rivulis prope Suomula et Saukko in Kianta collecta, apotheciis magis depressis, majore parte planis, atris, conceptaculis conidangiorum violaceo-nigricantibus, conidiis cylindrico-oblongis, long. 0.005—0.006, crass. 0.001 mm, rectis instructa, praesertim ob descriptionem falsam conidiorum (»spermatorum«) a Th. Fr. et Nyl. datam, a *Lecidea hypopta* separatam, revera ad f. *insequentem* Nyl. pertinet.

#### 90. *L. Petsamoënsis* Räsänen n. sp.<sup>1)</sup>

Thallus effusus, crassitudine mediocri, areolatus, areolae 0.2—0.5 mm. latae, contiguae et angulosae vel hinc inde subdiscretae et magis rotundatae, opacae, depresso convexae, cinerascentes vel plumbeo-cinerascentes. Thallus sorediis conspicuus, numerosissimus, suis locis confluentibus, instructus, soredia albida, granulosa, diam. usque ad 0.8 mm. (vulgo 0.4—0.5 mm.). Hypothallus indistinctus.

Apothecia numerosa, dispersa vel rarius confluentia, adpressa, sed thallum superantia, mediocria, diam. 0.4—0.7 mm. Discus ater, etiam madefactus, epruinosus, nitidus, planus. Margo crassus, tumidulus, persistens, integer, optime nitidus. Excipulum in parte centrali incoloratum vel dilute fuscescens, infra hypothecium et versus marginem obscurius,

<sup>1)</sup>. Dr. Räsänen had found it to be a new species, the diagnosis has been prepared by the editor.

fuscescens vel fusco-nigricans. Hypothecium incoloratum. Hymenium strato amorpho incolorato tectum, 85—90  $\mu$  altum, in parte superiori fuligineum vel fusco-fuligineum. Paraphyses cohaerentes, septatae, versus apicem leviter solum incrassatae. Asci pyriformes. Sporae (saepe male evolutae) ellipsoideae, 13—16  $\times$  6.5—8  $\mu$ .

Pycnides frustra quaesitae.

Hymenium J e caeruleo mox fusco-rubescens, etiam cum hypothecio. Medulla J  $\ddot{\sim}$ , KOH rubescens, (crystalla sanguinea praeccipituntur),  $\text{CaCl}_2\text{O}_2$   $\ddot{\sim}$ .

Lt.: Petsamo, leg. Veli Räsänen, 1921.

*Obs.* As long as its pycnoconidia are unknown it is hardly possible to place it with certainty in any of the many sections of *Lecidea*. The editor is of opinion that its spores are rather large for the *L. lithophila* section, he might suggest the *L. leucophaea* section. It is well distinguished from *L. Lulensis*, which has the same reaction, by its conspicuous soredia.

#### 91. **L. superlata** Vain.<sup>1)</sup>.

Vainio Adj. Lich. Lapp. II (1883) p. 79.

Tab. II, fig. 1.

Thallus crassitudine mediocri vel crassiusculus, cinerascens, opacus vel nitidulus, sorediis isidiisque destitutus, verrucoso-areolatus, areolis parvis, 0.2—0.5 mm, contiguis, angulosis variis formis. Hypothallus ater inter areolas distincte visus et zonam angustam minus distinctam circum thallum formans.

Apothecia parvula, diam. 0.5—0.7 mm, numerosissima, thallum densissime tegentia, primo innata, plana et thallum subaequantia, dein depresso-convexuscula et thallum leviter superantia. Discus ater, epruinosus, immarginatus. Excipulum parte interiori decoloratum-pallidum, parte exteriori fusco-fuligineum. Hypothecium incoloratum. Hymenium 85—100  $\mu$  altum, epithecium fusco-vel olivaceo-fuligineum. Paraphyses arcte cohaerentes, indistinctae, in KOH visae tenues distinque constrictae articulatae. Asci

<sup>1)</sup>. By B. Lynge.

ventricosi. Sporae octonae, incoloratae, simplices, guttulas oleosas continentes, majusculae:  $14-20 \times 10-12 \mu$ .

Pycnides ignotae.

Medulla J $\ddot{\text{a}}$ , KOH flavo-aurantiaca (sec. Vain l.c.: thallus hydrate kalico fere immutatus),  $\text{CaCl}_2\text{O}_2$  $\ddot{\text{a}}$ , hymenium J, praecedente haud intense caerulea, pulchre vinoise rubens.

*Distr.* Ad rupem graniticam in regione subalpina montis Nuorunen in par. Kuusamo. (Vain.).

*Obs.* »Facie externa fere similis est *Lecan. gibbosae* v. *subdepressae*, neque valde dissimilis *L. obscurissimae* Nyl. Flora 1872 p. 553 (Arnold Lich. Exsicc. No. 843), sed *L. aspicilioidea* Th. Fr. Lich. Scand. p. 542 forsitan maxime affinis (Vain. l. c.).

If the medulla is white, it is KOH  $\ddot{\text{a}}$ , the editor also found a yellowish medulla, with a distinct reddish-orange KOH reaction. As stated by Vainio l. c. it resembles *Lecidea aspicilioidea* habitually, but it differs considerably from that species in its very coherent paraphyses.

A very isolated species in its genus. The editor might suggest the *Lecidea leucophaea* section, but unfortunately its pyrenoconidia are unknown.

92. **L. Altensis** Th. Fr.<sup>1)</sup>

Th. Fries Lich. Scand. II (1874) p. 552, Vain. Adj. Lich. Lapp. II (1883) p. 96.

Planta minuta. Thallus obsoletus vel tenuissime verruculosus granulosusve, albidus vel glaucescens. Hypothallus albidus, valde indistinctus.

Apothecia anguste affixa, subelevata, parva, diam. 0.3—0.7 mm, primo plana et indistincte tenuiter elevato-marginata, dein mox convexa immarginata. Discus ater vel (madefactus) obscure atropurpureus, epuruinosus, laevigatus, nitidiusculus. Excipulum incoloratum vel p. p. fuscescens. Hypothecium incoloratum vel dilute flavescens. Hymenium 50—60  $\mu$  altum, incoloratum vel dilute flavescens, strato incolorato amorpho (haud granuloso) tectum. Paraphyses modice cohaerentes,

<sup>1)</sup> By B. Lyngé.

satis validae, plus minusve ramosae, fusco-capitatae ( $4 \mu$ ). Asci anguste clavati, pachydermatici. Sporae incoloratae, simplices, octonae, anguste ellipsoideae vel oblongae, 9—12 ( $—15$ )  $\times$  4—4.5 ( $—5$ )  $\mu$ .

Pycnoconidia ignota.

Medulla J  $\vdash$ , KOH  $\vdash$ ,  $\text{CaCl}_2\text{O}_2 \vdash$ . Hymenium J primo caerulescens, dein asci subpersistenter caerulescentes (Vain. l. c. »asci... demum... vinoise rubentes») et gelatina hymenialis subdecolorate vel sordide vinoise rubet.

*Distr.* Ad rupes talcaceo-schistosas et calcareas prope Sirkelä in regione coniferarum mixtarum paroeciae Kuusamo.

Even the young, not full-grown paraphyses have dark incrassated tips, giving the hymenium a variegated to brownish colour.

Var. *fusco-rubescens* Vain. Vain. Adj. Lich. Lapp. II (1883) p. 96.

Differt a typo thallo melius evoluto fusco-cinerascenti, apotheciis fusco-rubescentibus, diutius planis, hymenio 80—90  $\mu$ , et paraphysisbus ut videtur arctius cohaerentibus.

*Distr.* Ks.: ad Kuoppaoja in Kuusamo (Vain.).

Gelatina hymenialis J persistenter caerulescens, demum obscure caerulescens.

Ad saxa schistosa prope Sirkelä in par. Kuusamo.

*Obs.* The type plant (leg. Norman, in herb. Oslo) has »paraphyses conglutinatae, nigro-capitellatae». (Norm. herb. not.). The habitus is very like some minute formae of *Lecidea elaeochroma* (Ach.) Th. Fr. Lich. Scand. p. 542, as stated by Th. Fries l. c. But the paraphyses are so coherent that it is difficult to find a place for it in the *Lecidea elaeochroma* section with its »paraphyses facillime liberae».

In a herb. note Vainio has suggested a »*Bialora*». The editor thinks this a good suggestion. It would place the species in the *Lecidea leucophaea* section of Th. Fries Lich. Scand. II p. 457. — The hypothecium, which the editor studied, was decidedly pale, Th. Fries as well as Vainio made the same observation.

#### Sect. *Lecidea erythrophaea*.<sup>1)</sup>.

Apothecia parva, (vulgo) obscurata, hypothecium (normaliter) pallidum, paraphyses plus minusve concretae,

<sup>1)</sup>. In his herbarium Vainio had referred the two species *Lecidea obscurella* (Somrft) Nyl. and *Lecidea Cadubriae* (Mass.) Nyl. to the genus *Lecanora*. Th. M. Fries referred them to his section *erythrophaea* of the genus *Lecidea* (Lich. Scand. II p. 467 and 468).

sporae mediocres vel minutae, pycnoconidia (ubi visa) minuta, brevia.

*Obs.* In Vainio's manuscript the editor found one sheet, reserved for *Lecidea humida* (Kullh.) Th. Fr. Lich. Scand. II p. 477. But it was quite evident that he had resolved to drop it, on the reason that it was not a *Lecidea*, but »*Pannularia humida* (Kullh.) Vain.«. — There was another remark: »*Lecidea subhumida* Vain. Adj. Lich. Lapp. II p. 50 omnino diversa.«

### 93. *L. erythrophaea* Floerk.

in Sommerf. Suppl. Fl. Lapp. (1826) p. 163; Th. Fr. Lich. Scand. II (1874) p. 465. *Biatora* Th. Fr. Lich. Arct. (1860) p. 196. *Lecidea minuta* Mass. Ric. Lich. Crost. (1852) p. 76 (sec. A. L. Smith Mon. Brit. Lich. II p. 34); Mudd Mon. Brit. Lich. (1861) p. 195 (*L. anomala* v. *minuta* Schaeer. Lich. Helv. Exs., 1836, n. 211 p. p., sec. cit.). *Biatora hyalinella* Koerb. Syst. Lich. (1855) p. 201 (sec. Th. Fr.). *Lecidea mutabilis* var. *stenospora* Nyl. Herb. Mus. Fenn. (1859) p. 88. *L. vernalis* \**L. tenebricosa* Nyl. Lich. Scand. (1861) p. 201. *L. tenebricosa* Nyl. Lich. Lapp. Or. (1866) p. 145. *Biatora tenebricosa* Norm. Spec. Loc. Nat. (1868) p. 112 (352). *B. alnicola* Anzi Lich. Etrur. Exs. (1863) n. 27 (sec. Nyl. l. c.).

*Exs.* Leight. Lich. Brit. Exs. X (1858) n. 298, XI (1858) n. 326 (sec. A. L. Sm. l. c., Nyl. l. c.). — Mudd Lich. Brit. Exs. II (1861) n. 163 (sec. Nyl.) — Anzi Lich. Etrur. Exs. (1863) n. 27 (sec. Nyl.). — Havås Lich. Norv. Exs. (1915) n. 492.

Thallus tenuis aut sat tenuis, verrucoso- vel verruculosoinaequalis, albidos, continuus, aut subevanescens, sorediis destitutus, hypothallo indistincto. Apothecia sat parva aut partim mediocria, late adnata, basi demum leviter constricta, disco fusco aut fusco-nigro aut fusco-rufescente aut raro testaceo, haud pruinoso, saepe leviter nitido, plano aut depresso-convexo aut demum bene convexo, margine tenui aut sat tenui, leviter prominente, nigricante fuscove aut raro testaceo, nitido, persistente aut vulgo demum excluso. Hypothecium decoloratum, aut raro sublutescens pallidumve, irregulariter contextum, chondroideum. Epitheciun fuseum aut rarius rufescentia. Paraphyses arcte cohaerentes. Sporae 8:nac, oblongae aut subfusiformi-oblongae, long. 0.010—0.016, crass. 0.003—0.005 mm (»long. 0.010—0.018 mm» sec. Th. Fr.).

*Distr.* Ad corticem arborum (praesertim frondosarum), velut Populi, Alni, Salicis, Tiliae, rarius etiam Juniperi et ad lignum pineum resinosum atque saxa crescit, in maxima parte Fenniae passim obveniens. N.: Kyrkslätt (Lång). Pohjoiskorkia Hoglandiae (Brenn. Bidr. Hogl. Lafv. p. 85), Fredriksberg, Tölö et alibi ad Helsingforsiam (Vain.), Degerö ad Helsingforsiam (Lång). Esbo et Vihti (Nyl. Lich. Scand. p. 201). Ka.: Vanha-Viipuri et Hietala ad Viburgum (Vain. Lich. Vib. p. 61). KOI.: Nikola et Humbaritsa (Elf. Ant. Veg. Svir p. 168). St.: (A. J. Malmgren sec. Nyl. l. c.). Ta.: Tiirismaa locis numerosis, Hersala, Messilä in Hollola (Vain.), Nyystölä, Vieru, Kirkonkylä in Padasjoki (Vain.), in territorio ad Vesijärvi passim (sec. Norrl. Bidr. Sydöstr. Tav. Fl. p. 186), Kesäin in Luhanka (Vain.), sat frequenter in Korpilahti (Vain. Fl. Tav. Or. p. 110). Haarajärvi in Evo par. Lammi (Lång). Kl.: Remtjinkorpi in Soanlahti (Lång). KOn.: pluribi sec. Norrl. (Fl. Kar. Oneg. II p. 29). Tb.: Norola et Laurinniemi in Jyväskylä (Vain.). Sb.: Rautalampi (Nyl. l. c.), Kuopio (Lång Lich. Sav. Bor. p. 33). Maljalampi prope opp. Kuopio (Linkola). Kb.: passim (sec. Vain. Adj. Lich. Lapp. II p. 46). Lieksa (Lång). KPom. Occ.: Koroppi, Kiimosvaara (Vain.). OKaj.: Pietari et Hossa in Kianta (Vain. l. c.). Ob.: Simo (Räsänen). Alkkula (Norrlin). Turtola (Norrl. Ber. Torn. Lappm. p. 346). Kuus.: Näränkävaara (Vain. l. c.), Iivaara (F. Silén). KKer.: Kivakka (Vain. l. c.). LKem.: Jerisjärvi, Vähäniva, Karesuanto (Norrl. l. c.). LIn.: In reg. bet. ad Köngäs prope Mare Glaciale (Vain. l. c.).

*F. tenebricosa* (Nyl.) Vain.

Apothecia disco fusco aut fusconigro aut fusco-rufescente.

*Distr.* Est f. typica et maxime distributa hujus speciei.

Thallus KOH non reagens. Apothecia sat crebra aut dispersa, lat. 0.4—1 mm, simplicia aut rarius demum p. p. tuberculosa confluentiae, gonidiis destituta. Hypothecium jodo non reagens, hyphis pachydermaticis, conglutinatis, ramoso-connexis, cavitatibus oblongis, 0.0005 mm latis. Peritheciun in margine aut extus fuscescens et intus subitusque decoloratum, jodo non reagens, hyphis radiantibus, pachydermaticis, conglutinatis, cavitatibus oblongis, 0.001—0.0005 mm latis. Hymenium circ. 0.070 mm crassum, jodo caerulescens. Epithecium fuscum, tenue, granulis parcis fuscis, haud gelatinoso-obductum, KOH nec reagens, nec dissolutum. Paraphyses simplices, membrana haud gelatinosa, in KOH sat laxe cohaerentes, tenues, p. p. apice vix incrassatae, p. p. clavatae. Sporae distichae. Gonidia cystococcoidea.

*Obs.* In specimine (n. 19905 in herb. Nyl.) in Kylemore a Larbal. collecto (Larbal. Lich. Herb. III, 1879, n. 102), »*L. rufofuscus*« a Nyl. perperam determinato, conidia sec. annot. (et icon.) Nyl. »filiformia,

bene aut parcus leviter curvata, long. 0.020—0.024, crass. 0.005—0.006 mm». Facie externa similis est *L. erythrophaeae*, thallo sublaevigato, continuo, tenui instructa, sed sporis sec. Nyl. »long. 0.012—0.020, crass. 0.008—0.01 mm» ab hac specie differt.

*F. rufescens* Vain.

Apothecia disco rufescente.

*Distr.* Ad corticem Sorbi in Tiirismaa (Vain.) et ad. corticem *Alni incanae* ad Vieru in Padasjoki (supra indicata).

*F. testacea* Vain.

Apothecia disco testaceo.

*Distr.* Ad corticem Salicis in Padasjoki (Vain.) et in Sutonen in Korpilahti (Vain., supra indicata).

Hypothecium subhyumeniale dilute pallidum. Perithecium in parte superiore extus rufescenti-testaceum, ibi partim etiam cavitibus rotundatis, diam. 0.004—0.006 mm, in seriebus subsimplicibus dispositis, sat leptodermaticis. In membranis hypharum hypothecii et perithecii stratum interius tenue a strato exteriore gelatinoso-incrassato distincte limitatum. Hymenium circ. 0.060 mm crassum. Epithecum tenue, testaceo-rufescens. Ceterum haec forma simile est f. *tenebricosae*.

94. *L. turgidula* Fr.<sup>1)</sup>.

Sched. crit. I (1842) p. 10, Lich. Eur. (1831) p. 337; Nyl. Lich. Scand. (1861) p. 201, Lich. Lapp. orient. (1866) p. 146 p. p.; Th. M. Fries Lich. Scand. II (1874) p. 469, ubi syn. crit.; Vain. Adj. Lich. Lapp. II (1881) p. 48, Lich. Konda (1928) p. 100; Zahlbr. Cat. Lich. Un III (1925) p. 840. *Lecidella turgidula* Fr. Kbr Syst. Lich. Germ. (1855) p. 243. *Bialora turgidula* Fr. Arn. Lich. Ausfl. Tirol XXI (1880) p. 40 (132); Elenkin Lich. Flora Ross. med., fasc. 3—4 (1911) p. 384.

Exs. Arn. Lich. Exs. (1894) n. 1621. — Fries Lich. Suec. I (1818) n. 25. — Krypt. Vindob. XIII (1905) n. 1229. — Malme Lich. Suec. V (1909) n. 116. — Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 172. — Stenh. Lich. Suec. VIII n. 215. — Suza Lich. Boh.-Slov. IV (1929) n. 100. — Vide Lynge Index Lich. Exs. II (1920) p. 40, 186 et 187.

Thallus vulgo tenuissimus usque evanescens, hypophloeodes, interdum melius evolutus, sed semper tenuis, albidus, rarissime minute granulosus.

Apothecia numerosa, dispersa, parva vel minuta: diam. 0.2—0.5 mm., primitus plana et indistincte marginata,

<sup>1)</sup>. By B. Lynge.

deinde mox convexa et immarginata. Discus rugulosus, fusco-nigrescens vel ater, strato amorpho incolorato tectus (KOH), ab initio saepe caesiopruinosus, deinde nudus, nitidus. Excipulum flavo-fuscescens vel (sec. Th. Fr. l. c.) plus minus sordide obscuratum, extus hyphis radiantibus conglutinatis, sat tenuibus, cavitibus angustis, contextum. Hypothecium dilute flavescens. Hymenium angustum: 40—45  $\mu$ , superne olivaceo-nigricans. Paraphyses conglutinatae, ramosae et hinc inde anastomosantes, sat validae, in apice capitatae: 4—5  $\mu$ , et obscuratae, olivaceo-fuligineae vel fusco-fuligineae vel (KOH) plus minusve caerulescentes. Ascii pyriformes, octospori. Sporae distichae, oblongae, lateribus subcylindricae, apicibus obtusae aut rotundatae, 6—12  $\times$  2—4  $\mu$ .

Sec. Th. Fries l. c. »Spermatia Lecideae Cadubriae similia», i. e. »Spermogonia semiimmersa, nigra. Spermatia anguste linearia v. cylindrica, vulgo paullum curvula, 5—6  $\times$  1.0—1.5  $\mu$ .»

Hymenium J caeruleo-nigricans, asci persistenter colorati. — Sec. Th. Fries l. c.: »Hymenium jodo intense caeruleascit, dein sordidescit.»

Distr. Ad cortices, praecipue Pini, sed etiam Piceae et Juniperi, atque ligna nuda vetusta. Ut videtur in toto territorio. — N.: Helsingforsia (Lång). Ik.: Muola (Kihlman). Sakkola (Lång). Ta.: Tiirismaa in Hollola (Vain.). Evo in Lammi (Lång). Korpilahti pluribi (Vain.). Sb.: Kuopio (Collan et Lönnbohm). Kb.: Lieksa (Lång). Lipinlahti in Nurmes (Vain.). OKaj.: Kiannanniemi in Kianta (Vain.). Li.: Paatsjoki (Vain.). Veskonniemi in Inari (Vain.).

In Adj. Lich. Lapp. II p. 48 Vainio records the following formae: *F. typica* Th. Fr. Lich. Scand. p. 470 p. p. *L. subglomerella* Nyl., Flora 1875 p. 10. Norrl. et Nyl. Herb. Lich. Fenn. 178 (misprint for 172).

»Apothecia nuda vel fere nuda, epithecio olivaceo vel smaragdulo. Thallus vulgo parum evolutus. — Multis locis ad corticem pini et lignum vetustum e Karelia boreali usqve ad regionem piniferam Lapponiae Inarensis (ibi ad Koppelo, Veskonniemi, Paatsjoki).»

*F. endopella* Leight. Lich. Great Brit. ed. 3, p. 261. Exs. Cromb. Lich. Brit. I (1874) n. 84.

»Apothecia nuda. Epithecium fuscescens, hydrate kalico smaragdulum vel olivaceo-fuscescens. Hypothecium incolorato-fusce-

scens. Thallus parum evolutus. — In Karelia boreali: ad pag. Lieksa in par. ejusdem nominis, in par. Kuusamo legit F. Silén, in Karelia Rossica: in regione subalpina montis Kivakka. Ad lignum in truncis et parietibus obvia.»

In addition to the above mentioned localities the editor found the following plants in the Finnish herbaria: Ab.: Lehmämaa prope Aboam (Sederholm). Vihti (Lång). N.: Gammelstad in Helsingforsia (Vain.). Ka.: Uuras et Vanha-Viipuri in Viburgo (Vain.). Ta.: Tii-rismaa in Hollola (Vain.). Luhanka (Vain.). Korpilahti (Vain.). Tb.: Jyväskylä (Vain.). Ob.: Tiuranen in Simo (Räsänen).

*F. pithyophila* (Somrft) Th. Fr. Suppl. Flor. Lapp. (1826) p. 154.  
Th. M. Fries Lich. Scand. II (1874) p. 470.

*Exs.* Malme Lich. Suec. V (1909) n. 117, XV (1913) n. 360.

»Apothecia nuda vel rarius tenuissime pruinosa. Hymenium caerulescens (epithecio fuligineo), hydrate kalico smaragdulum. Thallus obsoletus. — Multis locis a Karelia boreali usque ad Lapponiam Inarensem, velut in regione coniferarum mixtarum ad Ivalojoki, in regione subalpina montis Hammastunturi, ad Veskonemi in regione pinifera. Ad lignum in ramis et caudicibus pini (etiam juniperi) lecta.»

In addition to the above mentioned localities the editor found the following plants in the Finnish herbaria: Ab.: Vihti (Vain.). N.: Helsingforsia (Vain.). Gesterby in Kyrkslätt (Lång). Ta.: Evo in Lammi (Lång). Sutonen in Korpilahti (Vain.). K. Pom. occid.: Koroppi in Repola (Vain.). L. Kem.: Muonio (Norrl.). Le.: (Norrlin.).

*F. subalbida* Vain. Adj. Lich. Lapp. II (1883) p. 49.

»Apothecia pruinosa. Thallus tenuis, laevigatus vel granulosus — granulato-rugosus. — Ad corticem pini nonnullis locis saltem in Karelia boreali. Transitum in var. sequentem praebet.»

The editor found the following plants in the Finnish herbaria: Ta.: Hollola (Vain.). Prusila in Padasjoki (Vain.). Sutonen in Korpilahti (Vain.).

Var. *pulveracea* Th. Fr. Lich. Scand. II (1874) p. 470. Vain. Adj. Lich. Lapp. II (1883) p. 49.

*Exs.* Krypt. Vindob. XXI (1913) n. 2059. Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 309.

»Apothecia plus minusve pruinosa. Thallus crassior, albidus, farnaceo vel granuloso-sorediosus. In regione infralapponica: ad corticem abietis in montibus Ohtosenvaara et Hidenvaara in par. Kuhmo.»

The editor also found the following plants in the Finnish herbaria: N.: Fredriksberg ad Helsingforsiam (Vain.). Ta.: Kirkonkylä in Padasjoki (Vain.) Tianen in Korpilahti (Vain.). Ob.: Sistola in Oulu (Räsänen).

*F. lividula* Nyl. apud Vain. Florula Tavastiae orientalis (1878) p. 111.

Thallus pulveraceus. Apothecia pallescenti-lividula.

Distr. Ta.: Piililä in Korpilahti (Vain.).

95. **L. olivascens** Th. Fr.<sup>1)</sup>

Th. Fries Lich. Scand. II (1874) p. 471.

Thallus tenuis vel tenuissimus, effusus, granulis dispersis vel subcontiguis supra corticem Alni formatus. Granulae minutae: 0.1—0.2 mm latae, rotundatae vel varie crenatae, subverrucosae, molles, sed non fatiscentes, cinereo-olivascentes vel flavo-cinerascentes.

Apothecia numerosa, dispersa, mollia, parva: diam. 0.2—0.4 (—0.5) mm, adpressa, primitus plana et indistincte marginata, dein mox depresso convexa, immarginata. Discus epruinosus, subnitidus, olivaceo-nigricans vel fusco-nigricans, maderatus fuscescens vel olivaceus. Excipulum incoloratum, molle, etiam cum hypothecio. Hymenium 65—70  $\mu$  altum, incoloratum vel dilute flavescens vel flavo-fuscescens, saltem in parte superiori, strato incolorato, amorpho, plus minusve granuloso tectum. Paraphyses concretae, indistinctae, satis validae (KOH), in apice non incrassatae. Asci inflato-vel subventricoso-clavati. Sporae oblongae, vel fusiformi-oblongae, utrinque obtusae, 13—17  $\times$  4—5  $\mu$ .

Thallus KOH pallide flavescens,  $\text{CaCl}_2\text{O}_2$  dilute rubescens. Gelatina hymenialis J haud tingitur, sed asci J persistenter caerulescentes, saltem versus apicem.

Distr. Ad corticem Alni prope Mustiala, socia *Pertusariae protuberantis* (P. A. Karsten).

96. **L. microsphaerooides** Vain. (n. sp.)

Exs. Norrl. et Nyl. Herb. Lich. Fenn. Cont. (1921) n. 739.

Thallus tenuis aut tenuissimus, macula alba indicatus, verruculis convexis passim inspersus, sorediis destitutus,

<sup>1)</sup>. By B. Lynge.

hypothallo indistincto (conf. infra). Apothecia sat crebra, parva aut minutissima, late adnata, basi demum constricta, disco convexo, atro, haud pruinoso, parum nitido, margine tenuissimo, subalbido primum instructa aut fere mox immarginata. Hypothecium irregulariter contextum, superne sordide subcinerascens, inferne decoloratum. Hymenium haud granulosum, epithecio cyaneo-fuligineo, KOH non reagente. Paraphyses arcte cohaerentes. Sporae 8:nae, oblongae ellipsoideaevae, long. 0.007—0.012, crass. 0.002—0.004 mm.

*Distr.* Ad corticem Abietis putrescentis in Kotomäki in Pyhäniemi par. Hollola (a. 1882 a Norrl. collecta, »*L. atroviridis* v. *subglobulosa*» in H. L. F. cont. n. 739).

Intermedia est inter *L. turgidulam*, cui habitu subsimilis, et *L. atroviridem*, a priore colore perithecia et reactione epithecii et a posteriore apotheciis constanter minoribus (etsi abundanter collectis) et textura leviter dissimilibus differens. Thallus KOH non reagens, gonidiis tantum in verruculis inclusis, quare partes albae inter verrucas sitae revera ad hypothallum pertinent. Apothecia lat. 0.5—0.2 mm, crass. ad marginem 0.140, medio 0.2 mm, gonidiis destituta, partibus obscuratis  $HNO_3$  demum violascentibus. Hypothecium jodo caerulescens, dein partim vinose rubens, irregulariter contextum, inferne pachydermaticum, cavitatibus difformibus, 0.0015—0.002 mm latis, superne leptodermaticum et  $HNO_3$  dilute violascens. Perithecium 0.030—0.040 mm crassum, decoloratum, in margine intus subfuscescenti- aut subcyanescenti-obscuratum, KOH non reagens, intus jodo caerulescens, hyphis radiantibus, parum vel leviter pachydermaticis, cavitatibus oblongis, 0.001 mm latis. Hymenium circ. 0.050 mm crassum, jodo caerulescens, dein partim vinose rubens. Epithecium KOH distinctius caerulescens, dein dilutescens. Paraphyses simplices, membrana leviter gelatinoso-incrassata, in KOH visae partim discretae et apice leviter incrassatae. Sporae distichae, simplices. Gonidia cystococcoidea.

### 97. *L. atroviridis* (Arn.) Th. Fr.

Lich. Scand. II (1874) p. 472; Vain. Adj. Lich. Lapp. II (1883) p. 45; Hedl. Krit. Bem. Lec. Micar. (1892), p. 64. *Lecidella turgidula* var. *atroviridis* Arn. Fl. 1864 p. 596. *Bialora atroviridis* Hellb. Ner. Laffl. (1870) p. 69; Arn. Lich. Fränk. Jura Fl. 1885 p. 152. *Lecidea ocelliformis* Nyl. Fl. 1865 p. 145, Fl. 1882 p. 453; Hue Addend. II (1888) p. 145. *Bialora admixta* Kullh. Lich. Rar. Must. (1871) p. 275 (sec. specim. orig.), haud Th. Fr. Bot. Not. 1863 p. 9 (sec. Lich.

Scand. II p. 469). *Lecidea subocelliformis* Nyl. Fl. 1882 p. 453 (conf. infra).

*Exs.* Arn. Lich. Exs. (1865) n. 277. — Zwackh Lich. Exs. (1881) n. 681. — Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 307, cont. (1921) n. 738, 739 (in herb. Vain.). — Lojka Lich. Univ. V (1886) n. 234. — Malme Lich. Suec. Exs. IV (1898) n. 93, VI (1909) n. 142.

Thallus tenuis aut sat tenuis, verrucoso- et verruculosoinaequalis, verrucis vulgo depresso-convexis, contiguis, albido-glaucescens vel impure albidus, sorediis destitutus, hypothallo cinereo-cyanescente nigricanteve aut obsoleto. Apothecia vulgo sat crebra, sat parva aut partim medioeria, tota adnata, disco depresso-convexo aut rarius bene convexo, nigro atrove aut vulgo saltem partim livido- vel subcaerulecenti-nigricante aut livido-fuscescente, haud pruinosa, vulgo subnitido, margine sat tenui depressoque subcinereo-pallescente vel caerulco-nigricante demum aut fere mox excluso. Hypothecium sordide subdecoloratum aut pallidum aut inferne fulvescens vel subviolascens aut medio toto sordide subviolascens, textura variabili. Hymenium haud granulosum, totum aut partim inferne superneve cyanescens aut partim epithecio decolorato pallidove. Paraphyses arcte cohaerentes. Sporae 8:næ, distichæ, ellipsoideæ aut oblonegæ, long. 0.006—0.013, crass. 0.003—0.004 mm (sec. Hedl. long. 0.008—0.016, crass. 0.003—0.004 mm).

*Distr.* Ad corticem Alni, Abietis, Sorbi, Tiliae, Salicis, Coryli, Padi, Juniperi collecta, passim in prov. med. Fenniae proveniens, meridiem versus rarescens et prov. septentrionalibus deficiens. Ab.: Ruissalo vel Runsala prope Aboam (Vain.). N.: Gumtäckt Helsingforsiae (Vain.), Gesterby in Kyrkslätt (A. Kullhem). Ka.: Pietarinpuoli Viburgi (Vain.), Vammelsuu in Uusikirkko (A. O. Kihlman). Ta.: Passim in Tammela (»*B. admixta*« Kullh. Lich. Must. p. 275), Tiurismaa (Vain.) et Hersala (Vain.), Uusikartano (Norrl. H. L. F. n. 307), Pyhäniemi (Norrl. l. c. n. 739) et Enonsaari (Norrl.) in Hollola, Kaila in Asikkala (Norrl.), Evo (Norrl.), Sutoinen et Soima in Korpilahti (Vain.). KOn.: Perttiniemi et Mundjärvi (Norrl., Fl. Kar. Oneg. II p. 28). Sb.: Ad Neulalampi in Kuopio (K. Linkola). Kb.: Kivivaara et Koriseva in Lieksa (Vain. Adj. Lich. Lapp. II p. 45). Indicationes in litteratura de distributione hujus speciei incertae sunt, quia a Nyl. aliisque auct. cum *L. plusiospora* commixta est.

Thallus KOH leviter flavescentis, demum subfulvescens,  $\text{CaCl}_2\text{O}_2$  non reagens [hypothallus in var. *tristicolare* Vain. (in Havaas Beitr. Westnorw. Flecht. I p. 27) nigricans, bene evolutus continuusque]. Apothecia lat. 0.5—0.8 (—0.9) mm, saepe sat tenuia, gonidiis destituta, partibus subcyanescientibus  $\text{HNO}_3$  violascentibus. Hypothecium jodo reagens (sicut hymenium), vulgo tenue (in f. *subglobosa* crassius), hyphis suberectis aut partim sat irregulariter contextis, leviter pachydermaticis, crebre septatis, cavitatibus subglobosis aut ellipsoideis, 0.005—0.0015 mm latis, ceterum valde variabile. Peritheciun circ. 0.040—0.120 mm crassum, subdecoloratum aut intus dilute vel intense cyanescens, sat pachydermaticum, jodo partim aut totum dilute caerulescens, hyphis radiantibus, sat pachydermaticis, simplicibus aut in limite hymenii ramoso-connexis, cavitatibus angustissimis, vix 0.001 mm latis, oblongis. Hymenium 0.070—0.140 mm crassum, jodo caerulescens, dein obscure vinose rubens aut partim fulvescens. Paraphyses simplices aut in latere hymenii ramoso-connexae, apice parum incrassatae, membrana leviter gelatinoso-incrassata, cavitatibus 0.001—0.0015 mm latis, saepe elongatis. Sporae 8:næ aut saepe abortu pauciores, distichæ, simplices. Gonidia cystococcoidea, globosa et subglobosa.

*F. dilutescens* Vain. *L. atroviridis* f. *ocelliformis* Hedl. l. c. p. p.

Apothecia depresso-convexa, disco livido- vel cinereo-rufescente aut fusco-nigricante, marginem versus saepe pallidiore.

*Distr.* Ad corticem *Abietis excelsae* junioris, Juniperi, *Sorbi aucupariae*, *Salicis capreae* et *Coryli* collecta. Ka.: Vanhaviipuri (Vain.). Ta.: Hersala (Vain.), Tiurismaa (Vain., Norrl. H. L. F. n. 738) et Isosaari (Vain.) in Hollola, Sutoinen, Tianen et Rutalahti in Korpi-lahti (»*L. ocelliformis*» in Vain. Fl. Tav. Or. p. 112).

Textura apotheciorum cum *L. atroviridi* nec *L. lignaria* congruens, quamquam facie externa posteriori similis, ab ea reactione partium subcyanescientium  $\text{HNO}_3$  violascentium etiam sterilis dignata. Hymenium parte inferiore subcyanescens, parte superiore decoloratum aut totum dilute caerulescens.

*F. ocelliformis* (Nyl.) Vain. (Hedl. l. c. p. p.).

Apothecia depresso-convexa, disco nigricante aut subcaeruleo-nigricante, novella margine pallidiore saepe conspicuo.

*Distr.* Locis numerosis collecta.

*F. subglobosa* (Nyl.) Vain. Adj. Lich. Lapp. II (1883) p. 45; Hedl. l. c. *Lecidea subglobulosa* Nyl. Fl. 1867 p. 327; Hue Addend. II (1888) p. 148. *Catillaria globulosa* f. *subglobulosa* Th. Fr. Lich. Scand. II (1874) p. 576.

Apothecia bene convessa, nigra aut nigricantia, vulgo simplicia, margine inconspicuo. Hymenium totum caerulescens aut epithecio partim decolorato, KOH dilutius caerulescens aut demum decoloratum.

*Distr.* Ad corticem Alni, Sorbi et *Salicis capreae* et Abietis collecta. Ta.: Mustiala (A. Kullhem), Tiirismaa in Hollola (Vain.), Evo (J. P. Norrlin), Kesäin in Luhanka (Vain.), Soima in Korpilahti (Vain.). Kon.: Perttiniemi et Mundjärvi (Norrl. Fl. Kar. Oneg II p. 28). Kb.: Kivivaara in Lieksa (Vain. l. c.).

*F. Tiirismaënsis* Vain.

Apothecia depresso aut bene convexa, vulgo acervulato-prolificantia aut tuberculato-divisa, nigricantia aut partim subfuscescens, margine inconspicuo. In apotheciis nigricantibus hymenium superius subcyanescens-nigricans, KOH fuscescens aut sordide subviolascens.

*Distr.* Ad corticem Sorbi in Tiirismaa in Hollola (a. 1873 abundantanter legi).

Notis internis externisque ab *L. atroviridi* differt, sed apotheciis simplicibus fuscescentibus f. *ditutescenti* similis. Perithecium decoloratum et in margine intus aut fere totum dilute sordide subolivaceo-fuscescenti-pallidum. Hypothecium sordide pallidum, jodo caerulescens deindeque vinose rubens, tenuer et irregulariter contextum aut crassum et hyphis erectis. Hymenium inferius sordide pallidum, jodo caerulescens, dein vinose rubens. Paraphyses arcte cohaerentes, crebre septatae, membrana leviter gelatinosa, cavitate 0.001—0.005 mm lata, apicem versus rarius 0.003 mm, parte inferiore ramoso-connexae. Sporae 8:nae, simplices, long. 0.013—0.017, crass. 0.003—0.006 mm, apicibus obtusis. Apothecia gonidiis destituta. In apotheciis fuscescentibus hymenium totum sordide pallidum aut partim pallido-fuscescens aut epithecio subdecolorato (haud caerulescens).

*Obs.* *Leucidea subocelliformis* Nyl. Fl. 1882 p. 453 sec. herb. Nyl. spectat ad Zwackh Lich. Exs. (1881) n. 681, ubi sec. Lynge (Ind. p. 553) nominatur *L. pleiotaea* Nyl. »Sporis variantibus 1-septatis» a Nyl. descripta, sed ceteris notis ab eo indicatis et facie externa (in herb. Nyl.) non differt a *L. lignaria* Koerb.

98. *L. phaeopelidna* Vain.

Adj. Lich. Lapp. II (1883) p. 99.

Tab. IV, fig. 1.

Thallus tenuis aut tenuissimus, verruculis sat crebris inspersus, albus, sorediis destitutus, hypothallo indistincto. Apothecia sat crebra, minuta, lat. 0.3—0.5 mm, tenuia, basi non distincte constricta, fere tota adnata, disco plano aut demum leviter convexo, nigro aut raro fusco-atro, nudo, sat opaco, fere mox immarginata. Hypothecium pallide fulvo-

fuscescens, in parte superiore hyphis erectis. Peritheciū fulvo-fuscescens aut subviolascens. Epitheciū decoloratum interdum granulosum. Paraphyses arcte cohaerentes, leviter gelatinosae. Sporae 8:næ, ellipsoideæ aut ellipsoideo-oblongæ, long. 0.011—0.018, crass. 0.005—0.009 mm.

*Distr.* OKaj.: Ad corticem Salicis desiccatae in abieto prope Hossa in par. Kianta.

Facie externa subsimilis est *Bilimbiae populorum* (Mass.) Vain. (*L. acclini* Flot.), sed textura apotheciorum affinitatem ejus cum *L. atroviridi* (Arn.) Th. Fr. indicat. Thallus verruculis 0.05—0.15 mm latis, convexis. Apothecia crass. circ. 0.2 mm. Hypothecium membranis modice incrassatis, KOH non reagens. Peritheciū chondroideum, hyphis radiantibus, parce ramoso-connexis, cavitatibus angustis, elongatis, membranis leviter gelatinoso-incrassatis, KOH modice turgescitibus. Hymenium circ. 0.060—0.100 mm crassum, basin versus saepe fulvescens, jodo caerulescens deindeque sordide vinose rubens. Paraphyses simplices et partim parce ramoso-connexae, apice non incrassatae, membrana in KOH modice turgescente. Ascii clavati, long. 0.045—0.050, crass. 0.015—0.017 mm. Sporae distichæ aut rarius monostichæ, simplices, long. 0.011—0.018, crass. 0.005—0.009 mm. Gonidia globosa et subglobosa, membrana incrassata, tantum simplicia visa, forsitan pleurococcoidea.

### 99. *L. subfuscens* Vain.

Adj. Lich. Lapp. II (1883) p. 100.

Thallus obsoletus aut tenuissimus, sat laevigatus aut leviter verruculoso-inaequalis, albidus, sorediis destitutus, hypothallo indistincto. Apothecia minuta, lat. 0.3—0.4 mm, tenuia, basi parum leviter constricta, disco plano, nigro aut raro subfuscante, nudo, sat opaco aut leviter nitido, margine tenui, concolore aut fuscante, nitido aut opaco, saepe demum excluso. Hypothecium albidum pallidumve, tenue, hyphis irregulariter contextis, strato thallino gonidia continente impositum. Peritheciū laterale in parte inferiore strato myelohyphico gonidiis destituto instructum. Epitheciū intense aeruginoso-nigricans aut subolivaceum, KOH immutatum. Paraphyses arcte cohaerentes, non gelatinosae, apice capitatae clavatae. Sporae 8:næ, ellipsoideæ aut partim globosæ, long. 0.007—0.009 (—0.005), crass. 0.005 (0.003—0.006) mm.

*Distr.* LIN.: Ad corticem desiccatum Salicis in reg. pinifera ad Vesloniemi (Vain.). LTUL.: Petsamontunturit in Petsamo (Kujala).

Facie externa *Calillariae atropurpureae* similis et quasi forma in *Bialoras* regressa *Lecanorae obscurellae* (Sommerf.) HEDL. Apothecia crass. circ. 0.120 mm, margine integro, primum leviter prominente. Hypothecium hyphis conglutinatis, sat leptodermaticis. Peritheciun in margine extus olivaceum aut subaeruginosum, intus subpallidum, hyphis radiantibus, sat leptodermaticis, conglutinatis, cavitate tenui, gonidiis destitutum. Hymenium circ. 0.045 mm crassum, »jodo caeruleens» (Vain. l. c.). Paraphyses simplices, tenues, apice 0.003—0.004 mm crasso. Sporae distichae. Gonidia cystococcoidea, globosa, diam. 0.010—0.016 mm, membrana sat tenui.

100. **L. subhumida** Vain.

Adj. Lich. Lapp. II (1883) p. 50.

Thallus tenuis aut sat tenuis aut modice incrassatus, verruculosus aut verruculoso-inaequalis, dispersus, fuscus aut fusco-nigricans aut passim parcius olivaceo-pallescens, sorediis destitutus, hypothallo indistincto. Apothecia simplicia, minuta et lat. 0.3—0.6 mm, demum vulgo tuberculoso-divisa et lat. usque ad 1.2 mm, primum depresso-convexa, demum elevata et subglobosa, basi primum late adnata, demum constricta, fusca aut fusco-nigricantia aut raro rufescens, nuda, nitida, immarginata. Hypothecium pallidum aut decoloratum, basi hyphis partim irregulariter contextis, ceterum erectis. Epithecium rufescens fuscescensve. Paraphyses arcte cohaerentes. Sporae 8:næ, ellipsoideæ aut subglobosæ et long. 0.005—0.009 et crass. 0.002—0.005 mm, aut p. p. globosæ et diam. 0.003—0.005 mm.

*Distr.* LIN.: Ad lignum durum et intus resinosum *Pini sylvestris* in reg. pinifera prope Paatsjoki una cum *Lecidea melancheima*.

Facie externa et textura apotheciorum vix differt a *L. Tornoënsi*, sed sporis omnino dissimilibus et gonidiis ad aliam speciem pertinentibus et thallo vulgo obscuriore, sporæ autem non satis abundanter evolutæ. Apothecia dispersa aut partim sat crebra, KOH non reagentia. Hypothecium hyphis conglutinatis, sat tenuibus, leviter pachydermaticis, cavitatibus angustis, saepe oblongis, jodo caeruleens, in parte infima dilutissime carulescens aut lutescens. Peritheciun in parte inferiore laterali apothecii evolutum, circ. 0.030—0.040

mm crassum, jodo non reagens aut dilutissime caerulescens, hypothecio subsimile. Hymenium jodo caerulescens. Paraphyses ramoso-connexae, membrana gelatinosa, leviter incrassata, KOH turgescente, apice capitato obscuratoque, non gelatinoso, 0.003—0.006 mm crasso. Epithecum strato gelatinoso decolore non obductum. Sporae membrana sat tenui, distichae, decolores, simplices. Gonidia pleurococcoidea, glomerulosa, subglobosa, membrana incrassata.

### 101. *L. lignaria* (Koerb.) Nyl.

Flora 1881 p. 184, 455; Vain. Lich. Caucas. (1899) p. 322; Hue Addend. II (1888) p. 142 et in Lamy Suppl. Cat. Lich. Mont-Dore (1882) p. 15, Exp. Lich. Cauter. (1884) p. 70. *Biatora glomerata* b. *lignaria* Koerb. Syst. Lich. Germ. (1855) p. 204 (sec. Arn.), Par. Lich. 2 Lief. (1860) p. 154. *B. lignaria* Arn. Lich. Tirol XI (1873) p. 34 (518), nec *Lecidea lignaria* Ach. (ad *Bilimbiam* pertinens, conf. Vain. Lich. Fenn. II p. 247), nec Hepp (Flecht. Eur. n. 20, conf. Vain. I. c. p. 255). *B. Cadubriae* var. *sympicarpoidea* Müll. Arg. Flora 1870 p. 163 (sec. Arn. et specim. in herb. Nyl.). *B. betulincola* Kullh. Lich. Rar. Must. (1871) p. 275. *L. sapinea* Nyl. in Lamy Cat. Lich. Mont-Dore (1880) p. 102 (sec. n. 21408 in herb. Nyl.). *L. plusiospora* Th. Fr. (et Hulting) Lich. Scand. II (1874) p. 473 (sec. Nyl. Flora 1881 p. 184); Hedl. Krit. Bem. Lee. Micar. (1892) p. 62.

Thallus tenuis aut sat tenuis, verrucoso- et verriculosoinaequalis, verrucis vulgo depresso-convexis, albido-glaucescens vel impure albidus, sorediis destitutus, hypothallo indistincto. Apothecia vulgo sat crebra, sat parva aut partim fere medioeria, tota adnata, disco depresso-convexo aut bene convexo, livido-fuscescente aut rufescente aut nigricante, haud pruinoso, subnitido, margine sat tenui, concolore pallidiore, saepe demum aut fere mox excluso. Hypothecium superne fuscescenti-lividum vel sordide pallidum, inferne (aut totum sec. Th. Fr., Arn. et Hedl.) decoloratum. Hymenium haud granulosum, parte inferiore late angusteve fuscescenti-lividum vel pallidum (aut »fuscidulo-sordidum aut incoloratum» sec. Hedl., aut »epithecio leviter fuscescente» sec. Arn.), epithecio vulgo decolorato. Paraphyses arcte cohaerentes. Sporae 12:nae (»—16:nae» sec. Th. Fr., »—32:nae» sec. Hedl.), ellipsoideae aut oblongae, »long. 0.006—0.009 (—0.012), crass. 0.003—0.004 mm» (sec. Hedl.).

*Distr.* »Ad corticem Abietis, Juniperi, Betulae, Alni et ad lignum nudum sec. Hedl. crescit. Ad corticem Betulae in Mustiala (*B. betulicola* Kullh. l. c.) et ad corticem *Pruni padi* in Enonsaari in Hollola (J. P. Norrlin, n. 21403 in herb. Nyl.) collecta.

A formis apotheciis subfuscescensibus instructis *L. atroviridis* facie externa distingui non potest, quare facile praetervisa est. Apothecia lat. 0.25—0.7 mm, gonidiis destituta. Hypothecium nec jodo, nec  $\text{HNO}_3$  reagens, hyphis irregulariter contextis, pachydermaticis (in parte summa minus pachydermaticis), ramoso-connexis, cavitatibus saepe oblongis, 0.001—0.002 mm latis. Perithecium saepe circ. 0.000—0.050 mm crassum (haud distincte limitatum), subdecoloratum aut in margine saepe intus livido-fuscens, jodo non reagens (aut in f. *endamylea* Hedl. jodo »intense caerulescente vel violaceo-caerulescente» sec. Hedl.), hyphis radiantibus, sat pachydermaticis, simplicibus (aut in margine etiam ramoso-connexis), cavitatibus vulgo oblongis, vix 0.001 mm latis aut in eodem apothecio partim etiam latoebris. Hymenium circ. 0.050—0.070 mm crassum, jodo caeruleo-sens deindeque obscure vinose rubens. Paraphyses simplices, membrana leviter gelatinoso-incrassata, cavitatibus vulgo angustissimis, apicalibus saepe claviformi-dilatatis, septatae. Asci clavati. Sporae distichae aut tristichae, simplices (sed saepe ob nucleus medium saepe »spurie 1-septatae» apparent).

*Obs.* Specimina Fennica ad f. *betulicola* (Hedl.) Vain. (*L. plusiospora* f. *betulicola* Hedl. l. c. p. 63), »apotheciis spadiceis — nigricantibus, margine concolore vel saepissime pallidiore demum convexis vel semiglobosis, excipulo non vel obsolete caerulescente» dignotam pertinent. — F. *Hultingii* (Hedl.) Vain. (*L. plusiospora* f. *Hultingii* Hedl. l. c.), apotheciis nigricantibus, subpersistenter planiusculis, margine elevato, concolore, nitidulo, excipulo jodo haud caerulescente descripta, a nobis non est visa. — F. *endamylea* (Hedl.) Vain. (*L. plusiospora* f. *endamylea* Hedl. l. c.), »apotheciis pallide vel obscure spadiceis mox vel jam primitus convexis, margine pallidiore, demisso, excipulo toto jodo intense caerulescente vel violaceo-caerulescente» describitur.

## 102. *L. globularis* (Ach.) Nyl.

in Lamy Cat. Lich. Mont-Dore (1880) p. 99. *L. resinae* \**L. globularis* Nyl. Lich. Scand. (1861) p. 213. *Arthonia lurida* var. *globularis* Ach. in herb. suo. *Lecidea anomala* f. *misella* Nyl. Lich. Scand. (1861) p. 202. *L. misella* Nyl. Lich. Lapp. Or. (1866) p. 177. *L. denigrata* \**L. misella* Nyl. Lich. Paris (1896) p. 81. *L. asserculorum* Ach. Lich. Univ. (1810) p. 170 et Syn. Lich. (1814) p. 26 p. p. (deser. haud congruens, conf. Hedl. Krit. Bem. Lec. Micar. p. 89 et Th. Fr.);

Th. Fr. Lich. Scand. II (1874) p. 473. *Biatora* Arn. Lich. Tirol XIV (1875) p. 483; Lich. Münch. (1891) p. 72. *Lecidea melanochroza* Leight. Lich. Great Brit. 2 ed. (1872) p. 267 (sec. 3 ed. p. 265).

*Exs.* Cromb. Lich. Brit. Exs. II n. 174. — Zwackh Lich. Exs. (1889) n. 1085 (in herb. meo). — Elenk. Lich. Ross. IV (1904) n. 189. — Zahlbr. Krypt. Vindob. XVI (1907) n. 1532. — Claud. et Harm. Lich. Gall. Exs. IX (1908) n. 445. — Norrl. et Nyl. Herb. Lich. Fenn. cont. (1921) n. 744, 745. (P. p.).

Thallus tenuissimus, verruculosoinaequalis aut vulgo evanescens, hypothallo indistincto. Apothecia crebra, minutissima minutave, basi leviter aut parum constricta, convexa, nigra aut nigricantia, nuda, immarginata. Hypothecium sordide pallidum aut pallescens, aut rarius decoloratum, jodo reagens. Epithecium haud granulosum, fuscescens vel fusconigrum aut lividum aut partim subdecoloratum, KOH violascens. Paraphyses arcte cohaerentes, tenuissimae, parce ramoso-connexae vel subsimplices, gelatinam in KOH turgescentem percurrentes, apice haud incrassatae. Sporae oblongae ellipsoideaeve aut subovoideae, long. 0.007—0.012, crass. 0.002—0.003 (—0.0015) mm.

*Distr.* Ad lignum putridum truncorum pineorum praesertimque arborum frondosarum in silvis et raro ad saepimenta lignea in pratis crescit, sat rare aut passim in parte meridionali Fenniae obvia et usque ad OKaj. proveniens. Ab. Pyhänsuu in Pargas (K. Linkola, 107). N.: Kotikallio Hoglandiae (Edwin Nylander, 18914 in herb. Nyl., Brenner Bidr. Hogl. Lafv. p. 85), Mjölo et Helsingforsia (W. Nyl., Lich. Scand. p. 202, Lich. Lapp. Or. p. 177, Norrl. H. L. F. cont. n. 745), Tölö (Vain.), Kerava in Tuusula (Vain.). Ka.: Ad Sorvarinsalmi, Hietala et Huusniemi Viburgi (Vain. Lich. Vib. 62). Ik.: Perkjärvi (Kihlman). Ta.: Mustiala (A. Kullhem), ad Särkkä (Norrl. H. L. F. cont. 744) et alibi (Vain.) in Hollola, Prusila, Osola in Padasjoki (Vain.), Rutalahti in Korpilahti (Vain. Fl. Tav. Or. p. 112). Tb.: Haukkavuori in Korpilahti, Norola, Kanavuori et ad Tourujoki in par. Jyväskylä (Vain. l. c.). Sb.: Vanuvuori in Kuopio (Linkola). Kb.: Jännevaara in Lieksa (Vain. Adj. Lich. Lapp. II p. 49). OKaj.: Kylmälä in Kuhmo (Vain. l. c.).

Apothecia lat. 0.1—0.25 mm, gonidia haud continentia. Hypothecium haud granulosum, pallidum aut decoloratum, KOH non reagens, jodo persistenter caerulescens aut demum subvinose fulvescens, hyphis tenuibus, sat leptodermaticis, conglutinatis, erectis aut leviter irregulariter suberectis, cavitatibus circ. 0.0015 mm latis, brevibus aut

globosis, membranis in KOH leviter turgescentibus. Perithecium evanescens. Hymenium 0.030—0.040 (—0.060) mm crassum, parte superiore aut striatim fuscescens aut livido-violascens aut raro sublivaceum, jodo persistenter caerulescens aut demum obscure vinose rubens aut ascis solis demum violascentibus. Conidangia haud rara, apotheciis immixta, prominentia, lat. circ. 0.045 mm, nigricantia, sub micr. parte superiore fuscescentia (basi decolorata), KOH leviter violascentia. Sterigmata parum conspicua. Conidia recta, ceterum variabilia, vulgo oblonga, long. 0.0035—0.004, crass. 0.0015—0.001 mm, in Norrl. et Nyl. H. L. F. cont. n. 744 bacilliformia, long. 0.004—0.005, crass. 0.0005 mm, in f. *olivascente* ovoidea ellipsoideave, long. 0.003, crass. 0.0015 mm. Gonidia globosa subglobosave aut subellipsoidea, diam. 0.004—0.008 mm, simplicia aut glomerulosa, membra sat tenui, potius pleurococcoidea, quam micareoidea.

*F. olivascens* Vain.

Hymenium superius striis olivaceo-nigricantibus (KOH pulchre violascentibus), haud granulosum, ceterum hymenium et hypothecium sordide pallida, jodo persistenter caerulescentia.

*Distr.* Ad lignum trunci prope Sorvarinsalmi Viburgi (Vain.).

*F. misella* (Nyl.) Vain. *Lecidea anomala* f. *misella* Nyl. Lich. Scand. (1861) p. 202 p. p. (specim. ex Helsingforsia sec. Nyl. in Lich. Lapp. Or. p. 177). *L. misella* Nyl. Lich. Lapp. Or. (1866) p. 177. *Micarea misella* Hedl. Krit. Bem. Lec. Micar. (1892) p. 78, 88. *Biatora misella* Falk Blek. p. 15. *Lecidea melanochroza* Leight. Lich. Great Brit. 2 ed. (1872) p. 267 (sec. 3 ed. p. 265).

*Exs.* Zwackh Lich. Exs. (1889) n. 1085 p. p. (partim in f. *deviellam* transiens).

Hymenium et hypothecium jodo caerulescentia deindeque vinose rubentia.

*Distr.* Speciminibus, ab auctoribus pluribus nomine *L. misellae* indicatis, ad f. *deviellam* Vain. pertinent.

*Obs. 1.* *Micarea globularis* et *M. misella* Hedl. reactione hymenii solutione jodetica producta in Hedl. Krit. Bem. Lec. Micar. (1892) p. 78, 88 distinguuntur. In *L. globulari* (Ach.) autem haec nota est valde vacillans, etiam multum gradu concentrationis solutionis jodeticae dependens. In ambabus formis hymenium solutione minus concentrata persistenter caerulescit, sed in aliis speciminibus nequidem solutione concentrata vinose rubet. In specimine orig. \**L. globularis* Nyl., »gelatina hymenea jodo caerulescente» descriptae (Nyl. Lich. Scand. p. 214), hymenium duorum apotheciorum a me examinatorum jodo obscure vinose rubens vidi, sicut res se habet sec. Nyl. (Lich. Lapp. Or. p. 177) in specimine ad Helsingforsiam collecto *L. misellae* Nyl. Ad hanc f. *misellam* (Nyl.) Vain. etiam Zwackh Lich. Exs. et specimina supra citata locis sequentibus collecta pertinent:

Pargas, Kerava, Teurois prope Mustiala, Haukkavuori in Korpilahti, Kanavuori in Jyväskylä, Kuopio, Kuhmo. Conidia, duobus locis examinata, long. 0.003—0.004, crass. vix 0.001—0.0015 mm. — *F. deviella* Vain. (*Micarea globularis* Hedl. l. c.), hymenio et hypothecio jodo persistenter caerulescente (aut ascis demum violascentibus) dignota, locis numerosis collecta est, velut ad Helsingforsiam (Norrl., II. L. F. cont. n. 745, conidia supra indicata), Mustiala, Särkkä in Hollola (Norrl. l. c. n. 744), Prusila in Padasjoki, Tourujoki (conidiis 3—4 × 1  $\mu$ ) et Norola (conidiis 3.5—4 × 0.7  $\mu$ ) in Jyväskylä.

*Obs.* 2. Vain. Lich. Bras. Exs. n. 1420 et 1450, hypothecio virecente, KOH reagente, a f. *olivascente* differentes, ad *L. Brasilianam* Vain. pertinent.

### 103. *L. phaeotera* Nyl.

Flora 1865 p. 5, Lich. Lapp. Or. (1866) p. 143; Th. Fr. Lich. Scand. II (1874) p. 476; Hue Addend. II (1888) p. 137 (n. 893).

Thallus sat tenuis, verruculoso-inaequalis, impure albidus, hypothallo indistincto. Apothecia parva, perithecio cupuliformi-subturbanato, basi bene constricta, disco plano aut concaviusculo, fusco- aut subtestaceo-rufescente, nudo, laevigato, margine pallidiore, tenui, saepe prominente. Hypothecium subhymeniale pallidum (aut »icolor» sec. Nyl.), irregulariter contextum. Paraphyses laxe cohaerentes, haud gelatinosae, apice incrassatae. Sporae 8:nae, ellipsoideae, »long. 0.007—0.014, crass. 0.005—0.006 mm, rectae.

*Distr.* Supra muscos ad oram Maris Glacialis prope Kletni in LMur. (N. I. Fellman), parce collecta.

Affinis sit *L. vicariae* Th. Fr. Apothecia lat. 0.3—0.5 mm (—0.7 mm) sec. Nyl.), haud flexuosa, margine testaceo, gonidia non continentia, KOH non reagentia. Hypothecium subhymeniale chondroideum, hyphis pachydermaticis, conglutinatis, cavitatibus angustissimis, brevibus, strato gonidioso, aërem inter hyphas continentis impositum. Hymenium 0.050 mm crassum, »jodo caerulescens, dein violaceum» (sec. Nyl.).

### Sect. *Lecidea Tornoënsis*.

Apothecia parva, obscurata, sporae majusculae vel magnae, duplicitate limbatae.

104. **L. Tornoënsis** Nyl.

Herb. Mus. Fenn. (1859) p. 110, Lich. Scand. (1861) p. 195, Lich. Lapp. Or. (1866) p. 142, En. Lich. Fret. Behr. (1888) p. 21, 45, 54, 66, 68, Lich. Jap. (1890) p. 61; Th. Fr. Lich. Scand. II (1874) p. 464, On Lich. Engl. Pol. Exp. (1879) p. 360; Vain. Lich. Caucas. (1899) p. 322, Lich. Exp. Vegae Pitlekai (1909) p. 125. *Biatora* Th. Fr. Lich. Arct. (1860) p. 196, Lich. Spitzb. (1867) p. 37; Arn. Lich. Tirol XI (1873) p. 514, XIV (1875) p. 491; Tuck. Syn. North Am. Lich. II (1888) p. 26. *B. oospora* Th. Fr. Lich. Arct. (1860) p. 126. *B. Nowajae* Koerb. Lich. Spitzb. Now. Semlj. Wilez. Exp. (1875) p. 523 (sec. descr.). *Lecidea frigidella* Nyl. Flora 1868 p. 473 (conf. infra).

Exs. Fellm. Lich. Arct. (1864) n. 148 (Mus. Fenn.), — Arn. Lich. Exs. (1872) n. 500. — Hav. Lich. Norv. Exs. (1903) n. 174 (in hb. meo).

Thallus evanescens aut tenuissimus aut raro sat tenuis, verruculo-so-inaequalis verriculosusve, subdispersus, olivaceus aut fuscescenti-pallidum aut cinerascens vel albido-glaucescens, sorediis destitutus, interdum hypothallo obscure cinerascente limitatus. Apothecia minuta, lat. 0.3—0.5 mm, raro mediocria, — 1 mm, elevata et demum subglobosa, basi constricta, fusca aut fusco-rufescens aut nigricantia, nuda, vulgo nitida, immarginata. Hypothecium dilute rubricosum aut fulvescens aut decoloratum, basi hyphis partim irregulariter contextis, ceterum erectis. Epithecium rufescens aut fusco-rufescens, superne decoloratum gelatinosumque. Paraphyses arcte cohaerentes. Sporae 8:næ, ellipsoideæ aut raro subglobosæ, membrana incrassata, long. 0.015—0.023 (—0.011), crass. 0.008—0.013 mm.

Distr. Ad corticem Betulae, Abietis, Juniperi, Sorbi et lignum nudum et muscos destructos, praesertim in regionibus borealibus proveniens. LIN.: Ailigadsch in Utsjoki (F. Silén), in reg. subalp. montis Hammastunturi (Vain. Adj. Lich. Lapp. II p. 46). LENONT.: in summo monte Pahtavaara (Norrl. Ber. Torn. Lappm. p. 334). LTUL.: Kola (»frequens« sec. Nyl. Lich. Lapp. Or. p. 142). (Fellm. L. A. n. 148). LMUR.: Varsina (Fellm.). LPON.: Ponoi (Fellm.). LVAR.: Olenitsa (P. A. Karsten). LKEM.: Muonio (Norrl.), ad Laimiojoki in Kittilä (G. Lång), pag. Sodankylä et Pyhä-tunturi in par. Sodankylä (Vain. I. c.). OB.: Tengli (E. Nylander), Turtola (Norrl.). KUUS.: Ad Oulankajoki et in reg. subalp. montis Iivaara (Vain. I. c.). OKAJ.: Tauriainen in Kianta, Ohtosenvaara, Lenttiira, Kylmälä in

Kuhmo (Vain. l. c.). Kb.: Koriseva in Lieksa (Vain. l. c.). KOn.: Suojärvi (Norrl. Fl. Kar. On. II p. 27). Ta.: Ad Säkijärvi (Kullh. l. c. p. 275).

Apothecia simplicia aut demum tuberculato-confluentia, KOH non reagentia. Hypothecium hyphis sat tenuibus (circ. 0.003 mm crassis), leviter pachydermaticis, cavitatibus angustis, saepe oblongis. Peritheciun ceterum parum evolutum, extus rufescens, intus pallidum, hyphis radiantibus, leviter pachydermaticis, conglutinatis, cavitatibus angustis, vulgo oblongis. Hymenium jodo caerulescens, ascis demum violascentibus. Paraphyses ramoso-connexae, membrana gelatinosa, leviter incrassata, KOH leviter turgescente, apice fuscescenti-clavato. Ascii late clavati, long. 0.046—0.060, crass. circ. 0.024 mm, in apice membrana incrassata. Sporae distichae, simplices, saepe stratis duobus aequalibus distinctis. Gonidia cystococcoidea, globosa.

*Obs.* *L. frigidella* Nyl., Fl. 1868 p. 473 (Hue Addend. II, 1888, p. 133), sec. specim. orig., in jugo alpino prope Kilpisjärvi in Lapponia Norvegica a Norrl. collectum, nulla nota differt a *L. Tornoënsi*, etiam textura apotheciorum ei congruens. Hypothecium electrinofulvescens aut partim superne pulchre rubricosum, »gel. hym. jodo caerulescens, dein thecae vinose rubescentes, sporae long. 0.018—0.023, crass. 0.011—0.012 mm», pachydermaticae. Ad *Alectoriæ* vetustam crescit sec. Norrl. Ber. Torn. Lappm. (1873) p. 334.

#### Sect. *Lecidea elabens*.

Thallus pallidus, hypothecium pallidum, paraphyses concretae. Hyphae medullares non amyloideae.

#### 105. *L. Kolaënsis* Nyl.

Flora 1863 p. 306 p. p. (excl. specim. saxicolae, conf. sub *L. conferranda*, et f. *dolosula*), Lich. Lapp. Or. (1866) p. 146 p. p.; Th. Fr. Lich. Scand. II (1874) p. 553 p. p. (excl. »f. *dolosula*, Nyl.»); Zahlbr. Cat. Lich. Un. III (1925) p. 604 p. p. (excl. f. *dolosula*).

*Exs.* Fellm. Lich. Arct. (1864) n. 181 (hb. Nyl. et Mus. Fenn.).

Thallus modice incrassatus aut tenuis, verruculosus aut subareolatus, areolis parvis, verruculoso-inaequalibus aut laevigatis, subcontiguis, albidos, KOH lutescens, sorediis destitutus, hypothallo indistincto (aut albo). Apothecia parva, lat. 0.4—0.6 mm, crebra, parce contigua confluentiae, tota adnata, basi non constricta, disco nigro, nudo, opaco,

depresso-convexo, margine inconspicuo excluso. Hypothecium pallidum aut decoloratum, hyphis erectis, in parte infima irregulariter contextis. Hymenium parte superiore impure caerulescens, inferne decoloratum. Paraphyses arcte cohaerentes, gelatinosae. Sporae 8:nae, oblongae, »long. 0.011—0.021, crass. 0.004—0.0045 mm».

*Distr.* LTul.: In ligno ad arcem Kolaëensem (N. I. Fellman l. c.).

Proxima est *L. melancheimae* Tuck., sed apotheciis opacis et numquam marginatis facie externa ab ea differens. Thallus leviter nitidus aut subopacus, »CaCl<sub>2</sub>O<sub>2</sub> non reagens» (sec. adn. Nyl.), jodo non reagens. Hypothecium jodo superne caerulescens, hyphis conglutinatis, membranis modice incrassatis, cavitatibus sat brevibus, circ. 0.002 mm latis, inferne jodo non reagens. Perithecium passim circ. 0.030 mm crassum, decoloratum, jodo parum reagens, hyphis radiantibus, tenuibus, conglutinatis, cavitatibus subellipsoideis, circ. 0.0015 mm latis. Hymenium 0.060 mm crassum, jodo persistenter caerulescens (»dein vinose rubescens» sec. Nyl., quod affirmare non potui). Paraphyses modice gelatinosae, tubulo circ. 0.001 mm lato, in apice non dilatato, clava obscurata nulla. Asei clavati, in apice membrana modice incrassata. Sporae distichae. Conidangia »nigricantia», conidia »filiformia, arcuata, long. 0.015, crass. 0.0005 mm» (sec. adn. Nyl.). Gonidia cystococcaceae.

*Obs.* Planta saxicola ad Sinum Kolaëensem collecta (Fellm.) non differt a planta a Nyl. nominata »*L. lapicida* f. *minor*» (Nyl. Lich. Lapp. Or. p. 160). »*L. Kolaënsis* ecrustacea Nyl.», ad Kildin collecta, saxicola (Lich. Lapp. Or. p. 160), teste Nyl. ipso (in litt. ad Norrl. 1872) est *L. conferenda*.

### 106. *L. dolosula* (Nyl.) Vain.

*Lecidea Kolaënsis* f. *dolosula* Nyl. Fl. 1863 p. 306; Th. Fr. Lich. Scand. II (1874) p. 553; Zahlbr. Cat. Lich. Un. III (1925) p. 604.

Thallus sat tenuis, verruculosoinaequalis, sat dispersus, albus, KOH lutescens, sorediis destitutus, hypothallo cinereo-nigricante, tenuissimo, inter plagas thalli conspicuo. Apothecia parva, lat. 0.35—0.15 mm, crebra aut sat crebra, tota adnata, basi non constricta, disco nigro, nudo, opaco, depresso-convexo, margine inconspicuo excluso aut primum distincto tenuissimoque, nigro, integro. Hypothecium superne decoloratum et dilute lutescens, inferne fulvescens et fulvo-rubescens, irregulariter contextum. Hymenium parte supe-

riore nigricans aut in cyanescenti-nigricantem vergens, inferne decoloratum. Paraphyses arcte cohaerentes, gelatinosae. Sporae 8:næ, oblongæ, long. 0.009—0.012, crass. 0.003—0.004 mm aut sec. Nyl. »long. 0.014—0.018, crass. 0.003—0.004 mm.»

*Distr.* LTul.: In ligno subputrido ad Sinum Kolaënum (N. I. Fellman, specim. in Mus. Fenn.).

Forsan est variatio *L. Kola sis*, sed hypothecio valde dissimili. Thallus subopacus, jodo non reagens. Hypothecium circ. 0.180 mm crassum, jodo caerulescens, KOH non reagens, in hypothecio subhymeniali anguste hyphis suberectis. Peritheciū circ. 0.050 mm crassum, decoloratum et infra apothecium fulvo-rubescens, jodo non reagens, hyphis radiantibus, pachydermaticis, cavitatibus saepe subellipsoideis aut oblongis, 0.001—0.0015 mm latis. Hymenium circ. 0.065—0.080 mm crassum, jodo intense persistenter caerulescens »deinde obscure vinose rubens vel violacee tincta» sec. Nyl.). Paraphyses simplices, tubulo 0.001—0.0015 mm lato, in apice non dilatato, clava obscurata nulla. Epithecium KOH non reagens. Asci clavati, in apice membrana modice aut sat bene incrassata. Sporae distichae, simplices. Gonidia cystococcaceae.

### 107. *L. elabens* Fr.

Vet. Ak. Handl. 1822 p. 256, Lich. Eur. (1831) p. 344; Th. Fr. Lich. Arct. (1860) p. 217, Lich. Scand. II (1874) p. 554; Tuck. Fl. (1875) p. 63. *Lecidella elabens* Koerb. Par. Lich. 3 Lief. (1861) p. 215; Arn. Lich. Tirol XIV (1875) p. 468. *Lecidea melancheima* Tuck. Syn. Lich. New Engl. (1848) p. 68 (sec. orig. in hb. Nyl.), Syn. North Am. Lich. II (1888) p. 81; Nyl. Lich. Lapp. Or. (1866) p. 164; Zahlbr. Cat. Lich. Un. III (1925) p. 636. *L. sabuletorum* var. *microspora* Mass. Ric. Lich. (1852) p. 66. *Lecidella eluta* Koerb. Syst. Lich. Germ. (1855) p. 246; Rabenh. Flecht. Eur. VII (1857) n. 196. *Lecidea euphoroides* Nyl. Lich. Scand. (1861) p. 244 (hb. Nyl.).

*Exs.* Fr. Lich. Suec. Exs. VI (1825) n. 154 (hb. Nyl.). — Schaer. Lich. Helv. Exs. XIX (1843) n. 472 (sec. Arn.). — Hepp Syst. Samml. XVI (1852) n. 205 (Lynge). — Tuck. Lich. Am. Sept. VI (1854) n. 138 (hb. Nyl.). — Rabenh. Lich. Eur. Exs. VII (1857) n. 196 (Mus. Fenn.). — Arn. Lich. Exs. (1862) n. 202, (1874) n. 202 b (hb. Nyl.). — Koerb. Lich. Sel. Germ. XIV (1873) n. 405 (Arn.). — Anzi Lich. Langob. Exs. XIV (1873) n. 552 (Arn.). — Havaas Lich. Norv. Exs. (1906) n. 313 (Mus. Fenn.). — Malme Lich. Suec. Exs. VIII (1910) n. 190 (Mus. Fenn.).

Thallus sat tenuis aut modice incrassatus, verrucosus et verriculosus, verrucis contiguis aut rarius dispersis aut parce confluentibus, convexis aut depresso-convexis, albido aut albido-glaucescentibus aut rarius pallidis, sorediis destitutus, hypothallo indistincto. Apothecia crebra aut sat crebra, lat. 0.3—0.8 mm, adnata, basi non aut parum constricta, primum plana, demum convexa aut depresso-convexa, margine tenui, integro, non prominente vel depresso, demum excluso, atra, nuda, nitida. Hypothecium pallidum, hyphis erectis. Paraphyses arcte cohaerentes, gelatinosae. Sporae oblongae ellipsoideaevae, long. 0.006—0.010 (»—0.012» sec. Th. Fr.), crass. 0.003—0.004 mm.

*Diskr.* Ad ligna pinea crescit. Al.: In pariete tabernae scaphariae ad Pantsarnäs in Geta (K. Linkola). N.: Jollas in Degerö (E. Nylander). St.: Nuoliala in Birkkala (R. Frey). Ta.: Ad Mustiala et alibi in Tammela (A. Kullhem), Hersala in Hollola (J. P. Norrlin), Asikkala (»parce et sat raro» sec. Norrl. Bidr. Sydöstr. Tav. Fl. p. 192), Evo (Vain.), in pariete ligneo domi in Piililä et in trunco erecto Pini desiccati in Haukkavuori in Korpilahti (Vain. Fl. Tav. Or. p. 118). Sa.: Loco non indicato (ad Ristiina?) ab E. Nylandro collecta. Klad.: Puutsalo in Sortavala (Norrl. Symb. Fl. Lad.-Kar. p. 31). Kon.: Dianovagora et Tiudie (A. Kullhem, Norrl. Fl. Kar. Oneg. II p. 35). Tb.: In saepimento ligneo ad Norola in Jyväskylä (Vain. I. c., n. 13035 in hb. Nyl.), »abundanter in radice Pini ad Pihlajaselkä in Pihlajavesi (Norrl. Not. Sällsk. F. Fl. Fenn. XIII p. 435, hb. Vain.). Sb.: Ad Kuopio (G. Lång Lich. Sav. Bor. p. p. 35). Suovu in Kuopio (Linkola). Kb.: Matovaara in Lieksa, Mujejärvi in Nurmes (Vain. Adj. Lich. Lapp. II p. 101). Lieksa (Lång). Om.: In pariete ligneo horrei ad Neulaniemi in Lappajärvi (A. L. Backman Fl. Lap-paj. p. 132, determ. G. Lång). Alajärvi (Backman). OKaj.: In ramo arboris delapsae in littore ad Hiidenvaara et in Lenttiira in Kuhmo, in trunco erecto Pini desiccati in turfoso ad Hossa in Kianta (Vain. I. c.). KPom. Occ.: Vuosiniemi (Vain. I. c.). Ob.: In turfoso ad Martimo et in Leipäröinen in Simo (V. Räsänen Flecht. Ostrob. Bor. p. 336). Kuus.: In reg. abiet. montis Närränkävaara (Vain. I. c.). KKer.: In reg. abiet. montis Kivakka (Vain. I. c.). LIn.: Kaamas et Muddusniemi (F. Silén), Inari (R. Hult). LTul.: Tuloma (N. I. Fellman, »*L. melancheima*« Nyl. Lich. Lapp. Or. p. 164).

Thallus leviter nitidus aut opacus, jodo non reagens, KOH leviter sublutescens, »CaCl<sub>2</sub>O<sub>2</sub> non reagens« (Th. Fr.), verrucis 0.2—0.5 (0.0015—0.008) mm latis. Hypothecium pallidum aut decoloratum, impellu-

cidum, grumosum, guttulosum, jodo caerulescens, dein vinose rubens. Peritheciun extus purpureo-nigricans (KOH distinctius purpureum), intus dilutescens aut subdecoloratum, hyphis radiantibus, tenuibus, gelatinosis, cavitatibus oblongis, circ. 0.001 mm latis, leviter ramoso-connexis (in KOH visum). Hymenium circ. 0.000 mm crassum, jodo caerulescens, dein vinose rubens. Epitheciun purpureo-fuligineum, KOH distinctius purpureum. Paraphyses gelatinosae, cavitate circ. 0.0005 mm lata, apice gelatinoso-incrassatae, clava purpurea, 0.004—0.006 mm crassa. Ascii clavati, in apice membrana modice aut sat bene incrassata. Sporae 8:næ, distichæ, simplices. Conidia »filiformia, arcuata, long. 0.011—0.015, crass. 0.0006—0.0007 mm» (sec. adn. Nyl. in n. 13035). Gonidia cystococcaceæ.

*Obs.* *L. elabens* Fr., sec. specim. orig. a Th. Fr. visum, etsi disco saepe elabente apotheciisque dein plus minus corrugatis instructa, ad *L. melancheimam* Tuck, pertinet, quare hoc nomen antiquissimum retinendum est. — *Lecidea elabens* Schaer. Lich. Helv. Exs. X (1833) n. 232 (Lich. Helv. Spic. sect. 4, 1833, p. 199, En. Lich. Eur., 1850, p. 131) sec. Arn. Lich. Münch. (1891) p. 99 ad *Arthothelium Flotowianum* Koerb. (Hepp Flecht. Eur. n. 230) pertinet.

#### 108. *L. infralapponica* Vain.

Oliv. in Bull. Géogr. Bot. XXV (1915) p. 100, 168; Zahlbr. Cat. Lich. Un. III (1925) p. 599. *L. antiloga* Stirt. \**L. infralapponica* Vain. Adj. Lich. Lapp. II (1883) p. 100.

Thallus evanescens. Apothecia crebra, parva, lat. 0.2—0.4 mm, atra, nuda, basi parum aut leviter constricta, disco opaco, margine tenui, leviter nitido aut opaco, persistenter plana marginataque aut rarissime demum leviter convexa immarginataque. Hypothecium pallidum aut decoloratum, irregulariter contextum. Epitheciun cyanescens aut aeruginosum aut partim nigricans, KOH non reagens. Paraphyses arete aut sat arcte cohaerentes, leviter gelatinosae, apice clavatae. Sporæ 8:næ, simplices, globosæ, diam. 0.004—0.005 mm.

*Distr.* OKaj.: Ad pontem ligneum prope Säynäjä in Kuhmo (Vain. I. c.).

*Lecanoram obscurellam* (Sommerf.) Hedl. et *Lecideam* (*Biatoram*) *subfuscescens* Vain. in memoriam revocans, sed jam facie externa apotheciis semper atris ab iis differens. Thallus indistinctus, hyphis et gonidiis cystococcaceis inter fibras substrati evolutis, hypothallo

indistincto. Apothecia substrato adnata, strato thallino gonidia continentia non imposita, gonidiis et strato myelohyplico (medullari) destituta, margine integro. Hypothecium hyphis tenuibus, conglutinatis. Peritheciun parte marginali sordide fusco-fuligineo, parte basali fuscescente aut toto pallescente, hyphis radiantibus, conglutinatis, modice pachydermaticis, cavitatibus oblongis, 0.001—0.0005 mm latis. Hymenium circ. 0.040—0.050 mm crassum, parte superiore sat late cyanescens aut aeruginosum aut partim nigricans, jodo intense persistenter caerulescens. Paraphyses sat crebre distincte septatae, crass. 0.002 mm, apice clavatae (saepe sensim incrassatae), clava 0.004—0.003 mm crassa, cyanescente aut subaeruginosa obscuratave. Asci clavati (saepe late clavati), in apice membrana modice incrassata. Sporae distichae.

*Obs.* In Vainio's manuscript the species were not always definitively arranged. *L. infralapponica* was placed between two species of the *xanthococca* section. It has the small spores of that section, but the editor has found it difficult to retain it there, on account of its uncoloured hypothecium.

The editor really does not know how to place this species in any of the sections of Th. M. Fries, and the same is the case with *Lecidea subfuscescens*. He might suggest the *Lecidea elabens* section. But it is difficult, if possible, to find a clear character of distinction between this section and the *Lecidea erythrophaea* section. This is one of many cases where the subgenera *Bialora* and *Eu-Lecidea* are quite confluent.

#### Sect. *Lecidea xanthococca*.

Thallus pallidus vel evanescens, hypothecium obscurum, hyphae medulares non amyloideae. Species lignicolae.

#### 109. *L. xanthococca* Sommerf.

Suppl. Fl. Lapp. (1826) p. 154; Fr. Lich. Eur. Ref. (1831) p. 345; Schaefer. En. Lich. Eur. (1850) p. 125; Th. Fr. Lich. Arct. (1860) p. 222; Lich. Scand. II (1874) p. 517 (p. p.); Nyl. Lich. Scand. (1861) p. 243; Vain. Adj. Lich. Lapp. II (1883) p. 103; Lamy Exp. Lich. Cauter. (1884) p. 93; Ilue Addend. II (1888) p. 233; Zahlbr. Cat. Lich. Un. III (1925) p. 726. *Lecidella* Koerb. Par. Lich. 3 Lief. (1861) p. 218. *Psora* Arn. apud Lojka in Math. Term. Közl. XII (1874) p. 106. *Lecidea praestabilis* Nyl. Fl. 1874 p. 13 (sec. Nyl. Fl. 1874 p. 318).

Thallus verruculosus aut verrucosus aut partim subsquamulosus, verruculis dispersis aut partim contiguis, pallidis

aut subalutaceis aut cinerascentibus vel impure albidis substramineisve, tenuis aut sat tenuis aut evanescens aut rarius modice incrassatus, sorediis destitutus, hypothallo indistincto. Apothecia crebra aut sat dispersa, lat. 0.5—0.7 (0.3—1.2) mm, sat tenuia, adnata, basi leviter constricta, disco plano aut demum depresso-convexo, atro, nudo, margine tenui, atro, nudo, persistente. Hypothecium parte inferiore aut totum fusco-nigrum, KOH solutionem purpureo-violaceam effundens, aut superne cinerascens, hyphis erectis. Epithecium fusco- aut violascenti- aut aeruginoso- aut cyanescenti-nigricans (in eodem specimine), KOH solutionem purpureo-violaceam effundens aut raro non reagens. Paraphyses in epithecio arcte cohaerentes, ceterum minus arcte, in KOH laxe cohaerentes. Sporae oblongae aut ellipsoideae, long. 0.008—0.018, crass. 0.003—0.005 mm.

Var. *praestabilis* (Nyl.) Vain. *Lecidea praestabilis* Nyl. Fl. 1874 p. 13.

*Exs.* Arn. Lich. Exs. (1873) n. 550 (hb. Nyl.). — Lojka Lich. Hung. Exs. II (1882) n. 88 (hb. Vain.). — Zwackh Lich. Exs. (1883) n. 794 (hb. Vain.).

Epithecium KOH solutionem purpureo-violaceam effundens.

*Distr.* Ad lignum praesertim in truncis erectis *Pini sylvestris* in parte septentrionali Fenniae crescit. Kb.: Ad truncum Pini in latere turfosi prope Niska in Enontaispale (Vain.), ad pag. Lieksa in par. ejusdem nominis (G. Lång), ad truncum in littore stagni prope Mujejärvi in Nurmes (Vain. Adj. Lich. Lapp. II p. 103). OKaj.: Ratasvaara in Paltamo (M. Brenner), ins. Selkäsaari in Kuhmo (Vain. I. c.). Kuus.: In reg. abietina montis Näränkävaara (Vain. I. c.), Iivaara (F. Silén, »*L. melancheima*» in hb. Nyl. 5523). LIN.: In reg. pinifera in jugo Suoloselkä, Ivalojoki et Paatsjoki (Vain. I. c.).

Thallus nitidus aut sat opacus, KOH parum reagens aut subfuscens et demum subfuscens. Apothecia disco leviter nitido aut opaco, margine nitido aut opaco, leviter prominente, saepe leviter flexuoso. Hypothecium interdum superne impure sat dilute fuscens, inferne fusco-nigrum. Hymenium »jodo caerulescens» (sec. Nyl.). Conidangia verrucaeformia, lat. 0.160—0.120 mm, fuliginea (in sectione tenuissima cyanescenti-fuliginea). Sterigmata long. circ. 0.012 mm, simplicia, apicibus conidia efferentibus. Conidia subglobosa aut globosa, diam. 0.002 mm aut long. 0.003, crass. 0.002 mm (sec. Th. Fr. sunt »breviter cylindrica, long. 0.003 mm»).

Var. *immutata* Vain. *Lecidea xanthococca* f. *immutata* Vain. Adj.

Lich. Lapp. II (1883) p. 103; Zahlbr. Cat. Lich. Un. III (1925) p. 726.

Epitheciun KOH demum pulchre caerulescens.

*Distr.* LIN.: Ad lignum in trunco erecto *Pini sylvestris* desiccata in reg. pinifera ad fl. Paatsjoki (Vain. l. c.).

Thallus evanescens aut sat tenuis et e verruculis dispersis cinerascentibus aut impure albidis constans, sorediis destitutus (aut sorediis stramineis interdum instructus). Apothecia sat crebra aut dispersa, habitu sicut in v. *praestabili*. Hypothecium superne dilute fuscescens aut cinerascens (in eodem apothecio), inferne fusco-fuligineum, KOH partim purpureum, partim non reagens (in eodem apothecio), hyphis erectis. Hymenium crass. 0.045—0.050 mm, a hypothecio haud bene limitatum. Peritheciun fuligineum, KOH non reagens. Epitheciun cyanescenti-fuligineum aut nigricans aut violascenti-nigricans, KOH demum pulchre caerulescens (solutionem violaceam non effundens). Paraphyses sat arcte aut sat laxe cohaerentes (in KOH laxe cohaerentes), simplices, increbre septatae, leviter gelatinosae, crass. circ. 0.0015 mm, apice haud aut parum incrassatae. Ascii clavati, in apice membrana modice incrassata. Sporae ovoideae aut ellipsoideo-ovoideae, long. 0.008—0.011, crass. 0.004—0.005 mm. Gonidia cystococcaceae.

110. \***L. sorophora** Vain. (n. subsp.)

Thallus sat tenuis, verruculosus, verruculis dispersis aut contiguis, fulvescentibus aut glauco-fulvescentibus aut albidis, p. p. demum in soredia granulosa fatiscentibus, hypothallo indistincto. Apothecia sat crebra aut dispersa, lat. 0.5—0.3 mm, sat tenuia, adnata, basi leviter constricta, disco plano, atro, nudo, margine tenui, atro, nudo, persistente. Hypothecium parte majore inferiore fusco-nigrum, KOH solutionem purpureo-subviolaceam effundens, superne plus minus late subdecoloratum aut dilute fuscescens, hyphis erectis. Epitheciun fusco-fuligineum, KOH solutionem purpureo-violaceam effundens. Paraphyses arcte cohaerentes, in KOH laxe cohaerentes. Sporae oblongae, long. circ. 0.009, crass. 0.004 mm.

*Distr.* TA.: Ad lignum in truncis erectis *Pini sylvestris* in turfosis ad Tianen et Soima in Korpilahti (»*L. xanthococca*« sec. determ. Nyl. in Vain. Fl. Tav. Or. p. 111). OKAJ.: Paltamo (F. Silén, 13040 in hb. Nyl.)

Thallus KOH leviter sublutescens aut parum reagens. Apothecia tenuia, disco opaco, margine prominente, leviter flexuoso aut integro, nitido aut opaco. Peritheciun fuligineum, in KOH demum subpurpureum, hyphis radiantibus, tenuibus, leptodermaticis, conglutinatis, cavitatibus oblongis, tenuissimis. Paraphyses crass. 0.0015 mm, simplices, leviter gelatinosae, apicibus parum incrassatis. Asci clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae, decolores, simplices (bene evolutae parce visae). Gonidia cystococcaceae.

### 111. *L. consimilis* Nyl.

Flora 1867 p. 178; Th. Fr. Lich. Scand. II (1874) p. 518; Hue Addend. II (1888) p. 146; Zahlbr. Cat. Lich. Un. III (1925) p. 750. *Bialora consimilis* Arn. Fl. 1870 p. 476.

Thallus evanescens, macula albida indicatus. Apothecia partim crebra, lat. 0.8—0.5 mm, atra, nuda, leviter nitida, late adnata, basi leviter constricta, disco primum plano, demum subdepresso-convexo, margine tenui, persistente aut demum excluso. Hypothecium subfuscum, hyphis erectis. Hymenium totum pallidum aut subfumose sordidescens, epithecio consimili. Paraphyses arcte cohaerentes, gelatinosae, apice parum incrassatae. Sporae 8:nae, subfusiformes aut oblongae, »long. 0.006—0.010, crass. 0.002—0.003 mm».

*Distr.* Ta.: Ad lignum pineum non putridum in Evo (Norrl. Bidr. Sydöstr. Tav. Fl. p. 187).

Species insignis nulli alii bene affinis. Ad *Bialoras* non pertinet. Glomerulos gonidiorum in mycelio ex hyphis tenuissimis decoloratis constante continet. Hypothallus indistinctus. Apothecia margine integro, non prominente. Hypothecium crassum, intense subfuscum, KOH demum subpurpureo-rufescens, hyphis tenuibus, conglutinatis. Peritheciun strato tenui pallido decoloratoe obductum, ceterum intense subfuscum, hyphis radiantibus, tenuibus, conglutinatis, membranis modice incrassatis, cavitatibus oblongis, tenuibus. Hymenium circ. 0.040 mm crassum, »jodo dilute caeruleascens» (sec. Nyl.). Paraphyses vulgo simplices, crass. 0.001—0.0015 mm, apicibus circ. 0.002 mm crassis aut parum incrassatis, in KOH sat laxe cohaerentes. Asci anguste clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae, simplices. Conidangia »papilliformia (pyrenothidea)» sec. Nyl. Conidia oblongo-cylindrica, long. 0.003—0.005, crass. 0.001 mm» (sec. Nyl.). Gonidia globosa, parva, diam. 0.005—0.008 mm, simplicia et parce 2-connata, forsitan pleurococcoidea.

112. **L. enclitica** Nyl.

Lich. Lapp. Or. (1866) p. 148, Fl. 1866 p. 369, 1872 p. 355; Th. Fr. Lich. Scand. II (1874) p. 518; Hue Addend. II (1888) p. 237; Zahlbr. Cat. Lich. Un. III (1925) p. 574. *L. myriocarpoides* Nyl. in litt. ad Tuckerm., Fl. 1865 p. 355, Fl. 1866 p. 86 (nec. *L. expansa* Nyl., nec *L. myriocarpoides* Nyl. Fl. 1873 p. 23); Hue Addend. II (1888) p. 236. Conf. p. 29.

Thallus evanescens (conf. infra) aut e verruculis dispersis constans. Apothecia sat crebra, minutissima, lat. 0.2—0.3 (»—0.4») mm, nigra, nuda, opaca, immarginata, basi parum constricta. Hypothecium subpurpureo-fuligineum, in KOH distinctius purpureum, hyphis tenuibus, irregulariter contextis. Epithecium fusco- aut subpurpureo-fuligineum, KOH parum mutatum. Paraphyses arcte cohaerentes, leviter gelatinosae. Sporae oblongae aut ovoideo-oblongae, »long. 0.008—0.014, crass. 0.003—0.004 mm» (sec. Nyl.).

Distr. Kb.: In saepimento ligneo ad Nevala in Lieksa (»*L. plebeja* v. *pityophloides* specimina transitoria» Vain. Adj. Lich. Lapp. II p. 103). LIm.: Ad lignum abietinum prope Imandra leg. P. A. Karsten sec. Nyl. l. c.).

Apothecia »late dispersa» sec. Nyl. Hypothecium sat crassum. Peritheciun tenue, subfuscō-fuligineum, KOH parum mutatum, membranis hypharum modice incrassatis, cavitatibus angustissimis, oblongis aut ellipsoideis. Hymenium circ. 0.045—0.050 mm crassum, »jodo caerulescens, deinde sordide vinose tinctum» (sec. Nyl.). Paraphyses simplices, crass. 0.001 mm, apice gelatina fuscescente obducto et 0.002—0.006 mm crasso. Epithecium tenue. Ascii clavati, in apice membrana modice incrassata. Sporae subfusiformi- aut ovoideo-oblongae, apicibus obtusis aut altero apice rotundato, 8:nae, distichae, simplices. Conidangia »papillaeformia. Conidia breviter cylindrica, leviter curvata, utrinque nonnihil incrassatula, long. 0.003—0.0035 mm» (sec. Th. Fr.).

Obs. Sec. adn. Nylandri in bibl. sua »thallo tenui, albido, subleproso et sporis long. 0.008—0.016, crass. 0.003—0.004 mm supra thallum *Solorinae croceae* in Muddusniemi in Lapponia Inarensi F. Silén hanc speciem legit». Verisimiliter est autonoma species (*L. croceicola* Vain. ad interim), jam thallo subleproso a *L. enclitica* differens.

113. **L. plebeja** Nyl.

Flora 1865 p. 148 (n. 20229 in hb. Nyl.); Norrl. Fl. Kar. Oneg. II (1876) p. 29; Vain. Adj. Lich. Lapp. II (1883) p. 102, En. Lich. Konda (1928) p. 101; Hue Addend. II (1888) p. 144; Arn. Lich. Tirol XXIX (1896) p. 128; Zahlbr. Cat. Lich. Un. III (1925) p. 671. *L. enalliza* Nyl. Fl. 1867 p. 371 p. p. (excl. specim. corticolis, quae ad *L. turgidulam* sec. Nyl. ipso pertinent); Th. Fr. Lich. Scand. II (1874) p. 519; Arn. Lich. Fränk. Jura (1885) p. 169. *L. myriocarpoides* Nyl. Fl. 1873 p. 23 (nec Fl. 1865 p. 355, nec Fl. 1866 p. 86), Nyl. in Vain. Fl. Tav. Or. (1878) p. 111; Hue Addend. II (1888) p. 144 p. p. (excl. cit. Fl. 1865 p. 355 et Fl. 1866 p. 86).

*Exs.* Arn. Lich. Exs. (1869) n. 408 (»*L. plebeja*« sec. determ. Nylandri in hb. suo). — Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 173, VII (1882) n. 313.

Thallus evanescens aut e verruculis minutissimis constans, hypothallo indistincto. Apothecia sat crebra aut dispersa, minutissima aut parva, lat. 0.2—0.3 (—1) mm, nigra, nuda, opaca, disco plano aut demum convexo, margine tenuissimo, demum saepe excluso, basi leviter constricta. Hypothecium fusco-fuligineum aut fuscum, KOH non reagens, hyphis tenuibus, irregulariter contextis. Epithecium fuscum aut partim pallidum, KOH non mutatum. Paraphyses arcte cohaerentes, leviter gelatinosae, tenuissimae, clava obscurata, angusta, crass. 0.002—0.003 (—0.004) mm. Sporae subfusiformes aut ovoideae, long. 0.007—0.011 mm, crass. 0.002—0.003 (—0.004) mm.

*F. primaria* Vain.

Apothecia sat crebra, minora.

*Distr.* Ta.: Ad lignum Pini in Asikkala (J. P. Norrlin, »*L. plebeja*« Nyl. Fl. 1865 p. 148), ad lignum in trunco Pini in Keihäsniemi in Luhanka (»*L. plebeja*« Nyl. in Vain. Fl. Tav. Or. p. 111) et ad Pohjola in Korpilahti (»*L. plebeja*« Nyl. in Vain. I. c.). Evo in Lammi (Lång). Tb.: Ad lignum in trunco Pini prope Piililä in Korpilahti (»*L. plebeja*« Nyl. in Vain. I. c.).

Thallus evanescens aut macula albida indicatus. Apothecia lat. 0.15—0.3 (—0.6) mm, rotundata, leviter nitida aut sat opaca, primum marginata, margine tenuissimo, integro, non aut parum prominente. Hypothecium fusco-nigrum, KOH non reagens (non rubricosum), hyphis tenuibus, irregulariter contextis (specim. orig. hic describitur). Peritheciun tenue, extus fuscescens (KOH non reagens), intus dilute fuscescens aut pallidum, hyphis radiantibus, modice pachydermati-

cis, cavitibus oblongis, angustissimis. Hymenium 0.040—0.045 mm crassum, leviter gelatinosum, »jodo caerulescens, dein sordide vinose tinctum» (Nyl.). Epithecum fuscum aut partim pallidum, tenue. Paraphyses arcte cohaerentes (in KOH laxius cohaerentes), crass. 0.0005 aut paullo crassiores, apice anguste clavatae, clava 0.002—0.003 mm crassa, vulgo fuscescente. Ascii anguste clavati, in apice membrana modice incrassata. Sporae 8:nac, distichae aut monostichae, oblongae aut ovoideo-oblongae aut subfusiformes, simplices, »long. 0.007—0.011, crass. 0.003—0.004 mm», sec. Nyl. (tantum 0.002—0.003 mm crassas vidi).

*F. consimilans* (Nyl.) Vain. *L. myriocarpoides* var. *consimilans* Nyl. in Norrl. Ber. Torn. Lappm. (1873) p. 336, Herb. Lich. Fenn. VII (1882) n. 313; Nyl. in Vain. Fl. Tav. Or. (1878) p. 111. *L. enalliza* Nyl. Fl. 1867 p. 371 p. p. (excl. specim. corticolis, conf. supra); Nyl. in Norrl. Fl. Kar. On. II p. 29.

Apothecia magis dispersa, saepe demum majora, saepe diu plana, demum depresso-convexa.

*Distr.* Praesertim ad trunco, radices et ramos siccios decorticatos pineos crescit. Ka.: Supra tectum putridum in sepulcreto Rossico Viburgi (»*L. myriocarpoides* v. *consimilans*» Vain. Lich. Vib. p. 62), Pällilä in Muola (A. O. Kihlman). Ta.: Evo (Norrlin H. L. F. n. 313, »*L. enalliza* Nyl.» in Norrl. Bidr. Sydöstr. Tav. Fl. p. 187), Onkisalo in Luhanka (»*L. myriocarpoides* v. *consimilans* Nyl.» in Vain. Fl. Tav. Or. p. 111). KOn.: Ad Maimalampi (»*L. enalliza* Nyl. in Norrl. Fl. Kar. Oneg. II p. 29). Tb.: Piililä in Korpilahti (»*L. myriocarpoides* v. *consimilans*» Vain. l. c.), Pihlajavesi (»*L. myriocarpoides*» Norrl. in Not. Sällsk. F. Fl. Fenn. XIII p. 435). Kb.: Petäinen in Nurmeks (»*L. plebeja*» Vain. Adj. Lich. Lapp. II p. 102). KPom. occ.: Vuosiniemi in Repola (Vain. l. c.). OKaj.: Lehtovaara in Kianta (Vain. l. c.). LKem.: Lompolotunturi in Kittilä (Norrl. Ber. Torn. Lappm. p. 336).

Saepe habitu a *L. plebeja* f. *primaria* bene differt, sed valde est inconstans. Norrl. et Nyl. Herb. Lich. Fenn. n. 173 et 313 ad statum inter f. *primariam* et f. *consimilantem* intermedium pertinent. Thallus macula albida indicateus, interdum distinctus, tenuis, e verruculis pallidis, dispersis, minutissimis constans, hypothallo indistinetu. Apothecia 1—0.3 mm lata, saepe demum irregularia difformiaque, leviter nitida aut sat opaca, primum marginata, margine tenuissimo, integro, non aut parum prominente. Hypothecium fusco-fuligineum aut fuscum, KOH non reagens, hyphis irregularibus aut sat irregulariter contextis. Perithecum fuscum, KOH non reagens, hyphis radiantibus, leviter pachydermaticis, cavitibus elongatis, angustis aut angustissimis. Hymenium 0.040 mm crassum, jodo caerulescens, demum p. p. vinose rubens. Epithecum fuscescens, KOH non re-

gens. Paraphyses arcte cohaerentes (etiam in KOH), leviter gelatinosae, crass. 0.0015—vix 0.001 mm, capitatae clavatae, clava fuscescente, lat. 0.002—0.003 (—0.004) mm. Sporae 8:nae, distichae, ellipsoideo- aut oblongo- aut ovoideo-fusiformes, simplices aut raro parce 1-septatis immixtae, long. 0.005—0.009, crass. 0.002—0.003 mm. Gonidia cystococcaceae

#### 114. *L. pithyophiloides* Vain.

*Lecidea plebeja* var. *pithyophiloides* Vain. Adj. Lich. Lapp. II (1883) p. 102.

Thallus tenuis, verruculosus, verruculis dispersis, albido- vel cinereo-glaucescens aut subcinerascens, sorediis destitutus, hypothallo indistincto. Apothecia crebra, parva, lat. 0.2—0.35 mm, nigra, nuda, opaca, mox convexa immarginataque aut primum plana et margine tenuissimo, integro instructa. Hypothecium purpureo-fuligineum, KOH pulchre purpureum, irregulariter contextum et in parte summa hyphis erectis. Epithecum fuligineum. Paraphyses arcte cohaerentes, leviter gelatinosae. Sporae ovoideae aut ellipsoideae, long. 0.005—0.007, crass. 0.003—0.004 mm.

*Distr.* Kb.: Ad pontem ligneum prope pag. Lieksa (Vain. l. c.).

Thallus KOH non reagens. Apothecia basi parum aut leviter constricta, margine non prominente. Hypothecium sat crassum. Perithecum purpureo-fuligineum. Hymenium 0.030—0.040 mm crassum, parte inferiore saepe dilute purpureum, jodo caerulescens. Paraphyses etiam in KOH parum distinctae, cavitatibus angustissimis, apicibus non capitatis aut partim apicem versus sensim gelatinoso-clavatis. Epithecum fuligineum, continuum, KOH fere immutatum aut fumoso-nigrescens aut subcaerulecenti-nigricans. Asci anguste clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae, simplices. Gonidia cystococcaceae. — Proxime affinis est *L. encliticae*, quacum colore hypothecii congruens, sed epithecio ab ea differt et autonoma species.

#### 115. *L. Tianensis* Vain.

Thallus tenuis, albidus, maculaeformis, verruculis minutis, concoloribus inspersus, hypothallo indistincto. Apothecia subdispersa, parva, lat. 0.2—0.5 mm, nigra, nuda, opaca, primum plana submarginataque, dein convexa immarginata.

taque. Hypothecium fuscum, KOH rubricoso-rufescens, hyphis erectis. Epithecium fuscum, KOH demum subrubricoso-rufescens. Paraphyses arcte cohaerentes, leviter gelatinosae, apice anguste clavatae. Sporae oblongae aut subfusiformi-oblongae, long. 0.005—0.007, crass. 0.002 mm.

*Distr.* Ta.: Ad corticem *Piceae excelsae* prope Tianen in Korpilahti (»*Lecidea myriocarpoides*« sec. determ. Nylandri a. 1874 in Vain. Fl. Tav. Or., 1878, p. 111). N. 79 in hb. Vain. Conf. infra.

Affinis est *L. plebeiae*, sed hypothecio KOH subrubricoso-rufescente, ex hyphis erectis formato et thallo magis evoluto (et gonidiis minoribus) ab ea differens, quare autonoma sit species. Thallus KOH non reagens, granulis sorediorum parce inspersus. Apothecia partim etiam crebra, p. p. basi constricta, margine tenuissimo, integro, non prominente. Hypothecium sat crassum. Peritheciun fusco-fuligineum, KOH demum subrubricoso-rufescens, gonidiis destitutum, hyphis radiantibus, tenuibus, conglutinatis, leptodermaticis, cavitibus angustissimis. Paraphyses tenuissimae, clava 0.002—0.003 mm lata, superne anguste fuscescente. Hymenium circ. 0.050—0.060 mm crassum, jodo caerulescens. Ascii anguste clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae, simplices. Gonidia cystococcacea, globosa, diam. 0.005—0.010 mm, pyrenoide et nucleo instructa.

*Obs.* *Lecidea myriocarpoides* Nyl. in litt. ad Tuckerm., a Nyl. in Fl. 1865 p. 355 commemorata, sec. specimi. orig. n. 20223 in hb. Nyl., n. 292 in hb. Tuck., ad *Pinum palustrem* in Carol. merid. collectum, apotheciis instructa est circ. 0.3—0.5 mm latis, hypothecio fuligineo, irregulariter contexto, KOH purpureo et solutionem subpurpuream effundente, paraphysibus arcte cohaerentibus, apice capitato-clavatis, epithecio pallido-fuscescente, KOH purpureo, »hymenio jodo caerulescente, persistenter aut demum sublutescente, sporis long. 0.007—0.008, crass. 0.003—0.0035 mm« (sec. adnot. Nyl.). Non distinguenda sit a *L. enclitica* Nyl.

### 116. ***L. paraclitica* Nyl.**

Flora 1872 p. 355; Hue Addend. II (1888) p. 237; Vain. in Norrl. et Nyl. Herb. Lich. Fenn. cont. (1921) n. 762. *L. expansa* f. *paraclitica* Nyl. in Herb. Lich. Fenn. cont. (1921) n. 762. *L. enalliza*  $\beta$  *fuliginea* Th. Fr. in Kullh. (1871) p. 275 (conf. etiam Nyl. Fl. 1872 p. 355).

Thallus tenuis aut tenuissimus, subcontinuus, leviter verruculoso-inaequalis aut sat laevigatus, obscure cinereo-glaucescens, aut evanescens, hypothallo tenui, nigricante

aut indistincto. Apothecia crebra aut sat crebra, parva, lat. 0.15—0.4 mm, adnata, basi demum constricta, primum diu plana marginataque (20174 in hb. Nyl.) aut haud diu marginata et demum convexa, nigra, nuda, opaca aut leviter nitida. Hypothecium totum fusco-nigrum, hyphis superne suberectis, inferne sat irregulariter contextis. Perithecium extus subcaerulecenti-nigricans aut fuligineum, intus dilutius coloratum. Epithecium subfuligineum aut subcyaneo-nigricans. Paraphyses arcte cohaerentes, apicibus subfuligineis, gelatinoso-clavatis. Hymenium jodo caerule-scens. Sporae ellipsoideae aut subovoideae aut oblongae, »long. 0.005—0.010, crass. 0.0025—0.0035 mm» sec. adn. Nyl.

*Distr.* N.: Ad lignum vetustum Pini ad terram humidam in Fredriksberg (Norrl. H. L. F. cont. n. 762). Ta.: Ad lignum vetustum Pini prope Mustiala in Tammela (A. Kullhem).

Proxima *L. erratica*, sed lignicola et hymenio jodo non rubescente et paraphysibus minus bene evolutis ab ea differens. Peritheciū hyphis radiantibus, cavitatibus tenuissimis, striis fuligineis inter membranas subdecoloratas. Paraphyses in aqua haud bene conspicuis, clava gelatinosa circ. 0.004—0.006 mm crassa, superne in sectione horizontali visa, intus subdecolorata, extus nigricante, in subcyanescenti- aut subaeruginoso-nigricantem vergente. Gonidia cystococcaceae.

#### Sect. **Lecidea tenebrosa.**

Thallus obscure vel pallide cinerascens, paraphyses facilimē liberae, asci (vulgo) subcylindrici, pycnoconidia brevia, recta. Hyphae medullares non amyloideae. Species saxicolae.

#### 117. **L. atrocinerea** (Schaer.) Vain.

*Urceolaria cinerea* δ. *atrocineraria* Schaeer. Lich. Helv. Spic. II (1826) p. 72. *Aspicilia atrocinerea* Mass. Ric. Lich. Crost. (1852) p. 39 (conf. infra). *Lecidea tenebrosa* Flot. in Zwackh Lich. Exs. (1852) n. 134 (15046 in hb. Nyl.); Nyl. Prodr. Lich. Gall. (1857) p. 127, Lich. Scand. (1861) p. 231, Lich. Delph. (1863) p. 399, Lich. Paris (1896) p. 93; Th. Fr. Lich. Spitsb. (1867) p. 41, Lich. Scand. II (1874) p. 540; Vain. Adj. Lich. Lapp. II (1883) p. 87, Lich. Caucas. (1899) p. 324, Lich. Exp. Vegae Pitlekai (1909) p. 138; Tuck. Syn. North Am. Lich. II (1888) p. 77; Arn. Labrador (1896) p. 13. *Aspicilia*

Koerb. Par. Lich. 2 Lief. (1860) p. 99. *Lecanora* Nyl. Fl. 1862 p. 83. *Lecidea fuscoatra* ♂ *gibba* Ach. Syn. Lich. (1814) p. 12 (specim. e Suecia in hb. Ach.), non Wahlenb. Fl. Lapp. (1812) p. 473 (sec. Th. Fr. I. c. p. 481). *Lecidea griseoatra* A. I. Sm. Mon. Brit. Lich. II (1911) p. 91 (nec Schaeer. En. Lich. Eur., 1850, p. 101, nec *Verrucaria griseoatra* Hoffm., conf. sub *Aspicilia aquatica* Koerb.). *Lecanora coracina* Hepp Flecht. Eur. VII (1857) n. 383 (conf. infra). *Lecidea fuscocinerea* Nyl. Bot. Not. 1853 p. 99 (etiam sec. Lich. Scand. p. 231), non in Bot. Not. 1852 p. 127.

*Exs.* Moug. et Nestl. St. Crypt. Vog. V (1815) n. 462 (Mus. Fenn.). — Schaer. Lich. Helv. Exs. III (1826) n. 129. — Zwackh Lich. Exs. (1852) n. 134, (1876) n. 473 (hb. Nyl.). — Koerb. Lich. Sel. Germ. (1856) n. 9. — Leight. Lich. Brit. Exs. VII (1856) n. 205. — Hepp Fl. Eur. VII (1857) n. 383 (mea coll.). — Arn. Lich. Exs. (1860) n. 114, (1863) n. 227, (1879) n. 842. — Rabenh. Lich. Eur. Exs. XXI (1861) n. 595. — Anzi Lich. Exs. It. V (1865) n. 212. — Un. It. n. 55. — Erb. Cr. It. XXVIII (1866) n. 1387 (387). — Flag. Lich. Franche Comté IV n. 189. — Zahlbr. Cr. Exs. Vindob. V (1900) n. 448. — Malme Lich. Suec. Exs. XI (1912) n. 273. — Norrl. et Nyl. Herb. Lich. Fenn. cont. (1921) n. 750. (Sec. Arn. Lich. Fränk. Jur. p. 160).

Thallus crassus aut modice incrassatus aut rarius sat tenuis, areolatus, areolis vulgo 0.3—0.5 aut p. p. usque ad 1 (—1.5) mm latis, contiguis, planis aut demum depresso-convexus, laevigatis (aut raro demum p. p. leviter verruculosoinaequalibus), cinereis aut obscure cinereis, sorediis destitutus, medulla KOH non reagente, hypothallo nigricante. Apothecia primum areolis thalli immersa, demum p. p. adnata emergentiave aut omnia immersa permanentia aspicilioideaque, lat. 0.2—0.5 (—0.7) mm, basi non constricta, disco plano, nigro, nudo, opaco, in apotheciis adnatis prominentibusque margine paratheliali tenui, nigro, nudo, integro, non prominente, opaco. Hypothecium superne pallidum, basin versus sensim plus minus subfuscescens, hyphis erectis. Epithecum aeruginoso-fuligineum. Paraphyses laxe cohaerentes. Asci cylindrici aut cylindrico-clavati. Sporae 8:næ, ellipsoideæ, long. 0.014—0.016, crass. 0.006—0.008 mm (sec. Th. Fr. »long. 0.01—0.017 mm»).

Var. *tenebrosa* Vain.

Thallus cinereus aut obscure cinereus, crassus aut modice incrassatus, KOH non reagens.

*Distr.* Ad rupes et saxa praesertim in montibus sat rare aut pas-sim in Fennia. Al. (E. Nylander), Öfverby in Jomala (Vain.), Geta (Vain.). Ab.: Viittakari et Vepsänsaari (Vain.), Ispoinen (L. Kari), Peltola et Pääskyvuoret in Kaarina (Vain.), Kultaranta in Naantali (Vain.). N.: Pluribus locis in Suursaari v. Hoglandia (Vain., Brenn. Bidr. Hogl. Lafv. p. 109), Tvärminne (F. Elfving), Kukubacka in Sibbo (Vain.), pluribus locis ad Helsingforsiam (Vain.). Ka.: Vanha-Viipuri (Vain. Lich. Vib. p. 67). St.: Loimijoki (A. J. Malmgren). Oa.: Kristinestad (A. J. Malmgr.). Ob.: Tiurasenkranni in Simo (Räs. Meddel. Soc. F. Fl. Fenn. 46 p. 172). Kuus.: In reg. subalp. montium Ukonvaara et Nuorunen (Vain. Adj. II p. 87). LKem. (E. Nyl.). — »Usque ad Ponoi ad saxa» (*L. tenebrosa*) a Nyl. in Lich. Lapp. Or. p. 161 indicatur, sed e Lapponia Kolaënsi in Mus. Fenn. tantum specimen n. 501 adest, ad *L. lygaeizam* Vain. pertinens (conf. infra).

Novella, saepe etiam adultior (velut in Arn. Lich. Exs. n. 842 c) similis *Aspiciliae*, interdum etiam apotheciis sat novellis distinete lecideinis instructa est. Thallus intus KOH non reagens, addito  $\text{CaCl}_2\text{O}_2$  leviter rubescens (Vain. L. Exp. Veg. p. 138) aut non reagens, jodo non reagens, non pruinosis, strato corticali ex apicibus hypharum incrassatis (crass. 0.004—0.006 mm), constipatis conglutinatisque, obscuratis formato, strato decolore destructo non obtecto. Apothecia saepe sat crebra, gonidiis et strato myelohyplico destituta. Hypothecium hyphis sat tenuibus, sat leptodermaticis, conglutinatis. Peritheciun fuscescens aut in summo margine cyanescens, bene evolutum (crass. 0.140 mm) aut valde tenue (in eodem apothecio), partim intus dilute coloratum, hyphis sat leptodermaticis, conglutinatis, tenuibus, apicibus leviter incrassatis constipatisque. Hymenium circ. 0.120—0.140 mm crassum, »ascis jodo caerulescentibus, dein violascenti-decoloratis» (sec. Th. Fr.). Epithecium aeruginoso-fuligineum, non granulosum, KOH non reagens aut pulchrius caerulescens. Paraphyses crass. circ. 0.0015 aut fere 0.002 mm, apices versus sensim leviter incrassatae, non gelatinosae. Asci in apice membrana parum incrassata. Sporae monostichiae aut distichae, rectae. Conidia »bacillaria, long. 0.006, crass. vix 0.001 mm» (sec. Nyl. Lich. Paris p. 93, »long. 0.006—0.009 mm, recta» sec. Th. Fr. I. c.). Gonidia globosa, simplicia, diam. 0.006—0.008 mm, parce etiam 4-cellulosa visa, membrana modice incrassata, forsitan pleurococcacea.

Var. *Fellmanii* Vain.

Thallus sat tenuis, areolis planis, cinerascentibus.

*Distr.* LPon.: In saxo granitico ad Ponoi (N. I. Fellman, n. 501, »*Lecidea tenebrosa*» Nyl. Lich. Lapp. Or. p. 161).

Areolis thalli non cinereo-albido-marginatis a *L. lygaeiza* differt. Thallus strato corticali ex apicibus hypharum clavatis, erectis, con-

stipatis, obscuratis formato, instructus, strato decolorato non obductus, medulla KOH non distinete reagente. Apothecia primum innata, dein mox admata elevataque, basi non constricta, disco nigro, nudo, opaco, laevigato, margine modice incrassato, nigro, nudo, leviter prominente aut discum non superante, persistente. Perithecium hyphis leptodermaticis, in parte exteriore radiantibus, conglutinatis, saepe aeruginoso-fuligineis et inferne fusco-fuligineis, intus albidum, irregulariter contextum, aërem inter hyphas passim continens, goniidiis destitutum, KOH non reagens. Hypothecium hyphis sat erectis, fuscescens rufescensve, in parte superiore angusta albidum. Epitheciun aeruginoso-fuligineum, KOH non reagens. Paraphyses laxe cohaerentes, increbre septatae, non constrictae, simplices, apice leviter incrassatae, non gelatinosae. Ascii cylindrico-clavati. Sporae decoloratae, simplices, ellipsoideae aut suboblongae, long. 0.0075—0.013, crass. 0.005 mm (parce visae). Gonidia cystococcaceaa, globosa, simplicia.

*Obs. 1.* *Urceolaria cinerea* δ *atrocinerea* Schaeer. Lich. Helv. Exs. VI (1826) n. 129, En. Lich. Eur. (1850) p. 87, sec. Stizenb. Lich. Helv. I (1882) p. 198 et Arn. Lich. Fränk. Jura Fl. 1885 p. 160 pertinet ad *L. tenebrosam* Flot. *Lichen atrocinereus* Dicks. Fasc. tert. Crypt. Brit. (1793) p. 14, tab. 9, fig. 2 est *Rinodina atrocinerea* Mudd (sec. Cromb. Mon. Lich. Brit. I, 1894, p. 398). *Verrucaria coracina* Hoffm. Deutsehl. Fl. II (1796) p. 183 sec. Hoffm. ipsum ad *Lichenem atrocinereum* Dicks. pertinet, sed exactius non est cognita. *Lichen coracinus* Ach., Lich. Suec. Prodr. (1798) p. 79, ad *V. coracina* Hoffm., ab Achario non visam, spectat. Postea *Lecidea coracina* Ach., Lich. Univ. (1810) p. 161 et Syn. Lich. (1814) p. 11, et min. p. etiam alias species Ach. ad speciem nostram duxit sec. Th. Fr. I. c. p. 607.

*Obs. 2.* *Lecidea tenebrosa* var. *Caucasica* Vain., Lich. Cauc. (1899) p. 324, praesertim sporis a *L. atrocinerea* differens, autonoma est species, *L. Caucasica* nominanda.

118. **L. cuculi** Vain. (n. sp.)

Thallus sat crassus aut modice incrassatus, areolatus, areolis circ. 0.2—0.5 (—1) mm latis, contiguis, convexis aut p. p. planis, obscure cinereis et p. p. impure subalbidis, opacis, sorediis destitutus, medulla KOH lutescente, hypothallo nigricante. Apothecia primum areolis thalli immersa, demum adnata, lat. 0.3—0.5 mm, basi non constricta, disco plano, nigro, nudo, opaco, margine tenui, integro, nigro, nudo,

opaco, non aut parum prominente. Hypothecium fere totum fuscum aut superne anguste pallescens, in parte superiore hyphis erectis. Epithecum aeruginoso-fuligineum. Paraphyses laxe cohaerentes, increbre septatae. Ascii cylindrici. Sporae ellipsoideae, long. circ. 0.009, crass. 0.005 mm (parce visae).

*Distr.* N.: Ad saxa granitica loco aperto ventosoque in summo monte Kukubacka (collis euculi) in Sibbo, una cum *Rhizocarpo geographicus* (Vain. a. 1913).

Forsan autonoma species, colore hypothecii et reactione medullae differens a proxima *L. atrocinerea*, quae eodem loco etiam optime evoluta provenit. Thallus KOH una cum  $\text{CaCl}_2\text{O}_2$  intus intensius lutescenti-fulvescens, sed non rubescens. Apothecia gonidiis et strato myelolyphico destituta. Hypothecium fere totum intense fuscum. Perithecum intense fuligineum vel fusco-fuligineum. Discus orbicularis, laevigatus. Paraphyses leviter gelatinosae, quamquam laxe cohaerentes, simplices, crass. 0.0015 mm, apices versum sensim leviter incrassatae (0.002 mm). Sporae decolores, simplices. Gonidia cystococcaceae. In superficie thalli apices hypharum capitati crebre consti-pati.

### 119. *L. somphotera* Vain.

*Lecidea tenebrosa* \**L. somphotera* Vain. Adj. Lich. Lapp. II (1883) p. 88 (excl. v. *sereniore*); Lich. Exp. Vegae Pitlekai (1909) p. 138. *L. somphotera* Zahlbr. Cat. Lich. Un. III (1925) p. 690 (excl. v. *sereniore*). *L. epitioidiza* Nyl. Fl. 1884 p. 216, En. Lich. Fret. Behr. (1888) p. 37; Hue Lich. Exot. (1892) p. 211 (conf. infra); Zahlbr. l. c. p. 575.

Thallus modice incrassatus, verrucosus vel verrucoso-areolatus, verrucis 0.15—0.4 (raro —1) mm latis, contiguis aut rarius dispersis, bene convexis aut raro primum planiusculis, laevigatis, cinereis aut rarius obscure cinerascentibus vel cinereo-nigricantibus, sorediis destitutus, hypothallo nigricante. Apothecia lat. vulgo 0.5—0.8, raro usque ad 1 mm, rotundata, primum thallo innata, dein mox emergentia adnataque, basi non aut leviter constricta, disco plano aut rarius demum convexo, nigro, nudo, opaco, margine tenui, integro, nigro, nudo. Hypothecium decoloratum pallidumve aut sordide pallidum aut raro subfulvescens aut dilute ru-

fescens, hyphis erectis. Paraphyses laxe aut sat laxe cohaerentes. Epithecum violascenti- aut cyanescenti-fuligineum. Asci cylindrici aut cylindrico-clavati. Sporae 8:nae, monostichae aut partim distichae, long. 0.010—0.012 (0.008—0.016), crass. 0.006—0.008 (—0.005) mm.

*F. subcontigua* Vain.

Thallus verrucis contiguis, cinereis. Epithecum violascens aut in eodem specimine etiam cyanescens.

*Distr.* Ad saxa granitica et gneissacea et quartzitica. Kb.: Pyssyvaara in Nurmes (Vain. Adj. Lich. Lapp. II p. 89). OKaj.: Lehtovaara et Suomula in Kianta (Vain.). LIn.: In reg. subalp. jugi Suoloselkä (Vain. l. c.).

*L. atrocinereae* est affinis. Thallus verrucis regularibus aut partim difformibus, vulgo 0.15—0.4 mm latis, opacus, non pruinosis, KOH extus non reagens, intus leviter lutescens aut vix distincte reagens, intus  $\text{CaCl}_2\text{O}_2$  leviter rubescens, his solutionibus conjunctis melius rubescens, extus non reagens, intus jodo non reagens, strato corticali ex apicibus hypharum incrassatis (0.005—0.004 mm) obscuratisque constipatis formato obductus. Apothecia sat crebra aut dispersa, gonidiis et strato myceliohyphico destituta. Hypothecium hyphis leviter pachydermatibus, sat tenuibus, conglutinatis, jodo partim praesertimque parte superiore dilute caeruleo-scens. Perithecum extus subviolaceum aut subfuscens aut cyanescenti-fuligineum (KOH pulchrius coloratum), intus subpallidum, in medio basis non coloratum. Hymenium circ. 0.070—0.120 mm crassum, guttulas (forsan resinosa) continens, ex hypothecio non bene limitatum, jodo caeruleo-scens aut demum decoloratum. Epithecum KOH cyanescens (aut dilutescens). Paraphyses crass. 0.0015 (—0.001) mm, apicem versus parum aut leviter incrassatae et arctius cohaerentes. Asci crass. circ. 0.012 mm, membrana tota tenui. Conidia cylindrica, recta, long. circ. 0.005—0.006, crass. circ. 0.001 mm. Gonidia pleurococcoidea, globosa et parce subglobosa, diam. 0.008—0.010 mm, simplicia et parce 2-cellulosa, membrana vulgo incrassata.

*Obs.* *Lecidea epiiodiza* Nyl. (\**L. somphotera* f. *epiiodiza* Vain. Lich. Exp. Vegae Pitlekai, 1909, p. 138) sec. n. 15373 et 15375 in hb. Nyl. vix nisi thallo obscuriore a *L. somphotera* Vain. l. c. (nunc f. *subcontigua*) differt et forma est ejus.

## 120. *L. serenior* Vain.

*Lecidea tenebrosa* \**L. somphotera* var. *serenior* Vain. Adj. Lich. Lapp. II (1883) p. 89.

Thallus modice incrassatus aut sat crassus, verrucosus aut verrucoso-areolatus, verrucis vulgo 0.4—0.5 (0.2—0.7) mm latis, bene aut depresso convexis, laevigatis, cinereis, supra hypothallum nigrum dispersis aut p. p. contiguis, sorediis destitutus. Apothecia primum diu verrucis thalli immersa, demum emergentia lecideinaque, basi non constricta, lat. 0.5—1 mm, disco plano, nigro, nudo, opaco, margine peritheciali nigro, nudo, tenui, saepe leviter prominente, integro. Hypothecium decoloratum pallidumve, hyphis erectis. Epithecum violaceo-fuligineum. Paraphyses laxe cohaerentes. Ascii cylindrici aut cylindrico-clavati. Sporae 8:nae, distichae, ellipsoideae aut p. p. subglobosae, long. 0.007—0.012, crass. 0.005—0.008 mm.

*Distr.* LIn.: Ad rupem graniticam in insula lacus Inarijärvi in regione pinifera (Vain 1. c.)

Affinis *L. tenebrosae* Flot. et *L. somphoterae*, ab ambabus differens. Thallus habitu sicut in *Rhizocarpo grandi*, nec KOH, nec addito  $\text{CaCl}_2\text{O}_2$  reagens, medulla jodo leviter violascente, verrucis opacis, non pruinosis, p. p. difformibus, strato corticali ex apicibus hypharum incrassatis (crass. 0.005—0.006 mm) constipatis conglutinatisque, obscuratis, et ex id passim obtegente strato hyalino subamorpho formato instructus. Apothecia dispersa, gonidiis et strato myelohyphico destituta. Hypothecium hyphis sat tenuibus, sat leptodermaticis, conglutinatis. Perithecum violaceo-fusecens aut cyanescens, bene evolutum (crass. circ. 0.1 mm) aut valde tenue (in eodem apothecio), sub hypothecium anguste continuatum. Hymenium circ. 0.070—0.110 mm crassum, jodo caerulecens. Epithecum minutissime violaceo-granulosum, KOH caerulecens. Paraphyses apice arctius cohaerentes et leviter gelatinosae et paululum incrassatae, ceterum crass. 0.0015 mm. Ascii clavati aut cylindrico-clavati, in apice membrana paululum incrassata. Gonidia globosa et parce subglobosa, diam. 0.006—0.014 mm, tantum simplicia et parce etiam glomerulosa viva, membrana vulgo incrassata.

### 121. *L. lygaeiza* Vain.

*Lecidea tenebrosa* var. *lygaeoides* Vain. Adj. Lich. Lapp. II (1883) p. 88 (non *Biatora lygeoides* Anzi Symb. Lich. Rar., 1864, p. 13, Magnuss. Stud. Rivul. p. 48, »*L. parasema* var.» sec. adn. in hb. Nyl.).

Thallus tenuis, areolatus aut partim areolato-diffractus, areolis vulgo minutissimis, circ. 0.15—0.35 mm latis aut p. p. etiam majoribus, planis, contiguis, angulosis, cinerascentibus, p. p. angustissime cinereo-albido-marginatis, subpruinosis, opacis, sorediis destitutus, hypothallo nigricante limitatus. Apothecia dispersa et partim crebra, primum thallo immersa, dein mox adnata, basi non constricta, lat. 0.35—0.5 (—0.6) mm, disco plano, nigro, nudo, opaco, laevigato, margine tenui, integro, nigro, nudo, primum prominente, persistente aut demum excluso. Hypothecium fuscescens, parte superiore angusta pallida, hyphis erectis. Epitheciun aeruginosofuligineum. Paraphyses laxe cohaerentes. Ascii cylindrici. Sporae ellipsoideae, long. 0.010—0.012, crass. 0.005—0.006 mm.

*Distr.* LIn.: In latere rupis graniticae in reg. pinifera in Ruoptuinväara (Vain., l. c.).

Stratum corticale thalli ex apicibus hypharum obscuratis, clavatis, 0.005—0.006 mm latis, constipatis, formatum, strato hyalino destructo tenuissimo, leviter evoluto, partim obductum, quare thallus subpruinosus apparet, sed pruina e granulis formata deficiens. Thallus KOH non reagens. Peritheciun fusco- aut olivaceo-fuligineum. Hymenium jodo caerulescens, dein decoloratum, crass. circ. 0.100—0.110 mm. Paraphyses simplices, increbre septatae, non constrictae, crass. 0.0015 mm, apice leviter clavato-incrassatae. Sporae 8:nae, ellipsoideae, simplices. Gonidia cystococcaceae, globosa, simplicia.

122. *L. praenubila* Nyl.

Flora 1873 p. 21; Hue Addend. II (1888) p. 211; Zahlbr. Cat Lich. Un. III (1925) p. 674.

Thallus tenuis, areolatus, areolis 0.25—0.45 mm latis, planis aut saepe leviter concavis, medio rufescenti-pallidis (non pruinosis) margine angustissime cinereo-limbatis subpruinosisque, in hypothallo nigro aut subcinerascente, leviter rimuloso sparsis aut contiguis, innatis, sorediis destitutus, KOH et  $\text{CaCl}_2\text{O}_2$  non reagens, medulla jodo non reagente. Apothecia dispersa, adnata, basi non constricta, lat. circ. 0.5 mm, disco nigro, nudo, opaco, plano aut demum convexiusculo, margine obtuso, integro, nigro, nudo, non promi-

nente, demum excluso. Hypothecium fuscescens, parte superiore dilutius colorata, hyphis erectis. Epithecum olivaceo- et aeruginoso-fuligineum. Paraphyses laxe cohaerentes. Ascii clavati. Sporae ellipsoideae, »long. 0.012—0.016, crass. 0.006—0.008 mm» (sec. Nyl.).

*Distr.* KOn.: »Ad cataractam prope Koikari supra granitum cum *Lecanora argopholi*» (Norrl. Fl. Kar. Oneg. II p. 34).

Thallo habitu subsimilis *L. fuscoatrae* f. *rорidulae* in Herb. Lich. Fenn. cont. n. 755, sed proxima est *L. lygaeizae*, praesertim thallo medio non pruinoso, margine apotheciorum non prominente et ascis clavatis ab ea differens. Potius affinis est *L. atrocinereae* (*L. tenebrosae*), quam *L. fuscoatrae*. Hymenium »jodo intense caerulescens» (Nyl.). Sporae 8:nae, distichae, decolors, simplices. Thallus KOH non reagens. Gonidia cystococcaceae, globosa, inter autosporas (circ. 5) continentia.

*Obs.* It differs from the other species of this section in its clavate ascii. It could also have been referred to the *L. elaeochroma* section, but Vainio expressly states »proxima est *L. lygaeizae*», which was first described as a var. of *Lecidea tenebrosa* = *atrocineraria* (Schaer.) Vain. Unfortunately its pycnoconidia are unknown, they would have settled the question.

#### Sect. *Lecidea elaeochroma*.

Thallus pallidus. Sporae late ellipsoideae, paraphyses (vulgo) facillime vel facile discretae. Pycnoconidia longa, acicularia, arcuata vel subrecta. Hyphae medullares non amyloideae.

#### 123. *L. stigmatica* Ach.

Lich. Univ. (1810) p. 161 p. maj. p., Syn. Lich. (1814) p. 15 p. p. *Lichen parasemus* Ach. Lich. Suec. Prodr. (1798) p. 64 p. min. p. *Lecidea parasema* Nyl. Lich. Scand. (1861) p. 216 p. p. *L. elaeochroma* Th. Fr. Lich. Scand. II (1874) p. 542 p. p. (non Ach.). *L. enteroleuca* Arn. Lich. Jur. Fl. 1884 p. 164, Lich. Münch. (1891) p. 80 (non Ach., conf. Th. Fr. l. c. p. 549). *L. goniophila* Vain. Adj. Lich. Lapp. II (1883) p. 90 (nec Floerk., nec Nyl., conf. infra).

Thallus evanescens aut tenuis crassusve, verrucosus aut verruculis minutis immixtus, albidus vel impure albidus, KOH lutescens fulvescensve addito  $\text{CaCl}_2\text{O}_2$  lutescens fulvescensve, sorediis destitutus, hypothallo indistincto. Apothecia mediocria aut partim sat parva, adnata, basi leviter

aut sat bene constricta, disco plano aut demum convexo, atro aut raro fusco-nigro, nudo, margine tenui aut sat tenui, atro, vulgo nitido, persistente aut demum excluso. Hypothecium decoloratum pallidumve aut raro subrubescens, hyphis irregulariter contextis. Epithecum fuscescens nigricansve aut aeruginosum cyanescensve, KOH parum reagens. Paraphyses sat laxe cohaerentes, apicem versus leviter incrassatae, non distinete gelatinosae. Sporae 8:nae, ellipsoideae, long. 0.008—0.014, crass. 0.005—0.008 (—0.010) mm. Conidia filiformia, arcuata, long. circ. 0.016—0.030, crass. 0.0005—0.0008 mm. Vulgo saxicola.

*Distr.* Ad saxa rupesque locis apricis subumbrosisque sat frequenter passimve toto territorio.

*F. diasemoides* (Nyl.) Vain. *Lecidea diasemoides* Nyl. Fl. 1874 p. 11. *L. goniophila* var. *incongrua* f. *diasemoides* Vain. Adj. Lich. Lapp. II (1883) p. 91.

Thallus modice incrassatus aut rarius crassus vel sat tenuis, verucosus areolatusve, verrucis areolisque dispersis aut partim contiguis, vulgo difformibus, partim minutis, partim mediocribus vel tuberculoso-confluentibus vel verruculoso-inaequalibus, albidis. Apothecia vulgo mediocria. Epithecum fuscescens aut olivaceo-fuligineum nigricansve. Hypothecium albidum pallidumve.

*Distr.* Praesertim ad saxa granitica locis apricis passim vel sat frequenter.

Areolae et verrucae verruculaeque thalli lat. circ. 1—0.15 mm. Apothecia lat. vulgo 0.4—0.8 mm, tota adnata aut basi leviter constricta, atra, plana aut demum convexa, margine non aut primum prominente, saepe demum excluso. Conidia »bene arcuata, long. 0.015—0.021, crass. 0.0005 mm» sec. ann. Nyl. in specim. orig. e Kongsvold in Norvegia. In specim. ad Paloniemi in Kuus. collecto condangia subviolascens, sterigmata simplicia, conidia filiformia, bene arcuata, long. circ. 0.020 mm, perithecum extus violaceo- aut cyaneo-fuligineum, intus partim dilutius violascens cyanescensve, membranis leviter incrassatis.

*F. spathea* Vain. *L. goniophila* var. *incongrua* f. *spathea* Vain. Adj. Lich. Lapp. II (1883) p. 91, Lich. Caucas. (1899) p. 325.

Thallus modice incrassatus aut sat crassus aut sat tenuis, areolato-diffractus areolatusve, areolis subplanis aut p. p. convexis, vulgo contiguis, impure cinerascentibus aut dilute cinereo-fuseescentibus, saepe mediocribus. Apothecia mediocria aut sat parva. Epithecum subnigricans aut olivaceo- vel subviolaceo-nigricans aut rarius p. p. subaeruginosum. Hypothecium albidum pallidumve.

*Distr.* Praesertim supra lapides saxave granitica ad domicilia, in pratis et locis cultis passim.

Areolae thalli lat. circ. 1—0.3 mm et partim minores, laevigatae, et maiores verruculoso-inaequales. Apothecia lat. circ. 0.8—0.3 (—1.3) mm, basi leviter constricta aut tota adnata.

*Obs.* *L. diasemoides* f. *sublaevigata* Vain. (Lich. Vib., 1878, p. 66, Fl. Tav. Or., 1878, p. 115), thallo magis areolato, areolis planis, sublaevigatis aut leviter verruculosis, apotheciis interdum majoribus (—1.5 mm latis) descripta, a f. *spathea* est evoluta. Ad Järvenpää in Tuusula (N.) in rupibus littoralibus abundanter provenit, etiam alibi obveniens — *L. goniophila* f. *grisea* Vain., in Räsänen Ein. Flechtenf. (Meddel. F. Fl. Fenn. 46, 1921 p. 171), thallo griseo-obscurato vel cinereo-fuscescente et verruculis verrucisque convexis instructa leviter differt a f. *spathea*. Pluribus locis collecta.

*F. luxurians* Vain.

Thallus crassus, cinereus, rimoso-areolatus, areolis verruculoso-inaequalibus. Epithecum olivaceo-fuligineum vel nigricans aut sordide aeruginosum.

*Distr.* Ka.: In rupibus et saxis graniticis Viburgi (»*L. incongrua*« in Vain. Lich. Vib. p. 66). Ta.: In rupe syenitica Haukkavuori in Korpilahti (»*L. subcongrua*« a Nyl. a. 1874 determinata, »*L. incongrua*« in Vain. Fl. Tav. Or. p. 115).

Intermedia est inter f. *diasemoidem* et f. *caesiocinereum*, colore epithecii et verruculis thalli minoribus a posteriore differens. Thallus verruculis 0.05—0.1 mm latis, KOH flavescentis. Hypothecium crassum, hyphis erectis (sicut in *L. subcongrua* Vain.). Peritheciun in eodem apothecio variabile, dilute olivaceum aut nigricans, hyphis sat tenuibus. Paraphyses sat laxe cohaerentes, leviter gelatinosae, apice anguste clavatae colorataeque.

*Obs. 1.* *L. parasema* \**L. incongrua* Nyl. (Lich. Scand., 1861, p. 218, Fl. 1874 p. 11, Hue Addend. II, 1888, p. 181), ad lapidem in Kajaani a K. P. Malmgren collecta, exactius non sit determinabilis. Est planta morbosa, thallo instructa crasso, KOH non reagente aut leviter flavescente, addito  $\text{CaCl}_2\text{O}_2$  non reagente. Alia specimina postea huc relata dissimilia sunt. Oblivioni tradenda est.

*Obs. 2.* *L. incongrua* f. *bryobala* Nyl. in Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 327, thallo KOH lutescente deindeque rubescente et paraphysibus ramoso-connexis instructa, in stirpem *L. parasema* non pertinet.

*F. granulosa* (Arn.) Vain. *Lecidella goniophila* var. *granulosa* Arn. Lich. Tirol IV (1869) p. 644, Lich. Exs. (1869) n. 411 a, b (in herb. Nyl.). *Lecidea goniophila* var. *incongrua* f. *granulosa* Vain. Adj. Lich. Lapp. II (1883) p. 92. *L. parasema* \**L. latypiza* Nyl. Fl. 1873 p. 201 (conf. infra). *L. perltingens* Nyl. Fl. 1874 p. 313

(sec. Nyl. Fl. 1881 p. 456, Hue Addend. II p. 179, et sec. herb. Nyl.).

Thallus crassus aut mediocris, impure albidum. Epithecum aeruginoso-fuligineum.

*Distr.* LIn.: In latere rupis in reg. pinifera ad Paatsjoki.

Paraphysibus sat laxe cohaerentibus, non gelatinosis a *L. subcongrua* differt. — Thallus verrucis areolisque contiguis dispersis, verruculoso-inaequalibus aut sat laevigatis. Apothecia adnata, p. p. basi leviter constricta, plana aut demum convexa, vulgo mediocria. Perithecum in margine extus cyanescens aut subaeruginosum. Hypothecium pallidum albidumve. Sporae long. 0.01—0.017, crass. 0.005—0.007 mm.

*Obs.* *L. parasema* \**L. latypiza* Nyl., Fl. 1873 p. 201, Obs. Lich. Pyr. (1873) p. 57, Lich. Pyr. Obs. Nov. (1891) p. 81, Fl. 1881 p. 180 (Hue addend. II, 1888, p. 179), sec. specim. orig. n. 19532 in herb. Nyl. non est distinguenda a f. *granulosa* Arn. Epithecum cyanescens-fuligineum aut subolivaceo-nigricans. Paraphyses laxe cohaerentes, non distincte gelatinosae. Hypothecium pallidum. Sporae ellipsoideae, simplices. Sec. annot. Nyl. in n. 19530, ad St. Janin in Vienne collecto, conidia »filiformia, arcuata, long. 0.017—0.022, crass. 0.0005 mm.» *L. latypea* f. *latypiza* Nyl. in Vain. Fl. Tav. Or. 1878 p. 115 (a Nyl. determ.) ad *L. Luhankačnsem* Vain. pertinet.

*L. parasema* \**L. subincongrua* Nyl. Obs. Lich. Pyr. Or. (1873) p. 37, Lich. Pyr. Obs. Nov. (1891) p. 63, »thallo crass. 2 mm vel tenuiore (KOH cum  $\text{CaCl}_2\text{O}_2$  aurantiaco-rubescente sec. annot. Nyl.), conidiis arcuatis, long. 0.015, crass. 0.0005 mm» instructa, in Fennia non est collecta.

*F. caesiocinerea* Vain. *L. goniophila* var. *incongrua* f. *granulosa* sf. *caesiocinerea* Vain. Adj. Lich. Lapp. II (1883) p. 92.

Thallus crassus, obscure caesio-cinereus. Epithecum cyanescens-vel aeruginoso-fuligineum.

*Distr.* LIn.: In scopulo littorali in Tervaniemi (Vain.).

Thallus areolis verrucaeformibus, 2.2—0.3 mm latis, contiguis, convexis, saepe verruculoso-tuberculosis, KOH flavo-lutescentibus. Apothecia tota adnata aut inter areolas thalli semiimmersa, lat. circ. 1.3—0.3 mm, convexa, saepe tuberculosa, gonidiis destituta. Paraphyses sat laxe cohaerentes, non gelatinosae. Hymenium circ. 0.060—0.080 mm crassum. Perithecum extus cyanescens aut subaeruginosum, hyphis radiantibus, conglutinatis, membranis modice incrassatis, distincte gelatinosis. *L. (Aspicilium) caesiocinereum* Nyl. in memoriam revocans, sed vix satis differens a f. *granulosa*.

*F. macra* Vain.

Thallus e verruculis parvis, subalbidis, dispersis constans. Epithecum fusco-fuligineum aut olivaceo-fuscescens. Hypothecium

decoloratum pallidumve. Peritheciū partim extus aeruginosum, ceterum subdecoloratum.

*Dislr.* KLad.: In rupe gneissacea in Haukkariutta in insula lacus Laatokka (Vain.). Ta.: In rupe granitica ad Vanha-Jutila in Jutinsalo in par. Luhanka (Vain., sec. determ. Nyl. a. 1874 »*L. subcongrua macra*«).

Facie externa similis *L. albidocinerellae* et *L. incongruella*e, thallo KOH lutescente ab iis differens. Intermedia est inter f. *diasemoidem* et f. *glabram*. Thallus  $\text{CaCl}_2\text{O}_2$  non reagens, verruculis 0.05—0.1 mm latis. Apothecia sat dispersa, lat. 0.5—1 mm, basi parum aut leviter constricta, disco plano aut demum convexo, atro aut raro fusco atro, subnitido, margine tenui, persistente aut demum excluso. Hypothecium hyphis irregulariter contextis. Peritheciū 0.050—0.060 mm crassum, hyphis sat tenuibus, modice pachydermaticis, cavitibus angustissimis, oblongis. Hymenium 0.080 mm crassum. Paraphyses sat laxe cohaerentes, simplices, leviter aut vix distincte gelatinosae, apice leviter clavatae. Sporae ellipsoideae aut parce etiam globosae, long. 0.011—0.015 (—0.007), crass. 0.007—0.009 (—0.004) mm.

*F. glabra* (Krempelh.) Vain. Adj. Lich. Lapp. II (1883) p. 90. *Lecidella glabra* Krempelh. in Arn. Lich. Exs. (1859) n. 44, Lich. Bay. (1861) p. 196 (excl. Arn. I. c. n. 45, conf. infra). *Lecidea enteroleuca* Nyl. in Vain. Fl. Tav. Or. (1878) p. 115, Nyl. Fl. 1881 p. 186, Lich. Paris (1896) p. 90, in Hue Addend. II (1888) p. 180 (nec Ach. Lich. Univ. p. 177, nec Syn. Lich. p. 19, conf. Th. Fr. I. c. p. 549). *L. euphorea* \**L. enteroleuca* Nyl. in Brenner Bidr. Hogl. Lafv. (1885) p. 99. *L. goniophila* var. *atrosanguinea* Vain. Adj. Lich. Lapp. II (1883) p. 90 (non Floerk.). *L. leptoderma* Dub. Bot. Gall. (1830) p. 651 sec. Nyl. in Fl. 1881 p. 187, sed exactius non cognita.

Thallus evanescens obsoletusve aut e verruculis dispersis parcis subalbidis constans. Epithecium nigricans aut olivaceo- vel subfuscensenti- vel subaeruginoso-fuligineum. Hypothecium pallidum albidumve. Peritheciū vulgo totum subfuligineum.

*Dislr.* In laterbus abruptis rupium scopulorumque praesertim graniticorum schistosorumque sat frequenter aut passim provenit.

Apothecia basi saepe distincte constricta, disco plano aut demum convexo, margine tenui, persistente aut demum excluso. Hypothecium jodo non reagens aut superne anguste caerulescens, hyphis sat tenuibus, irregulariter contextis, membranis modice incrassatis, cavitibus angustis, saepe oblongis. Peritheciū fuscensenti- aut violaceo-fuligineum aut in margine subcyanescens, circ. 0.050—0.100 mm crassum, hyphis sat regulariter radiantibus, sat tenuibus, modice aut leviter pachydermaticis, cavitibus angustis, oblongis aut p. p. ellipsoideis, in parte inferiore interdum intus dilute coloratum. Hymenium circ. 0.070—0.075 mm crassum. Paraphyses sat laxe cohae-

rentes, simplices, non aut vix distinete gelatinosae, apicem versus sensim leviter incrassatae (clava obscurata crass. 0.002—0.003 mm), ceterum crass. circ. 0.001 mm. Sporae 8:nae, distichae aut p. p. monostichae, ellipsoideae aut parce etiam globosae, long. 0.008—0.014, crass. 0.005—0.008 mm. Conidia »filiformia, bene arcuata, long. 0.016—0.030, crass. 0.0005—0.0008 mm» sec. annot. in specim. hue pertinentibus in herb. Nyl.

*Obs. 1.* Ob colorem variantem epithecii in duas formas dividi non potest, nam in eodem specimine haec variationes observantur.

*Obs. 2.* In specim. orig. *Lecidellae glabrae* Krempelh. n. 20017 in herb. Nyl. hymenium superne caeruleo-sordido, epithecio fuscescente, KOH non reagente, peritheciun intus caeruleo-sordido, extus fuscescente, hypothecium albidum, thallus albidus, laevigatus, calcis immixtus evanescensque, conidia (sec. annot. Nyl.) »bene arcuata, long. 0.020, crass. 0.0005—0.0008 mm».

*Obs. 3.* *L. lalypea* Ach., Meth. Lich. Suppl. (1803) p. 10, sec. specim. orig. e Suecia (a Westring missum) ad *L. planam* Lahm pertinet, thallo instructa verrucoso (nec verruculosus), cinereo, nec KOH nec jodo reagente, hypothecio sordide pallescente, ex hyphis erectis formato, hymenio circ. 0.120 mm crasso, indistincte limitato, epithecio olivaceo-fuligineo, paraphysibus arte cohaerentibus, leviter gelatinosis, apice leviter incrassatis (sporis non visis). In sensu variante hoc nomen a Nyl. adhibitum est; in Brenner Bidr. Hög. Lafv. p. 98 specim. ad Selkäpajanlahti lectum sec. Nyl. pertinet ad »*L. ternarium*». *L. parasema* \**L. lalypea* f. *ecrustacea* Brenner l. c. (1885) exactius non cognita.

*F. hypoleuca* (Th. Fr.) Vain. *L. elaeochroma* δ *hypoleuca* Th. Fr. Lich. Scand. II (1874) p. 544. *L. enteroleuca* var. *hypoleuca* Vain. Lich. Vib. (1878) p. 66.

Thallus tenuis aut sat tenuis, verruculosus aut verruculoso-inaequalis, cinerascens albidusve. Apothecia atra, vulgo plana marginataque. Hypothecium albidum pallidumve. Lignicola.

*Distr.* Ka.: Ad tectum ligneum putridum Viburgi (Vain. l. c.). Ta.: In aquaeductu ligneo molinae ad Tammijoki in Luhanka (Vain.).

Thallus KOH lutescens, addito  $\text{CaCl}_2\text{O}_2$  non reagens, hypothallo non aut parum evoluto. Apothecia saepe sat crebra, fere tota adnata, lat. circ. 0.5—0.6 mm (»1—1.4 mm» sec. Th. Fr.), disco nudo, parum nitido, margine nitido. Hypothecium hyphis sat tenuibus, sat lepto-dermaticis, irregulariter contextis. Perithecium circ. 0.069—0.080 mm crassum, in margine extus aeruginosum, ceterum subalbidum, hyphis radiantibus, increbre ramoso-connexis, sat pachydermaticis, cavitatis angustis, saepe oblongis. Hymenium circ. 0.070 mm crassum. Epithecium olivaceo-aeruginoso-fuligineum. Paraphyses sat laxe cohaerentes, leviter gelatinosae, apice anguste obscureque clavatae.

124. **L. Luhankaënsis** Vain. (n. sp.)

Thallus sat tenuis, verruculosus verrucosusque, verrucis dispersis, partim in soredia fatiscentibus, albido-cinerascentibus; KOH lutescentibus,  $\text{CaCl}_2\text{O}_2$  non reagentibus, hypothallo indistincto. Apothecia sat parva aut mediocria, usque ad marginem adnata, disco plano aut demum convexo, atro, nudo, margine tenuissimo, atro, persistente aut demum excluso. Hypothecium albidum aut subalbidum aut partim luteo-fuscescens, hyphis irregulariter contextis aut superne partim suberectis. Epithecium fusco-fuligineum aut (in eodem apothecio) partim aeruginoso-fuligineum, KOH parum reagens. Paraphyses sat laxe cohaerentes, apice leviter incrassatae, non distincte gelatinosae. Sporae 8:nae, ellipsoideae, long. 0.009—0.014, crass. 0.007—0.009 mm.

*Distr.* Ta.: In latere rupis gneissaceae, soli exposito ad Varma in Luhanka (»*L. latypea* f. *latypiza*« sec. determ. Nyl. in Vain. Fl. Tav. Or., 1878, p. 115).

Intermedia inter *L. stigmateam* et *L. subinsequentem*, sed ab ambabus thallo soredioso differens. Apothecia dispersa, lat. 0.3—1.1 mm. Hypothecium jodo dilute caerulescens. Peritheciun fuscobrunicoso-fuligineum, in margine interdum aeruginoso-fuligineum, KOH parum reagens, hyphis radiantibus, sat tenuibus, parum pachydermaticis. Hymenium circ. 0.070—0.080 mm crassum, jodo caerulescens, dein vinose rubens. Sporae distichae, ellipsoideae, simplices.

*Obs.* *L. parasema* \**L. latypiza* Nyl., Fl. 1873 p. 201, ad *L. stigmateam* f. *granulosam* (Arn.) Vain. pertinet (conf. sub ea).

125. **L. goniophila** Floerk.<sup>1)</sup>

Berl. Mag. (1809) p. 311 (sec. herb. Ach.); Nyl. Fl. 1881 p. 186, Lich. Paris (1896) p. 90. *L. immersa* β *atrosanguinea* Floerk. l. c. p. 308 (sec. herb. Ach.). *Biatora pungens* Koerb. Lich. Sel. Germ. I (1856) n. 13 (in herb. Nyl.). *Lecidea pungens* Nyl. Fl. 1878 p. 248, Fl. 1881 p. 4. *L. goniophila* var. *atrosanguinea* f. *glabra* (Kremp.) Vain. Adj. Lich. Lapp. II (1883) p. 90 (Th. Fr. Lich. Scand. p. 547).

Thallus evanescens vel tenuissimus, albidus vel cinerascens.

<sup>1)</sup>). Literature and distinction of the 3 formae by Vainio, the descriptions by Lynge.

Apothecia adpressa, diam. 0.4—1.0 mm., plana vel deinde subconvexa, marginata. Excipulum in parte interiori incoloratum, praeterea fusco-fuligineum vel violascens, hypothecium incoloratum vel dilute flavescent. Hymenium superne aeruginoso-nigrescens, rarius (?) subviolascens, KOH vulgo plus minusve caerulescens. Paraphyses facillime liberae. Sporae late ellipsoideae, leptodermatae, (8—) 9—15 × (5—) 7—9  $\mu$ .

Pycnoconidia acicularia, recta vel arcuata, (10—) 12—30 × 0.8—1  $\mu$  longa.

Thallus J. KOH et  $\text{CaCl}_2\text{O}_2$  non reagens, hymenium J e caeruleo sordide vinosum.

*Obs.* Nylander wrote: »*L. goniophila* Flk. est prius nomen *L. pungens*« (Hue Addenda Nov ap. 180). It is evident that Vainio's *Lecidea goniophila* Flk. corresponds to *Lecidea elaeochroma* & *pungens* (Kbr.) Th. Fr. Lich. Scand. p. 543.

*Lecidea goniophila* is a saxicolous species. For practical purposes that will distinguish it from the corticolous or lignicolous species *Lecidea glomerulosa* and *Lecidea olivacea*. But the editor has been unable to detect how he should distinguish with certainty any plant of *Lecidea goniophila* from *Lecidea stigmatica*. The latter species has a much better developed thallus, Vainio attributes a »thallus modice incrassatus aut sat crassus« to its numerous formae, with few exceptions. The editor has got the impression that the excipulum is darker in *Lecidea stigmatica*.

*F. pungens* (Koerb.) Vain. *Biatora pungens* Koerb. Lich. Sel. Germ. I (1856) n. 13 (in herb. Nyl.). *Lecidea pungens* Nyl. Fl. 1878 p. 248, 1881 p. 4 p. p. (excl. Zwackh Lich. Exs. n. 605). *L. goniophila* Floerk. l. c. (in herb. Ach.); Nyl. Fl. 1881 p. 188 p. p., Lich. Paris (1896) p. 90 p. p. *L. nigrocruenta* Anzi Lich. Rar. Langob. X (1863) n. 402 (in herb. Nyl.), Symb. (1864) p. 18

Thallus evanescens vel subevanescens, minutissime disperse inconspicue verrucoso-granulatus (diam. granularum circiter 0.1 mm), albidus vel subalbidus.

Apothecia mediocria, diam. 0.4—1.0 mm, substrato adpressa, dispersa vel interdum hinc inde magis conglomerata. Discus niger, humidus fusco-nigrescens, diu vel persistenter planus, laevigatus, epruinosus, bene marginatus, deinde saepe subconvexus margine excluso. Excipulum in parte exteriori solum obscuratum, fusco-fuligineum vel plus minusve in violascentem vergens, praeterea incoloratum. Hypothecium cum parte superiori excipuli confluit, incoloratum

vel dilute flavescens. Hymenium 70—75  $\mu$  altum, superne aeruginoso-nigrescens vel interdum in violascentem vergens. Paraphyses distinctae, facile discretae, simplices, in apice non incrassatae. Ascii saccati, 14—18  $\mu$  crassi, membrana matura superne non vel leviter incrassata. Sporae bene evolutae, octonae, leptodermaticae, late ellipsoideae, 10—15  $\times$  7—8.5  $\mu$ .

Hymenium J e caeruleo sordide vinosum, KOH decoloratum vel pallide aeruginosum. Thallus J et KOH incoloratus.

Vainio (note): »conidia recta aut leviter arcuata, 12—18  $\times$  1  $\mu$  (Nyl. Herb. No. 19925).»

Vainio (note): »in latere rupium. Non sit rara, sed tantum conidiis certe determinanda.»

F. *enteroleuca* (Nyl.) Vain. *Lecidea enteroleuca* Nyl. Fl. 1881 p. 186, Lich. Paris (1896) p. 90; Hue Addend. II (1888) p. 180 (non Ach. Lich. Univ., 1810, p. 19, nec Syn. Lich., 1814, p. 19). *L. euphorea* \**L. enteroleuca* Nyl. in Brenn. Bidr. Hogl. Lafv. (1885) p. 99.

Thallus ut in praecedenti forma (f. *pungenti*), etiam structura apotheciorum. Sporae 9—12  $\times$  7—9  $\mu$ .

*Obs.* Vainio (note): »conidia arcuata 20—30  $\times$  0.8  $\mu$ , sec. annot. Nyl. in bibl. sua.»

Vainio (note): »huc forsitan pertinent *Lecidea immersa*  $\beta$  *atrosanguinea* Floerk. Berl. Mag. (1809) p. 308, *Lecidea dubia* Schaer. Lich. Helv. Spic. (1828) p. 148 et *Lecidea leptoderma* Dub. Bot. Gall. (1830) p. 651 et *Lecidea goniophila*  $\beta$  *egena* Kremph. Lich. Bay. (1861) p. 196. Sed conidia eorum incognita sunt. *Lecidea glabra* Kremph. in Koerb. Par. Lich. 3 Lief. (1861) p. 211 est intermedia inter f. *subsequentem* et f. *enteroleucam* Nyl.»

In Brenner Hoglands Lafvar p. 99 Nylander writes on his *Lecidea euphorea* Flk. \**L. enteroleuca* (Ach.) Nyl.: »F. thallo crassiore, sporis minoribus.»

In numerous plants in Vainio's herb. (Nos. 23883—93), all of them determined by Nylander, there is hardly any visible thallus. Nylander contented himself with the suggestion on the spore size, he gave no measures. In Vainio's herb., there was a note by Vainio: 9—12  $\times$  7—9  $\mu$  (No. 23890), the editor examined another plant (No. 23889) and found the same size: 9—11  $\times$  7  $\mu$ .

Evidently Vainio saw the real difference between f. *pungens* and f. *enteroleuca* in the length and form of the pycnoconidia. Unfortunately the pycnidia are very rare.

The editor does not venture any suggestion on its distribution in Finland. But there are several plants in Vainio's herbarium.

F. *subpungens* Vain. *Lecidea pungens* Nyl. Fl. 1881 p. 4 p. p. et in Zwackh Lich. Exs. n. 605. *L. goniophila* var. *atrosanguinea* f.

*pungens* Vain. Adj. Lich. Lapp. II (1883) p. 90 (*Biatora pungens* Koerb. Par. Lich. 2 Lief., 1860, p. 161 p. p., sec. descr.).

Vainio's description in Adjumenta l. c.: »Thallus obsoletus. Summa pars hymenii nigricans, smaragdulo-caerulescenti- vel olivaceo-nigricans.»

*Obs.* The editor has seen some of Vainio's Lapponian plants. There are several herb. notes, as is often the case in Vainio's herb. The editor has collaborated them in the following manner:

»Thallus disperse minute verrucosus vel obsoletus. --- Apothecia diu plana marginata vel interdum primo convexiuscula, margine vix ullo, dein convexa immarginata. Excipulum crassum, margine violaceo-fuligineum vel violascenti-fuscescenti-fuligineum, KOH -. Hypothecium fulvescens-lutescens vel subincoloratum. Hymenium 70  $\mu$  altum, superne violascenti-fuligineum vel sordide violascenti-olivaceo-fuligineum, J caerulescens, dein obscure violascens, praesertim asci, KOH -. Epithecium vix granulosum. Paraphyses laxae vel sat laxae, clava 2—3  $\mu$  crassa, ceterum 1  $\mu$ . Sporae late ellipsoideae, 8—14  $\times$  5—8  $\mu$ .»

A manuscript note by Vainio: »conidia recta filiformia, 10—12  $\times$  0.6  $\mu$ .»

Vainio in Adjumenta l. c.: »in lateribus praeruptis rupium et saxorum crescit.»

### 126. *L. subsequens* Nyl.

Flora 1874 p. 11, Fl. 1883 p. 108; Hue Addend. II (1888) p. 181.

*L. elaeochroma* f. *subsequens* Th. Fr. Lich. Scand. II (1874) p. 551.

*L. goniophila* var. *subsequens* Vain. Adj. Lich. Lapp. II (1883) p. 91.

*Exs.* Norrl. et Nyl. Herb. Lich. Fenn. cont. (1921) n. 747.

Thallus evanescens tenuissimusve (aut raro sat tenuis: f. *Paatsjokensis*), dispersus, verruculosus aut verriculosoinaequalis, albidus aut impure albidus, KOH lutescens, hypothallo indistincto. Apothecia sat parva aut partim medioria, tota adnata aut basi leviter constricta, disco plano, vulgo demum convexo, atro aut fuscoatro (aut raro livido-nigricante: f. *Paatsjokensis*), nudo, margine tenui, atro, persistente aut demum excluso. Hypothecium pallidum aut decoloratum, hyphis irregulariter contextis. Epithecium fuscescenti- aut rufesceni-purpureum, KOH distinctius purpureum. Paraphyses sat laxe cohaerentes, leviter gelatinosae, apice clavatae et p. p. etiam non incrassatae. Sporae

8:nae, ellipsoideae aut parce globosae, long. 0.009—0.015 (0.005—0.018), crass. 0.006—0.008 (—0.005) mm. Conidia »filiformia, arcuata, long. 0.021—0.028, crass. 0.0005—0.0006 mm» (sec. Nyl. Flora 1883 p. 108).

*Distr.* In rupibus calcareis et raro micaceo-schistosis graniticisque rara. Ab.: Simonby et Skräbböle (F. Elfving) et Storby (L. Kari) in Pargas, Pellonkylä in Karjalohja (Norrl., H. L. F. n. 747). N.: Brändskär prope Tvärminne (E. Häyrén), Degerö prope Helsingforsiam (Vain.). Ta.: Evo in Lammi (Lång). LIn.: In reg. pinif. ad Paatsjoki (Vain., f. *Paatsjokensis*).

Apothecia lat. 0.5—0.8 (—1) mm, disco opaco aut leviter nitido, margine saepe nitido, interdum primum leviter prominente. Peritheciū circ. 0.080—0.090 mm crassum, extus purpureo-fuscescens, intus dilute coloratum aut decoloratum, partes coloratae KOH purpurascentes, hyphis radiantibus, modice aut sat pachydermaticis, cavitibus angustis, oblongis aut in margine parcius ellipsoideis latioribusque, jodo non reagens. Hypothecium interdum dilute subroseum, hyphis sat tenuibus, membranis sat tenuibus, cavitatibus angustis, parte superiore (circ. 0.030 mm crassa) jodo caerulescens, parte inferiore non reagens. Hymenium circ. 0.060—0.080 mm crassum, jodo caerulescens, dein (in solutione magis concentr.) totum fulvo-fuscescens. Paraphyses simplices aut partim furcatae, in KOH laxius cohaerentes, tubulis 0.001 mm latis aut p. p. latioribus, saepe clava colorata 0.0015 (aut 0.003—0.004) mm crassa. Sporae distichae, simplices.

F. *Paatsjokensis* Vain.

Thallus bene evolutus. Apothecia nigricantia et p. p. livido-nigricantia.

*Distr.* LIn.: In latere rupis graniticae in reg. pin. ad fl. Paatsjoki (»v. *subsequens*« Vain. l. c. p. 91).

Thallus sat tenuis, albidus, KOH lutescens, verruculis et parce etiam verrucis areolisque dispersis et partim parce contiguis, granulis sorediorum parcissimis dispersisque. Apothecia lat. 0.5—1.2 mm, late adnata, disco demum convexo, nitido opacove, nudo, margine atro aut livido, aut demum excluso. Hypothecium albidum pallidumve, jodo parte superiore caerulescens, KOH lutescens, hyphis irregulariter contextis. Peritheciū extus fuscescens aut subviolascens aut p. p. violaceo-cyanescens aut partim et subtus subdecoloratum, intus decoloratum aut fuscescens, jodo non reagens, hyphis modice aut sat pachydermaticis. Hymenium circ. 0.080 mm crassum. Epitheciū (in ap. obscurioribus) subfuscens aut subpurpureo-fuscescens, KOH paullo distinctius subpurpureum. Paraphyses sat laxe cohaerentes, duarum formarum, aut fuscescenti-

clavatae aut p. min. p. non clavatae, leviter gelatinosae. Sporae long. 0.009—0.012 (0.007—0.018), crass. 0.006—0.008 mm. Gonidia cysto-coccoidea, globosa, diam. 0.009—0.014 mm, tantum simplicia visa.

127. **L. subcongrua** Vain.

Adj. Lich. Lapp. II (1883) p. 97, Lich. Sibir. Merid. (1896) p. 19, Exp. Antaret. Belge Lich. (1903) p. 34, Lich. Exp. Amdrup (1905) p. 138, Lich. Exp. Vegae Pitlekai (1909) p. 135 (non *L. subcongrua* Nyl., Fl. 1874 p. 11, ad *L. goniophilam* f. *diasemoidem* pertinens).

Thallus crassus mediocrisve aut raro tenuis evanescensve, verrucosus et verruculis minutis immixtus, verrucis verruculique convexus aut raro partim planis, vulgo dispersis et partim contiguis confluentibusve, aut raro partim subcontinuus rimosusque, albidus vel impure albidus vel subosseous-albidus, KOH lutescens, addito  $\text{CaCl}_2\text{O}_2$  lutescens fulvescensve, non sorediosus, hypothallo indistincto. Apothecia mediocria aut partim sat parva, adnata aut rarius partim semiimmersa subimmersa, basi non aut raro partim leviter constricta, simplicia aut rarius demum tuberculato-divisa vel acervulato-prolifera, disco plano aut vulgo demum convexo, atro, subopaco aut subnitido, nudo, margine tenui aut sat tenui, haud prominente, atro aut parte inferiore pallescente, nitido, demum vulgo excluso. Hypothecium decoloratum pallidumve, in parte superiore hyphis suberectis. Epithecum cyanescens aut aeruginoso-fuligineum. Paraphyses arcte cohaerentes, leviter gelatinosae, apice non aut leviter incrassatae. Sporae 8:nae, ellipsoideae, long. 0.007—0.018, crass. 0.005—0.006 (—0.008) mm. Conidia filiformia, recta aut parce etiam leviter arcuata, long. 0.010—0.018, crass. 0.001 mm.

*Distr.* In rupibus scopolisque graniticis, granuliticis cet. locis ventosis crescit. Ab.: Olkkala in Vihti (Lång). Sb.: Harjula prope oppid. Kuopio (Linkola). Kb.: In ins. Kynsisaari in Nurmes (Vain. Adj. Lich. Lapp. II p. 97). OKaj.: Lehtovaara in Kianta (Vain. I. c.). Kuus.: in reg. subalp. montis Iivaara (Vain. I. c.). LIn.: In reg. subalp. jugi Suoloselkä et montis Hammastunturi (f. *elaeochromiza* et f. *incongruens*), in reg. pinif. montis Ruoptuinväara (Vain. I. c.).

*F. latypella* Vain.

Thallus tenuis, dispersus, aut evanescens. Apothecia saepe medioria, disco nigricante. Epithecium fuscescens- aut subviolaceo-fuligineum. Hypothecium p. p. rubricosum subfuscescensve et p. p. albidum. Peritheciun extus purpureo-fuligineum vel subviolascens-nigricans, intus subdecoloratum et in margine subrubricosum.

*Distr.* N.: Munksnäs prope Helsingforsiam (Lång). Kuus.: In latere rupis graniticae ad Mäntyjoki (*L. goniphila* \**L. latypiza* in Vain. Adj. Lich. Lapp. II p. 92).

Proxima est *L. subsequenti* Nyl., in eam forsan transiens, hyphis peritheciis crassioribus, bene pachydermaticis a *L. stigmata* (f. *diase-moide*) differens. Thallus albidus, KOH lutescens,  $\text{CaCl}_2\text{O}_2$  non reagens, esorediatus, verruculis areolisque parvis, hypothallo indistincto. Apothecia lat. 1—0.7 mm, late adnata, basi bene constricta, disco piano aut demum convexo, nigricante aut fusco-nigro, sat opaco, margine atro, nitido, non aut raro leviter prominente, subpersistente. Hypothecium in eodem apothecio colore varians, jodo parte superiore caerulescens, hyphis irregulariter contextis. Peritheciun jodo non reagens, partes coloratae KOH distinctius purpureae aut subviolascentes, hyphis bene pachydermaticis, increbre ramoso-connexis, cavitatibus angustis, elongatis. Hymenium circ. 0.080 mm crassum. Epithecium KOH parum reagens. Paraphyses sat laxe cohaerentes, leviter gelatinosae, duarum formarum in eodem apothecio, aut subfuscescens-clavatae aut apice nec clavato nec colorato. Sporae simplices, long. 0.010—0.014, crass. 0.005—0.008 mm.

Thallus verrucis verruculisve circ. 2.5—0.2 mm latis,  $\text{CaCl}_2\text{O}_2$  solo non reagens. Apothecia lat. 1.8—0.4 mm. Hypothecium hyphis in parte superiore modice pachydermaticis sat erectis, irregulariter contextis immixtis, conglutinatis, demum in parte inferiore irregulariter contextis, sat pachydermaticis, conglutinatis et partim etiam aëre disjunctis, totum jodo caerulescens, cavitatibus cellularum angustis, vulgo oblongis elongatisve. Peritheciun aeruginosum aut sordide subviolaceum, subtus pallescens subalbidumve, aut intus pallescens, ex hyphis radiantibus, pachydermaticis aut sat pachydermaticis, conglutinatis, partim parce ramoso-connexis formatum, leviter granulosum, jodo non reagens, cavitatibus tenuibus, oblongis. Hymenium jodo caerulescens aut demum partim subviolascens. Paraphyses simplices et p. p. parce ramoso-connexae, membrana in KHO leviter turgescente, non mox mollescente, cavitatibus tenuibus, vix 0.001 mm crassis. Sporae distichae, simplices, apicibus rotundatis. Conidangia thallo immersa, puncto nigro indicata.

*F. elaeochromiza* Vain. Adj. Lich. Lapp. II (1883) p. 98.

Thallus evanescens aut e verruculis parcis, parvis constans.

*Distr.* In rupe decliva granitica in reg. subalp. montis Ilammas-tunturi in LIn. (Vain.).

*F. incongruens* Vain. l. c.

Thallus sat tenuis, e verruculis constans parvis, circ. 0.2—0.1 mm latis, parce etiam majoribus difformibusque.

*Distr.* Ad saxa granitica in reg. subalp. montis Hammastunturi in LIn. (Vain.).

Apothecia lat. 0.9—0.5 mm, adnata, diu plana marginataque. Peritheciun in margine extus aeruginoso- aut fuscesceni-fuligineum, parte inferiore extus fuscescens pallescensve, intus albidum, leviter granulosum.

*Obs.* *L. subcongrua* Nyl. (Fl. 1874 p. 11, Lich. Pyr. Or. 1891 p. 63), sec. specim. orig. n. 20142, in Pietsovaara collecto (»*L. incongrua*« Nyl. in Norrl. Ber. Torn. Lappm. p. 338), paraphysibus sat laxe cohaerentibus, non gelatinosis, apicem versus leviter incrassatis, epithecio sordide subfuscescente, parum caerulescente instructa, ad »*L. diasemoidem*« Nyl. pertinet, quare hoc nomen in sensu Nylanderiano suppressendum, in sensu nostro adhiberi potest

128. *L. atrosanguinea* (Floerk.) Vain. (n. comb.)

*L. immersa* β *atrosanguinea* Floerk. Berl. Mag. (1809) p. 308 sec. specim. aut. in herb. Ach. (*Verrucaria punctata* \**V. atrosanguinea* Hoffm. Deutschl. Fl. II, 1796, p. 192 exactius non est cognita). *L. goniophila* Nyl. Fl. 1881 p. 188 p. p. (sec. determ.), Lich. Paris (1896) p. 90 p. p. (*L. immersa* v. *goniophila* Floerk. Berl. Mag. 1809 p. 311 sec. specim. aut. in herb. Ach. ad *Sarcogynem simplicem* pertinet). *L. pungens* Nyl. Fl. 1878 p. 248 p. p., Fl. 1881 p. 4 p. p., Lich. Paris (1896) p. 90 p. p. (sec. determ., conf. infra).

Thallus evanescens aut rarius distinctus, tenuis, dispersus subdispersusve, areolatus verriculosusve, impure albidus, KOH non reagens, hypothallo indistincto. Apothecia mediocria aut partim sat parva, adnata, basi leviter aut rarius sat bene constricta, disco plano aut demum convexo, atro aut fusco-nigro aut raro sublivido-nigrante, nudo, margine tenui, atro, persistente aut demum excluso. Hypothecium decoloratum pallidumve, hyphis irregulariter contextis aut superne partim suberectis. Epitheciun fuscescens aut partim subdecoloratum, KOH reagens. Paraphyses arcte cohaerentes, leviter gelatinosae, apice non aut leviter incrassatae. Sporae 8:næ, ellipsoideæ aut parce subglobosæ, long.

0.009—0.015, crass. 0.007—0.008 mm. Conidia »filiformia, subrecta aut leviter arcuata, long. 0.011—0.014 mm» (sec. annot. in specim. a me missis in herb. Nyl.).

*Distr.* In lateribus rupium graniticarum gneissacearumque ad Herala in Hollola (Vain., »*L. pungens*» sec. determ. Nyl.) et Sikomäki in Padasjoki in Ta. (Norrl. et Vain., »*L. pungens*» sec. Nyl.). Jutinsalo in Luhanka (Vain., s. n. *Lecidea renegata* = *L. atrosanguinea* f. *renegata* Vain.).

Thallus KOH olivaceus, addito  $\text{CaCl}_2\text{O}_2$  non reagens, areolatus verruculosusque. Apothecia lat. 0.5—0.7 mm, margine demum excluso. Peritheciū circ. 0.075—0.100 mm crassum, hyphis sat regulariter radiantibus, sat tenuibus, sat leptodermaticis, cavitatibus angustis, oblongis, fusco-fuligineum et partim parce cyanescens, jodo non reagens. Hypothecium hyphis sat tenuibus, membranis sat tenuibus, cavitatibus angustis, jodo non reagens. Hymenium circ. 0.080 mm crassum, jodo caerulescens, dein partim decoloratum. Paraphyses simplices, tubulis 0.001 mm latis, apice — 0.0015 mm latis. Conidia »levissime arcuata, long. 0.011—0.014 mm» (sec. annot. Nyl. in n. 19921 ex Herala).

*F. Heralensis* Vain.

Discus livido-fuscescens. Thallus tenuis.

*Distr.* Loco subumbroso subhumidoque in silva ad Herala (supra indicata).

*Obs.* In specimine a Nyl. anno 1874 »*L. pungens*» determinato, supra rupem graniticam in Jutinsalo in Luhanka (Ta.) collecto, conidia sec. annot. Nyl. (in n. 19932) sunt »filiformia, recta, long. 0.015—0.016, crass. 0.001 mm», sed thallus nec KOH, nec  $\text{CaCl}_2\text{O}_2$  reagens, parce evolutus dispersusque, jodo non reagens, apothecia margine paullo crassiore, perithecio 0.080—0.090 mm crasso, fuscescenti-fuligineo, hypothecio dilute fuscescenti-pallido aut sordide pallido aut superne sordido ceterumque decolore, paraphysibus sat arcte aut sat laxe cohaerentibus, leviter gelatinosis, apice clavata aut non incrassata, sporis ellipsoideis aut p. p. globosis, diam. 0.006—0.012, crass. 0.006—0.007 mm. Parce collecta, nec certe determinabilis, forsitan non autonoma species (f. *renegata*).

## 129. *L. albidocinerella* Vain.

*L. incongruella* var. *albidocinerella* Vain. in Räsänen Ein. Flechtenf. (Meddel. Soc. F. Fl. Fenn. 46, 1921 p. 171).

Thallus sat tenuis aut modice incrassatus, e verruculis constans minutis minutissimisque, dispersis aut p. p. contiguis, glaucescenti- vel cinerascenti-albidis, nec KOH nec

$\text{CaCl}_2\text{O}_2$  reagens, hypothallo indistincto. Apothecia parva, tota adnata aut basi leviter constricta, disco plano aut demum convexo, atro, nudo, margine tenui, atro, persistente aut demum excluso. Hypothecium rufescens fuscescensve, hyphis erectis. Epithecum aeruginoso-fuligineum. Paraphyses sat laxe cohaerentes, parum gelatinosae, apice obscure clavatae. Sporae 8:nac, ellipsoideae aut parce globosae, long. 0.007—0.013, crass. 0.005—0.008 mm.

*Distr.* Ad rupes et saxa granitica littoralia crescit. Ab.: Una cum *Buellia coniope* (Wahlenb.) abundanter ad Ajonpää in ins. Luonnonmaa in par. Naantaali (Vain.), in Bälaskär in Pojo (Widar Brenner). Ob.: Tiurasenkrunni in Simo (V. Räsänen).

Proxima et facie externa subsimilis *L. distralae* Arn. (Lich. Tirol XXIII p. 100), quae thallo KOH bene lutescente ab ea differt. *L. incongruella* Vain. (Lich. Exp. Vegae Pitlekai p. 133), excipulo et hypothecio pallidiore et apotheciis impure nigris recedens, forsitan est autonoma species. Thallus verruculis 0.15—0.65 mm latis, esorediatus. Apothecia vulgo crebra, lat. 0.5—0.3 mm, disco sat opaco, margine saepe nitido. Hypothecium hyphis leviter pachydermaticis, cellulis brevibus, superne interdum partim pallidius. Perithecum fuligineum vel fusco-aut olivaceo-fuligineum aut in margine aeruginoso-fuligineum, circ. 0.050—0.060 mm crassum, hyphis tenuibus, parum pachydermaticis, cavitatibus angustis. Hymenium circ. 0.070—0.080 mm crassum, saepe totum dilute aeruginosum, jodo caerulescens deindeque vino rubens. Paraphyses sat laxe cohaerentes, parum gelatinosae, simplices, apice clavatae, clava obscurata, 0.002—0.003 mm crassa. Sporae distichae, simplices. Gonidia cystococcoidea, etiam autosporas continentia.

*Obs.* Specimina ad rupem littoralem in Ruissalo prope Aboam lecta, perithecio extus in margine aeruginoso, ceterum subdecolorato et hypothecio dilutius rufescente a *L. albiodocinella* differentia, vix nisi apotheciis intense atris a *L. incongruella* recedunt.

### 130. *L. euphorea* (Floerk.) Nyl.<sup>1)</sup>.

Flora 1881 p. 187, Lich. Paris (1896) p. 89. *L. sabuletorum* γ *euphorea* Floerk. Berl. Magaz. 1808 p. 311, Deutsch. Lich. (1815)

<sup>1)</sup>. Evidently after much hesitation Vainio had resolved to use the species name *Lecidea euphorea*. The species name *Lecidea glomerulosa* was often found in his manuscript. On the latter assumption he had called one forma *Lecidea glomerulosa* f. *euphorea* (Flk.) Vain.

p. 6, n. 4 (sec. herb. Ach.). *L. parasema* Nyl. Lich. Scand. (1831) p. 216 p. p.; Arn. Lich. Jur. Fl. 1884 p. 165, Lich. Münch. (1891) p. 79, Lich. Tirol XXX (1897) p. 28. *L. glomerulosa* Nyl. Fl. 1872 p. 356; Nyl. in Herb. Lich. Fenn. IV (1875) n. 192; Vain. Adj. Lich. Lapp. II (1883) p. 92, Lich. Exp. Vegae Pitlekai (1909) p. 132. *L. elaeochroma* Th. Fr. Lich. Scand. II (1874) p. 542 p. p.

Thallus tenuis aut crassus, verrucoso- et verruculosoinaequalis, albidus aut raro cinereo-glaucescens subolivaceusve, sorediis destitutus, KOH non aut raro leviter lutescens,  $\text{CaCl}_2\text{O}_2$  non reagens, hypothallo obscurato interdum limitatus, vulgo indistincto. Apothecia mediocria aut sat parva, fere tota adnata aut latere thallum parum superantia, disco plano aut demum convexo, atra nigricantiave aut raro fuscescentia, nuda. Hypothecium fulvescens aut rufescens, in parte superiore hyphis erectis. Epithecium aeruginosum aut subcyanescens aut raro fuscescens, KOH parum reagens. Paraphyses sat laxe aut raro arcte cohaerentes, leviter gelatinosae, apicem versus leviter incrassatae. Sporae 8:nae, ellipsoideae aut raro partim oblongae subglobosaeve, long. 0.010—0.016, crass. 0.006—0.009 mm. Conidia filiformia, arcuata, long. circ. 0.018—0.020, crass. 0.0005 mm (conf. infra). Corticola aut lignicola.

*F. euphorea* (Floerk.) Vain. Lich. Vib. (1878) p. 66, Adj. Lich. Lapp. II (1883) p. 94. *L. sabuletorum* γ' *euphorea* Floerk. Berl. Magaz. 1808 p. 311, Deutsch. Lich. 1 Lief. (1815) p. 6, n. 4 (sec. herb. Ach.).

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Having given preference to the species name *euphorea*, Vainio had found this same name inapplicable for the forma, and he had lined through the name, unfortunately without substituting another name. Such intricate questions can only be solved by a careful investigation of the many types. In order to avoid more confusion and more unnecessary names the editor has contented himself with this remark, and he has — ad interim — used Vainio's first name *f. euphorea* (Flk.) Vain., although he finds it inapplicable, as a homonym of the species name.

The editor cannot exclude his suspicion that Vainio had contemplated a division of this species into two: *Lecidea euphorea* and *Lecidea glomerulosa*. But the editor was unable to detect specific differences in Vainio's descriptions.

Thallus crassus aut modice incrassatus, verruculoso-inaequalis verruculosusque, verruculis contiguis dispersive, cinerascens aut albidus, nec KOH nec  $\text{CaCl}_2\text{O}_2$  reagens aut KOH leviter lutescens. Apothecia parva aut p. p. mediocria, cebra, atra, disco convexo aut primum plano, immarginata aut primum tenuissime marginata. Hypothecium rufescens aut violascens fuscescensve aut superne fulvescens.

*Distr.* Ad lignum vetustum praesertim in saepimentis et tectis, raro ad corticem Alni et Populi crescens, passim in prov. meridionalibus mediisque provenit. Lignicola ad Thule in Inari (F. Silén, n. 222, 316).

Thallus verruculis circ. 0.2—0.3 (—0.1) mm latis, hypothallo indistincto. Apothecia lat. circ. 0.3—0.6 mm, usque ad marginem adnata aut in latere parum thallum superantia, disco leviter nitido aut opaco. Hypothecium hyphis sat leptodermaticis, cavitatibus ellipsoideis subglobosisve aut partim oblongis, 0.2—0.1 mm latis, in parte superiore demum vulgo crassa erectis, in parte inferiore irregulariter contextis. Peritheciun extus aeruginosum, intus violascens aut rufescens, hyphis tenuibus. Hymenium circ. 0.070—0.090 mm crassum. Epitheciun aeruginoso- aut subcyaneo-fuligineum. Paraphyses sat laxe aut (in specimine saepincola n. 516 Helsingforsiae collecto) arcte cohaerentes, leviter gelatinosae, apice obscuratae et leviter clavato-incrassatae aut p. p. parum incrassatae. Sporae vulgo ellipsoideae et long. 0.012—0.016, crass. 0.007—0.009 mm, simplices, sed saepe duas guttulas oleosas continentia.

*Obs.* F. *hypoporphryea* Vain., ad corticem Populi in Peltola prope Aboam a me collecta, thallo instructa obscure cinerascente, KOH non reagente, verruculis dispersis, 0.05—0.1 mm latis, apotheciis dispersis, lat. 0.3—0.8 mm, disco primum plano, demum convexo, margine tenui, hypothecio intense violaceo, perithecio extus aeruginosum, intus violaceo, epithecio aeruginoso, paraphysisibus sat laxe cohaerentibus, parce gelatinosis, apice clavatis, sporis long. 0.012—0.016, crass. 0.008—0.009 mm, analoga est *L. albocinerellae* saxicolae, sed f. *euphorae* proxima.

F. *achrista* (Sommerf.) Vain. Adj. Lich. Lapp. II (1883) p. 93. *L. elaeochroma* f. *achrista* Sommerf. Suppl. Fl. Lapp. (1826) p. 150, Cent. Pl. Norv. (1826) n. 46 (Mus. Berol. et Hels.); Th. Fr. Lich. Scand. II (1874) p. 544 p. p. *L. glomerulosa* f. *populnea* Vain. Lich. Vib. (1878) p. 65, Fl. Tav. Or. (1878) p. 115. *L. euphorea* f. *laeviuscula* Nyl. in Brenner Bidr. Hogl. Lafv. (1885) p. 99.

Thallus tenuis, continuus, verruculoso-inaequalis. Apothecia atra, disco vulgo nitido, plano aut demum convexo; margine nitido, persistente aut demum excluso. Hypothecium vulgo fulvescens aut rufescens vel in eodem apothecio partim rufescens.

*Distr.* Praesertim ad corticem *Populi tremulae* in partibus mediis meridionalibusque territorii frequenter aut sat frequenter, septentrionem versus rarescens. Kuus.: In reg. abiet. montis livaara (Vain. Adj. Lich. Lapp. II p. 93). LIN.: In reg. pinif. ad Ruoptuinvaara (Vain. I. c.).

Thallus nec KOH nec  $\text{CaCl}_2\text{O}_2$  reagens aut KOH leviter flavescentes lutescensve (in speciminiibus in herbario longe asservatis, olim reagentibus, nunc reactionem nullam observavi), verruculis circ. 0.15—0.65 mm latis vulgo dispersis, leviter prominentibus, sorediis destitutus, hypothallo indistincto aut cinerascente nigricanteve interdum partim limitatus. Apothecia lat. 0.8—1.3 mm, basi fere usque ad marginem adnata, dispersa aut partim crebra. Hypothecium interdum superne etiam pallidum, hyphis sat tenuibus, sat leptodermaticis, cavitatibus oblongis ellipsoideisque, in parte superiore primum tenui demumque crassa hyphis erectis, in parte infima horizontalibus et irregulariter contextis. Peritheciun totum aeruginoso-cyanescens aut sordide violascens in eodem apothecio quoque, circ. 0.050—0.060 mm crassum, hyphis tenuibus, sat leptodermaticis aut apice saepe crassioribus (crass. 0.005—0.006 mm) et leviter pachydermaticis, cavitatibus oblongis ellipsoideisque. Hymenium circ. 0.070 (—0.120) mm crassum, jodo caerulescens deindeque vino rubens. Epitheciun aeruginoso-cyanescens (aut raro partim in eodem apothecio violascens), non granulosum. Paraphyses simplices, sat laxe cohaerentes (aut raro arcte cohaerentes), leviter gelatinosae, apice obscuratae et leviter clavato-incrassatae. Sporae distichae, simplices, ellipsoideae aut rarius oblongae.

F. *Laureri* (Hepp) Vain. Adj. Lich. Lapp. II (1883) p. 93. *Biatora Laureri* Hepp Flecht. Eur. (1853) n. 4 (in herb. Nyl.). *Lecidella Laureri* Koerb. Par. Lich. (1865) p. 215. *Lecidea elaeochroma*  $\eta$  *Laureri* Th. Fr. Lich. Scand. II (1874) p. 544 p. p. (excl. specim.  $\text{CaCl}_2\text{O}_2$  rubesc.). *L. Laureri* Arn. Lich. Tirol Catal. XXX (1897) p. 28. *L. papillata* Fr. Lich. Suec. Exs. XII (1852) n. 352 (in herb. Nyl.), non Sommerf. *L. parasema* var. *leucoplacoides* Nyl. Lich. Scand. (1861) p. 217 (sec. herb. Nyl.). *Biatora enteroleuca*  $\beta$  *rugulosa* b *grandis* Hepp I. c. XIII (1867) n. 725 (in herb. meo). *L. dia-sema* Nyl. Fl. 1872 p. 356; Hue Addend. II (1888) p. 179.

*Exs.* Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 192, cont. (1921) n. 748 b.

Thallus crassus aut modice incrassatus, verrucosus aut verrucoso-rugosus, albidus aut impure albidus, KOH non reagens. Apothecia sat parva aut fere mediocria, atra, plana aut demum convexa, marginata aut demum immarginata. Corticola.

*Distr.* Ad corticem Populi et Sorbi passim provenit.

Thallus verrucis 0.3—1 mm latis et p. p. minoribus, hypothallo

indistincto. Apothecia saepe crebra aut sat crebra, lat. vulgo 0.5—1 mm, usque ad marginem adnata aut in latere thallum parum superantia, disco vulgo opaco. Hypothecium fulvescens aut parte inferiore fulvo-rufescens. Perithecium colore varians, saepe dilute aut extus intense aeruginosum cyanescens et in basi subdecoloratum. Epithecium aeruginosum aut subcyanescens. Paraphyses sat laxe cohaerentes (in speciminiibus leviter morbosis arete cohaerentes). Conidia »filiformia, arcuata, long. 0.018—0.020, crass. 0.0005 mm» (sec. annot. Nyl.).

*Obs. 1.* Specimina intermedia inter f. *Laureri* et f. *euphorea*, ad corticem Alni lecta sunt.

*Obs. 2.* *Lecidea papillata* f. *subviridescens* Nyl. apud Norrl. Ber. Torn. Lapp. (1873) p. 340 (Th. Fr. Lich. Seand. II p. 593, *L. perlutescens* Nyl. Fl. 1878 p. 249, Hue Addend. II p. 224, *Buellia* Vain. Lich. Exp. Vegae Pitlekai p. 84), sterilis in Fennia collecta, non est *Bilimbia subviridescens* (Nyl. Fl. 1868 p. 474, Hue l. c. p. 153), in ins. Caesarea collecta.

*F. tabescens* (Koerb.) Arn. Lich. Fränk. Jur. Fl. 1885 p. 165. *Biatora tabescens* Koerb. Syst. Lich. Germ. (1855) p. 203, Lich. Sel. Germ. VI (1857) n. 164. *L. glomerulosa* f. *ambigua* (Mass.) Vain. Adj. Lich. Lapp. II (1883) p. 94.

Thallus tenuis aut modice incrassatus, glaucescens aut cinereo-glaucescens aut subolivaceus, verruculosus- aut partim verrucosoinaequalis. Apothecia vulgo sat parva aut tuberculoso-prolificantia medioeria, fuscescentia et p. p. nigricantia.

*Distr.* N.: Ad corticem Alni in Brunnsparken Helsingforsiae (Vain.). LKem.: Ad corticem Juniperi prope templum in Kemi-järvi (Vain. l. c.).

Thallus sat continuus, nec KOH, nec  $\text{CaCl}_2\text{O}_2$  reagens, hypothallo indistincto. Apothecia lat. 0.3—0.8 (raro —1.4) mm, vulgo convexa immarginataque, opaca, non pruinosa. Hypothecium fulvescens aut fulvo-rufescens rufescensve. Perithecium dilute aeruginosum at inferne subdecoloratum aut partim rufescens. Epithecium olivaceum aut (in apotheciis nigricantibus) aeruginosum. Paraphyses sat laxe cohaerentes, leviter gelatinosae, apice obscurato-clavatae. Sporae long. 0.010—0.015, crass. 0.006—0.008 mm.

*Obs.* *Biatora ambigua* Mass. Ric. Lich. Crost. (1852) p. 124 sec. Arn. Lich. Jur. Fl. 1885 p. 167 pertinet ad *L. olivaceam* f. *limitaltam* (Ach.) Vain. (»achristam Sommerf.»).

### 131. *L. olivacea* (Hoffm.) Mass.

Ric. Lich. Crost. (1852) p. 71; Vain. Lich. Caucas. (1899) p. 326, Lich. Exp. Vegae Pitlekai (1909) p. 132. *Biatora olivacea* Hepp

Flecht. Eur. (1853) n. 3. *L. parasema* \**L. olivacea* Arn. Lich. Jur. Fl. 1884 p. 167, Lich. Münch. (1891) p. 80. *L. olivacea* Arn. Lich. Tirol XXX (1897) p. 28. *Verrucaria punctata* \**V. olivacea* Hoffm. Deutschl. Fl. II (1796) p. 192 forsas p. p. (excl. specim. saxicolis). *L. parasema* β *L. elaeochroma* Ach. Meth. Lich. (1803) p. 36 (alnicoila), Lich. Univ. (1810) p. 175. *L. elaeochroma* Ach. Syn. Lich. (1814) p. 18 p. p. (conf. Th. Fr. I. c. p. 549); Th. Fr. Lich. Scand. I (1874) p. 542 p. p. *Lichen parasemus* Ach. Lich. Suec. Prodr. (1798) p. 64 p. p. (conf. Th. Fr. I. c. p. 593). *L. parasema* Ach. Meth. Lich. (1803) p. 35 p. min. p.; Nyl. Bot. Not. 1852 p. 175 p. p., Lich. Scand. (1861) p. 216 p. p., Fl. 1866 p. 132, Fl. 1881 p. 187 (Hue Addend. II p. 177), Lich. Par. (1896) p. 89, Nyl. in Lamy Cat. Lich. Mont-Dore (1880) p. 110 (excl. var. *exigua*). *Patellaria glomerulosa* D. C. Fl. Fr. 3 ed. II (1805) p. 347 (sec. Nyl. in Fl. 1881 p. 187 et in Brenner Bidr. Hogl. Lafv., 1885, p. 99).

Thallus tenuis aut sat crassus, verruculoso- et verrucosoinaequalis aut sat laevigatus, glaucescens aut flavidus aut rarius albidus cinerascensve, sorediis destitutus, KOH sublutescens, addito  $\text{CaCl}_2\text{O}_2$  fulvescens vel aurantiaco-rubescens, hypothallo obscurato distincto aut rarius indistincto. Apothecia mediocria aut sat parva, fere tota adnata, disco plano aut demum convexo, atra nigricantiave aut raro fuscescentia, nuda. Hypothecium rufescens aut subfuscescens aut subviolascens aut superne fulvescens pallidumve (aut albidum in apotheciis novellis), in parte superiore hyphis erectis. Epithecum aeruginosum aut subcyanescens aut raro partim violascens vel subolivaceum, KOH parum reagens. Paraphyses sat laxe aut arcte cohaerentes, leviter gelatinosae, partim apicem versus leviter incrassatae. Sporae 8:nae, ellipsoideae aut partim subglobosae, long. 0.007—0.016, crass. 0.006—0.008 mm. Conidia filiformia, varie curvata, long. 0.014—0.025, crass. fere 0.001 mm (conf. infra). Corticola aut muscicola aut raro lignicola.

F. *limitata* (Ach.) Vain. Lich. Caucas. (1899) p. 326. *Lichen parasemus* var. *limitata* (Scop.? ) Ach. Lich. Suec. Prodr. (1798) p. 65 (sec. specim. Suecic. in herb. Ach.). *L. parasema* f. *limitata* Vain. Adj. Lich. Lapp. II (1883) p. 94. Conf. Arn. Lich. Fragm. XXXIII (1894) p. 20.

Thallus tenuis aut sat tenuis, leviter verruculoso-inaequalis aut sat laevigatus, glaucescens aut subalbidus, supra hypothallum nigri-

cantem aut caeruleo-nigricantem dispersus aut hypothallo obscurato partim limitatus. Apothecia saepe mediocria dispersaque, disco atro.

*Distr.* Ad corticem *Sorbi aucupariae* et raro *Fraxini*, *Quercus* et *Pyri mali* et *Coryli* in provinciis australibus locis numerosis collecta. Al.: Sat frequenter. Ab.: Runnala (F. Elfving) et Ispoinen (Vain.) prope Aboam, Brändö prope Jurmo (H. Hollmén et V. Sederholm), Merimasku (P. A. Karsten). N.: Helsingforsia (Räsänen), Hoglandia (»v. *elaeochroma* in Brenner Bidr. Hogl. Lafv.), Raseborg (A. Kullhem), Kyrkslätt (Kullh., H. Lindberg, Vain.), Mjölö (H. Hollmén) et Degerö (A. Sola) ad Helsingforsiam. KLad.: Pekanvuori (Vain.). KOn.: Perttiniemi (Norrl. I. c. p. 32).

Thallus KOH leviter flavescent, addito  $\text{CaCl}_2\text{O}_2$  subfulvescens deindeque aurantiaco-rubescens aut punetis rubris,  $\text{CaCl}_2\text{O}_2$  solo non reagens, hypothallo tenui. Apothecia lat. 1—0.5 mm, usque ad marginem adnata aut ad basin leviter constricta, dispersa aut rarius sat crebra, disco plano aut demum convexo, opaco aut leviter nitido, margine tenui, atro, saepe demum excluso. Hypothecium superne pallidum fulvescensve aut primum (in apotheciis novellis) albidum, ceterum fuscens aut dilute fuscens rufescensve, hyphis sat tenuibus, sat leptodermaticis, cavitatibus oblongis ellipsoideisque, in parte infima irregulariter contextis. Peritheciun in margine aeruginoso-fuligineum, ceterum violascens aut extus violaceo-fuligineum, aut partim sordide pallidum, circ. 0.050—0.060 mm crassum, hyphis radiantibus, sat leptodermaticis et tenuibus aut apice saepe crassioribus (crass. 0.005—0.006 mm) et leviter pachydermaticis, cavitatibus oblongis ellipsoideisque. Hymenium circ. 0.070 mm crassum, jodo caerulescens deindeque vinose rubens. Epitheciun aeruginoso-cyanescens, non granulosum. Paraphyses simplices, sat laxe cohaerentes, leviter gelatinosae, apice saepe obscuratae et leviter clavato-incrassatae. Sporae 8:næ, distichæ, simplices, vulgo ellipsoideæ aut p. p. subglobosæ, saepe long. 0.008—0.013, crass. 0.006—0.007 mm.

*F. elaeochroma* (Ach.) Vain. *L. parasema*  $\beta$  *L. elaeochroma* Ach. Meth. Lich. (1803) p. 36 (alnicola); Nyl. Lich. Scand. (1861) p. 217; Herb. Lich. Fenn. VII (1882) n. 326. *L. anomala*  $\gamma$  *flavicans* Ach. Syn. Lich. (1814) p. 39. *L. enteroleuca*  $\delta$  *flavida* Fr. Vet. Ak. Handl. 1822 p. 261 (corticola) sec. Th. Fr. *L. parasema* v. *flavens* Nyl. Lich. Scand. (1861) p. 217; Hue Addend. II (1888) p. 178. *L. parasema* \**L. flavens* Nyl. Lich. Paris (1896) p. 89.

Thallus tenuis aut modice incrassatus, leviter aut bene verruculoso-inaequalis, flavidus aut flavidо-glaucescens, hypothallo nigricante vel caeruleo-nigricante partim limitatus. Apothecia saepe mediocria et sat crebra, disco nigro nigricanteve.

*Distr.* Ad corticem arborum, velut *Alni glutinosae*, *Sorbi aucupariae*, *Populi tremulae*, *Coryli*, *Fraxini*, *Pyri mali*, *Betulae*, *Hippo-*

*phaës*, crescit, raro etiam lignicola (E. Nylander). Al.: Passim, velut in Ramsholmen in Jomala, Lemböte et Nåtö in Lemland, Gripö in Föglö (Vain.). Ab.: Prope templum in Naantali (Vain.), Runsala (A. Kullhem). N.: Somerikonyvuoret (Vain.), Maahelli Hoglandiae (M. Brenner), Punavuoret, Fredriksberg, Tölö et Mjölkö Helsingforsiae (Vain.), Högholmen cet. in Kyrkslätt (Kullh.).

Thallus KOH leviter fulvescens, addito  $\text{CaCl}_2\text{O}_2$  aurantiaco-rubescens,  $\text{CaCl}_2\text{O}_2$  solo rubescens (in solutione bona), continuus aut dispersus et plagis saepe hypothallo obscurato disjunctis, hypothallo tenui. Apothecia lat. vulgo 0.7—1.3 (—0.4) mm, disco opaco, margine tenui, nigricante aut atro aut cinereo-nigricante, opaco aut rarius nitido, persistente aut demum excluso. Hypothecium superne fulvescens, inferne rufescens. Peritheciun in margine aeruginosum, ceterum dilutius aeruginosum subalbidumve aut extus intense aeruginosum. Hymenium circ. 0.100 mm crassum. Epithecium aeruginoso-cyanescens. Sporae long. 0.008—0.013, crass. 0.006—0.009 mm. Conidia »filiformia, bene arcuata, long. circ. 0.018 mm» sec. annot. Nyl., »long. 0.015—0.017, crass. 0.0007—0.0008 mm» sec. Hue Lich. Canisy, 1892, p. 131.

*F. dolosa* (Ach.) Vain. *Lecidea dolosa* Ach. Meth. Lich. Suppl. (1803) p. 11 p. p., Lich. Univ. (1810) p. 181 (a) sec. herb. Ach. *L. parasema*\**L. dolosa* Nyl. Fl. 1881 p. 187, Hue Addend. II (1888) p. 179. *L. elaeochroma*  $\times$  *dolosa* Th. Fr. Lich. cand. II (1874) p. 544 p. p. *L. parasema* f. *dolosa* Vain. Adj. Lich. Lapp. II (1883) p. 95.

Thallus tenuis aut modice incrassatus, glauco- aut cinerascenti-flavescens. Apothecia saepe crebra, sat parva, p. p. fuscescentia nigricantiaque.

*Distr.* Ad corticem et lignum trunci et ramorum abietis in reg. Conif. mixt. locis vere inundatis ad pag. Sodankylä, ubi etiam ab Ach. indicatur (LKem.) et ad Törmänen (LIn.) sec. Vain. l. c. In Alandia (E. Nylander).

Thallus verruculosoinaequalis, continuus aut dispersus, KOH non distincte reagens, addito  $\text{CaCl}_2\text{O}_2$  et hac solutione sola rubescens, non sorediosus (conf. Th. Fr. l. c.), hypothallo indistincto aut linea hypothallina cinerascente obscuratove partim limitatus. Apothecia lat. circ. 0.4—0.8 mm, opaca, interdum partim subpallescenti-variegata, saepe convexa immarginataque aut primum margine tenui subconcolore instructa. Hypothecium superne fulvescens, ceterum rufescens aut subviolascens fuscescensve. Peritheciun vulgo subviolascens. Epithecium violascens aut aeruginoso-fuligineum, ceterum hymenium saepe dilute aeruginosum, jodo caerulescens, deindeque obscure vinose rubens. Paraphyses arcte aut sat laxe cohaerentes, leviter gelatinosae, apicibus leviter incrassatis, vix obscuratis. Sporae saepe circ. 0.010, crass. 0.007 mm. Conidia »plus minusve arcuata,

long. usque ad 0.020, crass. fere 0.001 mm» (Hue Lich. Canisy, 1892, p. 132).

F. *Wulfenii* (Hepp) Vain. *Biatora Wulfenii* Hepp Flecht. Eur. I (1853) n. 5. *Lecidella* Koerb. Par. Lich. (1865) p. 216, Arn. Lich. Tirol IV (1869) p. 637. *Lecidea* Arn. l. c. XXI (1880) p. 137, XXX (1897) p. 14 (222), Cat. p. 28. *L. parasema* var. *latypea* f. *Wulfenii* Stizenb. Lich. Helv. I (1882) p. 178. *L. glomerulosa* f. *Wulfenii* Vain. Lich. Caucasia (1899) p. 326, Lich. Exp. Vegae Pitlekai (1909) p. 131. *Lecidella Laureri* b *muscorum* Koerb. Syst. Lich. Germ. (1855) p. 246 (non *Lichen muscorum* Wulf. sec. Arn. Zur Erinn. Wulf. 1882, p. 161). *Lecidea enteroleuca*  $\beta$  *muscorum* Th. Fr. Lich. Spitsb. (1867) p. 40; Tuck. Syn. North Am. Lich. II (1888) p. 80. *L. elaeochroma*  $\lambda$  *muscorum* Th. Fr. Lich. Scand. II (1874) p. 545. *L. euphorea* \**muscorum* Nyl. in Kihlm. N. Beitr. Flecht. Kola (1891) p. 57. *L. parasema* v. *latypea* f. *muscicola* Nyl. Lich. Scand. (1861) p. 217.

Thallus sat crassus aut sat tenuis, albidus aut impure albicans. Apothecia atra. Muscicola et terricola.

Dislr. Al.: Bastö (Edwin Nylander, »f. *muscicola*« Nyl. l. c.). N.: Ad terram Hoglandiae (E. Nyl.). Ta.: Muurila (A. Kullhem). Ob.: Kalkkimaa in Alatornio (Räs.). LPon.: Ponoi et Katschkovo (N. I. Fellman), Orlov (A. O. Kihlman). LKem.: Alipahta in Enontekiö (J. P. Norrlin). In Finmarkia passim sec. Th. Fr.

Thallus verruculoso- et verrucoso-inaequalis, continuus dispersus, non sorediosus, KOH dilute lutescens, addito  $\text{CaCl}_2\text{O}_2$  fulvescens aut subaurantiacus,  $\text{CaCl}_2\text{O}_2$  solo non reagens, hypothallo indistincto. Apothecia vulgo approximata, saepe demum confluentia tuberculosaque, lat. 0.3—1 mm, demum convexa immarginataque, nigra, opaca aut rarius leviter nitida, nuda. Hypothecium fulvofuscens aut fulvescens, in parte superiore ex hyphis erectis formatum, in parte inferiore hyphis irregulariter contextis. Peritheciun parte inferiore violascens fuscescensve aut pallidum, parte superiore margineque aeruginoso-fuligineum. Hymenium circ. 0.080—0.100 mm crassum, jodo caerulescens deindeque vinose rubens. Epitheciun aeruginosum aut rarius olivaceum. Paraphyses laxe aut sat laxe cohaerentes, leviter gelatinosae, apice leviter et parum incrassatae. Sporae long. 0.007—0.016, crass. 0.007—0.008 mm. Conidangia »atra, punctiformia, conidia varie curvata, long. 0.014—0.025, crass. 0.001 mm» (sec. Arn. Lich. Tirol XXX p. 14).

F. *euphoreoides* Vain. Lich. Caucasia (1899) p. 326, Lich. Exp. Vegae Pitlekai (1909) p. 132. *L. parasema* f. *euphoreoides* Vain. Adj. Lich. Lapp. II (1883) p. 95.

Thallus vulgo modice incrassatus aut crassus, albidus aut cinerascens. Apothecia atra. Vulgo corticola.

*Distr.* Ab.: Ad corticem Sorbi in Ruissalo et Luolavuori et ad corticem Quercus in Ispoinen prope Aboam (Vain.). N.: Ad corticem Sorbi in Suomenlinna (Vain.). LKem.: Ad corticem Betulae prope templum in Sodankylä (Vain. l. c.).

Thallus verruculosus aut verrucosus, saepe subdispersus, KOH superne leviter flavescent, intus distinctius lutescent aut demum fulvescent, addito  $\text{CaCl}_2\text{O}_2$  intus aurantiaco-rubescens aut fulvescent, hypothallo caeruleo-nigricante, tenui vulgo inter verrucas et ad limitem thalli vulgo evoluto. Apothecia dispersa aut sat crebra, parva aut mediocria, lat. 0.3—1 mm, convexa aut plana, immarginata aut marginata, atra, saepe leviter nitida. Hypothecium fulvo-fuscescens aut rufescens. Perithecium aeruginosum aut violascens aut inferne subdecoloratum. Epithecum aeruginosum. Sporae long. 0.010—0.013, crass. 0.0065—0.008 mm.

*Obs.* *Lichen dubius* Borr. in Sm. Engl. Bot. (1814) tab. 2547 sec. annot. Nyl. in specim. orig. n. 16862 in herb. Nyl. ad *L. olivaceam* lignicolam pertinet, thallo »KOII cum  $\text{CaCl}_2\text{O}_2$  aurantiaco» (sec. Nyl.).

### 132. *L. (?) parasemella* Nyl.<sup>1)</sup>

Nyl. Addenda Nova, Flora 1868 p. 344, Th. Fr. Lich. Scand. II (1874) p. 552. *L. parasema* (non *L. exigua*, quod errat. typogr. sec. ann. Nyl.) \**L. parasemella* Nyl. in Hue Addend. II (1888) p. 179.

Thallus effusus, tenuis, minutissime granulato-verrucosus, granulae 0.1—0.2 mm, interdum leviter papilliformiter protractae, pallide fuscescentes, nitidiusculae. Thallus sorediis isidiisque destitutus.

Apothecia numerosa vel numerosissima, minuta, diam. 0.2—0.3 mm, adpressa. Discus nitidus, epruinosus, ater, optime planus, deinde leviter convexulus, margine subconcolori, integro, tenui, non prominulo circumdatus. Excipulum fuscescens vel fusco-rubens, etiam cum hypothecio. Hymenium altum: 88—100  $\mu$ , superne caerulescens vel caerulescenti-fuligineum vel pallide caerulescens. Paraphyses facile discretae, apicibus solum magis cohaerentes, hinc inde sparse ramosae, apice non incrassatae (sed saepe adspersae, et eam ob causam clavatae videntur). Ascii subcylindrici, 10—13  $\mu$  crassi, membrana in-

<sup>1)</sup> By B. Lynge.

crassata. Sporae uniseriales, late ellipsoideae vel subglobosae vel mutua pressione subquadratae, valde pachydermaticae,  $9-14 \times 8-11 \mu$ .

Pycnides ignotae, frustra quaesitae.

Thallus KOH obscure fuscescit,  $\text{CaCl}_2\text{O}_2$  non tingitur, J non caerulescens. Hymenium J e caeruleo sordide decoloratur, asci tamen magis persistente caerulescunt. Hymenium KOH immutatum vel decoloratur.

Distr. Lapponia Enontekiensis: par. Enontekis in cacumine montis Pahtavaara prope Hetta, supra muscos emortuos, leg. J. P. Norrlin.

Th. Fries contested Nylander's statement: »Parasita supra thallum *Lecideae vernalis*», on the reason: »Re vera crustam habet propriam distinctamque». The editor examined the brownish, somewhat gelatinous granules, surrounding the apothecia, and found large, thick-walled gonidia, which he referred to *Trentepohlia*.

As stated by Th. Fries, the spores are very like those of *Lecidea Tornoënsis*, the editor would also compare them with those of *Lecio-physma finmarkicum*. Its narrow asci, uniserial spores and the discrete paraphyses agree well with the species of the *Lecidea tenebrosa* section (if it is a *Lecidea*). Th. Fries placed it in the *Lecidea elaeochroma* section, and the editor has done the same, although with much hesitation, for all the species of the *Lecidea tenebrosa* section are saxicolous.

#### Sect. *Lecidea armeniaca*.

Thallus flavidus vel expallens, hypothecium pallescens, paraphyses arcte cohaerentes (in aqua), hyphae medullares non amyloideae. Species saxicolae.

#### 133. *L. aglaea* Sommerf.

Suppl. Fl. Lapp. (1826) p. 144; Fr. Lich. Eur. Ref. (1831) p. 322; Nyl. Prodr. Lich. Gall. (1857) p. 380, Lich. Scand. (1861) p. 228; Th. Fr. Lich. Arct. (1860) p. 219, Lich. Spitsb. (1867) p. 41, Lich. Scand. II (1874) p. 534; Vain. Adj. Lich. Lapp. II (1883) p. 82, Lich. Exp. Vegae Pitlekai (1909) p. 136; Arn. Lich. Tirol XXII (1886) p. 66, XXIII (1887) p. 84, XXVII (1896) p. 109; Harm. Cat. Lich. Lorr. (1899) p. 93; Zahlbr. Cat. Lich. Un. III (1925) p. 502; Magnusson Studien über *Lecidea*-Arten der *Lecidea armeniaca*- und *elata*-Gruppe (1931) p. 95. *Lecidella aglaea* Koerb. Syst. Lich. Germ. (1855) p. 240, Par. Lich. 3 Lief. (1861) p. 199. *Oedemocarpus aglaeus*

Trev. Riv. Acc. Padova V (1857) p. 76. *Lichen miscellus* Sm. Engl. Bot. XXVI (1808) t. 1831 (non Ach.), sec. Leight. *Lecidea spectabilis* var. *intumescens* Flot. Fl. 1828 p. 698 (sec. cit.). *L. aglaeida* Nyl., Fl. 1884 p. 215.

*Exs.* Anzi Lang. IV (1861) n. 150 (s. n. *Lecidea Brunneri*). — Arnold Lich. Exs. n. 554 et n. 713 (s. n. *Lecidella Brunneri*). — Erb. Crit. Ital. I, fasc. VIII (1860) n. 386. — Flotow Lich. Exs. II n. 167 A. (s. n. *Lecidea armeniaca* var. *intumescens*). — Harm. Lich. Loth. 1048 p. p. (s. n. *Lecidea armeniaca*). — Havås Lich. Norv. (1907) n. 369. — Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 341. — Rabenh. Lich. Eur. XIII (1858) n. 366. — Zwackh Lich. Exs. n. 920 (s. n. *Lecidea Brunneri*). (Exs. sec. Vain. mscr. et Magnusson l. c.).

Thallus crassus, verrucosus aut areolatus, areolis contiguis aut dispersis, convexis aut rarius planis (in v. *Crombiei*), flavescenti-stramineis aut rarius albido-stramineis, KOH lutescentibus deindeque fulvescentibus, hypothallo vulgo indistincto. Apothecia lat. 0.5—3 mm, immarginata, latere raro thallum superante, basi non constricta, disco vulgo demum prominente convexoque aut depresso-convexo, atro, nitidulo, nudo. Hypothecium albidum aut pallidum aut subfuscescens (interdum in eodem apothecio), hyphis erectis. Epithecum aeruginoso-fuligineum aut impure aeruginosum. Paraphyses arcte cohaerentes, gelatinosae. Sporae 8:nae, distichae, ellipsoideae, »long. 0.008—0.014, crass. 0.005—0.008 mm» (sec. Nyl. et Vain.).

Var. *hypophaea* Vain. Lich. Exp. Pitlekai (1909) p. 136.

Apothecia convessa. Hypothecium subfuscescens. Thallus areolis convexis.

*Distr.* In rupibus et saxis graniticis et granuliticis et chloriticis in Fennia boreali rara. Kuus.: In reg. subalp. montis Ukonvaara (Vain. Adj. Lich. Lapp. II p. 82). LTorn.: In reg. subalp. ad Naimakka in Suecia (Norrl. Ber. Torn. Lappm. p. 339). LIn.: In reg. pinifera in ins. Iacus Inarijärvi (Vain. l. c.), ad Verkkojärvi et in reg. alp. inferiore montis Edlehoivi in Inari (F. Silén, Norrl. et Nyl. l. c. n. 341), in reg. betulina (subalpina) ad Königäs prope Mare Glaciale (Vain. l. c.). — Sec. Nyl. Lich. Lapp. Or. (1866) p. 160 »ad saxa orae Maris glacialis, e Kitofka ad Ponoi in Lapponia Kolaënsi provenit, sed, ut indicat Th. Fr. l. c. p. 535, omnia ibi lecta atque a Nyl. determinata specimina, quae vidit pertinent ad *Rhizocarpon chionophilum*.

Thallus areolis circ. 0.15—2.5 mm latis, aut confluentibus adhuc latioribus, raro atypice subcinerascentibus, sorediis destitutus, nec

jodo nec  $\text{CaCl}_2\text{O}_2$  reagens (sec. Th. Fr.), vulgo leviter nitidus, in parte superiore impellucida continente hyphis suberectis, conglutinatis, strato corticali tenui, in KOH turgescente (usque ad 0.030 mm crasso) hyalinoque, hyphis sat destructis, fere inconspicuis, gelatinam subamorpham formantibus. Hypothallus indistinctus (nec areloae thalli subtus obscuratae). Apothecia in superficie thalli nata, saepe sat crebra. Hypothecium subfuscescens aut passim parce pallidum in eodem apothecio, hyphis conglutinatis, thallo gonidia continenti aut gonidiis destituto impositum. Peritheciun tenue, hyphis radiantibus, conglutinatis, subaeruginoso-nigricantibus, membranis modice incrassatis, cavitatibus vulgo oblongis, tenuibus. Hymenium (et hypothecium sec. Vain. Lich. Exp. Vegae Pitlekai p. 137) jodo caerulescens, circ. 0.150—0.180 mm crassum, sine limite distincto in hypothecium transiens. Epitheciun KOH non reagens. Paraphyses tubulis tenuissimis, membrana gelatinosa, in KOH turgescente, ramoso-connexae, apicibus leviter aut parum incrassatis. Conidia »recta, long. 0.006—0.007, crass. 0.0015 mm» (sec. adn. Nyl. in n. 15197). Conidangia thallo immersa, conceptaculo aeruginoso-fuligineo, conidiis oblongis aut elongatis, rectis, apicibus rotundatis aut altero apice paullo angustiore obtusoque, long. 0.006—0.008, crass. 0.0015—0.0017 mm (in v. *hypoleuca* sec. Vain. l. c.). Gonidia cystococcaceae.

*Obs.* Var. *aglaeida* (*Lecidea aglaeida* Nyl. Flora 1884 p. 215), hypothecio fuscescente instructa, »hypothallo nigro, rugoso, apotheciis planis, difformibus, 1—2 mm latis» differt a v. *hypophaea*. Conidia »bacillaria, recta, long. 0.006—0.007, crass. 0.0007 mm.»

Var. *Norrlini* Vain.

Thallus areolis planis, partim leviter crenulatis, hypothallo nigro passim conspicuo. Apothecia convexa. Hypothecium albidum et passim parce dilute fuscescens in eodem apothecio.

*Distr.* LTorn.: In reg. alpina ad Kilpisjärvi in Suecia (»*L. aglaea*« sec. determ. Nylandri in Norrl. Ber. Torn. Lappm. p. 339).

Thallus areolis laevigatis, stramineis, KOH lutescentibus deinde fulvescentibus, contiguis. Epitheciun aeruginoso-fuligineum. Hypothecium hyphis erectis. — Huic proxima est var. *Crombiei* (Jones) Nyl. Fl. 1870 p. 38 (*Lecidea Crombiei* Jones in Nyl. Fl. 1868 p. 345), hypothallo indistincto et areolis demum verruculoso-inaequalibus ab ea differens. In var. *Brunneri* (Nyl.) Arn. Lich. Tirol XXIII (1887) p. 85 (*Lecidella Brunneri* (Nyl.) Arn. Lich. Exs. (1877) n. 713, Lich. Tirol XVIII (1878) p. 283, *Lecidea Brunneri* Zwackh Lich. Exs. (1884) n. 920) thallus areolis planiusculis, bene verruculoso-inaequalibus, subcinerascentibus (vel substramineis in partibus magis umbrosis), KOH demum fulvescentibus, apotheciis magis planis et thallum non aut parum superantibus. In Zwackh Lich. Exs. (1884)

n. 943 conidia sec. adn. Nylandri »long. 0.006—0.007, crass. 0.001 mm, recta.»

*Obs.* Arnold Lich. Exs. n. 469 a, s. n. *Lecidea aglaea* is *Lecidea armeniaca* (sec. Magnusson l. c.).

### 134. **L. subbulata** Vain.

Adj. Lich. Lapp. II (1883) p. 81; Zahlbr. Cat. Lich. Un. III (1925) p. 81.

Thallus sat crassus, areolatus, areolis contiguis, planis aut demum depresso-convexusculis, laevigatis, stramineis, KOH lutescentibus deinque fulvescentibus, hypothallo nigro. Apothecia lat. circ. 1.2—2 mm, immarginata, demum prominentia, basi non constricta, convexa, atra, nitidula, nuda. Hypothecium dilute fuscescens aut pallidum, irregulariter contextum. Epithecium aeruginoso-fuligineum. Paraphyses arcte cohaerentes, gelatinosae. Sporae 8:nac, distichae, ellipsoideae aut oblongae aut p. p. subglobosae globosaeve, long. 0.010—0.014, crass. 0.005—0.006 mm aut partim diam. 0.006 mm (in codem asco).

*Distr.* Kuus.: Ad rupem dioriticam in reg. subalp. montis Nuorunen.

Proxime affinis *L. aglaiae* et habitu subsimilis ejus varietati *Norrlini* Vain., sed textura apotheciorum et thalli ab ea differens. — Thallus areolis circ. 1—1.5 (—0.5) mm latis, angulosus, interdum parce lobatis, leviter nitidis, medulla KOH lutescente, jodo non reagente, sorediis destitutus, in parte superiore impellucida, straminea, circ. 0.020—0.030 mm crassa, gonidiis destituta, hyphis erectis, conglutinatis, strato subdecolorato, vix 0.010 mm crasso, subdestructo et fere evanescente obductus. Apothecia vulgo dispersa, areolis immixta aut e margine areolarum enata. Hypothecium jodo non reagens, crebre irregulariter contextum, pallidum aut dilute fuscescens, membranis conglutinatis, parte subhymeniali paullo intensius colorata, hyphis irregulariter (sed minus crebre) contexta, pachydermatica, hyphis conglutinatis, cavitatibus circ. 0.002—0.003 mm latis. Hypothecium strato thallino, myelohyplico, gonidiis destituto, jodo non reagenti, impositum. Peritheciun indistinetum. Hymenium circ. 0.80 mm crassum (in KOH), jodo caerulescens. Epithecium aeruginoso-fuligineum, in KOH dilutescens. Paraphyses cavitatibus tenuissimis, simplices et ad ambitum hymenii ramoso-connexae. Ascii clavati, in apice membrana modice incrassata.

135. **L. armeniaca** (D.C.) Fr.<sup>1)</sup>

Syst. Orb. Veg. (1825) p. 286; Lich. Eur. Ref. (1831) p. 320; Schaer. Lich. Helv. Spie. 3 (1828) p. 126; En. Lich. Eur. (1850) p. 107; Nyl. Prodr. Lich. Gall. (1856) p. 380; Lich. Scand. (1861) p. 229; Cirea Lich. Armor. (1863) p. 401; Th. Fr. Lich. Scand. II (1874) p. 532; Arn. Lich. Tirol XXX (1897) p. 24; Harm. Cat. Lich. Lorr. (1899) p. 405; Vain. Lich. Cauc. (1899) p. 373; Zahlbr. Cat. Lich. Un. III (1925) p. 516; Magnusson Studien über *Lecidea*-Arten d. *Lecidea armeniaca*- und *elata*-Gruppe (1931) p. 107; *Lecidella* Arn. Lich. Tirol XIII (1874) p. 8 (238); *Rhizocarpon Armeniacum* DC. Fl. Fr. II (1805) p. 366; *Lecidea viridiatra* Ach. Lich. Univ. (1810) p. 166; Syn. Lich. (1814) p. 21 (sec. hb. Ach.; non Floerk., forsitan non *Lichen viridiater* Wulf., conf. Lich. Fenn. II p. 283).

Exs. Anzi Lich. Lang. III (1861) n. 113, s. n. *Psora spectabilis* var. *lutescens* (dext. f. *lutescens*) et X (1863) n. 396, s. n. *Psora armeniaca* var. *viridiatra*, sec. Magn.: f. *lutescens*). — Anzi Lich. Ital. VI (1865) n. 264, dext. var. *Ramondii*, et n. 265, dext. f. *nigrila*. — Arnold Lich. Exs. 469 a,b, dext. f. *aglaeotera*; 469 a s. n. *Lecidella aglaea*; et 838, f. *aglaeoides*. — Erb. Crit. Ital. ser. II, fasc. X (1871) n. 467, f. *aglaeolera*, et n. 874, ad f. *aglaeoides*. — Flotow Lich. Exs. II n. 166, var. *lutescens*. — Havaas Lich. Norv. (1901) n. 34. — Hepp Flecht. Eur. V (1857) n. 255, f. *nigrila*, s. n. *Bialora viridi-atra* vera. — Malme Lich. Suec. XII (1912) n. 298, f. *pallens*. — Rabenh. Lich. Eur VII (1856) n. 195, f. *lutescens*, s. n. *Lecidea spectabilis* a *armeniaca*, et XIII (1858) n. 375, var. *Ramondi* et var. *laevigata*, s. n. *Rhizocarpon geographicum* var. *alpicolum*. — Schaer. Lich. Helv. VII (1828) n. 174, p. p. var. *Ramondi* et p. p. f. *nigrila*. — Suza Lich. Boh. Slov. III (1928) n. 74, var. *Ramondi*. (Exs. sec. Magnusson l. c.).

Thallus crassus aut sat crassus, vulgo areolatus, areolis circ. 0.4—4 mm latis, contiguis aut rarius dispersis, depresso-convexis aut rarius planis, raro continuus et demum diffractus (v. *aglaeotera*), testaceo- vel armeniaco-rufescens aut subflavido- vel albido-stramineus, raro nigricans, KOH rubescens aut in specim. obscuratis zona gonidiali KOH rubescente, opacus aut nitidus, laevigatus aut raro inaequalis, sorediis destitutus, medulla KOH vulgo dilute lutescente, jodo non reagente, hypothallo nigricante aut cinerascente. Apothecia thallo immersa, lat. circ. 0.8—4.5 mm, disco nigro,

<sup>1)</sup> Exs. by B. Lynge.

nudo, nitido aut opaco, plano aut demum depresso-convexo, saepe demum emergente, immarginata. Perithecium indistinctum. Hypothecium dilutissime subfuscresenti-pallidum (aut »incoloratum» sec. Th. Fr.), tenuie, irregulariter contextum. Perithecium haud distincte evolutum. Epithecium subaeruginoso- aut subolivaceo-nigricans. Paraphyses arcte cohaerentes. Sporae 8:nae, distichae, ellipsoideae oblongaeve aut subglobosis immixtae, long. 0.004—0.010, crass. 0.0035—0.004 mm (in specim. Inarensi) aut (in specim. Norveg. et Gallicis sec. adn. Nyl.) »long. 0.009—0.015, crass. 0.0045—0.006 (—0.008) mm.»

*Dislr.* LIn.: In rupe granulitica in Kuaervikodsh in Inari (F. Silén, ad var. *melaleucam* (Sommerf.) Fr. pertinens, »var. *tutescens* (Anzi) Nyl.» sec. determ. Nyl.).

Apotheciis thallo immersis innatisque instructa et perithecio distincto destituta, potius aspicilioidea, quam lecideoidea, sed interdum hymenio demum bene protruso, thallum superante, latere nigricante et habitum Lecidearum referens et Lecideis distinctis proxime affinis, ad stirpem *Lecideae aglaeae* pertinens. Stratum corticale thalli crass. 0.100—0.070 mm in aqua (in Lojka Lich. Hung. Exs. ined. n. 324 »ad inter.», n. 15245 in hb. Nyl., f. *laevis* Th. Fr.) pallidum, impellucidum, in KOH visum zona summa (usque ad 0.032 mm crassa) gelatinosa, striis tenuissimis (vestigiis cavitatum), brevibus, horizontalibus, zona inferiore crassiore hyphis erectis et partim irregulariter contextis, conglutinatis, crebre septatis, membranis leviter incrassatis, cavitatibus saepe rotundatis, 0.0015—0.002 mm latis. Hypothallus saepe leviter incrassatus, areolatus, parte inferiore vulgo albidus, parte superiore nigricans obscuratusve (aeruginoso-nigricans in KOH visus), apicibus hypharum clavato-incrassatis, constipatis. Apothecia vulgo dispersa. Hypothecium circ. 0.030—0.040 mm crassum, gonidiis destitutum, dilutissime subobscuratum, hyphis conglutinatis, strato thallino, myelohyplico, albo, gonidiis destituto impositum. Hymenium circ. 0.10—0.250 mm (in eodem apothecio), saepe totum plus minus obscuratum, parte inferiore sordido aut subaeruginoso-nigricante. Epithecium KOH non reagens. Paraphyses parce gelatinosae, increbre septatae, crass. 0.002—0.0015 mm, apice parum incrassatae, simplices et partim parce ramoso-connexae, in parte inferiore magis ramoso-connexae et zonam hypotheciodem formantes. Asci clavati, pede filiformi, elongato, in apice membrana modice incrassata. Conidangia »in interstitiis nigris» (in hypothallo) sita aut »thallo innata» (sec. Arn. Lich. Tirol XIII, 1874, p. 8). Conidia »filiformi-bacillaria aut rarius acicularia, recta, long. 0.069—0.015, crass.

0.001—0.005 mm» (sec. adn. Nyl. in n. 15245, 15246, 15212). *Gonidia cystococcaceae*.

*Obs. 1.* *Lecidea armeniaca* var. *melaleuca* (Sommerf.) Fr., Lich. Eur. Ref. (1831) p. 321 (*Lecidea melaleuca* Sommerf. Suppl. Fl. Lapp., 1829, p. 148, *L. armeniaca* \**L. melaleuca* Nyl. Lich. Scand. p. 229), thallo albido aut albido-pallescens, opaco, instructa, in Lapponia Inarensi collecta est (supra indicata). Huc pertinet Malme Lich. Suec. Exs. XII (1912) n. 298 (Mus. Fenn.). — Var. *lutescens* Anzi Cat. Lich. Sondr. (1860) p. 66 (ad Rabenh. Lich. Eur. Exs. VII, 1857, n. 195 spectans), thallo flavescenti- vel armeniaco-pallescens, parum aut leviter nitido (Arn. Lich. Exs. n. 469 b) instructa. — Var. *aglaeotera* (Nyl.) Müll. Arg., Lich. Val. 1881 p. 61 (*L. aglaeotera* Nyl. Fl. 1872 p. 365, Fl. 1881 p. 540, ad Arn. Lich. Exs., 1871, n. 469 spectans), thallo continuo, rimoso, lutescenti-pallido, opaco. — Var. *nigrita* Schaeer. Lich. Helv. Exs. VII, 1828, n. 175, (Flot. Fl. 1828 p. 698, Schaeer. En. Lich. Eur. p. 107), thallo obscurato, areolis cupreis aut nigricantibus, hypothallo bene evoluto. — Var. *aglaeoides* Nyl. Lich. Delph. (1863) p. 401 (Arn. Lich. Exs., 1880, n. 838), thallo castaneo badiove nitido instructa, intermedia inter v. *lutescentem* et v. *nigritam*. Specimina intermedia inter has varietates interdum observantur. Un. Itin. Cr. (1867) n. 58 (hb. Nyl.) ad statum inter v. *aglaeoidem* et v. *nigritam* intermedium pertinet.

*Obs. 2.* *L. armeniaca* var. *laevigata* Flot. Fl. 1828 p. 698; Laur. in Sturm Deutsch. II, 24 Heft (1832) p. 3 (*L. spectabilis* b. *laevigata* Rabenh. Lich. Deutschl., 1845 p. 81), »areolis laevigatis, pallide armeniacis» descripta, forsitan non differt a v. *aglaeoides* Nyl.

### 136. *L. leucomelaena* Vain.

*Lecidea armeniaca* \**L. arctogena* f. *leucomelaena* Vain. Lich. Nov. Sembla (Hedwigia 1898 p. 86). *L. armeniaca* \**L. arctogena* Malme Lich. Suec. Exs. XIII (1913) n. 325; Th. Fr. Lich. Scand. II (1874) p. 533 p. p. (conf. infra). *L. arctogena* Zahlbr. Cat. Lich. Un. III (1925) p. 515 p. p. Magnusson Studien über *Lecidea*-Arten d. *Lecidea armeniaca*- und *elata*-Gruppe (1931) p. 119.

*Exs.* Malme Lich. Suec. exs. XIII (1913) n 325 (Mus. Fenn.).

Thallus sat tenuis aut rarius crassus, areolatus, areolis circ. 2—0.2 mm latis, planis aut raro p. p. depresso-convexis, supra hypothallum nigrum dispersis aut p. p. contiguis, albis aut stramineis (aut morbose cinerascentibus), nitidis, non pruinosis, KOH dilute lutescentibus, sorediis destitutis, medulla jodo et KOH non reagente. Apothecia inter areolas

thalli sita, sed strato thallino gonidiis destituto, myelohyplico imposita, lat. circ. 0.8—3 mm, immarginata, disco atro, nitido, nudo, depresso-convexo aut raro plano. Peritheciū haud distinctum aut passim leviter evolutum in eodem apothecio. Hypothecium fusco-nigrum et partim parceque pallidum in eodem apothecio. Epitheciū aeruginoso-fuligineum. Paraphyses arcte cohaerentes. Sporae 8:næ, distichæ, ellipsoideæ oblongæve, long. 0.007—0.012, crass. 0.004—0.006 mm.

*Distr.* Ad rupes in summis alpibus in Norvegia et Suecia proveniens, in Fennia nondum collecta est.

Reactionē thalli a *L. testaceoatra* et *L. armeniaca* differt. Thallus areolis sat laevigatis, hypothallo nigro, in partibus crassioribus subtus albido. Apothecia dispersa, bene prominentia, basi non constricta. Peritheciū passim leviter evolutum, subaeruginosum, hyphis radiantibus, leviter pachydermaticis, conglutinatis, cavitatis oblongis, angustis. Hypothecium hyphis irregulariter contextis, conglutinatis, saepe circ. 0.080—0.100 mm crassum. Hymenium saepe totum sordide subaeruginosum (epithecio aeruginoso-fuligineo) et parte inferiore intensius colorato, crassitudine usque ad 0.150—0.260 mm, jodo sec. Th. Fr. caerulescens. Paraphyses gelatinosae, ramoso-connexae, sat increbre septatae, cavitatis oblongis circ. 0.0015—0.0018 mm crassis (in KOH visae), apieibus parum incrassatis. Ascii clavati, pede filiformi, elongato, in apice membrana modice incrassata.

*Obs.* \**L. arclogena* a Th. Fr. l. c. descripta »areolis etiam pallide ochroleucis et KOH omnino non mutatis», ut res se habet in *L. testaceoatra* Vain., nec in *L. leucomelaena* Vain.

*Obs.* This species is very common in the Norwegian mountains where the editor has collected it. The editor found a paler hypothecium than Vainio, and Magnusson made the same observation. The editor may refer to Malme Lich. Suec. Exsic. No. 325. In the Clavis specierum of the present paper the editor has placed it with the species that have an uncoloured hypothecium.

### 137. *L. testaceoatra* Vain.

Adj. Lich. Lapp. II (1883) p. 78; Zahlbr. Cat. Lich. Un. III (1925) p. 709; Magnusson Studien über *Lecidea*-Arten d. *Lecidea armeniaca-* und *elata*-Gruppe (1931) p. 123.

Thallus modice incrassatus, areolatus, areolis 1—0.2 (—2) mm latis, planis aut rarius depresso-convexus, supra hypothallum nigrum sparsis aut partim contiguis, pallido-

testaceis, nitidis, KOH non reagentibus, sorediis destitutus, medulla jodo et KOH non reagente. Apothecia inter areolas thalli sita, sed strato thallino gonidiis destituto, myelohypico imposta, immarginata, lat. circ. 1—2 mm, disco atro aut in fusco-nigricantem vergente, nitido, nudo, depresso-convexo aut primum plano. Peritheciun haud distinctum aut passim leviter evolutum in eodem apothecio. Hypothecium pallidum et partim pallido-fuscescens in eodem apothecio. Epithecium aeruginoso-fuligineum. Paraphyses arcte cohaerentes. Sporae 8:næ, distichæ, ellipsoideæ oblongæve, long. 0.008—0.013, crass. 0.004—0.006 mm.

*Distr.* Ad rupes gabbroiticæ et dioriticæ in reg. subalp. montium in partibus borealibus territorii collecta. Kuus.: In montibus Ukonvaara et Nuorunen (Vain. l. c.). KKer.: In mont. Kivakka et Päänuorunen (Vain. l. c.).

Affinis est *L. leucomelaena*, praesertim thallo testaceo, KOH non reagente ab eo differens. *L. aglaeiza* Nyl., Fl. 1875 p. 301, habitu *L. testaceoatram* referens, areolis contiguis ab ea differt et notis internis apotheciorum subsimilis est *L. aglaeae*. *L. alpina* Schaer., En. Lich. Eur. p. 114, apothecis marginatis ab his differens, habitu proxima est *Lecideæ aeneæ*. Etiam *L. Transsylvanica* Nyl. his subsimilis est. — In *L. testaceoatra* thallus areolis sat laevigatis, hypothallo nigricante, in partibus crassioribus subtus albido. Apothecia dispersa, basi non constricta, demum prominentia. Peritheciun passim conspicuum, subdecoloratum aut fuligineum, hyphis radiantibus, membrana leviter incrassata, cavitate angusta, oblonga elongatavæ. Hypothecium irregulariter contextum et partim hyphis erectis in eodem apothecio, saepe 0.10—0.18 mm crassum. Hymenium parte superiore aeruginosum aut partim late sordide aeruginosum, jodo subpersistenter caerulescens, crassitudine variabile, usque ad 0.260 mm crassum. Epithecium KOH pulchrius aeruginosum. Paraphyses gelatinosæ, sat increbre septatae, crass. 0.002 mm, parte superiore simplices aut parce furcatae, basin versus ramoso-connexæ, apicibus parum incrassatis. Asci clavati, pede filiformi, elongato, in apice membrana modice incrassata.

*Obs.* Magnusson is of opinion that this species cannot be distinguished from *Lecidea leucomelaena* Vain. = *Lecidea arclogena* Th. Fr. Magn. (1931) p. 123.

138. **L. elata** Schaeer.<sup>1)</sup>.

Spicil. Lich. (1828) p. 137; Nyl. Prodr. Lich. Gall. (1857) p. 380. Th. Fries Botan. resa i Finmarken (1865) p. 45, Lich. collect. Engl. Polar Exped. (1879) p. 361; Hellbom Lich. anteck. Lule Lappm. (1865) p. 475, Lich. excurs. Lule Lappm. (1872) p. 106, Bidrag Lule Lappm. Iaffl. (1875) p. 74, Norrl. Iafvar (1884) p. 99. Norman Specialia loca natalia arct. Norv. (1868) p. 356; Deichm. Branth et Grønlund Grönl. Lichen Flora (1888) p. 501; Deichm. Branth Lich. Island (1903) p. 214; Havås Beitr. Kenntn. westnorw. Flecht. (1909) p. 30; Frey Veg. Verhältn. Grimselgeg. (1922) p. 81; Lynge Lich. from Spitsb. I (1924) p. 13. Magn. New or interest. Lich. (1924) p. 378, Studien über Arten der *Lecidea armeniaca*- und *elata*-Gruppe (1931) p. 123; Zahlbr. Cat. Lich. III (1925) p. 573. *Lecidea marginata* Schaeer. *Lecidea amylacea* (Ach.) Nyl. *Lecidea areolata* (Schaeer.) Zahlbr. *Lecidea oreina* Stiz. — Vide Magn. (1931) p. 124. Exs. Anzi Sondr. VII n. 189. — Anzi Lang. X (1863) n. 397. — Arnold Lich. Exsic. (1879) n. 798 et 1004. — Lich. Austr.-Hung. VIII (1886) n. 1548. — Havås Lich. Norv. n. 497. — Hepp Flecht. Eur. V (1857) n. 256. — Schaeer. Lich. Helv. VIII (1828) n. 189 et X (1833) n. 229. — Zwackh Lich. Exsic. n. 138.

Thallus limitatus vel elimitatus, magnitudine valde variabilis, diam. vulgo 1—2 cm., albidus vel cretaceo-albidus vel pallide sulphureus, crassus vel crassiusculus (usque ad 1—1.5 mm) vel rarius tenuissimus, normaliter areolis typicis destitutus, rimosus, farinaceus, subplanus, interdum areolis distinctis, angulatis, subconvexis instructus. Thallus vulgo hypothallo destitutus, rarius glauco-caerulescente limitatus.

Apothecia numerosa, diam. 0.5—1 (usque ad 1.5 vel 2.0) mm, vulgo plus minusve elevata usque substipitata, rarius immersa. Discus semper ater, primo bene marginatus, deinde interdum subconvexus et immarginatus. Discus ab initio saepe albido- vel albido-virescenti vel glaucescenti-pruinosis. Excipulum in parte exteriori aeruginosum, ab hypothecio non bene limitatum. Hypothecium crassitudine variante,

<sup>1)</sup>. There was no indication of this species in Vainio's manuscript. The editor has extracted the above description from Magnusson's paper of 1931. This paper should be consulted for further particulars.

70—200  $\mu$  altum, incoloratum, hymenium (45—) 55—65 (—75)  $\mu$  altum, superne (10—15  $\mu$ ) impure fuligineo-smaragdulum vel olivaceo-fuligineum, praeterea pallide flavescens vel cinereo-flavescens. Paraphyses simplices, 1.5—1.7 (—2)  $\mu$  crassae, septatae, arcte cohaerentes, in KOH facile discretae. Ascii clavati, 50—60  $\times$  12—14  $\mu$ . Sporae late ellipsoideae, octonae, 9—12 (—14)  $\times$  5.5—6.5  $\mu$ .

Pycnides saepe numerosae, diam. 150—200  $\mu$ , ostiolum atrum, supra thallum elevatum. Pycnoconidia cylindrica, vulgo valde arcuata, interdum subrecta, 12—16  $\times$  0.7—1  $\mu$ .

Thallus jet CaCl<sub>2</sub>O<sub>2</sub> immutatus, cortex KOH plus minusve intense flavescens, etiam cum medulla. Hymenium obscure caeruleum, etiam cum hypothecio, hymenium deinde interdum sordide fusco-rubescens.

*Distr.* Ad rupes plus minusve calcareas, in Fennia boreali rara. Li.: Enare (sec. Magn. 1931 p. 126).

*Obs.* Easily confused with *Lecanora atrosulphurea*, but distinguished from that species by its negative reaction with CaCl<sub>2</sub>O<sub>2</sub>, and by its shorter pycnoconidia (18—25 usque ad 32  $\mu$  in *Lecanora atrosulphurea*).

#### Sect. **Lecidea sylvicola.**

Apothecia minuta, 0.5 mm vulgo non superantia, mox vel demum convexa, paraphyses (vulgo) concretae. Hyphae medullares non amyloideae. Species normaliter saxicolae.

*Obs.* Several of these species are nearly related and difficult of distinction. The leading character is the small apothecia (the *Micro-Lecideae*). But the editor is not quite convinced that all the species of this section are really so nearly related. He might suggest a study of the excipulum for a more natural arrangement.

#### 139. **L. pycnocarpa** (Koerb.) Ohlert

Zusamm. Lich. Preuss. Schrift. Phys.-Ök. Ges. Königsb. XI, (1870) p. 15; Th. Fr. Lich. Scand. II (1874) p. 555; Vain. Adj. Lich. Lapp. II (1883) p. 109; Tuck. Syn. Lich. North Am. II (1882) p. 82; Zahlbr. Cat. Lich. Un. III (1925) p. 681. *Lecidella pycnocarpa* Koerb. Par. Lich. 3 Lief. (1861) p. 213; Arn. Lich. Tirol XVII (1877) p. 553.

*Exs.* Malme Lich. Succ. Exs. XXV (1916) n. 622 (Mus. Fenn.).

Thallus sat crassus aut tenuis, verrucosus et verruculosus aut areolatus areolisque verruculosis vel verruculoso-inaequalibus, impure albidus aut albido-cinerascens, sorediis destitutus, KOH bene lutescens aut fulvescens, hypothallo indistincto. Apothecia tuberculoso-prolifera aut parcissime simplicia parva (lat. 0.2—0.35 mm), primum plana et submarginata, margine parum distincto, non prominente, nigra, nuda, demum saepe depresso-convexa, basi non constricta. Hypothecium fusco-rubricosum aut in eodem apothecio fuscum aut in parte superiore fulvo-rubescens vel fulvescens aut in parte infima demum dilutescens. Epithecium saepe impure subaeruginoso-olivaceum aut in eodem apothecio etiam fuscescens. Paraphyses arcte cohaerentes, leviter gelatinosae, apicibus gelatinoso-clavatis obscuratisque. Sporae oblongae, »long. 0.012—0.022, crass. 0.005—0.006 mm» (in specim. orig. sec. Nyl.) aut long. 0.009—0.014, crass. 0.003—0.004 mm (in specim. Fenn.).

*Distr.* N.: Ad saxum dioriticum in Lounatpuoli in Suursaari vel Hoglandia (Vain.). OKaj.: Ad saxa in campo prope Tervasalmi in Kuhmo (Vain. Adj. Lich. Lapp. II p. 109).

Thallus laxe adnatus, verrucis contiguis aut subdispersis, nec  $\text{CaCl}_2\text{O}_2$  nec I reagens (sec. Th. Fr.). Apothecia leviter nitida aut subopaca, »insigniore modo non reagentia» (Th. Fr.). Hypothecium superne hyphis erectis, inferne suberectis. Peritheciun fulvo-rubescens, saepe indistinctum. Hymenium circ. 0.030—0.040 mm crassum (0.050 mm crassum in specim. orig.), jodo caerulescens deindeque vinose rubens. Epithecium  $\text{HNO}_3$  demum roseo-violascens (Th. Fr.). Paraphyses (etiam in specim. orig.) cavitatibus 0.0005—0.001 mm latis, clava gelatinosa 0.004—0.006 mm lata. Asci clavati, in apice membrana saepe bene incrassata. Sporae 8:næ, distichæ, saepe guttulosæ (in specim. orig.). Gonidia cystococcaceæ.

*Obs. 1.* *Lecidea segregans* Nyl. Fl. 1866 p. 372 (»hymenio sordide tincto, epithecio haud obscurato» descripta) sec. adn. Nyl. ad »*L. symphorellam*» Nyl. pertinet. Verrucis thalli majoribus, laevigatis, apothecis tuberculato-confluentibus habitu a *L. pycnocarpa* typica habitu differt (Zahlbr. Cat. Lich. Un. III p. 687). — *L. symphorella* Nyl., Fl. 1870 p. 35, sec. adn. Nyl. in bibl. et hb. suo ad *L. pycnocarpam* Koerb. pertinet, sed specim. orig. herbario Nyl. deest. — *L. amphotera* Leight. Lich. Brit. (1871) p. 283 (ed. 3 p. 287) sec. Th. Fr. ad *L. pycnocarpam* pertinet, et specim. orig. non vidimus.

*Obs. 2. Psora pycnocarpa* Müll. Arg. Lich. Parag. (1888) p. 8 (Vain. Lich. Exs. II, 1892, n. 1568, Zahlbr. Cat. Lich. Un. III p. 890) nominetur *Lecidea pycnocarpiza* Vain.

140. **L. amphoteroides** Vain. (n. sp.)

Thallus sat tenuis vel modice incrassatus, subareolatus, areolis saepe leviter adscendentibus, laevigatis aut verruculosis, albidis aut albido-glaucoscentibus, KOH non reagentibus, hypothallo indistincto. Apothecia parva, lat. 0.3—0.5 mm, saepe nonnulla conferta aut divisa, leviter elevata vel substipitata, basi constricta, disco primum plano deinque depresso-convexo, fusco-atro, nudo, margine concolore, tenuissimo, parum distincto. Hypothecium dilute fuscescens, in lamina tenui pallidum. Epithecum fuscescens. Paraphyses arcte cohaerentes, leviter gelatinosae, tubulis tenuibus, apicibus parum incrassatis. Sporae 8:nae, oblongae, long. 0.010—0.013, crass. 0.003—0.004 mm.

*Distr.* Kb.: Loco abscondito in latere rupis chloritico-schistosae ad Hiidenportti in par. Nurmes (»*Lecidea pycnocarpa* \**L. amphoteroides*» in Vain. Adj. Lich. Lapp. II, 1883, p. 109).

Revera non est affinis *L. pycnocarpae*, sed ad *Biatoras* pertinet, analoga *Bacidiæ ophiosporæ* (Hellb.), *B. Kuopioënsi* Vain. et *Bilimbiae gomphillaceæ* (Nyl.), quae apothecis breviter stipitatis instructae sunt. Thallus laxe adnatus, areolis subcontiguis, granulis sorediorum parcissime passim inspersus. Apothecia sat opaca aut leviter nitida, margine integro. Hypothecium hyphis erectis, tenuibus, cavitatibus angustissimis, et in parte infima hyphis irregulariter contextis, magis pachydermaticis. Perithecum dilute fuscescens, hyphis radiantibus, tenuibus, conglutinatis, tubulis 0.0005—0.0015 mm latis. Hymenium circ. 0.050 mm crassum, jodo caeruleescens, dein partim decoloratur. Paraphyses tubulis 0.001—0.0015 mm latis, apice parum incrassatae, fuscescentes. Asci clavati, in apice membrana modice aut parum incrassata. Sporae distichae, simplices, apicibus rotundato-obtusis. Gonidia cystococcaceæ.

*Obs.* This is one of the very few cases where Vainio had finished his description of one species (here *Lecidea pycnocarpa*) and commenced the description of the next species (here *Lecidea amphoteroides*) on the same manuscript sheet. This suggests his definite decision concerning the consecutive order of the two species, in spite of his

above remark: »Revera non est affinis *L. pycnocarpae*« — The type plant of *Lecidea amphoterooides* in Vainio's herb. only consists of a few small crumbs, and a section.

#### 141. *L. commaculans* Nyl.

Flora 1868 p. 476; Leight. Lich. Great Brit. 3 ed. (1879) p. 287; Vain. Adj. Lich. Lapp. II (1883) p. 110; A. L. Smith Mon. Brit. Lich. (1911) p. 102; Zahlbr. Cat. Lich. Un. III (1925) p. 535.

Thallus evanescens (aut »fusco-niger vel olivaceo-nigricans, tenuis, opacus, subareolatus, depresso, saepius dispersus, hypothallo indistincto» sec. Nyl.). Apothecia dispersa, lat. 0.6—1 mm, adnata, basi leviter constricta, disco convexo, nigro, nudo, opaco, margine inconspicuo. Hypothecium intense purpureum, KOH solutionem purpuream effundens, hyphis erectis. Epithecium cyanescens-fuligineum. Paraphyses arcte cohaerentes, tubulis tenuibus. Sporae oblongae, long. 0.007—0.010, crass. 0.002—0.0035 mm.

*Distr.* Kuus.: Ad saxa dioritica in reg. subalp. montis Nuorunen (Vain. I. c.).

Apotheciis paullo majoribus differt a stirpe *L. pycnocarpae*. Inter alios lichenes crescents, thallo ab iis non bene distinguitur. Apothecia sat crassa, interdum parce confluentia. Hypothecium sat crassum. Hymenium circ. 0.050 mm crassum, nisi colore a hypothecio non bene limitatum, parte sporas efferente circ. 0.035 mm crassa, decoloratum infra epithecium, »jodo caerulescens» (sec. Nyl.). Epithecium KOH non reagens. Paraphyses haud abundanter gelatinosae, gelatina in KOH tantum leviter turgescente, tubulis vix 0.001 mm latis, ambitum hymenii versus bene ramoso-connexae, in medio subsimplices. Peritheciun in margine depresso (non prominens), extus cyanescens-fuligineum, intus dilutescens deindeque rubricosum et in hypothecium transiens, praesertim contento colorato, hyphis radiantibus, sat tenuibus, modice pachydermaticis, cavitatibus tenuibus. Ascii clavati, in apice membrana leviter incrassata. Sporae 8:nae, distichae, simplices, decolorantes, rectae aut interdum levissime curvulae, long. 0.007—0.010, crass. 0.002—0.0035 mm. Conidia »cylindrica, recta, long. 0.009—0.011, crass. 0.001 mm» (sec. Nyl.).

142. **L. melaphanoides** Nyl.

Flora 1875 p. 299; Nyl. in Brenner Bidr. Hogl. Lafv. (1885) p. 85; Hue Addend. II (1888) p. 236 (68); Zahlbr. Cat. Lich. Un. III (1925) p. 637.

Thallus sat crassus aut sat tenuis, areolatus, areolis verruculo-so-inaequalibus, aut verruculosus, fuscescens aut obscure subolivaceus, KOH non reagens, hypothallo indistincto. Apothecia dispersa aut parce conferta aggregatae, parva, lat. 0.2—0.4 mm, nigra, nuda, opaca, primum plana marginataque, margine tenuissimo, aut mox depresso-convexa convexave et immarginata, basi non constricta. Hypothecium impure fulvescens aut fulvo-fuscescens vel fulvo-rufescens aut partim fulvescenti-pallidum aut inferne fulvo-rubescens, KOH dilutescens, hyphis erectis. Epithecum aeruginoso- aut cyanescenti-fuligineum. Paraphyses arcte (in KOH sat laxe) cohaerentes, apicibus obscuratis, gelatinoso-clavatis. Sporae oblongae ellipsoideaeve, long. 0.009—0.014, crass. 0.005—0.006 (—0.0045) mm» (sec. Nyl.).

*Distr.* N.: In rupe porphyrica in Louonatpuoli in Suursaari vel Hoglandia (Vain.), in rupe granitica in Töölö (487) et ad Meilans (648) Helsingforsiae (Vain.) una cum *Rhizocarpo geographicus*.

Affinis *L. pycnocarpare*, sed thallo obscuriore et KOH non reagente, apotheciis simplicibus et colore hypothecii ab ea differens. Thallus intus albidus et KOH non reagens, areolis 2—0.5 mm latis, opacis, non pruinosis, saepe p. p. algis nigris obtectus, quare subfurfuraceus aut isidiosus appareat. Apothecia margine integro, non prominente. Hypothecium »acidum chrysophanicum» non continet (reactio hypothecii a Nyl. false observata). Peritheciun hyphis radiantibus, sat pachydermaticis (in KOH turgescentibus, ramoso-connexis), cavitatibus angustissimis, extus fuscescens vel roseorufescens, intus dilutius coloratum, KOH non reagens. Hymenium circ. 0.050 mm crassum, »jodo e caerulescente vinose fulvescens vel subrubescens, ascis praesertim tinctis» (sec. Nyl.). Epithecum KOH non reagens. Paraphyses crass. 0.005 mm, apicibus gelatinoso-incrassatis. Ascii clavati, in apice membrana sat bene aut modice incrassata. Sporae 8:næ, distichæ, simplices et parcissime 1-septatae. Gonidia cystococcaceæ.

143. **L. chalybeoides** (Nyl.) Vain.

*L. chalybeoides* Nyl. Fl. 1875 p. 12; Nyl. in Vain. Fl. Tav. Or. (1878) p. 113; Vain. Adj. Lich. Lapp. II (1883) p. 110. *L. chalybeoides* Nyl. Fl. 1875 p. 446, Fl. 1876 p. 239; Lamy Cat. Lich. Mont-Dore (1880) p. 101. *Catillaria lenticularis* var. *chalybeoides* Boist. Nouv. Fl. Lich. II (1903) p. 199. *Catillaria chalybeoides* Zahlbr. Cat. Lich. Un. IV (1927) p. 33.

Thallus tenuis, areolatus, areolis parvis, circ. 0.1—0.5 mm latis, supra hypothallum nigrum dispersis aut rarius contiguis, glauco-caerulescens aut rarius cinerascens obscuratusve aut raro partim albidus, sorediis destitutus, hypothallo nigro distincto aut rarius evanescente. Apothecia thallo innata, vulgo demum emergentia, parva, lat. 0.2—0.3 (—0.4) mm, vulgo crebra, nigra, nuda, opaca, basi haud constricta, disco plato, margine tenui, integro, non prominente, interdum parum distincto. Hypothecium fuligineum, in lamina tenuissima rubricosum, KOH purpureum, hyphis erectis. Epitheciun aeruginoso-fuligineum. Hymenium partim aeruginosum. Paraphyses in KOH laxe cohaerentes, sat crassae. Sporae ellipsoideae aut globosae subglobosaeve, long. 0.003—0.007, crass. 0.003—0.005 mm, globosae diam. 0.003—0.005 mm, sec. Nyl. »long. 0.006—0.008, crass. 0.0035—0.0045 mm».

*Distr.* Praesertim locis irrigatis in saxis et rupibus quartzosis crescit. N.: In rupe porphyrica loco saepius irrigato in Mäkiensälllys in Suursaari v. Hoglandia (Brenner Bidr. Hogl. Lafv. p. 86). Ta.: Locis abundantius irrigatis in lateribus rupium prope Markkula (ad silicem) in Lubanka et ad Välyvuori in Korpilahti (Vain. Fl. Tav. Or. p. 113). Kb.: In rupe granitica littorali ad Niska in Enontai pale (Vain.), in latere saepius irrigato rupium graniticarum montium Riihivaara et Pyssyvaara in Nurmes (Vain. Adj. II p. 110). KPom. or.: In latere rupis graniticae littoralis ad Koroppi (Vain. I. c.). LIn.: In rupibus granuliticis in reg. subalp. jugi Suoloselkä et montis Hammastunturi (Vain. I. c.).

Affinis est *L. nygariae* Nyl., nec ad *Catillarias* pertinet, ut false a Boist. et Zahlbr. indicatur. Thallus areolis opacis aut subnitidis, KOH non reagens, planis aut raro depresso-convexis. Apothecia tenuia. Hypothecium KOH solutionem violaceam effundens, cellulis globosis aut ellipsoideis, intense coloratum aut interdum superne anguste roseum. Hymenium circ. 0.060 mm crassum, »jodo intense

caeruleoescens» (sec. Nyl.). Epithecium KOH non reagens. Paraphyses arcte cohaerentes, sed in KOH laxe cohaerentes, crass. 0.0015 mm, apicem versus sensim incrassatae (~0.008 mm) aut parum incrassatae, saepe p. p. crebre constrictae articulatae, parce gelatinosae. Ascii sat late clavati, lat. 0.014 mm, in apice membrana bene aut modice incrassata. Sporae 8:nae, distichae, semper simplices (numquam 1-septatae in specim. orig. et in aliis speciminibus), forma etiam in eodem apothecio variabiles. Gonidia cystococcaceae.

*Obs. 1.* Nomen hujus speciei scribendum est *L. chalybeoides*, ut a Nyl. primum scriptum, et significat similis *chalybeiae*. Postea a Nyl. nominata est (forsan ob oblivionem) *L. chalybeoides*, quod significat proles *chalybeiae*.

*Obs. 2.* The editor found it difficult to intercalate this species, as well as *Lecidea nugaria*, into their proper place. Their small apothecia are in favour of the *sylvicola* section, but the spores are broad and the paraphyses are »laxe cohaerentes» in the latter species, and »arcte cohaerentes, sed in KOH laxe cohaerentes» in *Lecidea chalybeoides*, suggesting some affinity with species of the *claeochroma* section. Vainio writes: (*Lecidea chalybeoides*) »affinis est *L. nugariae*. *Lecidea nugaria* was found on Vainio's table after his death, but he had placed the other species in his herbarium between species of the *sylvicola* section. His herbarium being arranged systematically that will decide the question for either species.

#### 144. *L. nugaria* Nyl.

Flora 1875 p. 446; Hue Addend. II (1888) p. 145; Oliv. Bull. Géogr. Bot. XXV (1915) p. 117, 171; Zahlbr. Cat. Lich. Un. III (1925) p. 804.

Thallus tenuis, verruculosus aut areolatus, verruculis areolisque dispersis, convexis aut planis, circ. 0.2—0.15 mm latis, subcinereo-pallescens, sorediis destitutus, hypothallo indistincto. Apothecia adnata, parva, lat. circ. 0.3—0.2 mm, nigra, nuda, opaca, basi constricta, disco plano, margine tenui, integro, prominente aut demum subexcluso. Hypothecium majore parte inferiore nigrum, parte summa angusta dilute aeruginosum. Epithecium aeruginoso-nigricans aut partim fusco-nigrum in eodem apothecio. Hymenium inferne aeruginosum. Paraphyses laxe cohaerentes, sat crassae. Sporae subglobosae aut breviter ellipsoideae, »long. 0.006—0.007, crass. 0.0035—0.0045 mm» (sec. Nyl.).

*Distr.* Ta.: Supra saxum in lacu ad Piililä in Korpilahti (Vain. a. 1874).

Affinis *L. chalybeiodi* Nyl., sed colore thalli et apotheciis magis elevatis jam habitu ab ea differens. Apothecia dispersa. Hypothecium inferne irregulariter contextum, superne hyphis erectis et a hymenio non distinete limitatum. Peritheciun fuligineum aut intus dilutescens. Hymenium circ. 0.04—0.035 mm crassum, »jodo caerulescens, praesertim ascis persistenter caerulecentibus» (sec. Nyl.). Paraphyses increbre aut haud distinete septatae, crass. 0.002 mm, capitatae clavatae, clava 0.004—0.005 mm crassa, summo apice fuligineo, gelatina mollissima (in aqua) disjunetae. Ascii sat late clavati, in apice membrana sat crassa. Sporae 8:nae, distichae, decoloratae. Gonidia cystococcaceae.

#### 145. *L. erratica* Koerb.

Parerg. Lich. 3 Lief. (1861) p. 223 sec. Th. Fr. Lich. Scand. II (1874) p. 556, 557; Zahlbr. Cat. Lich. Un. III (1925) p. 575 (excl. *L. paraclitica*). *Lecidea dispansa* Nyl. Lich. Lapp. Or. (1866) p. 186, Fl. 1866 p. 87; Arn. Fl. 1869 p. 515; Müll. Arg. Fl. 1871 p. 402. *Lecidea expansa* Nyl. in Leight. Lich. Brit. Exs. VI (1854) n. 186, Nyl. Fl. 1866 p. 86, nec Chev. Fl. Par. (1826) p. 565 ad *Catillarium chalybaeum* pertinens sec. Nyl. in Lamy Lich. Mont-Dore (1880) p. 100 et Hue Addend. II p. 236; Mudd Lich. Brit. (1861) p. 208; Vain. Addend. II (1883) p. 109; Arn. Lich. Fränk. Jur. (1885) p. 169, Lich. Münch. (1891) p. 81. *Bialora deplanatula* Müll. Arg. Fl. 1870 p. 165 (sec. Zahlbr.).

*Exs.* Leight. Lich. Brit. Exs. VI (1854) n. 186 (in Mus. Fenn.). — Zwackh Lich. Exs. (1861) n. 426, (1876) n. 475, (1880) n. 600 et 601 (omnes in hb. Nyl.). — Mudd Lich. Br. Exs. II (1861) n. 176 (Arn.). — Rabenh. Lich. Eur. XXIV (1862) n. 675 (Mus. Fenn.). — Larbal. Lich.-Herb. II (1880) n. 222 (Lyngé). — Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 179, cont. (1921) n. 761.

Thallus tenuis aut sat tenuis, continuus aut rimulosus areolatusve aut subverruculosus, areolis verruculisve contiguis aut subdispersis, laevigatus aut inaequalis, aut raro subevanescens, cinereo-glaucescens aut raro subalbidus, sorediis destitutus, hypothallo nigricante, late evoluto aut indistincto. Apothecia crebra aut sat crebra, parva, lat. 0.15—0.7 mm (raro —1 mm), adnata, basi vulgo demum constricta, primum diu plana marginataque aut haud diu mar-

ginata et fere mox convexa, nigra, nuda, opaca, margine tenui tenuissimove, integro. Hypothecium fuscum, hyphis superne suberectis, inferne irregulariter contextis. Perithe-  
cium extus subcaerulescenti-nigricans aut fuligineum, intus dilutius coloratum. Epithecium subfuligineum. Paraphyses arcte aut sat arcte cohaerentes, apicibus subfuligineis, gelatinoso-clavatis. Hymenium jodo saltem demum vinose rubens. Sporae ellipsoideae ovoideaeve aut suboblongae, long. 0.007—0.008, crass. 0.003—0.004 mm (»long. 0.006—0.011, crass. 0.003—0.004 mm» sec. adn. Nyl.).

*F. deplanatula* Vain.

Apothecia primum diu plana marginataque, margine distincto.

*Distr.* N.: In rupe dioritica in Degerö (Vain. 671) et alibi (granit., 367 a, J. P. Norrlin) prope Helsingforsiam. Ka.: Ad pieem terrae superfusam in Tervaniemi Viburgi (Vain. Lich. Vib. p. 63). Ta.: Mustiala (syenit, gneiss., granit., A. Kullhem), ad lapidem in Tiirismaa in Hollola (667 Vain., 20177 hb. Nyl.), in campo deusto ad Tammijärvi in Luhanka (»*L. expansa*« sec. Nyl. in Vain. Fl. Tav. Or. p. 113). Sa.: In lapide schistoso ad Nyslott (O. A. J. Carle-nius). Sb.: Saxicola in Kuopio (G. Lång Lich. Sav. Bor. p. 37). Kuus.: Ad rupem dioriticam in reg. subalp. montis Iivaara (»*L. expansa*« Vain. Adj. Lich. Lapp. II p. 109).

Thallus »jodo et KOH et  $\text{CaCl}_2\text{O}_2$  non reagens» (Th. Fr.). Hypothecium in KOH partim immutatum, partim (in eodem apothecio) purpureum aut fulvescens. Perithe-  
cium extus KOH distinctius caeruleo-nigricans, hyphis radiantibus, tenuibus, membranis sat leptodermaticis, cavitatibus 0.002—0.005 mm latis brevibus aut oblongis. Hymenium non aeruginosum, circ. 0.060—0.050 mm crassum, jodo primum caerulescens deindeque vinose rubens (aut tantum »vinose rubens» sec. adn. Nyl.). »Epithecium et peritheci exterior pars  $\text{HNO}_3$  roseo-purpurascunt» (sec. Th. Fr.). Paraphyses crass. 0.001—0.0015 mm, leviter gelatinosae, apice 0.004—0.005 mm crasso gelatinoso-incrassato. Ascii clavati, in apice membrana modice incrassata. Epithecium KOH subnigricans. Sporae 8:nae, distichae, simplices. Conidangia »haud rara, verrucaeformia, nigricantia». Conidia »cylindrico-oblonga vel subellipsoidea, leviter curvula, long. circ. 0.004, crass. 0.0015 mm» (sec. Th. Fr. I. c.). Sec. icones et adn. Nylandri in hb. suo conidia »recta, long. 0.0035—0.0045, crass. 0.0015 mm». Gonidia cystococcaceae.

*F. demarginata* (Nyl.) Vain. *Lecidea expansa* f. *demarginata* Nyl. in Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 179. *Lecidea demar-ginata* Nyl. Fl. 1878 p. 245; Zahlbr. Cat. Lich. Un. III (1925) p. 561. *L. expansa* \**L. demarginata* Nyl. in Hue Addend. II (1888) p. 236.

*L. dispansa* f. *emarginata* Nyl. in Vain. Fl. Tav. Or. (1878) p. 113 (a Nyl. determ. a. 1874).

Apothecia primum haud diu marginata, margine tenuissimo, disco demum convexo.

*Distr.* Ta.: Ad granitum prope Kuivajärvi in Tammela (A. Kullhem), ad lapidem gneissaceum in Hersala in Hollola (Vain., hb. Nyl. 20173), supra saxum in Evo (Norrl. et Nyl. H. L. F. n. 179), ad lapidem graniticum supra rupem (»*L. dispansa* f. *emarginata*« Nyl. sec. det. Nyl. in Vain. Fl. Tav. Or. p. 113).

#### 146. *L. Ivalensis* Vain.

Adj. Lich. Lapp. II (1883) p. 65; Oliv. in Bull. Géogr. Bot. XXV (1915) p. 117, 145; Zahlbr. Cat. Lich. Un. III (1925) p. 604.

Thallus tenuis, e verruculis aut areolis constans dispersis, 0.1—0.3 (raro 0.5) mm latis, vulgo depresso-convexis, albis albidisive, KOH et jodo non reagentibus, sorediis destitutis, aut evanescens, hypothallo indistincto. Apothecia sat crebra, interdum nonnulla conferta, parva, lat. 0.3—0.5 mm, adnata, basi non aut demum leviter constricta, atra, bene nitida, nuda, disco primum plano, demum saepe convexo, margine tenui vel tenuissimo, primum saepe elevato, demum excluso. Hypothecium fusco-fuligineum, in KOH subviolascens-nigricans, irregulariter contextum. Peritheciun aeruginoso-nigricans. Epitheciun aeruginoso-fuligineum, ceterum hymenium totum aeruginosum. Paraphyses arcte cohaerentes, gelatinosae. Sporae ellipsoideae oblongaeve, partim etiam subglobosae, long. 0.006—0.011, crass. 0.0045—0.005 mm.

*Distr.* LIn.: Ad rupem granuliticam in regione subalpina montis Hammastunturi prope fl. Iivalojoki (Vain. l. c.).

In stirpem *L. erratica* pertinere videtur, apotheciis parvis nitidisque cognoscenda. Apothecia interdum irregularia vel flexuosa lobata, margine ceterum integro. Hypothecium hyphis in KOH non turgescentibus, parte subhymeniali aeruginosum et hyphis erectis. Peritheciun hyphis radiantibus, modice pachydermaticis, cavitatis angustis. Hymenium circ. 0.050—0.060 mm crassum, jodo persistenter caeruleo-scapulosus. Paraphyses simplices, apice haud incrassatae, tubulis 0.001—0.0005 mm latis. Ascii clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae, decoloratae, simplices.

*Obs.* In Adj. Lich. Lapp. Vainio had placed this species in the section *Lecidea panaeola*.

147. **L. sylvicola** Flot.

Lich. Schles. (1829) p. 8, n. 171; Koerb. Syst. Lich. Germ. (1855) p. 254 p. p.; Nyl. Fl. 1866 p. 87, Lich. Lapp. Or. (1866) p. 161, 185; Th. Fr. Lich. Scand. II (1874) p. 558 p. p. (excl. *L. infidula* Nyl.); Arn. Lich. Tirol XXI (1880) p. 104; Vain. Adj. Lich. Lapp. II (1883) p. 104; Hue Addend. II (1888) p. 234; Zahlbr. Cat. Lich. Un. III (1925) p. 705 p. p. (excl. *L. infidula* Nyl. et *L. aphana* Nyl. etc.). *Biatora sylvicola* Müll. Arg. Princ. Class. (1862) p. 395. *Lecidea latens* Tayl. in Mack. Fl. Hibern. II (1836) p. 259 (sec. Nyl. Fl. 1879 p. 361, sed deser. non congruens). *L. myriocarpoides* Nyl. Fl. 1865 p. 355 p. p. (non Nyl. Fl. 1866 p. 86, Fl. 1868 p. 344), sec. Arn. et Lynge.

Thallus tenuis aut sat tenuis, continuus aut areolato-diffractus leviter inaequalis aut sat laevigatus, aut e verruculis dispersis constans, obscure glauco-cinereus aut glauco-pallescens aut subalbidus, opacus, KOH non reagens, sorediis destitutus, hypothallo nigricante aut indistincto. Apothecia sat crebra aut dispersa aut conferta confluentiae vel tuberculato-divisa, saepe parva, lat. 0.15—1.3 mm, adnata, basi demum leviter constricta, convexa immarginataque, nigra aut raro nigricantia vel livido-nigricantia, nuda, opaca. Hypothecium nigricans aut subfuscō-nigricans (KOH leviter dilutescens). Hymenium decoloratum aut aeruginosum aut epithecio pallescente aut partim aeruginoso-fuligineo. Paraphyses arcte cohaerentes, gelatinosae. Sporae subellipsoideae, long. 0.006—0.009, crass. 0.003—0.004 mm.

Var. *Flotowii* Vain. *L. sylvicola* Flot. Lich. Exs. (1829) n. 171 (hb. Nyl.).

Exs. Arn. Lich. Exs. (1869) n. 409 b (hb. Nyl.).

Apothecia simplicia aut subsimplicia, non tuberculata, nigra aut raro subcaerulecenti-nigricantia. Hypothecium nigricans.

Distr. Locis umbrosis subhumidisve praesertim in lateribus saxonum rupiumque in provinciis meridionalibus sat rara aut passim, septentrionem versus rarescens. Al. (E. Nyl. sec. Th. Fr. I. c.). N.: Degerö in Helsingforsia (Lång), ad Humaljärvi in Kyrkslätt (G. Lång). Ka.: Uuras (Vain. Lich. Vib. p. 63). Ta.: Jokioinen (»*Lecidea propinqua*« Th. Fr. apud Kullh.). Talsola in Tammerla (Kullh.), Hollola (J. P. Norrl., 10694 hb. Nyl.). KLad.: in lapide ferroso (Norrl., 10702 hb. Nyl.). KOn.: Ad rupem dioriticam in Käpselkä (Th. Simming, Mus. Fenn., Nyl. Lich. Lapp. Or. p. 185). Sa.: Ad lapides gneissaceos in Rytkö prope Kuopio (K.

Linkola). Om.: Alajärvi (Backman). Kb.: »Passim in Karelia bor.» (Vain. Adj. Lich. Lapp. II p. 104). OKaj.: »Passim in reg. infralaponica» (Vain. l. c.). Ob.: Poikkijoki in Simo (Räsänen). Kuus.: In reg. subalp. montis Mäntytunturi (Vain. l. c.).

In Flot. Lich. Exs. (1829) n. 171 (in hb. Nyl.) thallus est sat tenuis, subcontinuus, parum verruculoso-inaequalis, glaucescenti-albidus, KOH non reagens. Apothecia dispersa, simplicia, mox immarginata convexaque, nigricantia. Hypothecium nigricans aut subfusco-nigricans, KOH non reagens aut distinctius fuscescens (in eodem apothecio), totum hyphis suberectis. Peritheciun indistinctum. Epithecium pallidum aut subolivaceo-pallidum et hymenium ceterum decoloratum aut partim aeruginosum aut in limite hypothecii intensius aeruginosum (in eodem apothecio), 0.045 (—0.090) mm crassum. Paraphyses arcte cohaerentes, gelatinosae, simplices, tubulis 0.001 mm crassis, in apice non incrassatis, sat parce evolutae. — In specimine n. 10708 (e Transsylvania) conidia »bacilliformia, recta, long. 0.004—0.005, crass. 0.001 mm» sec. adn. Nyl. in hb. suo.

*L. aggerata* (Mudd) Zahlbr. Cat. Lich. Un. III (1925) p. 706. *Lecidea aggerata* Mudd Man. Brit. Lich. (1861) p. 208; Arn. Fl. 1869 p. 515. *Lecidea Hellbomii* Lahm Fl. 1870 p. 177; Hellb. Nerik. Lafv. (1871) p. 72 p. p. (sec. Th. Fr. l. c. p. 559, 562). *L. sylvicola* f. *Hellbomii* Vain. l. c.

Exs. Mudd Lich. Brit. Exs. II (1861) n. 175 (»*L. incincla*» sec. Nyl. Fl. 1863 p. 78). — Zwackh Lich. Exs. (1880) n. 596 et 597 p. p. (»*L. latens* Tayl.» sec. determ. Nyl., hb. Nyl.), (1884) n. 919 (hb. Nyl.).

Apothecia tuberculata, nigra. Hypothecium nigricans.

Distr. Saepe cum var. *Flotowii* proveniens et in eam transiens. Ab.: Seppälänsaari in Lohja (Ch. E. Boldt). N.: Helsingforsiae (Norrl., »*L. latens*» sec. Nyl., 10695). St.: In rupe syenitica ad Källfjärd prope Björneborg (»*L. incincla*» sec. Nyl. in Malmgr. Fört. Lafv. Sat. p. 83, Nyl. Lich. Scand. p. 231). Ta.: In rupibus schistosis ad Talsola et in saxis gneissaceis ad Haarankorpi et Mustiala in Tammela (A. Kullhem), ad saxa gneissacea ad Virnajärvi in Padasjoki (Norrl. Bidr. Sydöstr. Tav. Fl. p. 187) et in Evo (Norrl.). KLad.: Supra petram dioriticam in Lahentausta ad Kirjavalahti (Norrl. Symb. Lad.-Kar. p. 31), ad Tirri in Ruskeala (K. Linkola). Sb.: In rupe gneissacea in Enonmäki prope Kuopio (K. Linkola). Kb.: Ad Riihi-vaara in par. Nurmes (»f. *Hellbomii*» Vain. Adj. Lich. Lapp. II p. 104). OKaj.: Paltamo (F. Silén), ad Kylmälä (Vain. l. c.) et Kovala (v. *Flotowii* et f. *aggerata*) in Kuhmo.

Var. *sublivida* Vain. *Lecidea sylvicola* f. *sublivida* Vain. Adj. Lich. Lapp. II (1883) p. 104.

Apothecia livido-nigricantia, simplicia, non tuberculata. Hypothecium fusco-nigricans.

Distr. OKaj.: Loco umbroso in latere rupis granitiae ad Kylmälä in Kuhmo (Vain. l. c.).

Thallus parum evolutus. Nonnullis apotheciis nigris in v. *Filotowii* transit. Apothecia mox convexa immarginataque. Hymenium circ. 0.060—0.050 mm crassum, totum aeruginosum, jodo levissime aut parum jodo caerulescens deindeque vinose rubens.

Obs. *Lecidea aphana* Nyl. Flora 1867 p. 327 (Hue Addend. II, 1888, p. 235, *L. sylvicola* var. *aphana* Zahlbr. Cat. Lich. Un. III, 1925, p. 707 p. p.), a Zahlbr. l. c. false cum *L. sylvicola* Flot., *L. infidula* Nyl., *L. lutulata* Nyl. et *L. ditutiuscula* Nyl. commixta, ab his epithecio hymenioque »vage violacee fuscescente», sec. specim. orig. n. 20236 in Hibernia collecto, facile distinguitur.

#### 148. *L. lapillicola* Vain.

Adj. Lich. Lapp. II (1883) p. 107; Arn. Lich. Fränk. Jur. (1885) p. 169 (Fl. 1884 p. 563); Zahlbr. Cat. Lich. Un. III (1925) p. 608.

Thallus tenuis, verruculosus, verruculis minutissimis, impure albidis pallidisve aut cinereo-virescentibus olivaceisve, KOH non reagens, hypothallo indistincto. Apothecia sat crebra aut dispersa, minutissima, lat. 0.15—0.35 mm atra, nuda, opaca, primum plana marginaque tenuissimo, integro, aut mox convexa immarginataque, basi levissime aut vix constricta. Hypothecium fusco-nigrum fuligineumve, hyphis tenuibus, irregulariter contextis. Epitheciun subaeruginoso-nigricans aut fuligineum. Paraphyses arcte cohaerentes, gelatinosae, tubulis tenuibus, apicibus non clavatis. Sporae ovoideae aut ellipsoideae, long. 0.005—0.008, crass. 0.0025—0.003 mm.

Distr. OKaj.: Ad lapillos et lapides graniticos et gneissaceos in jugo arenoso aprico prope templum in par. Kuhmo (Vain l. c. p. 108).

Proxima *L. sylvicola*, sed apotheciis minoribus et perithecio marginaque apothecii magis evoluto et hypothecio irregulariter contexto ab ea differens. Thallus saepe terra argillacea immixtus. Peritheciun hyphis radiantibus, sat pachydermaticis, cavitatibus oblongis, 0.001 mm latis aut angustioribus, extus subolivaceum, intus dilutescens. Hymenium circ. 0.004—0.045 (—0.034) mm crassum, »jodo intense caerulescens, dein obscure sordideque vinose rubens» (Vain. l. c.). Epitheciun coloratum tenue, hymenium ceterum decoloratum. Paraphyses tubulis 0.001—0.0005 mm latis, apice vix dilatatis. Sporae 8:nae, distichae, simplices. Gonidia cystococcaceae.

149. *L. hypocyanæa* Vain. n. sp.

Thallus effusus vel tenuissimus vel fere evanescens, irregulariter rimoso-diffractus, areolae angulatae, 0.2—0.4 mm latae. Thallus interdum subverniceus, sorediis isidiisque destitutus, cinereo-fuscens vel cinereo-fuligineus. Hypothallus fumosus hinc inde visus.

Apothecia dispersa, sed interdum numerosa, parva: diam. 0.4—0.6 mm, adpressa, sed thallum superantia. Discus ater, epruinosus, varie rugosus, deinde plus minusve tuberculatus, mox convexus, immarginatus. Excipulum crassum, totum cyanescenti-fuligineum aut obscure sordide subaeruginosum, hyphis erectis formatum. Hypothecium caerulescens. Epitheciun non granulosum, decoloratum aut pallide aeruginosum aut aeruginoso-fuligineum, hymenium ceterum plus minusve caeruleo-aeruginosum, inferne intense coloratum. Hymenium 45—50  $\mu$  altum. Paraphyses arcte cohaerentes, parce ramoso-connexae, saepe flexuosae, gelatinosae, graciles, 0.5  $\mu$  crassae, apice non incrassatae. Asci clavati, membrana apice modice incrassata. Sporae octonae, incoloratae, simplices, ellipsoideae aut oblongae aut ovoideae, parvae: 7—12  $\times$  (2—)3—3.5  $\mu$ .

Conidangia fuliginea, verruculas formantia, pycnoconidia 4—5  $\times$  1  $\mu$ .

Thallus J $\ddot{\text{v}}$ , KOH  $\ddot{\text{v}}$ , CaCl<sub>2</sub>O<sub>2</sub>  $\ddot{\text{v}}$ . Hymenium J persistenter caerulescens, hypothecium KOH  $\ddot{\text{v}}$ .

*Distr.* Al.: Mariehamn: Badhusberget (Vain.). Ab.: Hirvensalo (Vain.) et Velkua: Mustaluoto (Vain.).

*Obs.* This species was found on Vainio's table after his death. He had examined it with his wonted care, and entered his observations on the envelopes, as usualy. He had recognized it as a new species, and named it. But there was no diagnosis, and the above description has been written by the editor.

Vainio had suggested an affinity with *Lecidea sylvicola*, from which it differs in its bluish hypothecium (the hymenium itself is bluish in either species), as indicated by the species name. — *Lecidea tuberculata* Somrft has a bluish hypothecium, but it differs i. a. in its

minutely granular, subleprose thallus of a greenish-white colour. Its apothecia are also slightly smaller: 0.2—0.4 (—0.5) mm in the type plant (hb. Oslo).

These *Micro-Lecideae* form a section (*Lecideae sylvicolae* Th. Fr. Lich. Scand. II p. 555) of many nearly related species, often difficult of distinction.

### 150. **L. polycocca** Sommerf.

Suppl. Fl. Lapp. (1826) p. 147; Th. Fr. Lich. Arct. (1860) p. 218, Lich. Scand. II (1874) p. 559; Elenk. Lich. Fl. Ross. Med., 3—4 (1911) p. 424; Zahlbr. Cat. Lich. Un. III (1925) p. 674. *Lecidea Kajanita* Nyl. Lich. Scand. (1861) p. 245 (sec. Th. Fr.).

Thallus sat tenuis, areolatus, areolis circ. 0.8—0.3 mm latis, difformibus, convexis aut planis aut raro concavis, dispersis, pallidis aut albidis »aut virescenti-cinerascentibus» (sec. Th. Fr.), saepe tenuissime pruinosis, opacis, sorediis destitutis, hypothallo indistincto. Apothecia parva, lat. 0.3—0.5 mm, tota adnata, basi non constricta, disco primum plano demum convexo, caesio-pruinoso aut raro subdenudato, opaco, margine tenui, integro, non prominente, nigro, nudo, opaco, demum excluso. Hypothecium purpureum. Peritheciun aeruginosum. Epitheciun aeruginoso-fuligineum. Paraphyses arcte cohaerentes, gelatinosae. Sporae fusiformes oblongaeve, long. 0.010—0.012 (—0.014), crass. 0.004—0.005 mm» (sec. Th. Fr. et Nyl.).

Distr. OKaj.: Ad caementum veteris arcis in Kajaani (K. P. Malmgren). Ta.: Renko (A. Kullhem, sec. Th. Fr. Lich. Scand. p. 559, specim. non vidi).

Forsan est affinis *L. fuscoatrae* aut *Psoris*. Thallus substrato adnatus, subtus albidus, nec KOH, nec jodo reagens, strato corticali obductus circ. 0.030 mm crasso, albido, plectenparenchymatico, cellulis globosis, diam. circ. 0.006 mm, aut in superficie thalli depresso subdestructisque, areolis partim contiguis, apothecia solitaria aut 2—4 efferentibus. Apothecia interdum 2—4 contigua, »demum subglobosa et subtuberculosa» sec. Th. Fr., semper simplicia et tenuia in *L. Kajanita* Nyl. Hypothecium KOH non reagens, hyphis suberectis, parte superiore anguste subdecoloratum aut dilute rubricosum. Peritheciun KOH dilutescens, jodo intensius caeruleoscens, membranis leviter pachydermaticis, cavitatibus brevibus aut obl-

gis, 0.0005—0.002 mm latis. Hymenium circ. 0.050 mm crassum, jodo intense caerulescens. Epithecum KOH dilutescens, sordide subolivaceum. Paraphyses apicibus inturgescentes, cavitatibus 0.0005 mm latis, in apicibus vix dilatatis. Ascii clavati, lat. 0.011 mm, in apice membrana bene incrassata. Sporae 8:nae, distichae. Conidia »breviter acicularia, recta, long. 0.006—0.008, crass. 0.001 mm» (sec. Th. Fr.). Gonidia cystococcaceae.

### 151. **L. conferenda** Nyl.

in Fellm. Lich. Arct. (1864) n. 177; Nyl. Fl. 1866 p. 418, Lich. Lapp. Or. (1866) p. 160; Th. Fr. Lich. Scand. II (1874) p. 560; Vain. Adj. Lich. Lapp. II (1883) p. 105; Hue Addend. II (1888) p. 235; Zahlbr. Cat. Lich. Un. III (1925) p. 535 p. p. (excl. *L. subinfidula* Nyl.). *Lecidea lapicida* var. *minor* Nyl. Lich. Lapp. Or. (1866) p. 160 (sec. hb. Nyl.). *Lecidella umbratilis* Arn. Lich. Exs. (1870) n. 438 in hb. Nyl. (sed deser. in Arn. Lich. Tirol VI, 1871, p. 1108 non congruens). *Lecidea conferenda* f. *umbratilis* Arn. Lich. Exs. (index), 1894, p. 9.

*Exs.* Fellm. Lich. Arct. (1864) n. 177 (hb. Nyl.). — Arn. Lich. Exs. (1870) n. 438 (hb. Nyl.). — Zahlbr. Krypt. Exs. Vindob. IV (1899) n. 366 (sec. Lynge).

Thallus tenuis aut raro modice incrassatus, subcontinuus aut dispersus aut diffractus, leviter inaequalis, cinerascens aut obscure cinereo-glaucescens aut rarius albido-glaucescens, opacus, KOH non reagens, sorediis destitutus, hypothallo indistincto. Apothecia vulgo sat crebra, simplicia aut conglomerata, saepe parva, lat. 0.2—0.4 (—0.7) mm aut confluentia usque ad 1 mm, adnata, basi demum leviter constricta, primum (vulgo haud diu) plana marginataque, demum immarginata, nigra aut nigricantia (aut raro partim disco livido pallidoreve), opaca, nuda, disco vulgo demum convexo, margine tenui. Hypothecium superne subfuscescens et inferne dilutius coloratum albidumve aut totum subdecoloratum. Peritheciun in apotheciis junioribus bene evolutum, nigricanti-violascens aut obscure aeruginosum. Hymenium partim aut totum aeruginosum. Paraphyses arkte cohaerentes, gelatinosae. Sporae oblongae, long. 0.007—0.015, crass. 0.003—0.004 (—0.006) mm.

Var. *minor* (Nyl.) Vain. *Lecidea lapicida* var. *minor* Nyl. Lich. Lapp. Or. (1866) p. 160 (Mus. Fenn.).

*Exs.* Fellm. I. c. — Arn. I. c.

Apothecia simplicia. Hypothecium cinerascens aut parte inferiore vel totum subdecoloratum aut parte superiore dilute subfuscens.

*Distr.* Locis umbrosis subumbrosisque aut subhumidis ad lapides et in lateribus clivisque rupium saxorumque passim vel sat frequenter (»praesertim in betuletis» sec. Vain. in Fl. Tav. Or. p. 113), in majore parte territorii, septentrionem versus rarescens. N.: In lapide granitico muri ad villam Arabia (Vain., 10725 hb. Nyl.) et alibi Helsingforsiae (Nyl. sec. Th. Fr. I. c.). Ka.: Monrepos, Tervaniemi, Hietala ad Viburgum (Vain. Lich. Vib. p. 63). Ta.: In saxis graniticis, gneissaceis, schistosis et syeniticis pluribus locis in Tammela (A. Kullhem), in lapidibus graniticis, syeniticis, et gneissaceis pluribus locis in Hollola (Vain.), ad lapidem gneissaceum in Asikkala (»*L. sylvicola* var. *infidula* Nyl.» in Norrl. Bidr. Sydöstra Tav. Fl. p. 187, »est *L. conferenda*» sec. Nyl. in 10724), ad Kasniemi (Norrl. I. c.) et alibi in Padasjoki (Vain., 10719 hb. Nyl.), Evo (Norrl., apoth. p. p. bicoloribus), »sat frequenter, ut videtur, et pluribus locis collecta in Luhanka et Korpilahti» (Vain. I. c. p. 113). KOn.: Ad saxa dioritica prope Petrosavodsk (Th. Simming, Nyl. Lich. Lapp. Or. p. 161) et supra latus aridum rupis dioriticae ad Schungu (Norrl. Fl. Kar. Oneg. p. 36). Sb.: Ad saxum graniticum in Räimannmäki (K. Linkola) et alibi ad Kuopio (G. Lång Lich. Sav. Bor. p. 37). Kb.: »Passim» (Vain. Adj. Lich. Lapp. II p. 105). Ob.: Ad ostium fluminis Simo (Räsänen Einig. Flecht. p. 172). OKaj.: »Passim» in Kuhmo et Kianta (Vain. I. c.). Kuus.: Ad Paanajärvi (Vain. I. c.). KKer.: Knäsha-guba (P. A. Karsten sec. Th. Fr. Lich. Scand. II p. 560). LEnont.: »Supra lap. diabas in reg. betul. ad Kelottijärvi (et supra mic.-schist. ad Naimakka in Suecia), (»*L. conferenda*» et »*L. sylvicola*» in Norrl. Ber. Torn. Lappm. p. 336). LTul.: Kola (N. I. Fellman, »*L. lapicida* f. *minor*» Nyl., Th. Fr. I. c.), Kildin (Fellm., »*L. Kolaënsis*» Nyl. Lich. Lapp. Or. p. 146, saxicola). LPon.: Prope Ponoi (Fellm. Lich. Arct. p. 177, Nyl. I. c.), specimina a Kihlm. in N. Beitr. Flecht. Kola p. 58, a Nyl. determ., hue non pertinent.

Hypothecium subdecoloratum aut praesertim superne cinerascens aut in eodem apothecio partim superne obscuratum (tunc in var. *paraphanam* transiens). Conidangia extus punctis nigricantibus indicata, intus conceptaculo incolore, »conidia filiformia, recta, long. 0.006—0.009, crassit. vix 0.001 mm, sterigmatibus simplicibus» (sec. Nyl. Lich. Lapp. Or. p. 161 et adn. in n. 10736).

*Obs.* *Lecidea infidula* Nyl. Fl. 1868 p. 475 sec. specim. orig. n. 5413, ex ins. Caesarea (Jersey), hypothecio instructa est parte

superiore dilute impure pallida cinerascenteve, ceterum subdecolorato, parte inferiore irregulariter contexto et in parte superiore angusta hyphis erectis. Perithecium leviter evolutum, pallidum vel decoloratum, hyphis radiantibus, membranis modice incrassatis, cavitatibus elongatis, circ. 0.0015 mm latis. Hymenium circ. 0.045—0.055 mm crassum, »jodo vinose fulvescens» (sec. adn. Nyl., »vinose rubescens» in Fl. I. c. legitur). Paraphyses arcte cohaerentes, leviter gelatinosae, tubulis 0.001 mm crassis, in apice parum dilatatis. Sporae »long. 0.007—0.011, crass. 0.0035—0.045 mm.» »Spermogonia» (conidangia) »extus nigra, verrucariiformia», conidia »recta, long. 0.006, crass. 0.001 mm» (Nyl. I. c.). Thallus sat tenuis, inaequalis, passim rimulosus, impure albidus, opacus, parcissime granulis sorediorum inspersus. Apothecia nigra (non »livido-nigricantia»), opaca, lat. 0.5—0.2 mm, immarginata et parcissime primum tenuissime marginata, convexa vel vulgo depresso-convexa. In Fl. 1880 p. 364 legitur »*Bialora Bauschiana* Koerb., Zwackh Exs. (1858) n. 279, est *L. infidula* Nyl. Post a. 1888 autem Nyl. in bibl. sua (Hue Addend. II p. 234) adnotavit *B. Bauschianam* et Zw. Exs. n. 279 ad *L. dilutiusculam* Nyl. Fl. 1876 p. 308 pertinere. Revera in Zwackh Exs. n. 279 B (qui a Koerb. in Par. Lich., 1860, p. 157 citatur) »*B. Bauschiana* Koerb.» (apotheciis nigris, nudis) et »*L. dilutiuscula* Nyl.» (e Devon, apotheciis tenuissime pruinosis sublividisque) apotheciis numquam marginatis a *L. conferenda* differunt.

Var. *subbicolor* Vain.

Apothecia simplicia, p. p. nigricantia et p. p. bicolorata, uno latere aut disco pallidiore lividove et altero latere margineve nigricante. Hymenium partim aeruginosum, partim decoloratum. Hypothecium partim decoloratum, partim superne varie obscuratum.

*Distr.* LTorn.: In latere granitico umbroso rupis in reg. alpina inferiore montis Leutsuvaara in Suecia (»*L. conferenda*» sec. determ. Nyl. in Norrl. Ber. Torn. Lapp. p. 336). Ta.: In lapide granitico ad Evo nonnulla apothecia (J. P. Norrlin).

Thallus albido-cinerascens, verruculosos-inaequalis, sat tenuis, sorediis destitutus. Apothecia sat crebra, primum plana marginataque, demum convexa immarginataque. Hypothecium irregulariter contextum, parte summa angusta hyphis erectis. Perithecium aeruginosum, leviter pachydermaticum, cavitatibus circ. 0.002 mm latis, elongatis. Hymenium circ. 0.045—0.050 mm crassum. Paraphyses arcte cohaerentes, leviter gelatinosae, tubulis 0.0005 mm latis, in apicibus parum dilatatis. Sporae distichae, oblongae, long. 0.010—0.011, crass. 0.004 mm. Ascii clavati, in apice membrana leviter incrassata.

*F. moriformis* Th. Fr. Lich. Scand. II (1874) p. 560; Vain. Adj. Lich. Lapp. II (1883) p. 105; Zahlbr. Cat. Lich. Un. III (1925) p. 536.

Apothecia tuberculata.

*Distr.* Ta.: In rupe gneissacea ad Letku in Tammela (A. Kullhem). Sb.: Saxicola in Kuopio (G. Lång Lich. Sav. Bor. p. 37). Kb.: In rupe granitica ad Lieksa (Vain. l. c.). LEnont.: Supra lapidem dioriticum in reg. betulina ad Kelottijärvi (J. P. Norrlin).

Hypothecium parte superiore impure subviolascens, parte inferiore aut totum subincoloratum.

Var. *paraphana* (Nyl.) Th. Fr. Lich. Scand. II (1874) p. 477; Nyl. Fl. 1883 p. 108; Vain. Adj Lich. Lapp. II (1883) p. 106; Zahlbr. Cat. Lich. Un. III (1925) p. 536. *Lecidea paraphana* Nyl. Fl. 1868 p. 477, Fl. 1882 p. 457; Arn. Lich. Tirol XVIII (1878) p. 287, XXV (1893) p. 370; Hue Addend. II (1888) p. 235.

Exs. Norrl. et Nyl. Herb. Lich. Fenn. III (1875) n. 145 (sec. Nyl. Fl. 1883 p. 108).

Apothecia simplicia aut raro parce confluentia. Hypothecium superne et inferne intense fuscescens, medio pallidum aut dilutissime subfuscescens.

*Distr.* Ab.: Ispoinen prope Aboam (Vain.). KLad.: Supra saxum depresso, particulis calcareis immixtum ad Kirjavalahti (Norrl. H. L. F. n. 145 sec. Nyl.). Ta.: Ad saxum graniticum prope Kuivajarvi in Tammela (A. Kullhem). LTorn.: In lapide schistoso prope Karesuanto (»*L. paraphana*« Norrl. Ber. Torn. Lappm. p. 336).

Thallus evanescens aut tenuis. Gonidia cystococcaceae. Apothecia primum plana et tenuissime marginata aut margine parum distincto, demum convexa immarginataque, atra. Hypothecium superne hyphis erectis, ceterum irregulariter contextum. Peritheciun in margine superne aeruginoso-fuligineum, ceterum fusco-fuligineum aut subviolaceo-cyanescens. Hymenium aeruginosum aut epithecio partim aeruginoso-fuligineo, circ. 0.050 mm crassum, »jodo vinose rubens« (sec. Nyl.). Paraphyses arcte cohaerentes, simplices, gelatinosae, tubulis 0.001 mm crassis, in apice non incrassatis, sat abundanter evolutae. Sporae oblongae, long. 0.008—0.013, crass. 0.003—0.0035 mm.

Var. *mesoleuca* Vain. Adj. Lich. Lapp. II (1883) p. 106; Zahlbr. Cat. Lich. Un. III (1925) p. 536.

Apothecia simplicia aut raro parce confluentia. Hypothecium parte superiore intense fuscescens, parte inferiore subdecoloratum.

*Distr.* Ab.: Nuottasaari in Karjalohja (Ch. E. Boldt) Ta.: In rupe gneissacea ad Mustiala (A. Kullhem), ad lapidem gneissaceum in Jutinsalo in Luhanka (»*L. sylvicola*« sec. determ. Nyl. in Vain. Fl. Tav. Or. p. 113, n. 351). OKaj.: In latere rupis schistosae ad Saarikoski in par. Kianta (Vain. Adj. Lich. Lapp. II p. 106). Ob.: Jokisuu in Simo (Räsänen).

Apothecia plana et tenuiter marginata aut demum convexa immarginataque, nigra. Pars marginalis peritheciis aeruginoso-fuli-

ginea. Hymenium parte superiore aeruginosum, epithecio saepe fuligineo, parte inferiore dilute fuscescens aut decoloratum aut aeruginosum. Hymenium jodo vinose rubens aut primum levissime caeruleascens. Paraphyses arcte cohaerentes. Sporae oblongae, long. 0.007—0.01 ( $\rightarrow$  0.014), crass. 0.003—0.004 mm. — In specim. n. 10759 in hb. Nyl. »*L. paraphana*« determinato, in monte Mut in Tirolia collecto, sec. icon. et descr. (Arn. Lich. Tirol XVIII, 1878, p. 287, coll. Arn. 60) ad var. *mesoleucam* pertinente, conidiis rectis, subbacillaribus, long. 0.006—0.007, crass. 0.0005 mm» describitur.

Var. *subsvilicola* Vain. Adj. Lich. Lapp. II (1883) p. 106; Zahlbr. Cat. Lich. Un. III (1925) p. 536.

Apothecia simplicia aut raro parce confluentia tuberculatave. Hypothecium parte superiore dilute cinereo-subviolascens aut intense subfuscescens, parte inferiore pallidum decoloratumve. Sporae breviores, ellipsoideae oblongaeve.

*Distr.* OKaj.: In latere saxi schistosi ad Saarikoski in par. Kianta (Vain. l. c.).

Thallus sat tenuis, verruculosoinaequalis, rimulosus, cinereo-albidus. Apothecia primum plana marginataque, dein convexa immarginataque. Hymenium totum aut parte superiore aeruginosum aut epithecium partim aeruginoso-fuligineum, jodo leviter caeruleascens deindeque vinose rubens, crass. 0.045—0.050 mm. Perithecium intense aeruginosum aut intus violaceo-fuscescens. Paraphyses typicae. Sporae long. 0.006—0.009, crass. 0.003—0.004 mm. Gonidia cystococcaceae. — Proxima est var. *mesoleucae*.

Var. *violascens* Vain.

Apothecia simplicia. Hymenium parte inferiore violaceum aut impure dilute subviolaceum, parte superiore aeruginosum. Hypothecium subpallidum aut impure subviolaceo-pallidum.

*Distr.* Ta.: Ad lapidem gneissaceum littoralem in Rautakankara prope Tiirismaa in Hollola (Vain. 543, »*L. sylvicola* hypothecio pallidore« Nyl. a. 1873 determ.).

Thallus tenuis, dispersus, cinerascens. Apothecia primum plana, tenuissime marginata, dein mox convexa immarginataque, nigra. Perithecium aeruginoso-fuligineum, hyphis radiantibus, modice pachydermaticis, cavitatibus angustissimis, elongatis. Paraphyses arcte cohaerentes, leviter gelatinosae, cavitatibus angustissimis, in apice non dilatatis. Sporae oblongae, distichae, long. 0.009—0.010, crass. 0.003—0.004 mm.

152. **L. lyncea** Th. Fr.<sup>1)</sup>

Lich. Scand. II (1874) p. 561; Vain. Adj. Lich. Lapp. II (1883) p. 107 (excl. v. *lyncea*); Zahlbr. Cat. Lich. Un. III (1925) p. 626.

»Thallus tenuis, rimulosa, subalutacea aut sordide cinerea. Apothecia minutissima, adnata vel adpresso-adnata, primitus planiuscula tenuiterque marginata, dein convexa subglobosaque, immarginata, parva, lat. 0.2—0.4 mm, atra, nuda. Hypothecium subicoloratum vel vase obscuratum. Perithe-  
cium extus leviter smaragdulum. Totum hymenium plus minus dilute sordideque olivascens, epithecio obscurius oliva-  
scente vel subfuligineo. Paraphyses arcte cohaerentes. Sporae oblongae vel elongato-ovoideae, long. 0.006—0.009,  
crass. 0.003 mm» (sec. Th. Fr.).

Distr. Sb.: Supra saxum ad Kuopio parce lecta (sec. Lång Lich. Sav. Bor., 1910, p. 38). A me non visa.

»Thallus in sordide luteolum rufescensve interdum paullum vergens,  $\text{CaCl}_2\text{O}_2$  non mutatus, KOH indistincte sordideque in obscure luteum abiens, jodo non caerulescens. Hymenium jodo levissime caerulescens deindeque vinose rubens fulvescensve, KOH nil insignis agens.  $\text{HNO}_3$  omnes partes obscurores roseo-violascunt. Asci clavati. Ab affinibus *L. erratica* et *L. sylvicola* praecipue differt hypothecio, a *L. atomaria* sporis majoribus et reactione jodi, a *L. conferenda* sporis minoribus, a *L. tuberculata* apotheciis primitus planis sporisque multo crassioribus» (sec. Th. Fr.). — Specimen a Lång his verbis describitur: »Thallus cinerascens, rimuloso-areolatus. Apothecia primitus planiuscula, dein convexiuscula immarginataque. Hypothecium decoloratum. Paraphyses concretae, apice clavatae. Epithecium olivaceo-fuligineum. Perithe-  
cium fuligineum, extus in violaceum vergens. Sporae oblongae, long. 0.006—0.007 mm, crass. 0.003 mm.»

153. **L. enterophaea** Vain.

Adj. Lich. Lapp. II (1883) p. 108; Zahlbr. Cat. Lich. Un. III (1925) p. 575.

<sup>1)</sup>. Th. M. Fries named this species in honour of his friend »ocu-  
latissimus» N. G. Moe, whom he always called *Lynx norvegica* in  
his letters.

Thallus evanescens, e verruculis minutissimis, albidis, dispersis constans, hypothallo indistincto. Apothecia sat crebra et partim crebra, minutissima, lat. 0.15—0.25 (—0.3) mm, adnata, basi constricta, disco plano aut primum concavo, atro, nudo, nitido, margine tenui, integro, atro, nudo, persistente. Hypothecium fusco-nigrum aut superne anguste pallescens vel dilutius fuscescens. Perithecium in margine aut extus aeruginoso-fuligineum, ceterum fusco-nigrum. Epithecium aeruginoso-fuligineum. Paraphyses arcte cohaerentes, gelatinosae. Sporae 8:nae, ellipsoideae oblongaeve, long. 0.005—0.008, crass. 0.002—0.003 mm.

*Distr.* LIn.: Ad lapides parvos granuliticos in regione subalpina jugi Suoloselkä (Vain. l. c.).

*Lecidea atomaria* Th. Fr., Lich. Scand. II p. 561, hypothecio decolorato vel subdecolorato ab hac specie differt. — Thallus sorediis destitutus. Apothecia margine non aut primum leviter prominente. Hypothecium in parte summa angusta hyphis suberectis, ceterum sat irregulariter contextis, inferne KOH subpurpureum. Perithecium hyphis tenuibus, subrariantibus, conglutinatis. Hymenium inferne decoloratum aut totum aeruginosum, circ. 0.060 mm crassum, jodo intense caerulescens, dein dilutescens. Epithecium KOH demum virescens. Paraphyses tubulis 0.001—0.0015 mm latis, apice parum aut leviter dilatatis. Ascii clavati, in apice membrana modice incrassata. Sporae distichae.

#### 154. *L. tuberculata* Sommerf.

Suppl. Fl. Lapp. (1826) p. 160 (non *Biatora tuberculata* Fr. Stirp. Fems., 1825, p. 37, nom. nud., sec. Th. Fr. Lich. Scand. II, 1874, p. 562); Th. Fr. l. c. p. 562 p. p. (excl. »*L. apochroeella* var. *botryoides* Nyl. Fl. 1867 p. 373); Norrl. Fl. Kar. Oneg. II (1876) p. 36; Arn. Lich. Tirol XXIII (1887) p. 86; Zahlbr. Cat. Lich. Un. III (1925) p. 712 p. p.

*Exs.* Arn. Lich. Exs. (1884) n. 1057 (Mus. Fenn.). — Norrl. et Nyl. Herb. Lich. Fenn. cont. (1921) n. 763, 764.

Thallus tenuis aut sat tenuis aut rarius modice incrassatus, continuus aut dispersus aut areolato-diffractus, vulgo verruculoso-inaequalis, aut raro verriculosus, raro areolis demum squamuloso-adscendentibus, impure albidus aut albido-glaucescens aut pallidus, opacus, KOH non reagens, sorediis

destitutus, hypothallo indistincto. Apothecia adnata, sat crebra aut dispersa, vulgo fere mox tuberculato-divisa, lat. 1—0.2 mm, aut simplicia 0.1—0.2 mm, adnata, basi leviter constricta, immarginata, disco convexo, nigro aut subnigricante, opaco, nudo. Hypothecium aeruginosum aut subcyanescenti-nigricans, hyphis erectis. Hymenium tenue (circ. 0.025—0.040 mm crassum), epithecio subdecolorato. Paraphyses arcte cohaerentes, gelatinosae. Sporae oblongae, »long. 0.005—0.008, crass. 0.0015—0.0025 mm» (sec. Th. Fr.).

Var. *Scandinavica* Vain.

Thallus crustaceus, non squamulosus. Apothecia demum p. p. tuberculato-divisa, disco nigro.

*Distr.* Ab.: In latere rupis syenitcae in silva increbra et in lapidibus gneissaceis ad Pellonkylä in Karjalohja (Norrl. H. L. F. cont. n. 764 a, b, 763). Ta.: In fissuris rupis gneissaceae in Lapinkallio prope Evo (»*Lecidea apochroella* var. *boltryodes* Nyl.» in Norrl. Bidr. Sydöstr. Tav. Fl. p. 187, n. 404 in Mus. Fenn., »*L. bolryocarpa*» sec. Nyl. in hb. suo, n. 10767).

Hypothecium KOH distinctius aeruginosum aut subcyanescens. Peritheciun subdecoloratum, tenue. Hymenium jodo caerulescens (»vinose rubens fulvescensve, praecedente fugaci levique colore caerulecente» sec. Th. Fr. l. c. p. 563). Paraphyses tubulis tenuibus, apice leviter dilatato. Thallus nec jodo nec KOH reagens, gonidiis cystococcaceis, globosis, vacuolis lateralibus, membrana distincta.

Var. *subinfidula* (Nyl.) Th. Fr. *Lecidea tuberculata* f. *subinfidula* Th. Fr. Lich. Scand. II (1874) p. 563. *L. subinfidula* Nyl. Fl. 1869 p. 295; Hue Addend. II (1888) p. 149.

Thallus crustaceus, subcontinuus, non squamulosus. Apothecia non tuberculato-divisa, disco laevigato, convexo, saepe bicolore, uno latere saepe pallidiore, altero subnigricante aut toto subaeruginoso-nigricante.

*Distr.* Ad rupem micaceo-schistosam in caverna in reg. betulina ad Naimakka in Lapponia Tornensi in Suecia (»*L. subinfidula*» in Norrl. Ber. Torn. Lapp. p. 336).

Thallus verruculoso-inaequalis et parcissime granulis inspersus. Apothecia simplicia aut parce subconferta, lat. 0.1—0.25 mm. Hypothecium aeruginosum, partim sordide aeruginosum. Peritheciun subdecoloratum, hyphis radiantibus, cellulis brevibus, sat angustis, membranis modice incrassatis, conglutinatis. Hymenium circ. 0.040 mm crassum, majore parte inferiore caerulescenti-aeruginosum, epithecio decolorato. Paraphyses arcte cohaerentes, gelatinosae, tubulis tenuissimis, apice non incrassatis. »Jodo gelatina hymenialis

vinose fulvescens vel vinose rubens, praecedente colore caerulescente» (Nyl. l. c.). »Sporae oblongae, long. 0.006—0.008, crass. 0.002—0.003 mm» (Nyl. l. c.). Conidangia »parum prominula, superne obscura», conidia »(ut in *Ramalina*) apicibus leviter incrassatis, recta, »long. circ. 0.003 mm, crass. pauxillum vel vix 0.001 mm excedentia, sterig-mata brevia, simplicia» (sec. adn. Nyl.). Gonidia parva, saepe auto-sporas continentia.

Var. *botryocarpa* (Nyl.) Vain. »*Lecidea tuberculata* f.» sec. adn. Nyl. in bibl. sua (Th. Fr. l. c.). *Lecidea botryocarpa* Nyl. Fl. 1865 p. 603; Hue Addend. II (1888) p. 137; Norrl. Fl. Kar. Oneg. II (1876) p. 36.

Thallus areolatus, areolis demum squamulaeformibus, adscendentibus. Apothecia plurima tuberculato-divisa.

*Distr.* KOn.: Ad saxum dioriticum in Käpselkä (Th. Simming) Mus. Fenn., Nyl. l. c., n. 10766 in hb. Nyl.). N.: Kotimäki in Suur-saari vel Hoglandia (Vain., Brenn. Bidr. Hogl. Lafv. p. 83). Ta.: Evo (Vain. sec. adn. Nyl. in bibl. sua, Fl. l. c.).

Thallus superne glauco-pallescens, areolis circ. 0.2—0.3 (—0.7) mm latis. »Apothecia nigricantia (»interdum pallido-lutea» sec. Nyl., talia autem non vidi), minuta (lat. circ. 0.1 mm), capitato-conglome-rata (h. e. plurima aggregata et confluentia in capitulum verrucoso-subglobosum, diam. 0.5—0.9 mm), singula convexa, immarginata aut subglobosa. Sporae oblongae, long. 0.007—0.008, crass. circ. 0.0025 mm. Gelatina hymenea jodo caerulescens, deinde vinose rubens. Saepe glomeruli apothecis basi pallidioribus vel omnino pallidis» (Nyl. l. c.). Hypothecium aeruginosum. Hymenium totum aut parte inferiore dilute aeruginosum aut parte superiori subdecoloratum. Paraphyses gelatinosae, simplices, tubulis tenuibus. Gonidia globosa, vulgo parva, membrana tenuissima, p. p. subglobosa et ellipsoidea et ovoi-dea et majora. Hymenium hyphis infestatum fungosis, aeruginosis, circ. 0.003—0.004 mm crassis, ad instar paraphysum erectis aut in hypothecium continuatis.

#### Sect. *Lecidea rivulosa*.

Thallus cinereo-fuscescens, hypothallo obscuro circum-datus. Apothecia atra vel fuscescentia, excipulum fuscum, hypothecium pallidum, paraphyses apice incrassatae, obscure fuscescentes, sporae latae. Hyphae medullares non amyloideae. In rupibus graniticis crescentes.

155. **L. praeruptarum** Du Rietz et Magnuss.

Du Rietz Zur Meth. Pflanzenoz. (1921) tab. 21 (pag. 164); Magnuss. Stud. Rivul. (1925) p. 13.

*Exs.* Magnusson Lich. sel. Scand. II (1929) n. 44.

Thallus modice incrassatus aut sat crassus, verruculosoinaequalis, cinerascenti-olivaceus aut raro subcinerascens, sorediis vulgo minutis, flavescentibus aut olivaceis instructus, hypothallo nigricante limitatus aut inter verruculas conspicuo. Apothecia lat. circ. 0.5—1.2 (sec. Magnuss. »—1.5») mm, late adnata, basi leviter constricta, disco plano aut demum depresso-convexo, nigro aut fusco-nigro, nudo, opaco, margine tenui, concolore aut rarius pallidiore, integro aut lobulato, subpersistente. Hypothecium albidum pallidumve, hyphis erectis praesertim in parte media. Paraphyses sat laxe cohaerentes, apice fuscescente leviter clavato-incrassato. Sporae 8:nae, oblongae, »long. 0.009—0.012, crass. 0.004—0.005 mm» (sec. Magnuss.).

*Distr.* Ad latera praerupta rupium saxorumque praesertim graniticorum. Al.: In monte Badhusberget prope Mariehamn fert. (Vain.), in monte Geta fert. (Vain.). Ab.: In latere saxi gneissacei in silva ad Rakkaudenlähde prope Kultaranta ster. (Vain.), in sepulcreto ster. et ad Ispoinen fert. prope Aboam (Vain.). N.: Träskoplan in Esbo ster. (Vain.).

Facie externa et affinitate proxima est *Lecideae Lightfootii* et forsan ejus variatio saxicola, vix nisi peritheci partे obscurata magis evoluta et apice paraphysum vulgo minus incrassato, thallo saepe crassiore et statione ab ea differens. Thallus interdum areas latas in lateribus praeruptis rupium obtegens (Magnuss. l. c.), opacus, verruculis contiguis aut dispersis, sorediis (soraliis) interdum majoribus, raro tantum parce evolutis, granulis subtiliter farinosis. Apothecia dispersa, simplicia aut interdum in glomerulos divisa confertave, margine saepe leviter prominente. Hypothecium inferne et praesertim in lateribus (et totum in apotheciis magis novellis) irregulariter contextum. Peritheciū partim totum fusco-fuligineum, partim intus pallescens. Paraphyses clava sat praerupte incrassata (—0.0045 mm crassa) aut tantum leviter incrassata (circ. 0.0025 mm crassa). Sporas long. 0.007—0.009, crass. 0.003—0.005 mm vidi. Gonidia pleurococcacea, simplicia globosa et diam. 0.009—0.014 mm, saepe 2-cellulosa, membrana modice incrassata.

*Obs.* *Rinodina fatiscens* (Th. Fr.) ab hac specie apotheciis lecanorinis facile distinguitur. Ad eam etiam *Lecanora deflectens* Nyl. (Fl. 1875 p. 8) pertinet.

### 156. **L. cyathoides** Ach.

Meth. Lich. (1803) p. 51. *Lichen cyathoides* Ach. Lich. Suec. Prodr. (1798) p. 62 (conf. infra). *Lecanora falsaria* & *cyathoides* Ach. Lich. Univ. (1810) p. 351. *Lecidea rivulosa* Ach. Meth. Lich. (1803) p. 38; Nyl. Lich. Scand. (1861) p. 222, Lich. Paris (1896) p. 93; Th. Fr. Lich. Scand. II (1874) p. 450 p. p.; Magnuss. Stud. Rivul. (Göteborg. K. Vet. Samh. Handl. 4 följd. XXIX n. 4, 1925) p. 22 p. p.; Zahlbr. Cat. Lich. Un. III (1925) p. 818 p. p. *Biatora* Fr. Vet. Ak. Handl. 1822 p. 296; Koerb. Syst. Lich. Germ. (1855) p. 196; Arn. Lich. Tirol VIII (1872) p. 297, Lich. Fränk. Jur. (Fl. 1885) p. 156 p. p. *Lecidea rivulosa* & *superficialis* Schaer. En. Lich. Eur. (1850) p. 111.

*Exs.* Fr. Lich. Suec. Exs. XIV (1833) n. 404. — Desm. Pl. Cr. Fr. ed. II ser. 1, V (1838) n. 244. — Zwaakh Lich. Exs. (1851) n. 3. — Nyl. Herb. Lich. Par. II (1855) n. 59. — Hepp Flecht. Eur. V (1857) n. 239, IX (1860) n. 491. — Mudd Lich. Brit. Exs. II (1861) n. 168. — Havaas Lich. Norv. Exs. (1907) n. 364. — Malme Lich. Suec. Exs. XV (1913) n. 369. (Sec. Magnuss.). Conf. etiam sub f. *corticola*.

Thallus modice incrassatus aut sat crassus (aut raro evanescens, in f. *depauperata* Leight.), rimoso-areolatus areolatusve aut rarius demum subsquamoso-areolatus, cinereus aut rarius subalbido- aut subfuscescenti-cinerascens aut olivaceo-fuscescens, opacus, areolis planis aut raro partim parceque convexis, laevigatis aut raro verrucoso-rugosis, sorediis destitutus, hypothallo obscurato partim ad ambitum et raro inter areolas conspicuo. Apothecia lat. circ. 0.8—1.8 mm, late adnata, basi non aut demum leviter constricta, disco plano aut demum depresso-convexo, nigro aut fusco-nigrante aut raro fusco, nudo, opaco, margine vulgo modice incrassato, (disco) concolore aut pallidiore, non aut leviter prominente, vulgo persistente, integro aut interdum (cum disco) lobulato. Hypothecium albidum pallidumve, superne hyphis erectis (irregulariter contextis in f. *Velkuensi*), strato myelohypphico, aërem inter hyphas irregulariter contextas continentis, impositum. Paraphyses laxe cohaerentes, apicem fuscescentem

versus sensim incrassatae, non gelatinosae. Sporae 8:nae, ellipsoideae oblongaeve, p. p. leviter curvatae, long. 0.008—0.014, crass. 0.003—0.0045 mm (»0.004—0.006» sec. Th. Fr., »0.005—0.007» sec. Magn.).

F. *saxicola* (Fr.) Vain. *L. rivulosa* a *superficialis* a *saxicola* Schaeer. En. Lich. Eur. (1850) p. 111 p. p. (Fr. Lich. Eur. Ref., 1831, p. 271).

Saxicola. Thallus laevigatus, rimoso-areolatus aut areolatus, areolis planis, laevigatis.

Distr. In lateribus praeruptis rupium graniticarum et porphyricarum (aut silacearum) praesertim in montibus crescit. Al.: »Sat frequenter» sec. E. Nyl. (Ål. Lafveg. p. 91), Badhusberget in Mariehamn (Vain.), Öfverby in Jomala (Vain.), Gripö in Föglö (Vain.) Ab.: Artukainen in Raisio (Vain.), sepulcretum ad Aboam (Vain.). N.: Kasberg in Esbo (Linkola), Suursaari vel Hoglandia (Vain., Brenn. Bidr. Hogl. Lafv. p. 107). LTul.: Jeretik (H. Hollmén).

Thallus leviter aut vix distinete pruinosis, nec KOH, nec  $\text{CaCl}_2\text{O}_2$ , nec his solutionibus conjunctis, nec jodo reagens. Apothecia dispersa, lat. 0.8—1.8 mm, interdum (in Öfverby in Jomala) proliferationibus gyroso-confertis et lobulatis. Perithecium extus fuscescens, intus pallidum. Hymenium ab hypothecio non bene limitatum. Conidangia verruciformia, thallum superantia. Conidia oblonga, long 0.004—0.006, crass. 0.0015 (—0.002) mm, lateribus convexis (»oblonga» etiam sec. Nyl. l. c.), »ellipsoidea aut subcylindrica, long. 0.0025—0.0035, crass. 0.0015 mm» (sec. Magnuss. l. c. p. 24). Paraphyses crass. 0.0015—0.002 mm, apicibus 0.003—0.005 mm crassis. Gonidia pleurococcoidea.

Obs. 1. *L. rivulosa* var. *sorediata* Magnuss., l. c. p. 29 (Zahlbr. l. c. III p. 821), »sorediis pallide flavescentibus» descripta, a *L. cyathoides* excludenda est.

Obs. 2. *Lichen cyathoides* Ach. l. c. »scutellis pruinosis totis nigris» male ab Achario descriptus, sec. specim. orig. revera apotheciis non pruinosis instructus est, quamquam nonnulla apothecia vetusta, hymenio destituta, cinerascentia sunt. In ambobus specim. originalibus sporae p. p. leviter curvatae, oblongae, et excipulum intus myelohyphicum. Nomen antiquius *L. cyathoides* Ach. huic speciei igitur restituendum est. — »A pale form, certainly from very shady places» est *L. rivulosa* f. *cyathoides* Magnuss. l. c. p. 27 (Zahlbr. l. c. p. 820). Conf. etiam Th. Fr. Lich. Scand. p. 451.

F. *Velkuensis* Vain. Thallus sat tenuis, areolatus, areolis contiguis aut partim dispersis, planis, minutis, laevigatis, cinereo-albidis. Apothecia minora, lat. 0.6—0.9 mm, margine tenui, nigro.

Distr. In latere praerupto rupis graniticae in insula Mustaluoto in Velkua (Ab.).

Forsan est species autonoma, et revera pluribus notis, etiam hyphis hypothecii irregulariter contextis differens a *L. cyathoide*, quae autem valde est variabilis. Areolae thalli lat. 0.3—0.15 mm, vix distincte pruinosa, opacae. Hypothecium albidum, hyphis irregulariter contextis, superne conglutinatis, strato myelohyplico aërem inter hyphas continentis impositum. Peritheciun tenui, hyphis radiantis, subtus albido, superne extus fuscescens, intus pallidum. Epitheciun fuscescens. Sporae ellipsoideae aut suboblongae, p. p. leviter curvatae, long. 0.009—0.010, crass. 0.004—0.006 mm. — *L. Hoglandicam* in memoriam revocans, sed sporis ab ea differens.

*F. lobatula* Nyl. in herb. Nyl. et meo; Magnuss. Stud. Rivul. (1925) p. 26. »*L. rivulosa* f. *thallo cinerascente, et varians apotheciis lobatulis*« Nyl. in Brenn. Bidr. Hogl. Lafv. (1885) p. 107.

Saxicola. Thallus areolatus vel subsquamoso-areolatus, areolis demum saltem p. p. e substrato subsolventibus et convexis vel subpliatis inaequalibusve, p. p. etiam majoribus vel demum accrescentibus.

*Distr.* In partibus inaequalibus vel minus praeruptis rupium scopolorumque in montibus. Ab.: Artukainen in Raisio (Vain.). N.: Somerikonyvuoret et Kotimäki in Suursaari (Vain.), Helsingforsia (Vain. 1876).

Thallus non aut vix distincte pruinosis. Hypothecium parte superiore crassa ex hyphis erectis, conglutinatis formata, strato imposita ex hyphis irregulariter contextis, aëre disjunctis formato, partim etiam in partem inferiorem peritheciis continuato. Gonidia pleurococcaceae, simplicia globosa aut subglobosa et diam. 0.008—0.010 mm, membrana leviter incrassata, saepissime 2-cellulosa.

*F. corticola* (Fr.) Vain. *Biatora rivulosa* b *corticola* Fr. Lich. Eur. Ref. (1831) p. 272. *Lecidea rivulosa* b *corticola* Th. Fr. Lich. Scand. II (1874) p. 450; Lamy Cat. Lich. Mont-Dore (1880) p. 126; Magnuss. Stud. Rivul. (1925) p. 28. *L. rivulosa* a *superficialis* b *corticola* Schaeer. En. Lich. Eur. (1850) p. 111. *Biatora stiriacaca* Mass. Ric Lich. Crost. (1852) p. 125 (sec. Jatta).

*Exs.* Fr. Lich. Suec. Exs. II (1818) n. 39. — Zwackh Lich. Exs. (1858) n. 267 B. — Th. Fr. Lich. Scand. Exs. II (1860) n. 43. — Stenh. Lich. Suec. Exs. VI (1863) n. 167. — Hepp Flecht. Eur. XIII (1867) n. 730 (in hb. meo). — Rabenh. Lich. Eur. Exs. XXX (1868) n. 808 (Mus. Fenn.). — Zahlbr. Krypt. Exs. Vindob. IV (1869) n. 364. — Koerb. Lich. Sel. Germ. IV (1873) n. 404. — Lojka Lich. Univ. V (1886) n. 240 (in hb. meo, cet. sec. Magnuss.).

Corticola. Thallus vulgo sat tenuis aut modice incrassatus, laevigatus aut verrucoso- vel verruculosoinaequalis, cinereo- vel olivaceofuscescens.

*Distr.* Ad corticem arborum frondosarum, praesertim Fagi et Betulae crescit (etiam ad Castaneam et Alnum sec. Magnuss.), in

Fennia nondum collecta, in terris magis meridionalibus proveniens, in Suecia adhuc in Dalslandia obvia (sec. Hulting).

Facie externa saepe (velut in Lojka Lich. Univ. n. 240) a f. *saxicola* non differt. Hoc specimen notis anatomicis tamen leviter a f. *saxicola* recedit, parte superiore hypothecii ex hyphis erectis formata tenuiore et parte myelohypifica hypothecii magis evoluta et in perithecium usque ad marginem continuata. In hypothecio praesertim hyphae in ascos continuatae jodo aliquantum caerulescentes. Thallus non aut vix distincte pruinosis. Hymenium verum circ. 0.050 mm crassum, a hypothecio non bene limitatum (hyphis tamen tenuioribus, magis leptodermaticis in hymenio), jodo caerulescens, dein vino rubens aut partim subfulvescens. Paraphyses apicem versus sensim dilatatae, simplices, laxe cohaerentes, non gelatinosae. Ascii cylindrico-clavati aut clavati. Sporae 8:nae, distichae aut in ascis abortivis monostichiae, curvatae et p. p. rectae, simplices, long. circ. 0.009—0.011, crass. 0.003—0.004 mm, apicibus rotundatis. Gonidia pleurococcoidea, simplicia globosa aut subglobosa, parce 2-cellulosa, membra leviter incrassata.

157. **L. Lightfootii** (Sm.) Ach.

Lich. Univ. (1810) p. 177, Syn. Lich. (1814) p. 34; Nyl. Prodr. Lich. Gall. Alg. (1857) p. 105, Lich. Paris (1896) p. 78. *Lichen Lightfootii* Sm. Engl. Bot. (1805) t. 1451. *Biatorina* Koerb. Par. Lich. 2 Lief. (1860) p. 141; A. L. Smith Mon. Brit. Lich. II (1911) p. 124. *Catillaria* Oliv. Fl. Lich. Orn. II (1884) p. 217; Magnuss. Stud. Rivul. (1925) p. 29 (Th. Fr. Lich. Scand. II p. 451); Zahlbr. Cat. Lich. Un. IV (1927) p. 54.

*Exs.* Zwackh Lich. Exs. II (1851) n. 71, VII (1859) n. 373 A, XXII (1894) 1166 (hb. Vain.). — Rabenh. Lich. Eur. IV (1858) n. 395 (Mus. Fenn.). — Hepp Flecht. Eur. IX (1860) n. 503 et XIII (1867) n. 744 (hb. Vain.). — Koerb. Lich. Sel. Germ. IX (1864) n. 248. — Larb. Lich. Herb. III (1879) n. 106. Sec. Lynge.

Thallus modice incrassatus aut sat crassus, continuus aut areolato-diffractus, verruculoso-inaequalis, olivaceo-cinerascens, aut raro fuscescens, sorediis saepe minutis aut demum confluentibus olivaceis aut demum flavescentibus, instructus, hypothallo obscurato saepe partim limitatus. Apothecia lat. circ. 1—0.5 mm, late adnata, basi non aut leviter constricta, interdum demum (inter soredia accrescentia) subimmersa, disco plano aut demum depresso-convexo, nigro aut fusce-

scente, nudo, opaco, margine tenui, concolore aut pallidiore, integro, persistente aut demum subexcluso. Hypothecium albidum, irregulariter contextum, in summa parte tenui hyphis erectis. Paraphyses sat laxe cohaerentes, apice fuscescente clavato-incrassato. Sporae 8:nae, oblongae, p. p. leviter curvatae, long. circ. 0.008, crass. 0.003 mm, simplices. Corticola.

*Distr.* Ad corticem arborum, velut *Fagi*, *Betulae*, *Piceae excelsae*, *Pruni cerasi*, cet. in Europa magis meridionali crescents, forsan etiam prope Aboam et in insulis Alandicis provenit, sed specimina forsitan hoc pertinentia sterilia sunt, nec certe determinabilia.

Sporae *Lecideae Lightfootii*, saepe duas guttulas oleosas continent, 1:septatae apparent, sed revera simplices sunt, quare haec species erronee a pluribus auctoribus ad *Catillarium ducta* est. Item cum *L. rivulosa* var. *corticola* commixta est, sed thallo soredioso et verruculoso, margine apotheciorum tenui et paraphysibus magis praerupte clavatis ab ea differt. Thallus areolis aut verruculis contiguis aut dispersis, minutis, demum passim aut crebre sorediosis, nec J, nec KOII, nec  $\text{CaCl}_2\text{O}_2$  reagens. Apothecia vulgo dispersa. Peritheciun hyphis radiantibus, modice pachydermaticis, conglutinatis, extus vulgo fuscens, intus albidum pallidumve. Hypothecium modice pachydermaticum, strato myelohypphico parum evoluto. Hymenium circ. 0.060—0.070 mm crassum. Paraphyses apice 0.003—0.004 mm crassae, ceterum tenues, simplices. Ascii clavati aut cylindrico-clavati. Sporae distichae aut partim monostichae, apicibus rotundatis. »Stigmata simplicia.» Conidia »ellipsoidea aut subglobosa, recta, long. 0.002, crass. 0.0015 mm» (sec. Nyl. Lich. Paris p. 78 et annot, in n. 20437 in hb. Nyl.). Gonidia pleurococcaceae, simplicia globosa aut parce subglobosa, diam. 0.006—0.012 mm, saepe 2-cellulosa.

### 158. *L. subrivulosa* Vain.

Thallus crassus aut sat crassus, areolatus, cinereo-fuscescens, parum nitidus, non pruinosus, areolis convexis aut primum planis, vulgo laevigatis, sorediis destitutis. Apothecia lat. circ. 2—1.3 (—0.8) mm, semiimmersa, demum late aut tota adnata, basi non aut demum leviter constricta, disco plano, nigro, nudo, opaco, margine modice incrassato, aut sat tenui, persistente. Hypothecium crassum, pallidum aut decoloratum, hyphis erectis, in parte inferiore aërem inter

hyphas sat parce continens. Paraphyses arcte cohaerentes, apicem fuscescentem versus sensim incrassatae, non gelatinosae. Sporae 8:næ, ellipsoideæ oblongæeve, p. p. leviter curvatae, long. 0.012—0.015, crass. 0.005—0.008 mm.

*Distr.* In rupe porphyrica in Somerikonvuoret in Suursaari v. Hoglandia a. 1875 a me collecta.

A Nylandro a. 1876 determinata est »*L. rivulosa*«, sed habitu ab ea differt, thallo intensius fuscescente, non pruinoso, apotheciis primum semiimmersis, demum minus prominentibus. Thallus areolis sat irregularibus, lat. circ. 1.5—0.8 mm, contiguis, medulla jodo non reagente, hypothallo passim parce ad ambitum conspicuo, nigricante. Apothecia orbicularia aut irregularia, disco subscabrido (lente viso), margine nigricante, integro aut leviter flexuoso, vulgo non prominente. Hypothecium non guttulosum. Hymenium jodo caerulescens.

159. **L. mollis** (Wahlenb.) Nyl.

Lich. Scand. (1861) p. 223, Lich. Lapp. Or. (1866) p. 159, Fl. 1870 p. 35; Th. Fr. Lich. Scand. II (1874) p. 451; Vain. Lich. Sib. Merid. (1896) p. 18; Magnuss. Stud. Rivul. (1925) p. 31 (excl. var.); Zahlbr. Cat. Lich. Un. III (1925) p. 801 (excl. var.). *Lecidea rivulosa*  $\beta$  *mollis* Wahlenb. Fl. Lapp. (1812) p. 472; Ach. Syn. Lich. (1814) p. 79. *Bialora mollis* Arn. Lich. Tirol XIV (1875) p. 441. *B. rivulosa*  $b.$  *mollis* Tuck. Syn. North Am. Lich. II (1888) p. 24.

*Exs.* Fellm. Lich. Arct. (1864) n. 180. — Zwackh Lich. Exs. (1883) n. 785 (herb. Nyl.). — Havaas Lich. Norv. Exs. (1907) n. 394. — Zahlbr. Krypt. Exs. Vindob. XX (1912) n. 1955. — Malme Lich. Suec. Exs. XI (1912) n. 272. — Arn. Lich. Exs. (1894) n. 1620.

Thallus modice incrassatus aut sat crassus, areolatus aut rimoso-areolatus, areolis planis aut raro depresso-convexus, laevigatis, cinereus aut albido- aut subcaesio- aut livido-cinerascens, sorediis destitutus, hypothallo nigricante vulgo limitatus. Apothecia lat. 0.5—1 mm, late adnata, basi demum leviter constricta, disco vulgo plano, nigro aut nigricante (aut raro livido pallescente in partibus umbrosis), nudo, opaco, margine sat tenui aut modice incrassato, (disco) concolore aut interdum pallidiore aut inferne livido-pallenscente, opaco, integro, persistente. Hypothecium albidum pallidumve, hyphis erectis, demum strato peritheciæ myelo-hyphico, aërem inter hyphas, irregulariter contextas, conti-

nenti, impositum. Paraphyses sat laxe aut sat arcte cohaerentes, apicem fusco-fuligineum aut rarius olivaceo-fuscescentem versus sensim incrassatae, non distincte gelatinosae. Sporae 8:næ, ellipsoideæ aut subglobosæ, rectæ symmetriaeque, long. 0.007—0.012, crass. 0.003—0.006 (sec. Nyl. »—0.007, » sec. Magn. long. 0.0065—0.008, crass. 0.004—0.006 mm).

*Dislr.* Supra rupes graniticas, silaceas, dioriticas et gabbroiticas crescit. K.Ker.: In reg. subalp. montium Kivakka et Päänuorunen (Vain. Adj. Lich. Lapp. II p. 41). Kuus.: In reg. subalp. montis Mäntytunturi (Vain. I. c.). LIm.: Ad Kantalahti (G. Selin). LTorn.: In reg. alp. ad Kilpisjärvi in Suecia (Norrl. Ber. Torn. Lapp. p. 338). LIn.: Inari (E. Nylander), Kaunispää in Inari (Räsänen), Syrminniemi et Edlehoivi (F. Silén). LPets.: Eemelintunturi in Pummanki in Petsamo (E. Häyrén). LMur.: Olenji (Fellm., Nyl. Lich. Lapp. Or. p. 159). LPon.: Katschkova (Fellm. I. c. n. 180), Ponoi (Fellm., Nyl. I. c.).

Proxime affinis *L. cyathoidi*, sporis numquam curvatis, thallo vulgo distinctius pruinoso et apotheciis paullo minoribus, latit. non 1 mm excedentibus ab ea differens. Thallus opacus, nec jodo, nec KOH, nec  $\text{CaCl}_2\text{O}_2$  reagens, areolis planis aut rarius depresso-convexus, interdum partim continuus, vulgo pruinosis, interdum pruina nulla distincta, partibus umbrosis interdum albidis. Apothecia dispersa, disco laevigato, interdum concavo aut demum depresso-convexo aut medio leviter umbonato, raro in apotheciis nonnullis tenuissime pruinoso. Perithecium extus vulgo fuscescens, intus pallidum albidumve, in parte exteriore hyphis radiantibus conglutinatisque, in parte interiore hyphis irregulariter contextis conglutinatisque et aëre disjunctis. Hypothecium majore parte hyphis incrassatis (0.003—0.008 mm crassis), sat pachydermaticis, guttulas majusculas, forsitan oleosas continentibus (quare parenchymatice divisum appetet). Hymenium circ. 0.060—0.070 mm crassum (in specim. orig. Wahlebergii) aut »0.080—0.090 mm» (sec. Magnuss.), jodo »leviter caerulescens, demum thecis vinose violascentibus» (sec. ann. Nyl.). »Hymenium et hypothecium jodo non mutatum aut valde dilute caerulescens» (sec. Magnuss. I. c. p. 33). Paraphyses apice 0.003—0.005 mm, ceterum 0.001—0.0015 mm crassae. Conidia »cylindrica, long. 0.003—0.005, crass. 0.001 mm» (sec. annot. Siléni in specim. ex Edlehoivi), »plus minus cylindrica, long. 0.0035—0.0045, crass. 0.0012—0.0015 mm» (sec. Magnuss., conf. etiam Arn. I. c.). Gonidia pleurococcoacea, globosa et subglobosa, simplicia diam. 0.009—0.012 (—0.017) mm, partim etiam 2-cellulosa, membrana modice incrassata.

*Obs.* *Lecidea endogonia* Nyl., Fl. 1868 p. 475 (Hue Addend. II, 1888, p. 208, Magnuss. I. c. p. 49), ad saxa granitica prope Stensgaard

Lollandiae (Rostrup) collecta, sec. Nyl. »accedens ad *L. mollem*, sed thallo depauperato-fuscescente, paraphysibus minus discretis, gonidiis in hypothecio inclusis», affinis est *Lecanorae prosechoidi* Nyl. et forsitan ejus variatio, ut etiam Nyl. in bibl. sua annotavit. Th. Fr. (Lich. Scand. p. 251) »differentiam ejus a *Lecanora Hageni* (Ach.) Koerb. detegere non valuit.»

160. \***L. caesioalbescens** (Magnuss.) Vain.

*Lecidea mollis* var. *caesioalbescens* Magnuss. Stud. Rivul. (1925) p. 33. *Lecanora sordida*  $\beta$  *lecidina* Hellb. Vet. Ak. Förh. 1865 p. 470 (sec. Th. Fr. et Magnuss.), non *L. ramosa*  $a$  *sordida*  $b$  *lecidina* Schaeer. En. Lich. Eur. (1850) p. 71 (conf. infra). *Lecidea caesiopruinosa* Th. Fr. Lich. Scand. II (1874) p. 453, non Schaeer. Lich. Helv. Spic. III (1828) p. 135. *L. mollis* var. *albescens* Zahlbr. Cat. Lich. Un. III (1925) p. 802 p. p.

Thallus modice incrassatus aut sat crassus, areolatus aut rimoso-areolatus, areolis planis aut raro demum convexis, vulgo laevigatis, cinereus aut subcaesio- aut livido-cinerascens (aut partim albidus), sorediis destitutus, hypothallo nigricante partim limitatus. Apothecia lat. 0.5—1.3 mm., late adnata, basi demum leviter constricta, disco plano aut raro demum depresso-convexo, caesio- vel livido-pruinoso, opaco, margine tenui aut modice incrassato, nigro aut raro (in apoth. nonnullis junioribus) cinerascente, opaco, persistente. Hypothecium albidum pallidumve, hyphis erectis, strato perithecii myceliohyphico, aërem inter hyphas irregulatiter contextas, continentis, impositum. Paraphyses sat laxe aut sat arcte cohaerentes, apice incrassatae. Epitheciun fuscescens aut raro olivaceum. Sporae 8:næ, ellipsoideæ rectaeque aut subglobosæ globosæve, long. 0.005—0.009, crass. 0.004—0.006 mm.

*F. glaucoma* Vain. *L. mollis* var. *caesioalbescens* Magnuss. l. c.

Thallus modice incrassatus, areolatus aut rimoso-areolatus, areolis planis, substrato arcte affixis.

*Distr.* Kuus.: In latere rupis gabbroiticae ad septentriones vergentis in reg. abietina in summo cacumine montis Näränkävaara (»*L. caesiopruinosa*» Vain. Adj. Lich. Lapp. II p. 41). LIn.: In latere rupis graniticae in reg. pinifera ad Veskonиемi (Vain. l. c.).

Vix nisi disco pruinosa a *L. molli* differt et interdum in eam transire videtur. Thallus bene pruinosis. Apothecia dispersa, margine integro aut raro leviter subcrenulato. Hypothecium pallidum cellulis oblongis, guttulas 0.006—0.002 mm latas continentibus, membranis modice incrassatis, conglutinatis. Hymenium circ. 0.070 mm crassum, jodo leviter caerulescens, metaplasmate rubescente. Epithecium fuscescens aut raro olivaceum, parce granulosum. Paraphyses sat laxe aut sat arcte cohaerentes, paululum gelatinosae. Hypothecium hyphis guttulas vulgo majusculas continentibus. Sporae distichae. Gonidia pleurococcoidea, globosa et parcius subglobosa, simplicia, diam. 0.008—0.014 mm, parce bicellulosa, membrana modice incrassata. Conidia a Th. Fr. indicata, »oblonga, circ. 0.004 mm longa et 0.0015 mm crassa», forsitan in hac forma observata sunt.

*Obs.* *Lecidea caesiopruinosa* Schaer. Lich. Helv. Spic. III (1828) p. 135, En. Lich. Eur. (1850) p. 124, »thallo candido, apotheciis strato carbonaceo nullo receptis, junioribus concavis, a thallo coronatis descripta, in m. St. Bernhard a Schaer. collecta, evidenter ad \**L. caesiobescentem* (Magnuss.) non pertinet. Sec. Magnuss. (l. c. p. 49) est *Zeora Stenhammeri* Koerb. (Syst. Lich. Germ., 1855, p. 135) et a Nyl. (Prod. Lich. Gall., 1857, p. 334, Lich. Scand., 1861, p. 159) sub *Lecanora glaucoma*  $\beta$  *lecidina* (Schaer.) Nyl. affertur, et inspirante Nyl., a Stizenb. (Lich. Helv. I, 1882, p. 114) specimen Schaereianum indicatur sub *Lecanora subcarnea* \**L. bicincla* (Ram. in Mem. Mus. XIII, 1825, p. 248) Nyl. (Fl. 1872 p. 549) var. *lecidina* (Schaer.) Nyl., quae a Schaer. (En. Lich. Eur., 1850, p. 71) nominatur *Lecanora rimosa*  $\alpha$  *sordida*  $\beta$  *lecidina* Schaer. — Specimen n. 5130 (etiam sub n. 5163) in Helvetia a Schleicher collectum, cui Nyl. in hb. suo adscripsit »*L. caesiopruinosa* Schaer. (ut videtur)», ad *Aspicilium* pertinet (habitu *Lecanorae calcareae*).

F. *trapezoides* Vain.

Thallus sat crassus, areolatus, areolis p. p. demum e substrato subsolventibus et irregulariter convexis.

*Distr.* In rupe gneissacea ad Pielijoärvi in Inari (F. Silén, 1877).

Thallo analoga est *L. cyathoidi* f. *lobatulae* Nyl. Thallus cinerascens aut partim albidus, pruinosis, areolis difformibus, lat. 0.5—1.5 mm, nec KOH, nec addito  $\text{CaCl}_2\text{O}_2$  reagens. Apothecia 0.5—1 mm lata, disco tenuiter pruinosa, margine integro, non aut leviter prominente, nigro aut (in nonnullis apotheciis) toto cirerascente. Peritheciun extus fuscescens hyphisque radiantibus, circ. 0.004 mm crassis, sat leptodermaticis, conglutinatis, in parte inferiore saepe apice pallido, intus impellucidum et irregulariter crebre contextum albendum vel pallidum, gonidiis destitutum. Hypothecium hyphis guttulas 0.003—0.006 mm latas continentibus, membranis modice incrassatis. Hymenium circ. 0.050—0.055 mm crassum. Epithecium fuscescens, vix

distincte granulosum. Paraphyses sat laxe cohaerentes, apicem versus sensim aut partim sat praeerupte incrassatae, crass. 0.003—0.005 mm, ceterum crass. 0.0015—0.002 mm, non distincte gelatinosae. Asci clavati. Sporae distichae, long. 0.004—0.009, crass. 0.0035—0.005 mm. Conidangia thallo immersa, conceptaculo tenui, pallido rufescenteve. Conidia oblonga aut ellipsoidea, long. 0.003, crass. 0.001 mm, apicibus obtusis, latere convexo. Gonidia pleurococcoidea, globosa, diam. 0.010—0.014 mm, parce 2—4-cellulosa, membrana saepe leviter incrassata.

161. **L. asyndeta** Vain.

Flora 1877 p. 225; Magnuss. Stud. Rivul. (1925) p. 34; Zahlbr. Cat. Lich. Un. III (1925) p. 735. *Lecidea mollis* \**L. asyndeta* Nyl. in Brenn. Bidr. Hogl. Laffl. (1885) p. 108; Hue Addend. II (1888) p. 208.

Thallus sat tenuis, crebre rimulosus aut partim areolato-diffractus, verruculoso-inaequalis, verruculis partim crebris, cinereus, sorediis destitutus, hypothallo nigricante limitatus. Apothecia lat. 0.7—1.2 (0.5) mm, adnata, sat elevata, basi bene constricta, disco plano aut minus saepe concavo, fusco-nigricante, nudo, opaco, margine modice incrassato, atro, subintegro vel vix distincte ruguloso, persistente. Hypothecium albidum pallidumve, hyphis superne suberectis, inferne magis intricatis, strato peritheci myelohypophico, aërem inter hyphas, irregulariter contextas, continentis, impositum. Paraphyses sat laxe cohaerentes, apice p. maj. p. clavatae rufescentesque, non gelatinosae. Sporae 8:nae, globosae et diam. 0.005—0.006 mm et p. p. subglobosae ellipsoideaeve, »long. 0.008—0.011 mm, crass. 0.005—fere 0.007 mm» (sec. ann. Nyl.).

*Distr.* Ad rupem syeniticam in Lounatpuoli in Suursaari v. Hogglandia a. 1875 a me collecta.

Thallo verruculoso-inaequali et apotheciorum statura differt a *L. molli*, quacum proxime est affinis. Thallus non pruinosis, leviter nitidus, »strato corticali circ. 0.020 mm crasso», »decomposed with indistinct lumina» (sec. Magauss.), strato ferroso, dissoluto, subminiatu rupis impositum et subtus rubricoso-tinctum (sicut etiam *Rhizocarpon geographicum* et alii lichenes in societate *L. asyndetae* crescentes). Apothecia dispersa et partim crebra, perithecio extus convexo-subuliformi, inferne cinerascente, margine atro, nitido aut

opaco, prominente, disco laevigato, humido subrubricoso. Perithe-  
cium superne extus fuscescens, intus pallidum, in parte inferiore  
stratum myelohypthicum continens. Paraphyses apice 0.004—0.002 mm  
crassae, ceterum crass. 0.005—0.007 mm, apicem versus sat praeerupte  
aut sensim dilatatae et p. min. p. parum incrassatae. Hymenium  
circ. 0.070 mm crassum, »vix nisi asci jodo caerulescentes et dein sor-  
dide caerulescentes» (sec. Nyl.). Hypothecium »jodo dilute caerule-  
scens» (sec. Magnuss.), abundanter crystallos decolores continens.  
Gonidia globosa aut parceius subglobosa, simplicia, diam. 0.008—  
0.016 mm, parcissime 2—4-cellulosa, membrana saepe sat crassa,  
saepe pyrenoidem continentia, pleurococcoidea.

### 162. *L. Helsinkiensis* Vain. (n. sp.)

Thallus crassus, arcolato-diffractus, areolis verruculosi-  
inaequalibus, cinereus, sat opacus, non pruinosis, nec KOH,  
nec jodo reagens, sorediis destitutus. Apothecia crebra, lat.  
circ. 0.5—1 (—1.2) mm, orbicularia aut subangulosa, tota  
adnata, basi non constricta, tantum leviter prominentia,  
disco plano, nigro aut nigricante, laevigato, opaco, nudo, mar-  
gine tenui aut sat tenui, persistente, integro, non aut parum  
prominente, nigricante, opaco, nudo. Hypothecium albidum,  
hyphis erectis, in parte inferiore aërem inter hyphas conti-  
nens. Epithecium subfuscō-fuligineum, KOH non reagens.  
Sporae 8:næ, globosæ et subglobosæ ellipsoideaevæ, diam.  
0.004—0.005 aut long. 0.008, crass. 0.005 mm.

*Distr.* In rupe granitica in Gumiäckt prope Helsingforsiam a me  
a. 1881 collecta.

Habitu subsimilis *L. plumbicolori* Nyl., quæ sporis oblongis et  
disco saepe tenuiter pruinoso ab ea differt. Paraphyses, hypothecium  
et sporae affinitatem plantæ nostræ cum *L. mollis* indicant. Thallus  
partim intus maculis rubris aut strato hypothallino rubescente, KOH  
non reagente (forsitan fortuito) instructus, ceterum hypothallus albus,  
in substratum penetrans. Areolæ thalli sat planæ. Apothecia p. p.  
contigua confluentiaque. Hypothecium jodo caerulescens. Hyme-  
niū ab hypothallo indistincte limitatum, jodo caerulescens. Peri-  
thecium extus subfuscescenti-fuligineum, intus sordide coloratum,  
hyphis radiantibus, tenuibus, conglutinatis. Paraphyses arcte cohæ-  
rentes, crass. 0.002 mm, apices versus sensim incrassatae ibique crass.  
0.008 mm. Margo apotheciorum dilutius nigrum, quam discus. Gon-  
idia cystococcaceæ.

163. **L. Kochiana** Hepp

Lich. Würzb. (1824) p. 61; Schaeer. Lich. Helv. Spic. III (1828) p. 131; Nyl. Fl. 1877 p. 226; Lamy, Exp. Lich. Cauter. (1884) p. 85; Magnuss. Stud. Rivul. (1925) p. 35; Zahlbr. Cat. Lich. Un. III (1925) p. 786. *Bialora* Rabenh. Deutschl. Kr.-Fl. II (1845) p. 92; Arn. Tirol XXVIII (1896) p. 121. *Biatora rivulosa* β *B. Kochiana* Fr. Lich. Eur. Ref. (1831) p. 272; Mass. Ric. Lich. Crost. (1852) p. 125; Koerb. Syst. Lich. Germ. (1855) p. 196. *Lecidea rivulosa* β *Kochiana* Schaeer. En. Lich. Eur. (1850) p. 111; Nyl. Prodr. Lich. Gall. (1857) p. 381. *L. lygaea* Th. Fr. Lich. Scand. II (1874) p. 452 p. p. (sec. Magnuss.), non Ach. Syn. Lich. (1814) p. 34.

*Exs.* Moug. et Nestl. Stirp. Cr. Vog. VI (1818) n. 549 maj. p. (Mus. Fenn.). — Schaeer. Lich. Helv. Exs. VIII (1828) n. 181. — Flot. Lich. Exs. III (1829) n. 204. — Nyl. Lich. Mont-Dor. (1856) n. 56 (sec. Lamy). — Hepp Fl. Eur. V (1857) n. 239. — Rabenh. Lich. Eur. Exs. XI (1857) n. 321. — Anzi Lich. Exs. Min. Bar. It. VI (1865) n. 251. — Anzi Lich. Sondr. VII n. 183. — Arn. Lich. Exs. (1878) n. 797, (1892) n. 1620, 1706 b (hb. Nyl.). — Zwackh Lich. Exs. (1884) n. 944 (hb. Nyl.), non 794. (Etiam sec. Magnuss.) — Magnusson Lich. sel. Scand. II (1929) n. 43.

Thallus crassus aut sat crassus, areolato-diffractus aut areolatus aut rimulosus, areolis planis aut demum depresso-convexis, laevigatis aut partim parce verrucoso-inaequalibus, cinereo-albescens vel impure albidus aut rarius livido-fuscescens, sorediis destitutus, hypothallo nigricante partim limitatus. Apothecia lat. 0.7—2.5 mm, vulgo plus minus irregularia subangulosave aut parcus irregulariter arthonioideo-oblongata et long. usque ad 3.3 mm, primum thallo immersa aut subimmersa, demum leviter emergentia aut parce emergentia, basi non constricta, disco vulgo plano, nigro aut raro p. p. fusco-nigricante vel livido-fuscescente, nudo, opaco, immarginata aut saepe p. p. margine tenui vel tenuissimo, concolore aut pallidiore, integro instructa. Hypothecium albidum pallidumve, haud distincte guttulosum, hyphis erectis. Peritheciun tenue, fuscescens et infra hypothecium continuatum et parathecium fuscescens formans, strato mycelohyphico aërem continentem nullo. Paraphyses sat laxe aut sat arcte cohaerentes, apicem versus sensim leviter incrassatae. Epitheciun fuscescens. Sporae 8:nae, monostichae, ellipsoideae rectaeque

et p. p. subglobosae globosaeve, long. 0.005—0.009, crass. 0.005—0.007 mm (sec. ann. Nyl. »long. 0.008—0.012, crass. 0.005—0.008 mm»).

*Distr.* N.: Supra rupem porphyricam in Tervamäki (Brenner Bidr. Hogl. Lafv. p. 107), supra rupem graniticam in Louonatpuoli (Vain. 135) et supra rupem gneissaceam in Somerikonvuoret (Vain. 136) et in scopulo prope Suurkylä (V. Räsänen) in Suursaari v. Hoglandia.

Thallus non pruinosis, areolis majoribus minoribusque saepe in eodem specimine, haud raro latioribus crassioribusque circa apothecia majora, medulla jodo non reagens. Apothecia partim crebra, disco raro depresso-convexo. Hypothecium jodo fulvescens, hyphis sat tenuibus, leptodermaticis, conglutinatis. Hymenium leviter (vix distincte) gelatinosum, jodo ascis apice intense caerulescentibus dein-deque vinose rubentibus, ceterum dilutissime caerulescens demumque vinose rubentibus, ceterum dilutissime caerulescens demumque lute-scens, a hypothecio haud bene limitatum. Paraphyses apice 0.005 mm, ceterum 0.0015—0.0018 mm. Ascii cylindrici. Sporae vulgo monostichae, apicibus rotundatis. »Sterignata simplicia et saepius 2-articulata» (sec. Nyl. in litt. ad Brenner, I. c., et annot. Nyl.). Conidia »fusiformi-ellipsoidea aut ellipsoidea apicibusque obtusis, lateribus convexis, long. 0.003—0.0035, crass. 0.0015» (sec. annot. Nyl. in n. 15126), »cylindrica, recta, long. 0.0035, crass. 0.001—0.0013 mm» sec. Magnuss. I. c. p. 37. Gonidia pleurococcoidea, vulgo simplicia, globosa, diam. 0.006—0.010 mm, partim subglobosa et ellipsoidea, long. usque ad 0.013 mm (crass. tunc 0.008 mm), parce 2-cellulosa, membrana modice aut leviter incrassata.

*Obs.* *Lecidea morosa* Duf., in Fr. Syst. Orb. Veg. (1825) p. 286 indicata, sec. specim. orig. n. 15127 in herb. Nyl. ad *L. Kochianam* pertinet. »*L. Kochiana* \**L. morosa*» in Lamy Exp. Lich. Caut. (1884) p. 85 sec. ann. Nyl. in hb. suo (n. 15134) est *L. lygaea*.

#### 164. *L. cacuminum* Vain. (n. sp.)

*L. Pohjoiskorkiensis* Vain. in sched.

Thallus crassus aut sat crassus, verrucoso-areolatus, areolis contiguis, convexis, 2—0.3 mm latis, laevigatis aut leviter inaequalibus, albis, opacis, parum pruinosis, KOH non reagentibus, non sorediosus, hypothallo nigricante leviter evoluto. Apothecia lat. 0.4—0.7 mm, emergentia, basi non constricta, disco plano atro, nudo, opaco, margine tenui, integro, non

prominente, cinereo-fuscescente. Hypothecium pallidum, guttulis parcis, hyphis sat erectis, conglutinatis. Perithecium strato myelohyplico aërem continente nullo. Epithecum fuscescens. Paraphyses sat laxe cohaerentes. Ascii clavati. Sporae 8:næ, distichæ, ellipsoideæ, long. 0.008—0.010, crass. 0.006 mm et p. p. globosæ, diam. 0.006 mm.

*Distr.* N.: In rupe porphyrica in Pohjoiskorkka in Suursaari v. Hoglandia n. 15134 in hb. Nyl., ab eo in Brenner Bidr. Hogl. Lafv. (1885) n. 107 his verbis commemorata: »F. (*L. Kochianæ*) *L. leucophaæe* subsimilis, sed spermogoniis diversis et sporis breviter ellipsoideis distincta (in *L. leucophaæa* sporæ oblongæ)».

Proxime affinis *L. Kochianæ*, apotheciis magis prominentibus et areolis thalli convexis ab ea differens, et forsitan autonoma species. Thallus nec KOH, nec addito  $\text{CaCl}_2\text{O}_2$  reagens. Apothecia crass. circ. 0.250 mm, vulgo orbicularia. Hypothecium jodo non reagens, crystallis nullis, hyphis sat tenuibus, leptodermaticis. Hymenium jodo leviter caerulescens. Epithecum strato gelatinoso nullo obducum. Paraphyses apicem versus sensim incrassatae, non gelatinosæ.

165. ***L. demolita* Vain. (n. sp.)**

Thallus crassus aut sat crassus, areolato-diffractus, areolis verrucoso-inaequalibus, cinereo-albescens, sorediis destitutus, medulla jodo caerulecente. Apothecia lat. 1—2 mm, orbicularia aut leviter irregularia, primum thallo immersa aspicilioideaque, saepe demum leviter emergentia, basi non constricta, disco plano aut rarius demum depresso-convexo, nigro aut nigricante, nudo, opaco, interdum primum fere immarginata, dein margine sat tenui, nigricante aut rarius cinereo-nigricante instructa. Hypothecium sordide pallidum, hyphis erectis, in parte inferiore aërem inter hyphas continens. Epithecum aeruginoso-fuligineum. Sporae 8:næ, ellipsoideæ rectaeque et p. p. subglobosæ globosæve, long. 0.006—0.012, crass. 0.006 mm.

*Distr.* In rupe gneissacea et micaceo-schistosa in montibus Observatorii Helsingforsiae a. 1882 a me collecta (loco nunc demolito).

Habitu *L. Kochianam* in memoriam revocans eique affinis, sed epithecio aeruginoso-fuligineo et medulla thalli jodo caerulecente ab eo bene differens. Thallus non distincte aut parum pruinosis, areolis circ. 3—1 mm latis, KOH non reagens, hypothallo nigro pas-

sim parce ad ambitum conspicuo. Apothecia sat dispersa, margine lecideino, leviter aut parum prominente, subintegro aut leviter flexuoso. Hypothecium impellucidum, non distincte guttulosum, totum jodo intense caerulescens. Peritheciun tenui, aeruginosofuligineum. Hymenium jodo intense caerulescens. Paraphyses arcte cohaerentes, crass. 0.002 mm (apicem versus sensim incrassatae et crass. 0.003 mm). Gonidia cystococcoidea.

### 166. **L. Hoglandica** Nyl.

Flora 1877 p. 225; Hue Addend. II (1888) p. 208; Magnuss. Stud. Rivul. (1925) p. 40; Zahlbr. Cat. Lich. Un. III (1925) p. 781. *L. Kochiana* \**L. Hoglandica* Nyl. in Brenn. Bidr. Hogl. Lafv. (1885) p. 108.

Thallus tenuis aut sat tenuis, creberrime rimulosus aut areolato-diffractus, areolis vulgo minutissimis (circ. 0.1—0.2, raro—0.4 mm latis), angulosis, contiguis, planis, laevigatis, albido-cinerascentibus aut cinereis, leviter nitidis, non pruinosis, sorediis destitutus, hypothallo nigricante limitatus. Apothecia lat. vulgo 0.5—0.7 mm (radius 0.4—1.2 mm), vulgo rotundata, tota adnata, basi non constricta, disco plano aut demum depresso-convexo, nigro, nudo, opaco, margine concolore, tenui, integro, demum excluso. Hypothecium pallidum, hyphis erectis, guttulis minutis, sat parcis. Peritheciun tenui, fusco-nigrum et infra hypothecium continuatum (medio deficiens), strato myelohyphico aërem continente nullo. Paraphyses arcte cohaerentes, apicem versus sensim leviter incrassatae. Epitheciun fuscescens. Sporae 8:nae, distichae, ellipsoideae aut p. p. subglobosae, long. 0.007—0.012, crass. 0.005—0.008 mm (»long. 0.006—0.008, crass. 0.004—0.006 mm» sec. Nyl.).

*Distr.* Supra rupem graniticam in Somerikonyuoret in Suursaari vel Hoglandia (a. 1875 legi).

*L. lygaeae* proxime est affinis et forsitan ejus variatio, textura et facie externa thalli ab ea differens. — »Thallus nec jodo, nec KOH, nec  $\text{CaCl}_2\text{O}_2$  reagens» (sec. Nyl.), cortice saepe evoluto, ex apicibus hypharum formato clavatis, 0.005—0.006 (—0.008) mm crassis, fuscescientibus, constipatis, conglutinatis, »hyphis medullaribus 3—4  $\mu$  crassis, pachydermaticis, irregulariter intricatis» (sec. Magnuss.). Apothecia raro demum difformia, numerosa, sat crebra aut dispersa (raro primum thallo immersa visa), margine non prominente. Hypo-

thecium »jodo partim dilute caerulescens» (sec. Magnuss.). Hymenium crass. circ. 0.050—0.060 mm, a hypothecio non bene limitatum, jodo caerulescens, ascis deinde violacee tinctis» (sec. Nyl.). Paraphyses leviter gelatinosae, arcte cohaerentes (forsan ob statum leviter morbidum apotheciorum). Ascii clavati. Sporae parce aut male evolutae. Conidia »fusiformi-oblonga aut fusiformi-ellipsoidea, long. 0.003—0.0035, crass. 0.001—0.0015 mm, sterigmatibus infixi simpliciusculis» (sec. Nyl.). Gonidia pleurococcoidea, simplicia, diam. 0.007—0.014 mm, globosa aut abundanter etiam subglobosa, parce 2-cellulosa, membrana saepe incrassata.

167. **L. lygaeoplaca** Vain. (n. sp.)

Thallus sat tenuis, areolatus, areolis contiguis, planis, vulgo laevigatis, fuscescenti-cinereis aut partim cinereis, sorediis destitutus, hypothallo nigricante limitatus. Apothecia lat. 0.4—0.9 mm, rotundata, primum thallo immersa, dein mox tota adnata, tenuia, basi non constricta, disco plano aut demum depresso-convexo, nigro, nudo, opaco, margine concolore, tenui, integro, subpersistente. Hypothecium pallidum, guttulosum, hyphis erectis. Perithecium fuscum, bene evolutum, infra hypothecium continuatum (medio deficiens), strato myelohyplico aërem continente, nullo. Paraphyses sat arcte aut sat laxe cohaerentes, apicem versus sensim leviter incrassatae. Epithecium fuscum. Sporae 8:nae, distichae, ellipsoideae aut subglobosae aut p. p. globosae, long. 0.005—0.01, crass. 0.005—0.008 mm.

*Distr.* Ad saxa granitica in Somerikongvuoret in Suursaari vel Hoglandia (a. 1875 legi).

Proxime affinis est *L. Hoglandiae*, praesertim thallo crassiore areolatoque ab ea differens. Iisdem notis et parte fuscescente peritheciis distinguitur a *L. lygaea*, quae his proxima est. A *L. molli* distinguitur apothecis minus elevatis et strato myelohyplico destitutis et thallo non distincte pruinoso. In memoriam revocans etiam *L. circumflexam* Nyl., quae thallo crassiore et sporis parce leviter curvatis ab ea recedit. — Thallus opacus, nec jodo, nec KOH reagens, areolis angulosis, minutis (lat. 0.2—0.5 mm), p. p. parceque leviter inaequalibus. Apothecia crass. circ. 0.230 mm, numerosa, sat crebra, margine non prominente. Hypothecium hyphis leptodermaticis, guttulas 0.2—0.4 mm latae continentibus, conglutinatis, jodo fulvescens (non caerulescens). Perithecium KOH non reagens, para-

thecio fusco circ. 0.050—0.080 mm crasso. Hymenium circ. 0.060—0.070 mm crassum, jodo leviter caerulescens, ascis apice intense caerulescentibus. Epithecum KOH non reagens. Paraphyses apice 0.003 mm crassae (ceterum 0.002 mm). Ascii clavati. Conidangia verruculas fuligineas formantia, solitaria. Conidia ellipsoidea aut oblonga, recta, long. 0.003—0.004, crass. circ. 0.0015 mm, apicibus obtusis, lateribus convexis. Gonidia pleurococcoidea, simplicia, globosa et diam. 0.009—0.022 mm, p. p. 2-cellulosa, membrana saepe incrassata, crass. 0.002—0.001 mm.

### 168. *L. lygaea* Ach.

Syn. Lich. (1814) p. 34 (excl. var.); Hepp Lich. Würzburg (1824) p. 63; Schaeer. Lich. Helv. Spie. III (1828) p. 149, En. Lich. Eur. (1850) p. 117; Lamy Exp. Lich. Cauter. (1884) p. 85; Magnuss. Stud. Rivul. (1925) p. 41; Zahlbr. Cat. Lich. Un. III (1925) p. 795. *Biatora* Mass. Ric. Lich. Crost. (1852) p. 126; Arn. Lich. Tirol VIII (1872) p. 297, XXX (1897) p. 24, p. 218 (10). *L. Kochiana* f. *lygaea* Nyl. Lich. Scand. (1861) p. 223. *L. rivulosa* var. *lygaea* Linds. Mem. Sperm. Lich. Crust. (1870) p. 244, pl. 10, f. 28.

*Exs.* Schaeer. Lich. Helv. Exs. XXVI (1852) n. 626. — Anzi Lich. Langob. Exs. III (1861) n. 121. — Rabenh. Lich. Eur. Exs. XXVIII (1866) n. 768. — Zwackh Lich. Exs. (1883) n. 785 (in hb. meo). — Arn. Lich. Exs. (1896) n. 1706 a (in hb. meo). (Sec. Arn. Lich. Tirol XXX p. 10 vel 218, Magnuss. I. c. p. 42). (Magnusson refers Malme Lich. Suec. exs. n. 323 (*L. lygaea*) to *L. tenebrica* Nyl., a western species, not recorded from Finland (Magn. I. c. p. 43)).

Thallus sat tenuis, continuus, rimulosus aut partim crebre subareolato-diffractus, laevigatus, murinus vel cervinus vel cinereo-fuscescens, sorediis destitutus, hypothallo nigricante fuscescente limite limitatus. Apothecia lat. vulgo circ. 0.4—0.6 mm, rotundata, primum thallo immersa aut subimmersa, dein emergentia vel late adnata, tenuia, basi non constricta, disco plano aut demum depresso-convexo, nigro aut fusco-nigro, nudo, opaco, margine concolore, tenui, integro, demum excluso aut mox immarginata. Hypothecium albidum pallidumve, guttulis minutis, sat parcis, hyphis erectis. Peritheciun tenue, fuscescens et infra hypothecium continuatum (medio deficiens), strato myelohyplico aërem continentem nullo. Paraphyses sat arcte aut sat laxe cohaerentes, apicem versus sensim leviter incrassatae. Epithecum subfuscescens. Sporae 8:næ, distichæ, globosæ aut ellipsoideæ, rectæ, long. 0.005—0.010, crass. 0.005—0.007 mm (— 0.008 mm, long. — 0.012 mm) sec. ann. Nyl.).

*Distr.* Ad saxa granitica præsertim in regione alpina et subalpina Europæ (etiam Norvegiae) proveniens, nondum in Fennia collecta est.

Thallo tenuiore, magis continuo, apotheciis minoribus, rotundatis, demum emergentibus adnatisve, ascis crassioribus et sporis distichis a *L. Kochiana* differt. Thallus opacus, non pruinosus, »nec jodo, nec KOH, nec  $\text{CaCl}_2\text{O}_2$  reagens» (sec. Arn.). Apothecia lat. 0.2—1 mm, raro parceque — 2 mm, dispersa aut sat crebra. In specim. orig. Achariano apothecia lat. 0.5—0.6 mm, perithecium strato myelohyplico destitutum, parte exteriore subpurpureo-fuscescente sub hypothecium continuata, medio deficiente, hyphis tenuibus, sat leptodermaticis, radiantibus, conglutinatis, hypothecium albidum, jodo caeruleo, guttulis minutis, parcis, hyphis erectis aut sat erectis, tenuibus, leptodermaticis, conglutinatis, hymenium 0.060 mm crassum, jodo caeruleo, dein vino rubens, epithecium subpurpureo-fuscescens, paraphyses sat laxe cohaerentes, apicem versus sensim incrassatae et crass. 0.003—0.004 mm, ceterum 0.0015 mm crassae, asci ventricoso-clavati, crass. 0.012—0.014 mm, sporae 8:nae, distichae, globosae et diam. 0.005—0.006, p. p. etiam ellipsoideae, rectae, long. 0.009 et crass. 0.007 mm. — Conidia »fusiformia, long. 0.003—0.004, crass. 0.0015 mm» (sec. ann. Nyl.). Sterigmata »simplicia, long. 0.010 mm» sec. Magnuss. Gonidia pleurococcoidea, globosa et diam. 0.008—0.014 mm, abundanter p. p. subglobosa et ellipsoidea, long. usque ad 0.016 (—0.018) mm, p. p. 2-cellulosa. In superficie thalli hyphae verticales, constipatae, apicibus obscuratis, clavatis, 0.006—0.005 mm crassis, leptodermaticis, conglutinatis.

Sect. **Lecidea coarctata**.

Apothecia mollia, hypothecium pallidum, paraphyses plus minusve laxe cohaerentes, apicem versus subfuscantes lutescentesve, sporae ellipsoideae, magnae vel majusculae.

169. **L. coarctata** (Sm.) Nyl.

Prodri. Lich. Gall. (1857) p. 112, Lich. Scand. (1861) p. 196; Th. Fr. Lich. Aret. (1860) p. 189, Lich. Scand. II (1874) p. 447; Vain. Et. Lich. Brés. II (1890) p. 55. *Lichen coarctatus* Sm. Engl. Bot. VIII (1799) tab. 534. *Lecanora coarctata* Ach. Vet. Ak. Handl. 1810 p. 68, Lich. Univ. (1810) p. 352 (excl. δ), Syn. Lich. (1814) p. 149; Nyl. Lich. Alg. (1854) p. 311, Fl. 1886 p. 101 (Hue Addend., 1888, p. 134), Lich. Paris (1896) p. 68. *Zeora* Koerb. Syst. Lich. Germ. (1855) p. 132. *Bialora* Arn. Lich. Tirol XXI (1880) p. 133, Lich. Fränk. Jur. Fl. 1885 p. 155, Lich. Münch. (1891) p. 74.

Thallus sat tenuis aut sat crassus, verruculosus aut areolatus aut areolato-diffractus aut squamulosus, aut rarius

continuus, albus aut rarius cinerascens glaucescensve aut fusco-cinerascens, sorediis destitutus, hypothallo vulgo indistincto. Apothecia lat. circ. 0.6—0.2 (—1.5) mm, thallo innata, demum late adnata, basi non aut parum constricta, disco rufescente fuscescenteve aut nigricante aut (praesertim humido) subrubicoso, nudo, opaco, plano aut concavo aut demum convexo, margine tenui, zeorino, facie externa thallino thalloque concolore aut demum vel raro fere mox lecidino discoque subconcolore, persistente aut rarius demum excluso. Hypothecium pallidum decoloratumve, hyphis irregulariter contextis. Epithecium rufescenti-pallidum aut subfuscescens. Paraphyses vulgo arcte cohaerentes, membrana tenuiter gelatinosa. Sporae 8:næ, ellipsoideæ oblongæve, long. 0.020—0.011 (—0.026), crass. 0.010—0.006 (—0.012) mm.

Ab pluribus auctoribus ad *Lecanoras* ducta est, sed distinete proxime affinis est *Lecideæ Brujerianæ* (Hepp) et *L. subconcolori* (Anzi), originem *Lecanorearum* polyphyleticam e statu lecideino indicans (conf. Vain. Et. Lich. Brés. II p. 56). Apothecia revera saepe amphithecio thallino gonidia continente ornata sunt, et amphithecio carentia (velut in v. *expositella*), gonidia in parte inferiore peritheciæ, strato mycelohyphico instructa, continentia. — Thallus jodo non reagens, KOH non reagens, addito  $\text{CaCl}_2\text{O}_2$  saepe, praesertim intus, leviter rubescens (inconstanter). Apothecia interdum irregularia lirellinaque. Peritheciæ extus fuscescens, intus albidum, hyphis irregulariter contextis, cellulæ brevibus, sat leptodermaticis. Hypothecium hyphis sat leptodermaticis, jodo non reagens. Paraphyses tenues, apice non incrassato, praesertim apice vulgo ramosæ ramulosæque aut ramoso-connexæ. Hymenium circ. 0.080—0.160 mm crassum, jodo vinose rubens aut primum dilute intenseve caerulescens. Asci cylindrico-clavati. Gonidia pleurococcoidea, saepe bicellulosa, raro 4-cellulosa, vulgo simplicia, globosa aut subglobosa, diam. circ. 0.008—0.012 mm, membrana modice incrassato. »Spermatogonien ziemlich verbreitet, entwickeln sich aber nur auf kräftigem Thallus der Form *ornata*. Sie sind vom Thallus umkleidet und warzenförmig — —. Meistenteils treten sie gesondert für sich auf, mitunter aber auch in Begleitung gut entwickelter Apothecien. Die Sterigmata — — sind kurz, einfach, nicht gegliedert; die Spermatien sind immer gerade, stäbchenförmig, durchschnittlich 0.007, häufig nur 0.005, ausnahmsweise 0.010 mm» (sec. Lahm Zus. Westf. Flecht., 1885, p. 87). Conidia sec. Nyl. (Lich. Paris p. 69) »bacillaria, long. 0.0045, crass. 0.0007 mm», sec. Lindsay (Mem. Sperm. p. 266, in Lich.

Brit. Exs. n. 149) »curvula, long. 0.0063, crass. 0.001 mm, sec. Mudd (Man. Brit. Lich. p. 154) »acicularia, recta, long. 0.0125, crass. 0.001 mm». Sterigmata longa sec. Linds. (conf. Arn. Lich. Münch. p. 74). Specimina apothecis destituta a *Bilimbia trachona* gonidiis distinguuntur (conf. Vain. L. F. II p. 233).

*Obs. 1.* *Lecanora coarctata*  $\beta$  *listrota* Ach. Lich. Univ. (1810) p. 353, Syn. Lich. (1814) p. 150, sec. herb. Ach. ad statum intermedium inter v. *trapelia* et v. *elachistam* pertinet.

*Obs. 2.* »*L. coarctata* in ligno pineo parietis horrei ad Hammo in Hollola collecta», in Norrl. Bidr. Sydöstr. Tav. Fl. p. 185 commemorata, ad hanc speciem non pertinet.

Var. *trapelia* (Ach.) Vain. *Lecanora trapelia* Ach. Lich. Univ. (1810) p. 387, Syn. Lich. (1814) p. 177. *Parmelia coarctata* c *trapelia* Fr. Lich. Eur. Ref. (1831) p. 105 (sec. Th. Fr.). *Lecanora coarctata*  $\beta$  *ornata* Sommerf. Suppl. Fl. Lapp. (1826) p. 92 (sec. Th. Fr.). *Lecidea coarctata* var. *ornata* Nyl. Prodr. Lich. Gall. (1857) p. 112; Th. Fr. Lich. Arct. (1860) p. 190, Lich. Scand. II (1874) p. 447. *Lecanora ornata* Nyl. En. Lich. Fret. Behr. (1888) p. 57; Hue Lich. Exot. (1892) p. 157. *Parmelia coarctata* b *microphyllina* Fr. l. e. p. 105 (sec. Th. Fr.). *Lichen glebulosus* Sm. Engl. Bot. (1809) tab. 1955 (sec. nomen vix nisi p. p., conf. Leight. Lich. Great Brit. 3 ed. p. 281, A. L. Smith Mon. Brit. Lich. II p. 23).

*Exs.* Leight. Lich. Brit. Exs. V (1854) n. 149. --- Mudd Lich. Brit. Exs. II (1861) n. 123. — Larb. Lich.-Herb. V (1879) n. 170. — Johns. North Engl. Lich.-Herb. IX (1900) n. 334. (Sec. A. L. Smith l. e.).

Thallus albidus, squamulosus, squamulis saepe demum subcrenulatis, aut primum subareolatus, sorediis destitutus. Apothecia margine zeorino aut sublecanorino albidoque et saepe crenulato, p. p. etiam (in eodem specimine) lecideino.

*Distr.* Ad rupes et lapides schistosos et gneissaceos locis humidis subumbrosisque collecta. Ab.: Hietakuoppa ad Vanhahautausmaa (Vain., Hellin Nurmi). N.: Hoglandia (E. Nyl.), Viik (J. P. Norrlin), Punavuoret Helsingforsiae (Vain., 1872), Vanhakaupunki (Vain. 1872). Ta.: Mustiala (A. Kullhem), Asikkala Norrl., n. 480). KPom. occ.: Suojärvi (Norrl.).

Var. *elachista* (Ach.) Nyl. Prodr. Lich. Gall. (1857) p. 112 (emend.); Th. Fr. Lich. Arct. (1860) p. 190, Lich. Scand. II (1874) p. 447 p. p.; Vain. Ét. Lich. Brés. II (1890) p. 55. *Parmelia elachista* Ach. Meth. Lich. (1803) p. 159, tab. IV f. 4. *L. coarctata* var. *elachista* f. *subcrenulata* Cromb. in A. L. Smith Mon. Brit. Lich. II (1911) p. 23.

*Exs.* Sommerf. Pl. Crypt. Norv. I (1826) n. 60 (Mus. Fenn.). — Fr. Lich. Suec. Exs. XIII (1827) n. 362 (herb. Nyl.). — Hepp Flecht.

Eur. IV (1853) n. 186. — Nyl. Herb. Lich. Par. II (1855) n. 54 (herb. Nyl.). — Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 306. — Vain. Lich. Bras. Exs. II (1892) n. 644, 992 cet.

Thallus albidus aut rarius subcinerascens, dispersus aut continuus, verruculoso-inaequalis aut laevigatus, sorediis destitutus. Apothecia margine zeorino aut sublecanorino albidoque vel subcinerascente, crenulato aut subintegro aut p. p. demum lecideino obscuratoque.

*Distr.* Ad rupes et lapides graniticos, gneissaceos, dolomiticos, granuliticos, arenarios, calcareos, porphyricos et raro ad terram arenosam locis subumbrosis crescit. Reg. Ab.: Vedudden in Finnary in Finby (F. Elfving). N.: Hogland (Edv. Nylander), Fredriksberg (W. Nyl.). Ta.: Mustiala et Haarankorpi in Tammela (A. Kullhem), Urajärvi cet. in Asikkala (J. P. Norrlin), Padasjoki (Norrl.), Kuhmo (Norrl.), »passim in Tav. austr.-or.» (Norrl. Bidr. p. 185), Hakala in Luhanka (Vain., »*L. coarctata*» in Fl. Tav. Or. p. 109. Ke.: Kurkijoki (Räsänen). KOn.: Velikaja-guba (Norrl. Fl. Kar. On. II p. 27). KPom. occ.: Tscholka in Repola (Vain. Adj. Lich. Lapp. II p. 40). OKaj.: Saarenmylly in Kianta (Vain. I. e.). Kuus.: Vaskikallio (Vain. I. e.). LIn.: In reg. subsylv. ad Kaamasjoki (F. Silén, H. L. F. n. 306). LEonont.: In reg. subsylv. ad Peerakoski in Enontekiäinen (»*L. coarctata*» sec. Nyl. in Norrl. Ber. Torn. Lappm. p. 334).

*Obs.* *Lecidea coarctata* f. *colaria* (Ach.) Nyl. (in Norrl. Fl. Kar. Oneg. II, 1876, p. 27), supra terram argillaceam ad Tiudie in KOn. collecta, thallo disperso evanescente instructa est. *Lecidea colaria* Ach. Meth. Lich. Suppl. (1803) p. 11. — *Lecidea tenagea* Ach., Syn. Lich. (1814) p. 27, est v. *elachista* ad terram argillaceam crescens.

Var. *biatoriza* Vain.

Thallus albidus aut subalbidus, verrucosus aut areolatus, sorediis destitutus. Apothecia margine lecideino, obscurato.

*Distr.:* Ad rupes et lapides gneissaceos et schistosos in campis graminosis et locis umbrosis collecta. Aboa: Pertulinkallio (Vain.). Ta.: Haukkavuori in Korpilahti (»\**L. ornata*» sec. determ. Nyl. in Vain. Fl. Tav. Or. p. 109). OKaj.: Ad templum et Tervasalmi in Kuhmo (»v. *elachista*» in Vain. Adj. Lich. Lapp. II p. 40).

*Obs. 1.* In var. *elachistam* transit, apotheciis saepe p. p. primum zeorinis, margine thallino et lecideino cinctis instructa.

*Obs. 2.* *Lecidea coarctata* var. *exposita* Nyl. Lich. Nov. Zel. (1867) p. 254, (1888) p. 66, Fl. 1865 p. 339 »apotheciis nigro-fuscis vel nigris, convexis et thallo albido-cinereo, areolato» instructa, huic varietati est proxima.

Var. *expositella* Vain.

Thallus verruculosus, fuscescenti-cinereus, sorediis destitutus. Apothecia margine lecideino, fuso, disco concolore.

*Distr.* Ta.: Ad scopolum in prato Laaso in Hollola (Vain. 1886).

*Obs.* Hypothallo nigricante, continuo *L. coarctata* f. *subfumigata* Nyl. in Zwackh Lich. Heidelb. (1883) p. 42 ab hac varietate differt. Thallus verruculosus, cinereo-fuscescens, dispersus, sorediis destitutus (sec. specim. orig. in herb. Nyl.).

170. \**L. obtegens* Th. Fr.

*Lecidea coarctata* \**oblegens* Th. Fr. Bot. Not. 1867 p. 152.  
*L. coarctata* γ *oblegens* Th. Fr. Lich. Scand. II (1874) p. 447.

Thallus sat tenuis aut crassus, verruculosus, cinereo- aut olivaceo-fuscescens aut cinereo-virens, sorediis instructus, hypothallo indistincto. Apothecia lat. circ. 0.5—0.7 mm, thallo innata, dein mox late adnata, basi non aut parum constricta, disco fusco aut rufo-fuscescente, nudo, opaco, plano aut demum depresso-convexo, margine tenui, zeorino, facie externa thallino thalloque concolore aut demum vel fere mox lecideino discoque subconcolore, persistente aut rarius demum excluso. Hypothecium pallidum decoloratumve, hyphis irregulariter contextis. Epithecum fuscescens aut rufescenti-pallidum. Paraphyses arce cohaerentes, membrana tenuiter gelatinosa. Sporae 8:nae, ellipsoideae, long. 0.010—0.018, crass. 0.006—0.009 mm.

Var. *dioritica* Vain. *Lecidea coarctata* \**L. dioritica* Vain. Adj. Lich. Lapp. II (1883) p. 41. *Bialora coarctata* f. *ocrinaela* Arn. Lich. Exs. (1877) n. 710 a Lich. Fränk. Jur. (Fl. 1885) p. 156, Lich. Monac. (1891) n. 168, (1896) n. 440, Lich. Münch. (1891) p. 75 (*Lecanora ochrinaela* Ach. Lich. Univ., 1810, p. 380, Syn. Lich., 1814, p. 162, sec. Th. Fr. l. c. p. 448 composita est e *L. coarctata* praecipue et *L. panaeola*).

Thallus verruculosus aut minute areolatus, cinereo-fuscescens, parce sorediosus. Apothecia zeorina, margine thallo concolore.

*Distr.* OKaj.: In latere saxi dioritici in monte Ohtosenvaara in Kuhmo (Vain.).

*Obs.* *Lecidea coarctata* \**obtegens* Th. Fr., Bot. Not. 1867 p. 152 (*L. coarctata* γ *oblegens* Th. Fr. Lich. Scand. II p. 447), muscos destructos terramque humosam pr. Christianiam in Norvegia tegens, »crusta crassa, granulato-pulverulenta, cinereo-virente et apotheciis fusco-rufescientibus» descripta est.

Var. *ochrinaetella* Vain.

Thallus verruculosus, olivaceo-fuscescens, sorediis instructus. Apothecia margine lecideino, fusco, disco concolor.

*Distr.* Ta.: Supra lapides parvos ad Tammijärvi in Luhanka (\**L. ornata*) sec. determ. Nyl. in Vain. Fl. Tav. Or. p. 109).

### Sectio **Lecidea uliginosa.**

Thallus, apothecia, hypothecium obscurata.

#### 171. **L. botryosa** (Fr.) Nyl.<sup>1)</sup>

Th. Fr. Lich. Scand. II (1874) p. 454. *L. uliginosa* \**L. botryosa* Nyl. in Norrl. Bidr. Sydöstr. Tav. Fl. (1870) p. 186. *Bialora botryosa* Fr. Vet. Ak. Handl. 1822 p. 268 (sec. Th. Fr.), Sched. Crit. VIII (1826) p. 10. *Bialora uliginosa* a *botryosa* Fr. Lich. Eur. (1831) p. 275. *Lecidea glomerulosa* Th. Fr. Lich. Aret. (1860) p. 219. *L. miscelloides* Nyl. Lich. Scand. (1861) p. 200 (sec. herb. Mus. Fenn. specim. orig.). *L. hypopodia* Nyl. Fl. 1862 p. 464 (sec. specim. orig. Mus. Fenn.), Lich. Lapp. Or. p. 164. *L. miscelliformis* Nyl. Fl. 1867 p. 330, Nyl. in Norrl. I. c. (1870) p. 186. *L. crassipes* f. *minor* Nyl. in Norrl. Ber. Torn. Lappm. (1873) p. 341.

*Exs.* Fries Lich. Suec. VIII, n. 219. — Havás Lich. Norv. (1918) n. 388, Malme Lich. Suec. VIII (1910) n. 188. — Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 168, s. n. *Lecidea miscelliformis*, cont. (1921) n. 740. — Zahlbr. Krypt. Vindob. XXII (1914) n. 2270.

Thallus effusus, crassus vel crassiusculus, laxe adfixus, primitus e granulis vel verruculis conglomeratis contextus, dein glomerulis congestis, convexis, supra granulatis, verruculosis vel subpulveraceo-fatiscientibus quasi rimoso-verrucosus. Thallus fuscescens vel virescenti- vel pallide cinerascens.

Apothecia numerosa vel numerosissima, vulgo conglomerata, minuta, 0.2—0.4 (—0.5) mm, supra thallum plus minusve elevata, usque stipitata, primo plana et margine pallidiori cincta, deinde subconvexa et immarginata. Discus epruinosus, subnitidus, obscure rufo-fuscescens (saltem madefactus) vel vulgo atro-fuscus vel nigricans. Excipulum fusco-nigrum, etiam cum hypothecio. Hymenium angustum, 50—65  $\mu$ , strato amorpho in-

<sup>1)</sup> Literary references by Vainio, the rest by B. Lynge.

colorato tenui tectum, superne plus minusve, saltem maculate, fuscum, praeterea pallide fuscescens vel incoloratum. Paraphyses concretae, valde indistinctae, apice non incrassatae. Ascii clavati, octospori. Sporae parvae, ellipsoideae,  $7-12 \times 3-4.5 \mu$ .

Thallus J, KOH,  $\text{CaCl}_2\text{O}_2$  immutatus. Hymenium J cæruleo-nigricans.

*Distr.* Ad ligna, praecipue quercina et pinea, cariosa carbonisatave atque corticem Pini vetustum late distributa, ut videtur frequens.

Ik.: Muola (Kihlman). Ta.: Sankoniemi in Tammela (Kullhem). Hersala et Upila in Hollola (Vain.). Kalkkis in Asikkala (Norrlin). Evo in Lammi (Norrlin, Lång). Padasjoki (Vain.). Jutinsalo in Luhanka (Vain.). Rappukallio in Korpilahti (Vain.). Kol.: Gorki (Elfving). Tb.: Pihlajavesi (Norrlin). Kanavuori in Jyväskylä (Vain.). Kb.: Niska in Enontapale (Vain.). Lieksa (Vain., Lång). Vieki in Lieksa (Vain.). KOn.: Suojärvi (Norrlin). K. Pom. occ.: Vuosiniemi in Repola (Vain.). Ob.: (Silén). Ks.: Kuusamo (Silén). Le.: Hetta (Norrlin). Li.: Muddusniemi in Inari (Silén). Paatsjoki (Vain., Granit et Poppius).

The above description has largely been drawn from Th. Fr. Lich. Scand., which the editor has felt it impossible to improve. Th. Fries has justly called attention to the similarity with *Toninia cumulata*, on account of the small plane, glomerate apothecia.

### 172. *L. uliginosa* (Fr.) Nyl.

in Hue Addend. II (1888) p. 135, Nyl. Lich. Paris (1896) p. 80; Lich. Scand. (1861) p. 198 p. p.; Ach. Meth. Lich. (1803) p. 43 p. p. (excl.  $\gamma$  *L. humosa*), Lich. Univ. (1810) p. 180 p. p., Syn. Lich. (1814) p. 25 p. p.; Th. Fr. Lich. Scand. II (1874) p. 455 p. p. (non *Lichen uliginosus* Schrad. Crypt. II Lief., 1797, n. 163, Spic., 1794, p. 88 fors. p. p.). *Bialora uliginosa* Fr. Lich. Suec. Exs. VIII (1824) n. 218; Koerb. Par. Lich. 2 Lief. (1860) p. 158; Arn. Lich. Jur. (Fl. 1884) p. 154, Lich. Münch. (1891) p. 73; Bachmann Der lepröse Thallus einiger Krustenflechten, Archiv f. Protistenkunde, vol. 74 (1931) p. 268 seq. *Lecidea uliginosa*  $\gamma$  *geomoea* Ach. Lich. Univ. (1810) p. 180 (sec. herb. Ach.), in Meth. Lich. (1803) p. 43 ad *Verrucariam humisimilem* Hoffm. Fl. Germ. II (1796) p. 190 (exactius non cognitam) spectat.

*Exs.* Fr. Lich. Suec. Exs. VIII (1824) n. 218 (herb. Nyl.). — Fellm. Lich. Aret. (1864) n. 150. Ceterum videoas Arn. Lich. Tirol (Fl. 1884) p. 155.

Thallus modice incrassatus aut sat tenuis, verrucosus aut verruculosus, verrucis contiguis aut dispersis, olivaceis aut olivaceo-fuscescentibus, sorediis destitutus, hypothallo indistincto. Apothecia sat parva, lat. 0.4—0.6 (—0.7) mm, tota aut late adnata, interdum basi leviter constricta, disco convexo aut plano, fusco aut fusco-nigricante, nudo, opaco, margine tenuissimo, concolore, persistente, aut vulgo demum vel mox excluso. Hypothecium fusco-nigrum, hyphis irregulariter contextis. Epitheciun fusco-nigrum. Paraphyses arcte cohaerentes. Sporae 8:næ, oblongæ ellipsoideæ, »long. 0.011—0.016, crass. 0.005—0.007 mm» (sec. annot. Nyl.).

*Dislr.* Ad terram humosam sat frequenter — passim toto territorio provenit. Al.: Gripö in Föglö (Vain.). Ab.: Artukainen in Raisio (Vain.), Katariimanlaakso in Kaarina (V. Räsänen), Karuna (F. Elfving), Östernäs in Pargas (K. Linkola). N.: Helsingforsia (Nyl., Vain., Lång), Malm (A. A. Sola), Mosabacka (Vain.), Kyrkslätt (A. Kullhem). Ka.: Hamina (Nyl.), Monrepos (Vain. Lich. Vib. p. 60), Kirjola (Ch. E. Boldt). Ta.: Tiirismaa et Hlersala in Hollola (Vain.), Asikkala (J. P. Norrlin), Jokioinen ad templum (Vain.), Mustiala et alibi in Tammela (Kullh.), Messukylä (P. A. Karsten), Piililä in Hollola (Vain. Fl. Tav. Or. p. 109). Sa.: Savonlinna (E. Nylander). Klad.: Pahaniemi prope Sortavalala (Vain.). Kon.: Pyhäniemi (Norrl.). Ktron.: Poventsa (Kullh.). Kb.: Passim (Vain. Adj. Lich. Lapp. II p. 42), velut ad Lieksa, Nevala et Matovaara in pag. Lieksa, ad Lipinlahti, Saramo et Mujejärvi in par. Nurmes. KPom. occ.: Tscholkka (Vain.). Ob.: Oulu (E. Nyl.). OKaj.: Kajaani (K. P. Malmgren), passim in par. Kuhmo et Kianta, velut prope pag. Kuhmo et Tervasalmi in par. Kuhmo et ad Vuokkijärvi et pag. Kianta in par. Kianta (Vain. l. c.). LKem.: In monte Pyhäntunturi in par. Sodankylä (Vain. l. c.) et alibi (E. Nyl.). LIm.: Ad fl. Niva (N. I. Fellman) et lac. Imandra (Fellm.) et Lovozersk (A. O. Kihlman). LTul.: Ad sin. Kolaënsem (Fellm.) et in penins. Piscatorum (P. A. Karsten).

Thallus verrucis 0.05—0.3 mm latis, subglobosis aut difformibus, microscopio visus hypothallo, ex hyphis sat parcis, laxe contextis, sat leptodermaticis, fuscescentibus aut primum decoloratis, 0.005—0.004 (—0.002) mm crassis formato, instructus. Apothecia saepe partim crebra, KOH non reagentia. Hypothecium hyphis tenuibus, circ. 0.003 mm crassis, sat leptodermaticis, conglutinatis, cavitatibus angustis, saepe oblongis. Peritheciun fusco-nigricans, hyphis sat irregulariter contextis, conglutinatis, sat leptodermaticis, apicibus clavatis et circ. 0.005—0.006 mm crassis, constipatis. Hymenium circ.

0.065—0.070 mm crassum, »jodo vino rubens» (sec. ann. Nyl.). Paraphyses simplices aut parum ramoso-connexae, tubulis tenuissimis, membrana leviter gelatinosa, in KOH parum incrassata, apice fusco-capitato, circ. 0.005 (—0.003) mm crasso, non gelatinoso. Sporae distichae, simplices, decolores. Gonidia pleurooccoidea, glomerulosa, membrana vulgo incrassata.

173. *L. humosa* (Ehrh.) Nyl.<sup>1)</sup>

*Lecidea uliginosa* \**humosa* Nyl. in Bidr. Sydöstr. Tav. Fl. (1870) p. 186; Vain. Adj. Lich. Lapp. II (1883) p. 42. *Lecidea humosa* Nyl. Lich. Paris (1896) p. 28. *Lichen humosus* Ehrh. Pl. Crypt. (1789) n. 135 (in Mus. Berol.). *Lecidea uliginosa* γ *L. humosa* Ach. Meth. Lich. (1803) p. 43, Syn. Lich. (1814) p. 43. *Lichen uliginosus* Schrad. Crypt. II Lief. (1797) n. 163 (in Mus. Berol.). *Lecidea icmalea* Ach. Vet. Ak. Handl. 1808 p. 267; Lich. Univ. (1810) p. 201. *L. fuliginea* β *L. icmalea* Ach. Syn. Lich. (1814) p. 35 (verisim., specim. in herb. Ach. sat destructum). *L. fuliginea* Ach. Syn. Lich. (1814) p. 35 p. p. (excl. specim. ad saxa cotacea cresc.); Nyl. Fl. 1879 p. 136, Lich. Paris (1896) p. 80; Hue Addend. II (1888) p. 136. *Bialora fuliginea* Fr. Lich. Suec. Exs. IV (1824) n. 97; Koerb. Par. Lich. 2 Lief. (1860) p. 159; Arn. Lich. Münch. (1891) p. 74. *Lecidea uliginosa* f. *fuliginea* Th. Fr. Lich. Scand. II (1874) p. 456. *L. uliginosa* d. *coenosa* Fr. Lich. Eur. Ref. (1831) p. 275 (sec. Th. Fr.).

Exs. Anzi Lich. Lang. V (1861) n. 175 (sec. Arnold). — Arn. Lich. Exs. (1871—1879) n. 649 (sec. Nyl.), (1882—1889) n. 1076. — Crombie Lich. Brit. I (1874) n. 82 (hb. Nyl.). — Ehrh. Plant. Crypt. XIV (1789) n. 135. — Fries Lich. Suec. IV n. 97. (Mus. Berol.). — Hepp Flecht. Eur. V (1857) n. 267. — Malme Lich. Suec. XVI (1914) n. 387 (sec. Lynge). — Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 166. — Schrad. Syst. Samml. crypt. Gew. II (1797) n. 163. — Stenh. Lich. Suec. VI n. 174. — Zwackh Lich. Exs. n. 589.

Thallus effusus, tenuis vel tenuissimus, interdum fere obsoletus, cum substrato confusus. Thallus (sub microscopio visus) minutissime granulosus, facile farinoso-granulosus fatiscens. Thallus obscurus, fusco-nigrescens.

Thallus saepe sterilis. Apothecia minutissima, diam. 0.2—0.3, rarius usque ad 0.5 mm, dispersa, vel hinc inde numerosa, usque congesta, arcte adpressa, ab initio

1) Literary references by Vainio, the rest by B. Lynge.

plana, deinde mox convexa. Discus rugulosus, epruinosus, opacus, fusco-ater vel subnigricans, margine concolori. Excipulum satis obscure luteo-fuscescens, hypothecio concolor. Hymenium 62—75  $\mu$  altum, pallide flavo-fuscescens, vel in parte superiori solum fuscescens, praeterea incoloratum. Paraphyses concretae, apice leviter clavatae (usque ad 2  $\mu$ ). Ascii clavati. Sporae octonae, ellipoideae, 8—14 (—16)  $\times$  6—7  $\mu$ .

Hymenium J dilute caerulescens, interdum deinde sub-vinosum, vel subimmutatum.

Manuscript note by Vainio: Conidia utrinque apice in-crassata, 3.5—4.5  $\times$  0.5  $\mu$  (Nyl. herb. No. 21160).

*Distr.* Ad lignum cariosum vel carbonisatum, ad saepes vetustas, putrescentes, ad terram humosam et ad herbos et stramentum emortuum, rarius ad saxa. — Ut videtur frequens in toto territorio. Ab.: Pargas (Linkola). Pahaniemi et prope sepuleretum in Aboa (Vain.). Littoinen (Vain.). Sandö in Sagu (Elfving). Seppälä, Storön in Lojo (C. E. Boldt). N. Tvärminne (Räsänen), Helsingforsia (K. J. Ehnb erg). Suursaari (Vain.). Ka.: Viburgia (Vain.). Ta.: Mustiala, Torva et Sankoniemi (Kullhem). Tiirismaa, Enonsaari et Hersala in Hollola (Vain.). Asikkala (Norrlin). Osola in Padasjoki (Vain.). Jutinsalo et Tammi järvi in Luhanka (Vain.). Korpilahti (Vain.). Oa.: Jurva (Mahmgren). Tb.: Jyväskylä (Vain.). KOn.: Dianovagora (Simming). OKaj.: Tervasalmi in Kuhmoniemi (Vain.). Ks.: Mäntytunturi in Kuusamo (saxicola) (Vain.).

*F. fuscovirens* Vain. Adj. Lich. Lapp. II (1883) p. 42, ubi syn.

»Thallus virescens vel fuscovirescens. Apothecia fuscescentia. Ad lignum putridum» (sec. Vain. I. c.).

*Distr.* Ab.: Pargas, Sandö (Elfving). Pyhänsivu (Linkola). Åbo (Karsten). Storön in Lojo (Ch. E. Boldt). N.: Helsingfors (Nyl.). Ka.: Vanha-Viipuri (Vain.). Ta.: Hersala in Hollola (Vain.). Papinsaari in Asikkala (Vain.). Arokoski et Johioinen in Padasjoki (Vain.). Sankoniemi et Torva in Tammela (Kullhem). Mustiala (Kullhem). Pyhävuori et Vallivuori in Korpilahti (Vain.). Oa.: Jurva (Mahmgren). Tb.: Pihlajavesi (Vain.). Norola in Jyväskylä (Vain.). Kb.: Niska in Enontaipale (Vain.). OKaj.: Kianta (Vain.). KOn.: Dianovagora (Simming).

*F. fuliginea* (Nyl., Ach.).

»Var. crusta tenui, raro crassiuscula, minute granulosa, obscure rufo-fuscescente vel fusco-nigricante, raro virescente; apotheciis primo planiusculis tenuiterque marginatis, demum convexis, fuscescentibus vel fusco-atris, 0.3—0.5 mm. latis; paraphysibus gracilibus,

arcte cohaerentibus, sporis 8—12  $\mu$  longis et 4—6  $\mu$  crassis». (sec. Hedlund Kritische Bemerkungen, p. 72).

*Distr.* Ab.: Lojo, Storön, Seppälä (Ch. E. Boldt). N.: Tvärminne, Elgö (Linkola). Boxbacka prope Helsingforsiam (Linkola). Helsingfors, lign. putr. (Nyl.). Hoglandia (Brenner). Ka.: Kymi (V. Ku-jala). St. Johannes kyrka (Ch. E. Boldt). Ta.: Tammela (Kullh.), Asikkala (Norrl.). Tiirismaa, supra muros (Vain.). Hollola (Norrl.), Padasjoki (Norrl., Vain.). KOL: Mjatusova (Elfving). Kb.: Lieksa (Vain.). Oa.: Kristinestad (A. J. Malmgr.). Ob.: Uleåborg (E. Nyl.). Kk.: Koutajärvi (N. I. Fellm.). Lkem.: Muonioniska (Norrl.).

*F. argillacea* (Kremplh.) Vain. Adj. Lich. Lapp. II (1883) p. 42. *Lecidea uliginosa* f. *argillacea* (Kremplh.) Hedl. Krit. Bemerk. (1892) p. 73. *Lecidea uliginosa* e *proletaria* Th. Fr. Lich. Scand. II (1874) p. 456.

»Crusta indistincta; apotheciis minutis, margine elevato cinctis, siccis vulgo plus minus angulosis, nigris angulis, 0.2—0.4 mm. latis; paraphysibus gracilibus, arcte cohaerentibus; sporis 10—13  $\mu$  longis et (5—) 6—7  $\mu$  crassis» (sec. Hedlund Krit. Bemerk. 1. c.).

*Distr.* Lkem.: Muonioniska (Norrl.). Mäntytunturi, saxicola (Vain.). Ab.: Ersby in Pargas (Linkola). KOL: Vosnessenje (Elfving).

*Obs. 1.* In his manuscript Vainio had suggested these three formae. The editor is unable to give more detailed information on the distribution of the last mentioned forma.

*Obs. 2.* *Bialora humida* Kullh. (*Lecidea* Th. Fr. Lich. Scand. p. 477) ad *L. humosam* a Nyl. in Fl. 1872 p. 355 ducta, sec. specimina orig. ad *Pannulariam deficiente* Nyl. pertinet, sec. Vainio in msr.

*Obs. 3.* According to the above cited literature (compiled by Vainio) he regarded *Lecidea fuliginea* a synonym of *Lecidea humosa* (cfr. also Adj. Lich. Lapp. II (1883) p. 42). It is evident from his remarks in *Adjumenta* i.e. that he regarded the »thallus farinosus vel fere obsoletus» of *Lecidea humosa* to be the distinguishing character of this species against *Lecidea uliginosa*. In the present paper he attributes a »thallus modice incrassatus aut sat tenuis, verrucosus aut verruculosus» (verrucae 0.05—0.3 mm) to the latter species.

The granules of *Lecidea humosa* are so small that they are invisible to the unarmed eye. If studied under a lens of high power ( $\times 20$ ) they are easily discerned. The farinose thallus is due to their minute size. Pseudo-soredia are only developed if the granules are damaged.

The apothecia of *Lecidea humosa* are much smaller than those of *Lecidea uliginosa*, and more closely appressed, sometimes almost imbedded into the granules. The editor measured smaller apothecia in *Lecidea humosa* than Hedlund did (Krit. Bemerk. p. 72—73). — He also found that the paraphyses of *Lecidea uliginosa* were more

incrassated at their apices than they were in *Lecidea humosa*. — Koerber writes that the spores of *Lecidea fuliginea* Ach. (= *Lecidea humosa* (Ehrh.) Nyl.) are only half as large as those of *Lecidea uliginosa*, but unfortunately he does not state their size. (Parerga Lich. (1865) p. 159).

A. L. Smith refers  $\beta$  *humosa* as a subspecies to *Lecidea uliginosa*, she describes *Lecidea fuliginea* as a proper species, distinguished from *Lecidea uliginosa* by its »generally smaller spores». But the size is stated to be  $8-15 \times 4-7 \mu$  in *Lecidea fuliginea*, and  $8-17 \times 4-8 \mu$  in *Lecidea uliginosa*. Hedlund records  $8-12 \times 4-6 \mu$  in his var. *fuliginea*, and  $10-15 \times (5-) 6-7.5 \mu$  in his var. *humosa*. — Cfr also Hedlund Krit. Bemerk. p. 72—73, supra cit.

The present editor measured the spores of several plants, e.g. Malme Lich. Suec. n. 464 (*Lecidea uliginosa*) and Norrl. Herb. Lich. Fenn. n. 166 (*Lecidea uliginosa* \**fuliginea*), and some other plants, determined by Vainio, but the difference in the spore size was very inconspicuous. — Even if var. *fuliginea* has smaller spores than the type of *Lecidea humosa*, the editor agrees with Vainio that the difference is too small for specific distinction.

#### Sect. *Lecidea granulosa*.

Apothecia in olivaceum semper vel demum vergentia, hypothecium subpallidum, paraphyses graciles, apicem versus (vulgo) subviridulae ( $\text{HNO}_3$  non mutatae).

#### 174. *L. granulosa* (Ehrh.) Schaer.<sup>1)</sup>

Schaer. Spie. (1883) p. 172; Th. Fr. Lich. Scand. II (1874) p. 442; Vain. Adj. Lich. Lapp. II (1883) p. 40; A. L. Smith Brit. Lich. II (1911) p. 25; Ach. Meth. Lich. (1803) p. 65, saltem p. p. *Lichen granulatus* Ehrh. Plant. Crypt. Exsic. (1785) n. 145. *Lecanora granulosa* Ach. Lich. Univ. (1810) p. 383. *Lichen decolorans* Schrad. in Usteri Annal. der Bot. (1797) p. 85. *Lecidea decolorans* Ach. Syn. Lich. (1814) p. 37 p.p.; Wahlenbg. Flora Lapp. (1812) p. 477; Somrft Suppl. Fl. Lapp. (1826) p. 171; Nyl. Lich. Scand. (1861) p. 197 (a). *Bialora decolorans* Fries Vet. Ak. Handl. (1822) p. 268, Lich. Eur. (1831) p. 266; Koerb. Syst. Lich. (1855) p. 193; Th. Fr. Lich. Arct. (1860) p. 189.

Exs. Arn. Lich. Mon. (1892) n. 286a, (1894) n. 352. — Claud. et Harm. Lich. Gall. I (1903) n. 42. — Floerke Deutsch. Lich. VII (1821) n. 142 A-C. — Flot. Lich. Exs. III n. 228 A, B, 229. — Fries Lich.

<sup>1)</sup> By B. Lynge.

Suec. VIII (1824) n. 220. — Harm. Lich. Loth. n. 797. — Hepp Flecht. Eur. V (1857), n. 271. — Malme Lich. Suec. VII (1910) n. 165, XXXII (1919) n. 788, XL (1926) n. 986. — Mudd. Lich. Brit. II (1861) n. 165. — Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 164, 165. — Stenh. Lich. Suec. VI n. 163, 164. — Zahlbr. Krypt. Vindob. III (1898) n. 261.

Thallus effusus, crassitudine varians, verrucosus vel arcolato-granulosus, verrucae rotundatae, depresso-globosae, 0.2—0.3 (—0.5) mm., vel leviter crenatae vel (majores) interdum contiguae et varie angulosae. Thallus cinereo-glaucens, e viride glaucus ad albidum varians, saepe leproso-fatiscens, soredia usque ad 2—3 mm, granulosa, et interdum subconfluentia, sed vulgo minora, thallo concoloria vel saepe magis in albido-flavescentem vergentia. Hypothallus tenuis, membranaceus, thallo subconcolor, hinc inde inter verrucas visus.

Thallus bene fertilis. Apothecia regulariter supra thallum dispersa, numerosa vel numerosissima, saepe deinde confluentia, diam. 0.5—1.5 mm, rotundata, plus minusve crenulata, vel mutua pressione angulata, semper arcte adpressa, diu plana et tenuiter marginata, deinde saepe depresso-convexa et immarginata. Discus scabrosulus, opacus, pruina destitutus, versicolor, e lateritio vel carneo-livido olivaceo-fuscus vel nigricans, margine pallidiori circumdatus. Hypothecium incoloratum, 25—35  $\mu$  altum, hyphae arete contextae, indistinctae. Excipulum incoloratum vel secundum marginem apothecii magis obscuratum. Hymenium 75—90  $\mu$  altum, incoloratum vel superne plus minusve olivaceum vel viridulofuscens vel luteolum, strato incolorato rupto vel granulato tectum. Paraphyses arcte conglutinatae, valde indistinctae, ramosae, in apice haud incrassatae. Ascii angusti clavati, 70—75  $\mu$  longi, 10—13  $\mu$  crassi. Sporae octonae, biserialiter dispositae, ellipsoideae, 8—12 (—15)  $\times$  4—6 (—7)  $\mu$ .

Pyrenoconidia recta, 5—6  $\mu$  longa, 1  $\mu$  crassa (sec. A. L. Smith Brit. Lich. (1911), p. 26).

*Thallus CaCl<sub>2</sub>O<sub>2</sub> rubescens*, KOH leviter flavescentis.  
Hymenium J e caeruleo mox flavescentis vel vinosum, asci  
tantum persistenter caerulescentes.

*Distr.* Ad terram humosam vel sabulosam, truncos putrescentes,  
destructos e.s.p. Ut videtur frequens in toto territorio.

Al.: (Edv. Nylander). Finström (R. Frey). Ab.: Merimasku  
(Karsten). Bemby in Korpo (Elfving). Gunnarsnäs (Elfving) et  
Lampis (Linkola) in Pargas. Maalo in Karuna (Elfving). Storön  
(Boldt) et Lohjanselkä (M. E. Huumonen) in Lohja. N.: Tvärminne  
(A.-M. Häyrén). Svartbäck in Ingå (Brenner). Kyrkslätt (Kullhem).  
Ad Helsingforsiam pluribi (Lång, Lindberg, Buch). Hogland (Edv.  
Nylander). Ik.: Pällilä in Muola (Kihlman). St. Lankasuo in Huit-  
tinens (leg. ?). Ta.: Mustiala in Tammela (Kullhem). Vanaja (Norrlin.)  
Iso-Valkjärvi et Valkealampi in Evo par. Lammi (Lång). Sa.:  
Mäntyharju (Edv. Nylander). Ristiina (Edv. Nylander). In insulis  
lac. Saimae (Edv. Nylander). Savonlinna (O. A. J. Carlenius). Kl.:  
Pususaari in Impilahti (W. Nylander). Havuvaara et Remtjinkorpi  
in Soanlahti (Lång). Kol.: Gorki (Elfving). Oa.: Kvarken (Malm-  
gren). Jurva (Malmgren). Tb.: Jyväskylä (Linkola). Sb.: Suovu et  
Kortejoki in Kuopio (Linkola). Kb.: Tohmajärvi (L. Oesch). Kon.:  
Perttiniemi (Kullhem, Norrlin.). Povenets (Kullhem). Suopohja  
(Kullhem). O.Kaj.: Kajaani (Malmgren). KPom. occ.: Kemi ad  
Mare album (Fr. Nylander). Ob.: Paavola (Silén). Karlö (Lång).  
Simo (Räsänen). Kemi (Räsänen). Kalkkimaa in Ala-Tornio (Räsä-  
nen). Tengeliö (Edv. Nylander). Pöytiövaara in Rovaniemi (Bren-  
ner). Ks.: Kuusamo, f. *escharoides* (Räsänen). Kk.: Susijärvi (N. J.  
Fellman). LKem.: Muonioiska (Norrlin.) Käkäsuanto in Muonio  
(Norrlin.). LIm.: Lowosersk (Kihlman). Umba (Kihlman). LE.: in  
alpe Leutsuvaara (Norrlin.). Li.: Inari (Hult). Toivoniemi in Inari  
(Hult). Lmur.: Kola (N. J. Fellman). Voroninsk (Kihlman).

*F. hilaris* Ach. *Lecidea decolorans* \**hilaris* Ach. mscr. Nyl. Lich.  
Scand. (1861) p. 168. *Lecidea granulosa* f. *hilaris* Th. Fr. Lich.  
Scand. II (1874) p. 444; Harm. Cat. Lich. Lorr., suite 1 (1898) p.  
48; Sandst. Flecht. Nw. deutsch. Tiefl. (1912) p. 91.

*Thallus albidus* vel fere albus, granulosus. Apothecia carneo-  
lutea, plana, mediocria (latid. circ. 1 mm), margine concolore, flex-  
uoso (demum parum vel vix prominulo), intus pallida. Sporae ellip-  
soideae vel oblongae, simplices, 12—15 × 6—7  $\mu$ , paraphyses graciles,  
haud distinctae, hypothecium incoloratum. Gelatina hymenea J cae-  
rulescens, dein sordide tineta (sec. Nyl. Lich. Scand. (1861) p. 198).

*Distr.* Ab.: Pyhänsuu in Pargas (Linkola). N.: Degerö et Drumsö  
ad Helsingforsiam (Lindberg). Boxbacka ad Helsingforsiam (Lin-  
kola). Ka.: Ruotila in Sippola (V. Kujala). St.: Källfjärd (Malm-)

gren). Ta.: Tiirismaa in Hollola (Vain.). Oa.: Orismala in Isokyrö (P. Nederström). Om.: Lappajärvi (N. J. Fellman). Kk.: Ad flum. Niva (N. J. Fellman). Li.: Kaamasjoki in Inari (Silén).

F. *fusconigra* (Nyl.) Th. Fr. *Lecidea decolorans* f. *fusconigra* Nyl. Lich. Scand. (1861) p. 197. *Lecidea granulosa* f. *fusconigra* Th. Fr. Lich. Scand. II (1874) p. 444.

Differt a ceteris formis tantum disco obscuriori.

Distr. *Lecidea decolorans* var. *fusconigra* Nyl. Lich. Scand. p. 197 e Tengelis in Lapp. mer. »Edv. Nyl. 1850» ap. fusconigris sat normalis. — St.: Kälfjärd (J. Malmgren). Oa.: Lappajärvi (Fellm.), Kvarken (A. J. Malmgren 1859), Jurva (A. J. Malmgren in Mus. Fenn.) ad terr. humi. Kola (Fellm.) lign. putr., Niva (Fellm.).

### 175. **L. flexuosa** (Fr.) Nyl.<sup>1)</sup>

Nyl. Prodr. Lich. Gall. (1857) p. 110 (356); Th. Fr. Lich. Scand. II (1874) p. 444; Vain. Adj. Lich. Lapp. II (1883) p. 40; A. L. Smith Brit. Lich. II (1911) p. 27. *Biatora flexuosa* Fries Vet. Ak. Handl. (1822) p. 268 (nomen), Sched. crit. VIII (1826) p. 11; Koerb. Syst. Lich. (1855) p. 194. *Lecidea decolorans* \**flexuosa* Nyl. Lich. Scand. (1861) p. 197. *Lecidea sapinea* A. Zahlbr. Cat. Lich. III (1925) p. 827.

Exs. Anzi Lich. Ven. II (1863) n. 63. — Flot. Lich. Exsic. III, n. 230. — Fries Lich. Suec. VIII n. 221. — Havås Lich. Norv. (1904) n. 219. — Hepp Flecht. Eur. IX (1860) n. 486. — Malme Lich. Suec. VIII (1910 n. 187. — Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 305. — Nyl. Herb. Lich. Par. II (1855) n. 53. — Stenh. Lich. Suec. VI n. 165. — Zahlbr. Krypt. Vindob. III (1898) n. 260.

Thallus effusus, interdum tenuis, usque evanescens, sed vulgo bene evolutus, satis firmus, areolato-granulosus vel disperse granulatus vel depresso-verrucosus, granulae rotundatae vel crenatae vel angulatae. Thallus albidus vel cinerascens vel virescenti-cinerascens, saepe sorediis cinereo-flavescens, parvis (0.2—0.5 mm), rotundatis, granulatis adpersus, interdum hinc inde leproso-fatiscens.

Apothecia dispersa, parva, diam. 3—5 mm, adpressa, discus ater, scabrosulus, opacus, epruinosus, persistenter planus, margine persistenti, elevato cinereo-atro flexuoso circumdatu. Excipulum in parte exteriori olivaceo-nigricans, etiam cum parte superiori hymenio

<sup>1)</sup> By B. Lyngé.

nii, partes internes apotheciorum praeterea incoloratae vel plus minusve sordidae. Hymenium angustum, 50—60  $\mu$  altum, superne strato granulato tectum. Hyphae hypothecii creberrime contextae. Paraphyses valde indistinctae, concretae, apice haud incrassatae. Asci angusti, 40—45  $\times$  6—8  $\mu$ , sporae biserialis vel oblique uniseriales, ellipsoideae vel oblongo-ellipsoideae, parvae, 6—8  $\times$  3—4.5  $\mu$ .

Thallus  $\text{CaCl}_2\text{O}_2$  rubescens, KOH indistincte sordide flavescent. Hymenium (e caeruleo mox) vinose rubens.

*Disfr.* Ad ligna truncosque vetustos, praecipue carbonisatos, rarius ad corticem Pini. Ut videtur frequens.

Ab.: Pukkila in Askainen (Linkola). Ispoinen prope Aboam (Linkola). Karuna (Elfving). N.: Gesterby in Kyrkslätt (Lång). Helsingforsia (Kullhem). Ta.: Mustiala et Torro in Tammela (Kullhem). Hersala (Norrl., Vain.) et Taaveli (Vain.) in Hollola. Evo in Lamnii (Norrlin, Lång). Nyystölä in Padasjoki (Vain.). Paljokko, Sutoisenniemi et Pohjola in Korpilahti (Vain.). Tb.: Pihlajavesi (Vain.). Sb.: Pitkälähti prope Kuopio (Linkola). Kb.: Kalliovaara in Lieksa (Vain.). KOn.: Pertnawolok (Kullhem). Ob.: Simo (Räsänen). Alkkula (Edv. Nylander). — OKaj.: Vasoniemi in Kianta (Vain.) (var. *achristella*).

### 176. *L. viridescens* (Schrad.) Ach.<sup>1)</sup>

Acharius Meth. Lich. (1803) p. 62, Vet. Akad. Handl. (1808) p. 267, Lich. Univ. (1810) p. 200, Syn. Lich. (1814) p. 36; Mass. Ricerche sull'auton. lich. (1852) p. 64, fig. 118; Nyl. Prodr. Lich. Gall. (1857) p. 110 (356), excl. var., Lich. Scand. (1861) p. 206; Th. Fr. Lich. Scand. II (1874) p. 445; A. L. Smith Brit. Lich. II (1911) p. 28. *Lichen viridescens* Schrad., apud Gmelin Syst. Nat. vol. II (1794) p. 1361. *Bialora viridescens* Fries Svenska Vet. Akad. Handl. 1822 p. 268; Anzi Cat. Lich. Sondr. (1860) p. 76. *Lecidea sphaerooides* var. *viridescens* Schaer. Lich. Helv. Spicil. (1833) p. 165. *Bialora viridescens* var. *putrida* Koerb. Syst. Lich. Germ. (1855) p. 201.

*Exs.* Anzi Lich. Lang. V (1861) n. 176. — Arn. Lich. Mon. (1890) n. 171 et (1895) n. 399. — Claud. et Harm. Lich. Gall. VI (1904) n. 290. — Cromb. Lich. Brit. II (1877) n. 181, sec. A. L. Smith l.c. — Hepp Flecht. Eur. XIII (1867) n. 731. — Malme Lich. Suec. XXIV (1916) n. 589 (thallus subpapillosum). — Mudd Lich. Brit. II (1865) n. 164, s.n. *Lecidea prasina*, sec. A. L. Smith l.c. — Rabenh. Flecht.

<sup>1)</sup> By B. Lynge.

Eur. III (1856) n. 59. — Schaer. Lich. Helv. IX (1833) n. 208, s.n. *Lecidea sphaerooides* η *muscorum*. — Zahlbr. Krypt. Exs. Vindob. XIII (1905) n. 1230 (thallus flavidо-virescens). — Zwackh Lich. Exs. n. 234, s. n. *Biatora vernalis* var. *viridescens*, sec. Th. Fr. Lich. Scand. l.c.

Thallus tenuis, effusus, minute granulosus vel pulverulento-fatiscens, pallide aeruginoso-viridis vel cinereo-viridescens.

Apothecia numerosa, vulgo dispersa, interdum magis conglomerata, sessilia vel adpressa, sed non innata, parva vel mediocria, diam. 0.4—0.7 mm. Discus convexus, immarginatus, ater, madefactus livido-nigrescens, opacus, rugosus. Excipulum versus partem exteriorem olivaceum, praeterea incoloratum, etiam cum hypothecio. Paraphyses versus apicem olivaceo-virescentes, praeterea subicoloratae, arcte cohaerentes, graciles, in apice non incrassatae. Hymenium altitudine 90—95  $\mu$ , superne granulosum. Ascii anguste clavati. Sporae oblongo-ellipoideae, 9—12  $\times$  4—6  $\mu$ .

Thallus KOH sordide lutescens,  $\text{CaCl}_2\text{O}_2$  dilute rubescit, KOH +  $\text{CaCl}_2\text{O}_2$  intensius rubescit. Hymenium Je caeruleo sordide fusco-rubescit.

Distr. Ad lignum putredine destructum, rarissima. Ta.: Nyystölä in Padasjoki (Vain.). Kol.: Gorki (Elfving).

Obs. Th. Fr. writes »CaCl non mutatur» (l.c.) The editor found a distinctly red colour with  $\text{CaCl}_2\text{O}_2$ , intensified if KOH was first applied, in accordance with A. L. Smith's statement (l.c.).

### 177. *L. gelatinosa* Flk.<sup>1)</sup>

Floerke Berl. Mag. (1809) p. 201; Th. Fries Lich. Scand. II (1874) p. 446; A. L. Smith Brit. Lich. II (1911) p. 28; Zahlbr. Cat. Lich. III (1925) p. 764. *Lecidea viridescens* var. *gelatinosa* Nyl. Prod. Lich. Gall. (1857) p. 110 (356). *Biatora gelatinosa* (Flk.) Rabenh. Arnold Tirol XIV (1875) p. 56 (488); Dalla Torre et Sarntheim Flechten von Tirol (1902) p. 371.

Exs. *Lecidea gelatinosa* has been distributed in several exsiccatai. Unfortunately the editor has only seen Hepp's and Schaerer's collec-

1) By B. Lynge.

tions. — Harm. Lich. Loth. n. 798 bis. — Hepp Flecht. Eur. IX (1860) n. 493. — Larb. Lich. Herb. I (1879) n. 30. — Leight. Lich. Brit. XII (1866) n. 353. — Moug. et Nestl. Stirpes Crypt. IX (1826) n. 843. — Roumeg. Lich. Gall. III (1881) n. 298. — Schaeer. Lich. Helv. IX (1833) n. 205. — Zwackh Lich. Exs. n. 82 et B, n. 279A (var. *minor*).

Thallus tenuis vel tenuissimus, effusus, gelatinosus vel subarachnoideus, membranaceus, interdum indistincte leprose fatiscens. Thallus cinereus vel virescenti-cinerascens, interdum leviter in fuscescenti-cinerascentem vergens.

Saepe sterilis et tum haud certe determinanda. Apothecia dispersa vel (si numerosa) magis approximata vel etiam confluentia, parva vel mediocria, diam. 0.3—0.6 (—1.0) mm, thallo arcte adpressa vel eo subinnata. Discus thallum non vel leviter solum superans, planus, tenuiter livido-marginatus, in aetate interdum leviter depresso convexulus et immarginatus, discus epruinosus, subopacus, ater vel olivaceo-nigrans, maderfactus magis in fuscescentem vergens. Excipulum incoloratum vel pallide flavescens, versus marginem plus minusve olivascens. Hypothecium incoloratum, parte inferiori hymenii subconcolor. Hymenium 75—80  $\mu$  altum, hinc inde magis obscuratum, praecipue in parte superiori. Paraphyses valde indistinctae, cohaerentes, septatae, ramosae, graciles, in apice non incrassatae, versus apicem olivaceae vel subfuscantes. Ascii angusti clavati, 70—75  $\mu$  longi, 10—12  $\mu$  crassi. Sporae late ellipsoideae, 7—9  $\times$  4—5  $\mu$ .

Thallus KOH dilute lutescit,  $\text{CaCl}_2\text{O}_2$  non mutatur. Ascii J subcaerulentes, gelatina hymenialis J fere incolorata vel (sec. Th. Fr. I.c.) »praecedente caerulentia fugacissima levissimaque sordide rubenti-fuscescit».

*Distr.* Tb.: Pihlajavesi (Norrlin).

*Obs.* It differs from *Lecidea viridescens* in the plane, more innate apothecia and the slightly smaller spores. — Arnold has recorded remarkably long spores: 15  $\times$  6  $\mu$  (Tirol I.c.).

Sect. **Lecidea fusca.**

Thallus pallidus, apothecia (vulgo) obscure fuscouscentia vel nigricantia, hypothecium obscurum.

178. **L. Berengeriana** (Mass.) Th. Fr.

Lich. Scand. II (1874) p. 433. *Biatora* Mass. Ric. Lich. Crost. (1852) p. 128. *L. cuprea* \**L. Berengeriana* Nyl. Lich. Lapp. Or. (1866) p. 144 p.p. (sec. Th. Fr. l.c. p. 427). *L. miscella* Sommerf. Suppl. Fl. Lapp. (1826) p. 158 (haud Ach.). *Biatora miscella* Fr. Lich. Eur. Ref. (1831) p. 274; Th. Fr. Lich. Arct. (1860) p. 194. *Lecidea cuprea* Nyl. Lich. Scand. (1861) p. 199 p.p.

*Exs.* Sommerf. Pl. Crypt. Norv. II (1836) n. 131 (sec. Th. Fr.). — Fellm. Lich. Arct. (1864) n. 162 (Mus. Fenn.). — Arn. Lich. Exs. (1870) n. 439 (sec. Lyngé). — Zahlbr. Krypt. Exs. Vindob. XXI (1913) n. 2058. — Malme Lich. Suec. Exs. XVIII (1914) n. 439.

Thallus crassus aut sat crassus, albidus aut impure albodus aut rarius glaucescens, KOH non reagens, verrucoso- et verruculoso-inaequalis, sorediis destitutus, hypothallo indistincto. Apothecia sat parva aut mediocria, late adnata, basi non aut parum constricta, disco fuscoc-nigro aut fuscouscenteve aut raro subcinnamomeo, primum plano, demum convexo, margine tenui, atro fuscouscenteve, demum excluso. Hypothecium fuscum aut rubricoso-fuscouscenteve aut inferne pallidius, irregulariter contextum. Epithecum fuscum, aut raro pallidum, haud granulosum. Paraphyses arcte cohaerentes, apice clavatae, haud distinete gelatinosae. Hymenium corpusculis fuligineis nullis. Sporae 8:næ, ovoideæ oblongæve, »long. 0.009—0.016, crass. 0.004—0.006 mm» (sec. Th. Fr.).

*Distr.* Supra muscos emortuos in rupibus et terram turfosam humosamque, praecipue in regionibus calcareis et argillaceo-schistosis (Th. Fr.) et ips. LIn.: Ad Solojärvi et Leutolahti (F. Silén), ad Paatsjoki in pag. Inari et in reg. subalp. ad Königas prope Mare Glaciale (Vain. Adj. Lich. Lapp. II p. 36). LEnont.: Nonnullis locis ad Kilpisjärvi, ad Kelottijärvi (Norrl. Ber. Torn. Lappm. p. 334). LMur.: Gavrilova (Kihlm. N. Beitr. Fl. Kola 57). LPon.: Orlov (Kihlm. l.c.), Kotschkova (N. J. Fellman, Nyl. Lich. Lapp. Or. p. 145). LVar.: Tschavanga (Fellm. l.c.). Kuus.: Ad Oulankajoki (Vain. l.c.), Kitkajoki (F. Silén). Ob.: Uleåborg (E. Nylander sec. Th. Fr. l.c.). KLad.:

Ad Kirjavalahti (A. Kullhem, »*L. sanguineoalra* vegetior» sec. Nyl.).  
KOn.: Kivatscho (Kullh., »*L. cuprina*« sec. Nyl.), Valkeamäki (Norrl.  
Fl. Kar. Oneg. II p. 28). Ab.: Ins. Jurmo in Korpo (E. Nyl., vide  
infra)

Thallus continuus aut subdispersus aut demum varie diffractus.  
Apothecia typice crebra, saepe partim aggregata, lat. vulgo 0.6—0.9  
(0.5—1.5) mm, subopaca, cartilaginea, gonidiis destituta. Hypothecium  
hyphis parum pachydermaticis, (cavatibus oblongis elongatisve, 0.001—0.0015 mm latis), in parte subhymeniali tenui suberectis.  
Peritheciū hypothecio subconcolor (aut partim extus pallidius),  
KOH sicut hypothecium subpurpureum, hyphis radiantibus, parum  
pachydermaticis, cavatibus oblongis elongatisve, 0.002—0.0015 mm  
latis, contento saepe intensius colorato. Hymenium 0.050—0.070 mm  
crassum, corpuscula fuliginea nulla continens, jodo mox vinose  
rubens aut leviter caeruleescens glaucescens deindeque vinose  
rubens. Paraphyses clava vulgo fuscescente, raro pallida decolorante,  
cavitate angustissima, latiore in apice clavato, simplices. Sporae  
distichae, simplices. Gonidia globosa et subglobosa, cystococcoidea.

*Obs. 1.* *L. Berengeriana* f. *chlorosa* Vain. (Adj. Lich. Lapp II,  
1883, p. 36), thallo virescente vel albido-virescente, supra muscos  
in reg. subalpina ad Königas prope Mare Glaciale. — *F. endoxantha*  
Vain. l.c., supra corticem emortuum in reg. pinifera ad Koppelo in  
LIn. collecta, est f. ad *L. cuprea* accedens, hypothecio lutescente  
vel passim fuscescente.

*Obs. 2.* *L. cuprina* Nyl., Fl. 1865 p. 4 (*L. Berengeriana* \**L. cuprina*  
Nyl. in Norrl. Fl. Kar. Oneg. II, 1876, p. 28. *L. Berengeriana* f.  
*cuprina* Th. Fr. l.c. p. 434, Nyl. in Hue Addend. II, 1888, p. 140),  
»hypothecio luteo-rufescente» sec. annot. Nyl. in bibl. sua differt.  
Supra vegetabilia subhumosa ad Kivatscho (A. Kullhem) et inter  
muscos supra terram arenosam, particulis calcis immixtam (Norrl.  
l.c.) in KOn.

*Obs. 3.* *L. vernalis* var. *cupreiformis* E. Nyl., Ålands Lafveg.  
(1857) p. 90 (*L. cuprea* var. *cupreiformis* Nyl. Lich. Lapp. Or. p. 144,  
*L. cupreiformis* Nyl. Fl. 1868 p. 347, *L. cuprea* \**L. cupreiformis* Nyl.  
in Norrl. Ber. Torn. Lappm. p. 334, *L. Berengeriana* f. *cupreiformis*  
Nyl. in Hue Addend. II p. 141), sec. specim. orig. ex Jurmo est sat  
typica *L. Berengeriana*, hypothecio rubricoso-rufescente, epithecio  
testaceo-rufescente, parum gelatinoso, peritheciū purpureo-fuscescente,  
contento cellularum fuscescente, sporis simplicibus, hymenio corpor-  
sculis fuligineis nullis, paraphysibus clavatis, disco fusco-nigricante  
(conf. etiam Th. Fr. l.c. p. 434): »*L. cuprea* \**L. cupreiformis*» Nyl. in  
Norrl. Ber. Torn. Lappm. p. 334, in Leutsuvaara ad Kilpisjärvi  
collecta, ad *L. fuscum* var. *sanguineoatram* pertinet, corpuseculis  
fuligineis in hymenio instructa.

*Obs. 4.*<sup>1)</sup> *L. subuliginosa* Nyl. (ad terram humosam prope Kitkajoki in par. Kuusamo legit F. Silén). »Vix quidem forma a *L. Berengeriana* distingui potest», sec. Vainio in Adj. Lich. Lapp. II (1883) p. 43. Confer tamem Th. M. Fries Lich. Scand. II (1874) p. 456: »insignis, sed accidentalis forma est». In Vainio's notes the editor found the following: »*L. subuliginosa* Nyl. Fl. 1870 p. 34: Thallus albidus aut impure albidus, KOH +, verrucosus, verrucis diam. 0.2—0.25 (rarius 0.5—0.4 mm.), dispersis aut partim contiguis, sine sorediis, hypothallo indistincto. Apothecia crebra, fusconigra, opaca, 0.2—0.5 mm. in diam., nuda, immarginata, primum subplana, dein convexa, interdum nonnulla confluentia.»

179. ***L. fusca* (Schaer.) Th. Fr.**

Lich. Scand. II (1874) p. 435. *Lecidea sphaeroides* ζ *fusca* Schaer. Lich. Helv. Spic. IV (1833) p. 166. *Bialora fusca* Almqu. Lich. Iakt. Sib. (1879) p. 33. *Lecidea sanguineoatra* Nyl. Prodr. Lich. Gall. Alg. (1857) p. 106 (non sit *Lichen sanguineoater* Wulf. in Jacq. Collect. III, 1789 p. 177, sec. Arn. Zur Erinn. Wulf., 1882, p. 157, 161). *Bialora vernalis* Koerb. Syst. Lich. Germ. (1855) p. 202 (sec. Th. Fr.).

Thallus sat crassus aut tenuis, verruculoso-inaequalis, albido-glaucescens aut albido-cinerascens, sorediis destitutus, hypothallo indistincto. Apothecia vulgo fere mediocria, late adnata, demum basi leviter constricta, disco fusco aut fusco-nigricante, nigrove aut raro rufescente, persistenter plano aut demum convexo, leviter nitido aut opaco, haud pruinoso, margine tenui aut sat tenui, fuscescente aut cinereo-fuscescente aut atro, saepe nitido, persistente aut demum vel fere mox excluso. Hypothecium superne obscure subfuscans fuscescensve, ceterum dilutius fuscescens, irregulariter contextum. Hymenium totum subdecoloratum aut partim pallidum vel dilute fuscescens rufescensve aut raro inferne cyanescens, haud granulosum, sed saepe corpuscula difformia fuliginea parce abundanterve continens. Paraphyses arcte cohaerentes, cavitatibus angustis. Sporae 8:nae, oblongae ellipsoideaeve, long. 0.009—0.017, crass. 0.0085—0.007 mm.

<sup>1)</sup> By B. Lynge.

Var. *sanguineoatra* (Nyl.) Th. Fr. I. e. *Lecidea sanguineoatra* Nyl. Lich. Scand. (1861) p. 199, Lich. Lapp. Or. (1866) p. 143, Lich. Paris (1896) p. 79. *Biatora sanguineoatra* Lönrr. Vet. Ak. Förh. 1857 p. 5. *B. fuscolutea* γ *sanguineoatra* (Floerk.) Fr. Sched. Crit. VIII (1826) p. 11 n. 223 p. p. (sec. Th. Fr.). *B. cartilaginea* Lönrr. Fl. 1858 p. 615. *L. sanguineoatra* v. *fusca* (Schaeer.) Vain. Adj. Lich. Lapp. II (1883) p. 36.

*Exs.* Fr. Lich. Suec. Exs. VIII (1824) n. 223 p. p. — Nyl. Herb. Lich. Par. II (1855) n. 52. — Anzi Lich. Langob. V (1861) p. 181. — Arn. Lich. Exs. (1863) n. 229 a (b). — Erb. Crit. It. (1865) n. 1235. — Zwackh Lich. Exs. (1876) n. 465. — Flag. Lich. Franche-Comté IV n. 187, 327. — Arn. Lich. Mon. (1889) n. 42. — Elenk. Lich. Ross. (1902) n. 41. — Malme Lich. Suec. Exs. XXIII (1916) n. 566. (Sec. cit.).

Thallus sat tenuis aut sat crassus. Apothecia disco fuscescente aut nigricante aut raro rufescente, vulgo fere mox demumve convexo margine concolore aut fuscescente rufescente leve, vulgo fere mox excluso.

*Distr.* Supra muscos aliaque vegetabilia destructa in rupibus et ad terram passim aut sat frequenter in territorio nostro provenit.

Thallus dispersus aut sat continuus. Apothecia dispersa aut partim crebra confluentia, simplicia aut partim tuberculosa, lat. 0.4—1.2 mm (tuberculosa confluentiaque etiam majora), gonidiis destituta, margine fuscescente aut cinereo-fuscescente, primum leviter prominente, demum aut fere mox excluso. Hypothecium superne rufescens aut subrubricoso-rufescens, ceterum dilutius coloratum aut partibus interioribus membranarum decoloratis vel materiam rufescensem tantum inter hyphas continens, sat pachydermaticum, cavitatibus 0.001—0.005 mm latis, saepe oblongis, nec jodo nec KOH reagens. Peritheciun in margine subrubricoso-rufescens, ceterum dilutius coloratum vel inter hyphas aut in cavitatibus cellularum materiam rufescensem continens, hyphis radiantibus, conglomeratis, membranis sat tenuibus aut leviter pachydermaticis, KOH non turgescens, distinctioribus, cavitatibus ellipsoideis oblongis, angustis, KOH paulum dilatatis, jodo non reagens. Hymenium 0.060—0.070 mm crassum, corpuscula fuliginea, KOH non dissoluta, continens, ceterum decoloratum aut epithecio passim parce testaceo et parte infima angusta dilute subrufescente, jodo intense caerulescens aut demum vinose rubens (conf. etiam Nyl. Lich. Paris p. 79), KOH parte inferiore fulvescens. Paraphyses simplices, cavitatibus angustissimis aut in apice paullo dilatatis, membrana gelatinosa, tenui, in KOH leviter turgescente. Sporae distichae, simplices. Gonidia cystococcoidea, interdum etiam cum autosporis visa. »Sterigmata simplicia, conidia cylindrica, brevia» (sec. Flag. Fl. Lich. Franche-Comté, 1894, p. 425).

Var. *atrofusca* (Flot.) Th. Fr. Lich. Scand. II (1874) p. 436; Vain. Adj. Lich. Lapp. II (1883) p. 436. *Bialora atrofusca* Flot. in Hepp Flecht. Eur. (1857) n. 268 hb. Nyl. et sec. Th. Fr. et Arn. (in hb. meo p. p. ad *v. sanguineoalram* pertinet). *Bialorina Lönnr.* Vet. Ak. Förh. 1858 p. 275. *Lecidea* Nyl. in Stizenb. Ind. Lich. Hyperb. (1876) p. 38. *L. calcivora* \**L. atrofusca* Nyl. Lich. Paris (1896) p. 78. *L. sanguineoalra* \**L. fusca* Nyl. Lich. Lapp. Or. (1866) p. 436. *L. sanguineoalra* var. *planiuscula* Nyl. En. Gén. Lich. (1857) p. 121 (sec. Nyl.). *L. deusta* Mass. in Koerb. Par. Lich. (1865) p. 148 (sec. Arn. Lich. Tirol p. 157).

*Exs.* Fr. Lich. Suec. Exs. VIII (1824) n. 223 p. p. — Flot. Lich. Exs. III (1829) n. 215 B. — Hepp Flecht. Eur. V (1857) n. 268. — Rabenh. Lich. Eur. Exs. VI (1857) n. 162. — Zwackh (1859) n. 334, (1880) n. 607. — Anzi Lich. Lang. Exs. V (1861) n. 180. — Arn. Lich. Exs. (1873) n. 546. — Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 167 (conf. infra), Cont. (1921) n. 746. — Flag. Lich. Franche-Comté VI n. 270. — Malme Lich. Suec. Exs. XV (1913) n. 359. (Sec. cit.).

Thallus tenuis. Apothecia disco atro, plano aut demum convexo, margine atro, nitido, persistente aut demum excluso. Sporae simplices.

*Distr.* Supra muscos et alia vegetabilia destructa in rupibus et ad terram locis apricis praesertimque calcareis crescit, passim aut sat rare in territorio nostro proveniens.

Specimina intermedia inter has variationes saepe observantur, quamquam saepe etiam bene differunt, var. *atrofusca* typica ad *Eulecideas* et var. *sanguineoalra* ad *Bialoras* pertinens (conf. Nyl. Lich. Paris p. 78). Thallus dispersus. Apothecia vulgo simplicia, gonidiis destituta. Hypothecium subfuscescens aut sordide subpurpureum, basin versus ditius coloratum, jodo non reagens. Peritheciun in margine sordide subpurpureum aut rubricoso-rufescens, ceterum extus partim subpallidum, jodo non reagens. Hymenium corpuscula fuliginea continens, ceterum subdecoloratum, jodo intense caerulescens. Sporae simplices.

F. *tristior* (Nyl.) Th. Fr. l. c. p. 436. *L. sanguineoalra* \**L. tristior* Nyl. Lich. Lapp. Or. (1866) p. 143. *L. tristior* Nyl. in Stizenb. Lich. Hyperb. (1876) p. 38. *L. sanguineoalra* var. *atrofusca* \*var. *tristior*. Vain. Adj. Lich. Lapp. II (1883) p. 37.

Hypothecium parte superiore partim cyanescens. Hymenium jodo caerulescens dein deque subvinose rubens. Sporae simplices.

*Distr.* Supra muscos destructos ad Kola (N. I. Fellman). Kuus.: Prope Iijärvi (F. Silén), in reg. subalp. supra vegetabilia destructa ad rupem in monte Iivaara et ad terram arenosam montis Nuorunen (Vain. l. c.). OKaj.: Supra veg. destr. in campo arenoso prope Hossa in Kianta (Vain. l. c.).

Epithecum decoloratum aut partim pallidum fuscescensve aut partim cyanescens (in specim. orig.). Etiam perithecum in margine partim cyanescens aut fuscescens (in orig.). Hymenium vulgo corpusculis fuligineis instructum. — Sec. Th. Fr. ab hac forma non differt *L. sanguineoatra* \**L. fusca* f. *subcaerulescens* Nyl. in Norrl. Ber. Torn. Lappm. (1873) p. 334 (*L. atrofusca* \**subcaerulescens* Nyl. in Stizenb. Ind. Lich. Hyperb. 1876, p. 38), ad Väliväara in Kittilä (LKem.) collecta.

*F. caerulescens* Vain. *L. sanguineoatra* v. *atrofusca* \*var. *tristior* f. *caerulescens* Vain. Adj. Lich. Lapp. II (1883) p. 37.

Hypothecium parte superiore partim cyanescens. Hymenium jodo persistenter caerulescens. Sporae simplices.

*Distr.* OKaj.: Ad lignum vetustum prope pag. Lentiira et ad terram arenosam loco aprico prope templum in Kuhmo (Vain. l. c.).

*F. persistens* (Nyl.) Th. Fr. Lich. Scand. II (1874) p. 437. *L. persistens* Nyl. Fl. 1870 p. 34; Hue Addend. II (1888) p. 139. *L. sanguineoatra* var. *atrofusca* \*var. *persistens* Vain. Adj. Lich. Lapp. II (1883) p. 38. *L. fusca* v. *persistens* Vain. Lich. Caucas. (1899) p. 321, Lich. Exp. Vegae Pitlekai (1909) p. 120.

Hypothecium superne fuscescens aut subviolaceo-fuscescens. Hymenium jodo persistenter caerulescens. Sporae simplices. Apothecia atra.

*Distr.* Supra muscos destructos in rupibus et saxis. OKaj.: Kiananniemi in Kianta (Vain. Adj. l. c.). KKer.: In reg. subalp. montis Päänuorunen (Vain. l. c.). Inter Kilpisjärvi et Lyngen in Jugo Norvegico (Norrl. Ber. Torn. Lappm. p. 347).

*F. atrorufidula* Vain.

Apothecia disco fusco-rufescente, vulgo plano, margine atro, nitido, vulgo persistente. Sporae simplices.

*Distr.* Supra muscos destructos crescit. LIN.: Luomavaara (»*L. tristior*« sec. determ. Nyl., lecta a F. Silén). L. Enont.: Hetta (»*L. fusca*« sec. Nyl., p. p., lecta a Norrl.). LKem.: In reg. alpina montis Keimiötunturi (»*L. fusca* fere *tristior*« sec. Nyl. in n. 20736, Norrl. l. c. p. 334).

Etiam in specimine f. *subtristis* e Lounatpuoli in Suursaari vel Hoglandia (Vain.) apothecia nonnulla colore sunt sicut in hac forma.

*Obs.* »*L. atrofusca* f. *minuescens*« Nyl. in Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 167 est status intermedius inter f. *persistens* et v. *sanguineoatram*, p. p. etiam apotheciis paullo minoribus ab ambabus differens. Apothecia fusco-atra et nigricantia, emarginata et p. p. primum plana marginataque. Supra muscos inter lapillos calcareos in Ruskiala in KLad. (Norrl.).

Var. *Templetoni* (Tayl.) Th. Fr. Lich. Scand. II (1874) p. 437; Vain. Lich. Exp. Vegae Pitlekai (1909) p. 121. *Lecidea Templetoni*

Tayl. in Mackay Fl. Hibern. II (1836) p. 123 (ad Belfast in Hibernia), Leight. Lich. Great Brit. (1871) p. 312 (sec. Th. Fr.), 3 ed. (1879) p. 329. *L. sanguineoatra* var. *atrofusca* \*var. *Templetoni* Vain. Adj. Lich. Lapp. II (1883) p. 38. *Bialora fusca* Hepp Flecht. Eur. I (1853) n. 11 (sec. Th. Fr. l. c.).

Thallus tenuis. Apothecia disco atro, plano aut demum convexo, margine atro, nitido, persistente aut demum excluso. Hypothecium superne fuscescens aut subpurpureum. Hymenium jodo caerulescens deindeque vino rubens. Sporae p. p. 1-septatae.

*Distr.* Supra muscos destructos (*Andreaeas*) in reg. subalp. montis Iivaara in Kuusamo (Vain. Adj. Lich. Lapp. II p. 38) una cum f. *subtristis*, et montis Hammastunturi in LIn. (Vain.).

*Obs.* Sporae sec. Th. Fr. sunt »spurie uniseptatae» vel »pseudo-dyblastae», sed in »immersione» visae septo distincto normali instructae sunt. In specimine n. 18545 b in herb. Nyl., »*L. sabuletorum* \**montana*» a Nyl. nominato (»Salweys *L. Templetoni*» sec. annot. Nyl.), sporae plurimae distincte 1-septatae, hypothecium subrubriscoso-fuscescens, hymenium corpuscula fuliginea continens.

F. *subtristis* Vain. Lich. Exp. Vegae Pitlekai (1909) p. 121. *L. sanguineoatra* var. *atrofusca* var. \**Templetoni* f. *subtristis* Vain. Adj. Lich. Lapp. II (1883) p. 38.

Apothecia atra, disco plano aut demum convexo, margine persistente aut demum excluso. Pars superior hypothecii aut pars inferior hymenii cyanescens. Hymenium jodo subpersistenter caerulescens. Sporae p. p. 1-septatae.

*Distr.* N.: Ad terram et muscos in parte merid. insulae Suursaari v. Hoglandia (»*L. sanguineoatra* v. *subcaerulescens*» sec. determ. Nyl. in Brenner Bidr. Hogl. Lafv. p. 83, coll. a Vain.). Kb.: Prope Mujejärvi in Nurmes (Vain. l. c.). Kuus.: In reg. subalp. montis Iivaara (Vain.). LIn.: In reg. subalp. montis Hammastunturi (Vain. l. c.).

F. *subpersistens* Vain. Lich. Exp. Vegae Pitlekai (1909) p. 121.

Apothecia atra, disco plano aut demum convexo, margine persistente aut demum excluso. Hypothecium superne subfuscescens. Hymenium jodo caerulescens. Sporae p. p. 1-septatae.

*Distr.* Al.: Bastö (Edwin Nylander, »*L. vernalis* v. *montana*» sec. determ. Nyl.).

In hoc specimine thallus evanescens, hypothecium fusconigrum, epithecum rufescens, hymenium corpusculis fuligineis, KOH subcaerulescentibus, sporae »long. 0.012—0.017, crass. 0.006 mm, p. p. 1-septatae» (sec. annot. Nyl.).

180. **L. Haemensis** Vain. (n. sp.)

Thallus sat tenuis aut fere modice incrassatus, subcontinuus, rimulosus, leviter subverruculoso-inaequalis, cinereo-glaucescens, sorediis destitutus, hypothallo indistincto. Apothecia sat parva, lat. 0.5—0.3 mm, late adnata, basi leviter aut parum constricta, disco fusco-nigro aut nigricante, nudo, opaco, primum plano, demum depresso-convexo, margine tenui, integro, nigricante aut cinereo-nigricante, nudo, opaco, demum aut fere mox excluso. Hypothecium subfusco-nigrum, hyphis erectis. Epithecium et hymenium totum pallidum aut decoloratum aut epithecium passim dilute fuscescens, haud granulosum. Paraphyses arcte cohaerentes, tubulis angustissimis, in apice parum incrassatis. Sporae 8:nae, oblongae aut ellipsoideae, long. 0.009—0.014, crass. 0.005—0.006 mm (»long. 0.012—0.015, crass. 0.004—0.006 mm» sec. adn. Kullh.).

*Distr.* Ta.: In lapidibus gneissaceis ad Mustiala in Tammela (A. Kullhem).

*Lecideam fuscam* v. *sanguineoatram* in memoriam revocans, sed apotheciis minoribus obscurioribusque. A *L. conferenda* colore hymenii et peritheci differt. A *L. delincta* var. *subverrucosa* apicibus paraphysum non subfuscescenti-clavatis et thallo dissimili distinguitur. — Thallus KOH non reagens. Apothecia sat crebra. Peritheciū intus subfuscescens, KOH subviolaceo-rufescens, extus partim subdecoloratum, hyphis radiantibus, sat pachydermaticis, cavitatis angustissimis. Hypothecium superne anguste subrufescens, ceterum obscure subfuscescens, KOH parum reagens. Hymenium circ. 0.070—0.090 mm crassum, jodo intense persistenterque caeruleseens. Asci clavati, in apice membrana sat crassa. Sporae distichae, simplices. Gonidia cystococcaceae.

181. **L. delincta** Nyl.

Flora 1872 p. 356; Th. Fr. Lich. Scand. II (1874) p. 439; Hue Addend. II (1888) p. 139; Zahlbr. Cat. Lich. Un. III (1925) p. 753.

Thallus tenuis aut sat crassus, sublaevigatus aut leviter vel bene verruculoso-inaequalis, subpallido-glaucescens vel cinereo-stramineus, vulgo leviter nitidus, KOH non reagens, sorediis destitutus, hypothallo indistincto. Apothecia parva

aut sat parva, lat. 0.15—0.8 mm, (»0.5—0.8 mm» sec. Th. Fr. l.c. pag. 440), late adnata, basi leviter aut haud constricta, disco atro aut fusco-nigro, nudo, opaco, plano aut demum convexo, margine nigro, nudo, opaco, tenui aut sat tenui, persistente aut demum excluso. Hypothecium fusco-fuligineum aut intense subrubricoso-fuscescens, in parte subhymeniali hyphis suberectis, ceterum irregulariter contextum. Epitheciun intense pallidum aut fusco-fuligineum fuscumve, KOH non reagens. Paraphyses arcte cohaeraentes, leviter gelatinosae, tubulis tenuissimis. Sporae 8:næ, oblongæ, »long. 0.009—0.016, crass. 0.006—0.007 mm» (sec. Nyl.).

Var. *leptophyllina* Vain.

Thallus tenuis, continuus aut rimulosus.

Distr. Ta.: Ad Saukoniemi in Tammela (A. Kullhem, sec. Th. Fr. Lich. Scand. II p. 439); in rupe gneissacea littorali ad Isojärvi in Kuhmoinen (»*L. fuscorubens*» in Norrl. Bidr. Sydöstr. Tav. Fl. p. 186, n. 362, n. 20423 in hb. Nyl.). KOn.: Supra saxa diabasica ad Jalguba (Th. Simming, Nyl. Fl. Kar. Oneg. II p. 28, hb. Nyl. 20422). Tb.: Ad lapidem graniticum in prato prope Norola in par. Jyväskylä (Vain. Fl. Tav. Or. p. 112, n. 20419 in hb. Nyl.).

Thallus laevigatus aut verruculis inspersus, jodo non reagens. Apothecia sat crebra, lat. 0.15—0.35 (e Kuhmoinen et Jalguba) aut 0.3—0.5 mm (e Norola), disco plano, margine integro, saepe prominente. Hypothecium subfuscum, KOH non reagens. Perithecium sat dilute aut sat intense subviolaceo-fuscescens, KOH non reagens, hyphis radiantibus, sat tenuibus, modice pachydermaticis, cavitibus angustis, 0.0015—0.002 mm latis. Hymenium 0.055—0.060 mm crassum, decoloratum (epithecio colorato), »jodo caerulecescente, dein vinose rubente vel violaceo-tincto» (sec. Nyl.). Paraphyses simplices, gracilenta, crass. vix 0.001 mm, apice leviter aut parum incrassatae (in KOH visae, pallide anguste gelatinoso-clavatae in aqua visae), clava 0.002—0.003 mm crassa. Ascii clavati, in apice membrana modice incrassata, primum bene incrassata. Sporae distichæ, simplices. Conidia »bacilliformia, recta, long. 0.003, crass. 0.001 mm» (sec. adn. Nyl. in n. 20419).

Var. *subverruculosa* Nyl. Flora 1872 p. 356; Hue Addend. II (1888) p. 140 (Th. Fr. Lich. Scand. II, 1874, p. 440). *L. delineta* var. *subverrucosa* Nyl. in Vain. Fl. Tav. Or. II (1878) p. 112; Zahlbr. Cat. Lich. Un. III (1925) p. 754.

Thallus modice incrassatus aut sat crassus, areolatus aut subareolatus.

Distr. Ta.: Ad lapidem graniticum in Asikkala (J. P. Norrlin,

sec. Nyl. l. c., n. 20420 in hb. Nyl., una cum *Physcia obscura* f. *sciastria*); ad lapidem graniticum in rivulo in Judinsalo in Luhanka (Vain. Fl. Tav. Or. p. 112).

Thallus subpallido-glaucescens aut cinereo-stramineus, jodo non reagens, areolis convexis aut planis et verruculoso-inaequalibus, subcontiguis. Apothecia sat dispersa, lat. 0.3—0.8 mm, disco plano aut demum convexo. Hypothecium fuscum aut subrubricoso-fuscescens, KOH non reagens. Perithecium sat dilute aut intense subvioletaceo-fuscescens, KOH parum reagens. Hymenium 0.065—0.070 mm crassum, jodo intense persistenter caerulescens. Epithecium pallens aut subrubricoso-fuscescens (in codem apothecio), KOH non reagens. Paraphyses arcte cohaerentes, leviter gelatinosae, crass. 0.001—0.005 mm, apice leviter incrassatae. Asci clavati, in apice membrana modice aut sat bene incrassata. Sporae 8:nae, distichae, oblongae simplices, long. 0.011—0.015, crass. 0.0045—0.0065 mm» (sec. adn. Nyl. in n. 20420). Gonidia cystococcaceae. Sec. specim. orig. descr.

### 182. *L. albofuscescens* Nyl.

Flora 1867 p. 370; Th. Fr. Lich. Scand. II (1874) p. 437; Hue Addend. II (1888) p. 140. *Bialora* Kulth. Lich. Must. (1871) p. 274; Arn. Lich. Tirol XXI (1880) p. 108.

*Exs.* Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 181. — Arn. Lich. Exs. (1894) n. 1622 (herb. Nyl.). — Flag. Lich. Alg. III (1895) n. 294 (sec. Lynge).

Thallus tenuis aut sat tenuis, albus aut albidus, verruculis convexis inspersus aut verruculoso-inaequalis, esorediatus aut demum granulis sorediorum parcissimis inspersus, hypothallo indistincto. Apothecia fere mediocria et p. p. sat parva, late adnata, basi modice aut leviter constricta, disco fusco aut nigricante, haud pruinoso, bene aut leviter nitido, plano aut demum depresso-convexo, margine tenui, atro, bene nitido, leviter prominente, persistente aut rarius demum excluso. Hypothecium fusco-nigrum aut raro olivaceo-fuscescens, irregulariter contextum. Hymenium totum decoratum. Paraphyses arcte cohaerentes. Sporae 8:nae, fusiformi-oblongae aut oblongae, long. 0.009—0.015, crass. 0.003—0.005 mm.

*Distr.* Ad corticem Abietis et raro Sorbi Salicisque, raro etiam ad lignum putridum, praesertim in abiegnis turfosis in de-

sertis silvosis crescit. Ab.: Pyhämaa (F. Silén). N.: Jokiinsuo Hoglandiae (Brenner Bidr. Hogl. Lafv. p. 83), Kyrkslätt (A. Kullhem). IK.: Valkjärvi (V. Kujala). Ta.: Circa Mustiala (Kullh. Lich. Must. p. 274) et ad Särikjärvi in Tammela, Evo (Norrl. H. L. F. n. 181), Nyystölä et Kirkonkylä in Padasjoki (Vain.), Pohjola, Tia-nen, Soima, Piililä in Korpilahti (Vain. Fl. Tav. Or. p. 110). Tb.: Pihlajavesi (Norrl.). Sb.: Ad Ulvinlampi in Tiiholankylä (K. Lin-kola). Kb.: In silva Ekypti et ad Koriseva in par. Lieksa (Vain. Adj. Lich. Lapp. II p. 38). KPom. Occ.: Vuosiniemi (Vain. l. c.). OKaj.: Hiidenvaara, Lentiira et Kymlölä in par. Kuhmo (Vain. l. c.).

Thallus continuus, verruculis bene convexis aut depresso-convexus, KOH demum (vix distinete) levissime sublutescens. Apothecia sat crebra aut dispersa aut interdum partim aggregata, lat. 0.5—0.8 (—1) mm, gonidiis destituta. Hypothecium hyphis modice pachydermaticis, conglutinatis, in parte subhymeniali angusta erectis. Peritheciumparte exteriore 0.025—0.030 mm crassa decolorata, hyphis radiantibus, tenuibus, sat leptodermaticis, conglutinatis, cavitatibus tenuissimis (circ. 0.005—0.001 mm latis), in parte superficiali circ. 0.004 mm crassa gelatinosa cavitatibus parcissime conspicuis, parte interiore fusco-nigra in hypothecium sine limite distincto transeunte. Hymenium 0.045—0.050 mm crassum, haud granulosum, jodo caerulescens. Paraphyses simplices, membrana in KOH gelatinoso-in-crassata, cavitatibus angustissimis (vix 0.001 mm latis), apicem versus paululum dilatatis. Sporae distichae, apicibus obtusis. Gonidia cystococcoidea, globosa, etiam autosporis visa, interdum membrana incrassata. Conidia »filiformia, bene aut leviter arcuata, long. 0.020, crass. 0.0005 mm» (sec. annot. et icon. Nyl. in specim. n. 20726 in herb. suo).

183. \***L. Mustialensis** Vain. (n. subsp.)

Thallus sat tenuis, albus, verruculis convexis crebre inspersus, haud distinete sorediosus, hypothallo indistincto. Apothecia fere mediocria et p. p. sat parva, late adnata, basi leviter constricta, disco cinereo-pallido, haud pruinoso, opaco, primum plano, dein convexo, margine tenui, concolore, haud aut parum prominente, demum excluso. Hypothecium rubricoso-rufescens, irregulariter contextum. Hymenium totum decoloratum. Paraphyses arce cohaerentes, Sporae 8:nae, fusiformi-oblongae aut oblongae, long. 0.009—0.013, crass. 0.004—0.0045 mm.

*Distr.* Ad corticem trunci *Abielis excelsae* una cum *L. albofuscencente* ad Mustiala (A. Kullhem), parce collecta (circ. 30 apothecia).

Facie externa subsimilis *Lecanorae angulosa*e et hypothecio rufescente a *L. albofuscencente* differens, sed textura apotheciorum cete-

risque notis internis posteriori fere omnino consimilis et sine dubio ab ea evoluta. Thallus KOH non reagens. Apothecia sat dispersa, lat. 0.4—0.9 mm, gonidiis destituta. Hypothecium hyphis modice pachydermaticis, conglutinatis, in parte subhymeniali parum erectis. Peritheciumparte exteriore circ. 0.030 mm crassa decolorata, hyphis radiantibus, tenuibus, leptodermaticis, conglutinatis, cavitatibus tenuissimis, in parte superficiali tenui inconspectus, parte interiore rubricoso-rufescens. Hymenium 0.060—0.065 mm crassum, nec granulosum, nec corpusculis fuligineis instructum, jodo caerulescens. Paraphyses simplices, membrana tenuiter gelatinosa, in KOH gelatinoso-incrassata, cavitatibus angustissimis, apice vix dilatatis. Sporae distichae aut monostichae, apicibus obtusis, simplices. Gonidia cystococcoidea, globosa, etiam autosporis visa.

#### 184. *L. apochroella* Nyl.

Flora 1865 p. 6; Th. Fr. Lich. Scand. II (1874) p. 438; Hue Ad-dend. II (1888) p. 138.

Thallus evanescens, hypothallo indistincto. Apothecia minuta aut minutissima, tota adnata, convexa aut depresso-convexa, immarginata aut margine tenuissimo, vix conspicuo, disco fusco-nigricante fuscove aut livido, tenuissime pruinosa aut denudato. Hypothecium rufescenti-rubricosum, jodo non reagens. Epitheciumpubescenti-pallidum aut sub-decoloratum aut dilute rubricosum (KOH non reagens), saepe parce granulosum. Paraphyses arcte cohaerentes. Sporae subfusiformes aut partim ellipsoideae, long. 0.007—0.008, crass. 0.0025—0.003 mm.

*Distr.* Ad lignum in truncis et saepimentis locis apricis rara. N.: Kroksnäs ad Borgå (Th. Saelan). Ta.: Ad Hersala (Vain.) et Hummo (20693, 20699, Norrl. Bidr. Sydöstr. Tav. Fl. p. 187) in Hollola, ad Rauvala in Asikkala (F. Silén, 373), Evo (Norrl., 20698), Soima in Korpilahti (Vain. Fl. Tav. Or. p. 112). Specimina ex aliis locis indicata (Th. Fr. l. c.) non vidi.

Specim. orig., ad Borgå collectum, hic describimus. Apothecia lat. 0.25—0.35 mm, sat crebra, simplicia, tenuissime livido-pruinosa, opaca, immarginata, gonidiis destituta. Hypothecium KOH non reagens, hyphis tenuibus, sat leptodermaticis, conglutinatis, sat erectis (cavitatibus angustissimis), in parte infima irregulariter contextis. Peritheciumpubescenti-pallidum, jodo non reagens, circ. 0.030 mm crassum, hyphis radiantibus et leviter ramoso-connexis (in KOH visis),

tenuibus, conglutinatis, membranis sat tenuibus, in KOH leviter turgescens, cavitatibus angustissimis, oblongis. Hymenium 0.040 mm crassum, jodo intense caerulescens. Epithecum lutescenti-pallidum aut subdecoloratum, parce granulosum. Paraphyses simplices, apice parum incrassatae, cavitatibus angustissimis, membranis gelatinosis, sat tenuibus, in KOH leviter turgescens, Sporae 8:nae, distichae, simplices, sec. Nyl. long. 0.006—0.008, crass. 0.003—0.004 mm. Gonidia cystococcoidea, globosa.

*F. denudatula* Vain.

Apothecia lat. 0.3—0.4 mm, disco fusco-nigricante denudatoque et p. p. tenuissime sublivido-pruinoso.

*Distr.* In saepimento ad Hersala in Hollola (Vain., 20696 in herb. Nyl.), ad lignum putridum in Rauvola in Asikkala (F. Si-lén, 373).

Apothecia p. p. primum margine tenuissimo, nigricante instructa. Hypothecium fuscescens aut intense rufescens-rubricosum, partim subtilis anguste dilute coloratum. Perithecium 0.035—0.040 mm crassum, pallidum aut dilute subrubricoso-pallescens. Epithecum tenuiter rubricoso-rufescens aut dilute coloratum aut partim obscuratum, leviter granulosum aut partim haud granulosum. Sporae fusiformes et p. p. ellipsoideae vel ovoideae, long. 0.007—0.008, crass. 0.0025—0.004 mm.

*F. nudella* Vain.

Apothecia lat. 0.0015—0.003 mm, disco fusco-nigricante denudatoque.

*Distr.* Ad lignum trunci pinei resinosi prope Soima in Korpilahti (Vain.), supra indicatea.

Colore apotheciorum, p. p. leviter in livido-fuscescentem vergente, habitu a *L. misella* Nyl. differt. Hypothecium intense rubricoso-rufescens. Epithecum leviter rubricosum, haud granulosum.

*Obs. 1.* De »*L. apochroella*« in Norrl. Fl. Kar. Oneg. II p. 28 videas sub *L. hypopla*.

*Obs. 2.* »*L. vernalis* \**L. minula* Nyl.« in Norrl. I. c. p. 186 (»*L. viridella*« nominata in n. 4366 in herb. Nyl.) ad *L. apochroellam* pertinet (conf. etiam Th. Fr. I. c. p. 438).

185. *L. poliodes* Nyl.

Flora 1875 p. 10; Hue Addend. II (1888) p. 138; A. L. Smith Mon. Brit. Lich. II (1911) p. 44. *L. apochroella* f. *poliodes* Blomb. et Forsell En. Pl. Scand. (1880) p. 85.

*Exs.* Larbal. Lich. Herb. VI (1880) n. 227.

Thallus tenuis, sublaevigatus aut leviter verruculosoinaequalis, demum rimosus, cinereo-glaucescens, sorediis

destitutus, hypothallo indistincto. Apothecia minuta, tota adnata, basi haud constricta, convexa, immarginata, rufescens. Hypothecium fusco-rufescens, parte summa angusta fulvo- vel pallido-rufescente, majore parte inferiore irreguliter contextum. Hymenium haud granulosum, totum decoloratum aut tenuiter pallidum vel subrufescens-pallidum. Paraphyses arcte cohaerentes. Sporae ellipsoideae, long. 0.007—0.008, crass. 0.0025—0.0035 mm.

*Distr.* Ta.: In saxo micaceo-schistoso in Evo, socia *Lecideae sylvicolae* (J. P. Norrlin).

Thallus opacus. Apothecia lat. 0.3—0.45 mm, sat crebra, simplicia, hemisphaerica, parum nitida, haud pruinosa, gonidiis destituta. Hypothecium comparate sat crassum, KOH rubricosum, jodo non reagens, hyphis conglutinatis, tenuibus, sat leptodermaticis, cavitibus tenuissimis, oblongis, in parte superiore sat angusta erectis. Peritheciun parum evolutum, subdecoratum, hyphis radiantibus. Hymenium circ. 0.060—0.065 mm crassum, jodo intense caerulescens, dein vino rubens. Epithecium KOH non reagens. Paraphyses cavitibus tenuissimis, membrana in KOH gelatinoso-turgescente, simplices furcatae et parce praesertimque basi ramoso-connexae. Sporae 8:næ, distichæ, simplices. Gonidia cystococcoidea, globosa, tantum simplicia visa. Conidangia »pallida». Conidia »recta, long. 0.005—0.006, crass. 0.001 mm» (sec. Nyl.).

#### 186. *L. botryoides* Nyl.

*Lecidea apochroeella* \**L. botryoides* Nyl. in Hue Addend. II (1888) p. 138. *L. botryoides* Zahlbr. Cat. Lich. Un. III (1925) p. 740. *L. apochroeella* var. *botryoides* Nyl. Fl. 1867 p. 373 (Zahlbr. l. c. p. 712). *L. botryoides* Norrl. Fl. Kar. Oneg. II (1876) p. 36. *L. tuberculata* »f. apotheciis nigricantibus» Th. Fr. Lich. Scand. II (1874) p. 563.

Thallus verruculosus et areolatus, areolis vulgo demum squamulaeformibus adscendentibusque, dispersis, demum laxe affixis, glaucescenti-pallidis, KOH non reagens, hypothallo indistincto. Apothecia adnata, lat. circ. 0.2—0.5 mm, basi constricta, simplicia aut vulgo demum tuberculato-confluentia, glomerulis »circ. 1 mm latis» (Nyl.), convexa, livida aut livido-fuscescentia, subpruinosa, opaca, immarginata. Hypothecium fuscum, KOH subpurpureum, hyphis

erectis. Epithecium et totum hymenium decoloratum pallidumve. Paraphyses arcte cohaerentes, gelatinosae. Sporae oblongae ellipsoideaeve, »long. 0.005—0.010, crass. 0.0025—0.003 mm» (sec. Nyl.) —0.002 mm.

*Distr.* Ta.: Ad lapidem graniticum in Padasjoki (Vain. a. 1872, determ. Nyl.), ad lapidem gneissaceum in fissura umbrosa suhhumida rupis Lapinkallio in Evo (J. P. Norrlin a. 1866, n. 404, n. 20685 in herb. Nyl.). »Ad lignum putridum» errore indicatur in Fl. 1867 p. 373 (quod etiam in Norrl. Bidr. Sydöstr. Tav. Fl. p. 187 repetitur). Mensurae sporarum et conidiorum in sched. n. 404 a Nyl. adnotatae indicant specimina saxicolae originalia esse. Specimina lignicolae non existunt.

A *L. sylvicola* (var. *sublivida*) apotheciis subpruinosis et pallidioribus et hymenio numquam aeruginoso differt. Thallus areolis sat laevigatis aut leviter inaequalibus, sat opacis, granulis sorediorum passim parcissime inspersus. Apothecia dispersa aut sat crebra. Hymenium 0.050—0.040 mm crassum, »jodo caerulescens, dein vino rubens» (sec. Nyl.). Paraphyses tubulis 0.0005 mm latis, apicibus non obscurato-clavatis. Asci clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae, decoloratae, simplices. Conidangia »papillosa vel spinuliformia, incoloria (alt. 0.2—0.4 mm, crass. 0.08 mm vel tenuiora), etiam furcato-divisa et quasi prolifera». Conidia »cylindrica (vel utroque apice obsolete incrassatula), long. 0.0095—0.008, crass. 0.001 mm» (sec. Nyl.).

### 187. *L. laxula* Nyl.

Flora 1875 p. 11; Vain. Fl. Tav. Or. (1878) p. 113; Hue Addend. II (1888) p. 137; Zahlbr. Cat. Lich. Un. III (1925) p. 788.

Thallus areolatus, areolis demum laxe affixis, difformibus, crebre verruculosis, glaucescenti-pallidis (n. 303) aut impure albidis (n. 301), KOH non reagens, hypothallo indistincto. Apothecia adnata, lat. 0.35—0.55 mm, basi constricta, simplicia aut vulgo demum tuberculato-confluentia, convexa, impure fusco-nigricantia, non pruinosa, opaca, immarginata. Hypothecium rubricoso-rufescens, KOH subpurpureum, hyphis erectis. Epithecium et totum hymenium decoloratum pallidumve. Paraphyses arcte cohaerentes, gelatinosae. Sporae ellipsoideae oblongaeve, »long. 0.007—0.010, crass. 0.0025—0.0035 mm» (sec. Nyl.).

*Distr.* Ta.: In saxis gneissaceis ad Hietala in Luhanka (Vain., n. 301 et 303).

»Vix specie differt a *L. botryoide*» sec. adn. Nylandri in bibl. sua. Ab ea apothecis obscurioribus, nudis, hypothecio rubricoso-rufescente et areolis thalli demum bene verruculosis differt. Thallus granulis sorediorum sat parcis inspersus, demum sat crassus, areolis subcontiguis aut dispersis. Hymenium circ. 0.035—0.045 mm crassum, jodo caerulescens, dein vino rubens. Paraphyses tubulis 0.0005 mm crassis, apicibus non obscurato-clavatis. Conidia »oblongo-cylindrica» sec. Nyl. Gonidia cystococcaceae.

#### 188. *L. subflexuosa* Vain.

*L. subflexuosa* Nyl. Flora 1877 p. 459 p. p. (specim. n. 279 in Mus. Fenn., non n. 21084 in hb. Nyl. ad *L. morbiferam* Vain. pertinens); Hue Addend. (1888) p. 139, n. 889 p. p.; Zahlbr. Cat. Lich. Un. III (1925) p. 832 p. p.

Thallus tenuis aut sat tenuis, verruculosus, verruculis convexis, albidis, dispersis aut contiguis vel subconfluentibus, KOH rubescens, sorediis destitutus, hypothallo indistincto. Apothecia crebra, adnata, lat. 1—0.3 mm, basi non aut demum leviter constricta, disco nigro aut humido fusco-nigro, nudo, subnitido, margine tenui, nigro, nudo, nitido. Hypothecium subhymeniale anguste aeruginosum vel aeruginosonigricans, ceterum hypothecium superne intense rubricoso-rufescens et inferne dilute rubricoso-rufescens. Peritheciun obscure rubricoso-rufescens. Hymenium corpusculis nigricantibus destitutum. Epitheciun intense rubricoso-rufescens et partim dilutescens. Paraphyses arcte cohaerentes, gelatinosae, apice parum incrassatae. Sporae 8:næ, distichæ, oblongæ aut ellipsoideæ.

*Distr.* LIN.: Supra muscos deuctos (*Andreaeam petrophilam*) verisimiliter in rupe ad Muddusjärvi in Inari (F. Silén, a. 1869, n. 279 in Mus. Fenn., a Nyl. nominata »*L. subflexuosa*», quacum ab eo commixta).

Thallus et reactio thalli *L. subflexuosa* nostræ a Nyl. descripta sunt in Flora l. c., apothecia autem ibi descripta ad *L. morbiferam* Vain. pertinent. *L. subflexuosa* Vain. quidem (ut indicat etiam Nyl.) affinis est *Bialoris* (praesertim *B. atrofuscae* Flot.), sed *L. morbifera* ab iis longe distat, ad *Eulecideas* pertinens. — Apothecia disco plano

aut demum convexo, margine non aut leviter prominente persistente. Peritheciun inferne dilutius rubricoso-rufescens, hyphis radiantis, sat tenuibus, membranis modice incrassatis, conglutinatis, cavitatibus oblongis, angustis, KOH non reagens. Hypothecium subhymeniale KOH parum reagens, hyphis suberectis, hypothecium ceterum hyphis irregulariter contextis, KOH non reagens. Hymenium praesertim ascii jodo v nose fulvescens, praecedente caerulecente. Epitheciun KOH non reagens. Sporae rectae aut parce leviter curvatae, apicibus vulgo rotundatis, lateribus vulgo cylindricis. Gonidia cystococcaceae. Thallus KOH praecipitatum formans rubrum, ex crystallis minutissimis acicularibus constans.

189. **L. Diapensiae** Th. Fr.

Lich. Arct. (1860) p. 209, Lich. Scand. II (1874) p. 439; Nyl. Lich. Lapp. Or. (1866) p. 144; Vain. Lich. Exp. Vegaæ Pitlekai (1909) p. 122. *Biatora* Tuck. Syn. North Am. Lich. II (1888) p. 22.

*Exs.* Fellm. Lich. Arct. (1864) n. 149. — Rabenh. Lich. Eur. Exs. XXVI (1864) n. 702. — Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 303. — Malme Lich. Suec. Exs. VIII (1910) n. 186. — Zahlbr. Krypt. Exs. Vindob. XXI (1913) n. 2057.

Thallus evanescens aut tenuissimus, albidus, folia vetusta *Diapensiae* obducens, esorediatus, hypothallo indistincto. Apothecia vulgo fere mediocria, late adnata, demum basi leviter constricta, disco fusco-nigro fuscove, haud pruinoso, leviter nitido opacove, plano aut vulgo demum convexo, margine tenui, atro, nitido, vulgo demum excluso. Hypothecium fuscescens violascensve aut parte superiore cyanescens aut parte inferiore pallidum, irregulariter contextum. Hymenium haud granulosum, parte superiore rufescens, parte inferiore angusta violascens cyanescensve. Paraphyses arcte cohaerentes. Sporae 8:nae, oblongae aut rarius ellipsoideae, long. 0.010—0.014, crass. 0.003—0.0045 mm, sec. annot. Nyl. »long. —0.018 mm», sec. Th. Fr. »crass. —0.005 mm.»

*Distr.* Supra vetustam *Diapensiam Lapponicam* crescit. LEN.: In reg. betul. (subalpina) superiore ad Naimakka et in reg. alpina ad Kilpisjärvi, praesertim in monte Leutsuvaara abundanter (Norrl. Ber. Torn. Lappm. p. 334), inter Kilpisjärvi et Lyngenfjord in Jugo Norvegico (Norrl. l. c. p. 347). LIN.: In reg. subalp. montium prope

Köngäs (Vain. Adj. Lich. Lapp. II p. 39), in Luosmavaara et alibi in Lapponia (F. Silén). LMur.: Kljatnij et Varsina (Fellm. sec. Nyl. Lich. Lapp. Or. p. 144). LPon.: Ad promont. Orlov (A. O. Kihlman), Ponoj (Fellm. I. c., Nyl. I.c.).

Sec. Th. Fr. est »planta vere parasitica nec epiphyta, supra pulvinulos *D. Laponicae*, quibus, peripheriam versus cariose progredivis, pestem demumque mortem affert». Cum hac planta autem saepe etiam crescit fungillus, ad *Pyrenomyces* pertinens, hyphis thallinis fuscescens in partes interiores foliorum penetrans, qui potius, quam *L. Diapensiae*, nutrici sit mortifer. — Thallus hujus *Lecideae* saepe partim verruculoso-inaequalis, hyphis decoloribus, 0.003—0.002 mm crassis, passim, glomerulos gonidiorum continens (gonidia infra apothecia saepe emortua sunt). Apothecia saepe crebra, interdum confluentia, lat. 0.5—1.5 mm, gonidiis destituta, margine saepe primum leviter prominente, KOH non reagentia. Hypothecium hyphis conglutinatis, in parte superiore sat leptodermaticis, ceterum sat pachydermaticis, cavitatibus oblongis, 0.001—0.0015 mm latis, in eodem apothecio colore variabile, jodo non reagens. Peritheciun partim extus strato 0.006—0.010 mm crasso decolorato, ceterum subpurpureum fuscescensve, in parte inferiore plus minus late subpallidum decoloratumve, hyphis radiantibus, modice pachydermaticis, conglutinatis, cavitatibus oblongis aut p. p. ellipsoideis, KOH non reagens. Hymenium circ. 0.080—0.060 mm crassum, jodo persisterenter caerulescens (»dein vinose rubens» sec. annot. Nyl. in bibl. sua). Epitheciun strato gelatinoso, decolorato, tenui, continuo obductum. Paraphyses tenues, apice parum aut leviter incrassatae, simplices aut partim furcatae vel dichotome ramosae, interdum etiam parce ramoso-connexae, sat crebre septatae, membrana tenuiter gelatinosa, in KOH parum turgescente. Sporae distichae.

#### Appendix: *Biatorella geophana* (Nyl). Vain.

*Lecidea* Nyl. Lich. Scand. (1861) p. 212; Th. Fr. Lich. Scand. II (1874) p. 441. *Bialora* Th. Fr. Vet. Ak. Förh. 1864 p. 271; Arn. Lich. Fränk. Jur. (Fl. 1885) p. 155. *Lecidea boreella* Nyl. Fl. 1863 p. 306, Lich. Lapp. Or. (1866) p. 157 (sec. annot. Nyl. in bibl. sua). *Biatorella deplanata* Almqv. Bot. Not. 1866 p. 69; Th. Fr. Lich. Scand. II (1874) p. 400 (sec. annot. Nyl. in bibl. sua). *Lecidea trichoggyna* Norm. Bot. Not. 1872 p. 33 (sec. Th. Fr.).

*Exs.* Zahlbr. Krypt. Exs. Vindob. IV (1899) n. 365. — Arn. Lich. Exs. (1900) n. 1809.

Thallus tenuis aut tenuissimus, interdum, leviter verruculosus, cinereo-glaucescens albidusve, aut evanescens, hypo-

thallo indistincto. Apothecia minutissima, convexa, immarginata, nigra aut fusco-nigricantia, nuda, laevigata, sat opaca, adnata, interdum demum basi leviter constricta. Epithecum fuscescens aut rarius lutescenti- aut fulvescenti-rubricosum. Hypothecium fuscum aut raro fulvescenti- aut rubricoso-fuscescens, sat irregulariter contextum. Paraphyses arcte cohaerentes. Sporae 16:nae, globosae, diam. 0.005—0.006 mm (»—0.008 mm) sec. Nyl. in 19469).

*Distr.* Ad terram arenosam et argillaceam et calcaream et ad lignum putridum locis umbrosis. N.: Ad Helsingforsiam (S. O. Lindberg sec. Th. Fr.). St.: Raumö (P. A. Karsten). Ta.: »Pluribus locis et abundanter ad Laitiala» (Norrl. Bidr. Sydöstr. Tav. p. 190), Hersala et Vaania (»lignatilis» sec. determ. Nyl.) in Hollola et Jokioinen in Padasjoki (Vain.), passim ad Mustiala (Kullh. Lich. Rar. Must. p. 275). Tb.: Ad Tourujoki prope Jyväskylä (Vain. Fl. Tav. Or. p. 115). KOI.: Gorki (Elfv. Ant. Veg. Svir p. 169). KOn.: Pogost in Suojärvi, Mundjärvi (Norrl. Fl. Kar. Oneg. II p. 32). OKaj.: Kylmälä in Kuhmo (Vain. Adj. Lich. Lapp. II p. 40). Ob.: Alkula (J. P. Norrlin). I.Kem.: Sattanen in Sodankylä (Vain. I. c.). LENont.: Vuontisjärvi (Norrl. Ber. Torn. Lappm. p. 337). LTul.: Kola (P. A. Karsten, »*L. boreella*» Nyl. Lich. Lapp. Or. p. 157).

Thallus dispersus, leviter inaequalis aut verruculosus. Apothecia crebra aut dispersa, lat. 0.15—0.3 mm, vulgo simplicia, raro 2 confluentia, KOH non reagentia. Hypothecium hyphis sat tenuibus, sat leptodermaticis, conglutinatis. Peritheciun ceterum parum evolutum, hypothecio concolor. Hymenium 0.060 mm crassum, jodo caerulescens aut demum vino rubens. Paraphyses simplices, membrana gelatinosa, cavitate tenuissima. Ascii clavati, in apice membrana leviter incrassata. Sporae distichae aut polystichae, sec. Nyl. etiam »12:nae», nonnullae subglobosae et long. 0.007, crass. 0.005 mm. Gonidia pleurococcoidea, globosa aut subglobosa, diam. 0.004—0.0065 mm, etiam 2-cellulosa et glomerulosa visa.

*Obs. 1.* *F. boreella* (Nyl.) Vain. (*Lecidea boreella* Nyl. I. c.) sec. Nyl. hymenio »jodo vino rubente (praecedente passim caeruleo-scentia obsoleta)» distinguitur. Supra terram sabuloso-humosam ad Kola (P. A. Karsten).

*Obs. 2.*<sup>1)</sup> Th. M. Fries referred *Lecidea geophana* Nyl. to his »Stirps *L. fuscae*» (Lich. Scand. II (1874) p. 441). The editor found no mention of this species in Vainio's manuscript on *Lecidea*. But in some other posthumous papers by Vainio he detected a sheet with a description

<sup>1)</sup> By B. Lyngé.

of this species which Vainio referred to the genus *Biatorellia*, as *B. geophana* (Nyl.) Vain.

Otherwise he only found a few scattered notes on this genus. He therefore felt justified in publishing this description.

#### Sect. *Lecidea crassipes*.

Thallus pallidus, hypothecium jam primitus obscurum, sporae (vulgo) oblongae. Hyphae medullares non amyloideae. Species muscicolae vel terricolae.

*Obs.* The editor is of opinion that »*Lecidea neglecta* Nyl.» is not a *Lecidea*, but a *Crocynia*; see Appendix, after *Lecidea*.

#### 190. *L. crassipes* (Th. Fr.) Nyl.

Flora 1862 p. 464, Lich. Lapp. Or. (1866) p. 164, Addit. Lich. Jap. (1900) p. 32; Th. Fr. Lich. Scand. II (1874) p. 520; Arn. Lich. Tirol XVII (1877) p. 559, XXIII (1887) p. 142; Th. Fr. Lich. Scand. II (1874) p. 520; Tuck. Syn. North Am. Lich. II (1888) p. 86; Zahlbr. Cat. Lich. Un. III (1925) p. 548. *Helocarpon crassipes* Th. Fr. Lich. Arct. (1860) p. 178. *Lecidea hypopodia* f. *subassimilata* Nyl. En. Lich. Fret. Behr. (1888) p. 47 (sec. spec. orig.).

*Exs.* Fellm. Lich. Arct. (1864) n. 164 min. part. (ceterum *L. assimilata* f. *infuscata*). — Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 194 a, b. — Arn. Lich. Exs. (1885) n. 1121 (hb. Nyl.). — Malme Lich. Suec. Exs. XV (1913) n. 362 (Mus. Fenn.).

Thallus tenuis verruculis circ. 0.1—0.2 (—0.3) mm latis, albidis aut albido-glaucoscentibus, supra hypothallum impure albidum pallidumve dispersis, sorediis destitutus. Apothecia saepe crebra, adnata et p. p. demum substipitata aut breviter stipitata, basi bene constricta, disco primum plano, demum convexo, nigro, nudo, opaco, margine tenui, integro, vulgo nigricante, demum aut vulgo mox excluso. Hypothecium subpurpureo-fuligineum, KOH non reagens. Epithecum fuligineum vel nigricans, KOH non reagens. Paraphyses arete cohaerentes, leviter gelatinosae. Sporae oblongae aut subfusiformes »aut rarius ellipsoideis immixtae, long. 0.012—0.018 (—0.008), crass. 0.003—0.005 mm» (sec. Th. Fr.).

*Dislr.* Supra muscos in lateribus rupium praesertim locis subhumidis crescit. Ta.: Ad Piililä in Korpilahti (Vain. Fl. Tav. Or.

p. 118, H. L. F. n. 194 b). KLad.: Supra muscos loco saxoso in Lahentausta copiose et alibi (Norrl., H. L. F. n. 194 a) in Kirjavalahti, Variskallio (Norrl. Symb. Fl. Lad. Kar. p. 31). Tb.: Ad litus lacus Pihlajavesi (Vain., Norrl. Not. S. F. Fl. Fenn. XIII p. 435). Kb.: Kalliovaara in Lieksa, Riihivaara, Mujejärvi, Louhivaara in Nurmes (Vain. Adj. Lich. Lapp. II p. 84). OKaj.: Kylmäjärvi in Kianta (Vain. I. c.). Kuus.: In reg. abiet. montis Näränkävaara, in reg. subalp. montium Iivaara, Ukonyaara, Nuorunen et Mäntytunturi (Vain. I. c.). LKem.: In reg. subalp. montis Pyhäntunturi in Sodankylä (Vain. I. c.), in reg. abiet. montis Väliavaara in Kittilä et ad terram campi sieci prope templum in Muonioniska (Norrl. Ber. Torn. Lappm. p. 341). LEnont.: Pluribus locis in reg. alp. praesertim ad Kilpisjärvi (Norrl. I. c.), Leutsuvaara, ad terram turfoso-arenosam prope Palojoki (»*L. ramulosa* macrior» sec. Nyl. in Norrl. I. c., Mus. Fenn.). LIn.: Ad Mudduschjärvi et Ailigadsch (F. Silén). LTul.: Ad Sinum Kolaensem (N. I. Fellman, »*L. assimilata*« sec. det. Nyl. sec. Th. Fr. I. c. p. 521). LMur.: Varsina, Kljatnij (N. I. Fellman, Nyl. Lich. Lapp. Or. p. 164, Th. Fr. I. c. p. 520). LPon. Ad Ponoi (»*L. assimilata* f. *alpestris*« sec. Nyl. in Fellm. Lich. Arct. n. 164 (qui ad *L. crassipedem* p. min. part. et ad *L. assimilata* f. *infuscata* p. maj. part. pertinet).

Hyphae thalli crass. 0.002 mm; in hypothallo hyphae crass. 0.004 mm, albae. Apothecia simplicia lat. 0.7—0.3 mm, saepe etiam tuberculato-divisa, 1.5 mm lata, hypothecio crasso aut saepe in stipitem continuato circ. 0.280 mm longum et 0.230 mm crassum (aut variabili), intus fuligineum, extus strato cartilagineo, circ. 0.010—0.030 mm crasso, decolorato (peritheciali) obductum. Hypothecium KOH (post tempus longius) purpureo-subviolaceum, hyphis erectis, conglutinatis. Perithecium pallidum hyphis radiantibus, leviter pa-chydermaticis, cavitatibus angustissimis, in margine obscuratum. Hymenium circ. 0.050 mm crassum, jodo caerulescens deindeque vinose rubens (Nyl. Lich. Lapp. Or. p. 164) aut tantum vinose rubens (Add. Lich. Jap. p. 32). Epithecum fuligineum aut nigricans. Paraphyses arcte cohaerentes, leviter gelatinosae, simplices, tubulis 0.001 mm crassis (apice 0.0015 mm). Ascii anguste clavati, in apice membrana modice incrassata. Sporae 8:nae, distichae, simplices, apicibus vulgo obtusis. Conidangia »minutissima, punctiformia, extus nigra, intus decolorata; sterigmata simplicia, breviuscula; conidia oblongo-cylindrica, long. fere 0.0045, crass. fere 0.0015 mm» (Nyl. Lich. Lapp. Or. p. 164). Gonidia parva, globosa, diam. 0.004—0.006 mm, membrana distincta, tantum simplicia a me visa (»syn. gonidimiosa» h. e. pleurococcaceae, sec. Nyl. Add. Lich. Jap. p. 32).

*Obs.* 1. *F. moriformis* Th. Fr. I. c. (Vain. I. c.), apotheciis p. p. tuberculato-divisis instructa, ad Kalliovaara in Lieksa et in Iivaara

in Kuusamo indicata (Vain. l. c.), valde est inconstans, nam fere in omnibus speciminibus hujus speciei saltem nonnulla apothecia tuberculato-divisa sunt.

*Obs. 2.* *L. crassipes* f. *minor* Nyl. in Norrl. Ber. Torn. Lapp. (1873) p. 341, ad Hetta in Muonioniska collecta, ad *L. botryosam* (Fr.) Nyl. pertinet (conf. etiam Th. Fr. l. c. p. 455). »*L. crassipes* forma apothecis minoribus» (Norrl. Symb. Fl. I.ad.-Kar. p. 31) est *L. crassipes* sat normalis.

*Obs. 3.* »*L. crassipes* f. *pulverula*» Th. Fr. Lich. Scand. II (1874) p. 520, »crusta e granulis pulvareis cinerascentibus congestis contexta, apotheciis breviter stipitatis subsessilibusve (immixtis nonnullis distincte stipitatis)». »Ad Kongsvold et Högsnyta alpium Dovrensum Norvegiae, ad templum in Muonioniska (»*L. crassipes*» in Norrl. l. c.) et ad Palojoki in Enontekiäinen» (Norrl. n. 765, »*L. ramulosa* macrior» erronee a Norrl. adn.) sec. Th. Fr. collecta. Specimina supra museos in latere rupis in reg. abiet. montis Näränkävaara in Kuusamo a me parce collecta, hue ducta sunt (Adj. Lich. Lapp. II p. 84). Thallus non distincte sorediosus, sed e verruculis parvis et minutissimis confertis vel contiguis constans, hypothallo indistincto.

### 191. *L. verrucula* (Norm.) Th. Fr.<sup>1)</sup>

Lich. Scand. II (1874) p. 523; Vain. Adj. Lich. Flor. Lapp. II (1883) p. 86; Elenkin Lich. Flor. Ross. Mediae fasc. 3—4 (1911) p. 408. *Biatora turfosa* Mass. \**verrucula* Norm. Spec. Loc. Natal. (1868) p. 353. *Micarea verrucula* (Norm.) Hedl. Krit. Bemerk. (1892) p. 84 et 95. *Lecidea turfosa* Jatta, vide Zahlbr. Cat. Lich. III (1925) p. 712.

*Exs.* Koerber Lich. sel. Germ. I (1856) No. 12 (sec. Th. Fries l. c.). — Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) No. 321. (vide etiam Lynge Index Specierum II, p. 40).

Thallus tenuissimus, late effusus, verniceo-obducens, laevigatus, cinereus vel nigricans vel obsoletus, humectatus obscurior et gelatinosus.

Apothecia minuta, diam. 0.2—0.4 mm, numerosa vel numerosissima, crebra, sessilia vel elevato-adnata, ab initio convexa, immarginata, deinde interdum e lenticulari turbinata, rugulosa, difformia, saepe confluentia. Excipulum vix ullum. Hypothecium fuscescens. Paraphyses

<sup>1)</sup> By B. Lynge.

gelatinoso-concretae, indistinctae, apicem versus subfuligineae, fuscescentes vel virescenti-fuligineae, praeterea totae hyalinae, KOH si addito omnes totae incoloratae, valde ramosae et anastomosantes, 1.5—2  $\mu$  crassae. Asci clavati vel inflato-clavati. Sporae (saepe non evolutae) oblongae vel fusiformi-vel elongato-oblongae, utrinque obtusiusculae, tenuiter limbatae, p. p. simplices, p. p. tenuiter 1—3 septatae (septis sporarum vacuarum conspicuis), 12—20  $\times$  3—5  $\mu$  (sec. Norman: 10—18  $\times$  3—5, sec. Th. M. Fries: 12—18  $\times$  3—5  $\mu$ ).

Pycnoconidia rectiuscula, subcylindrica, 3—4  $\mu$  longa.

Jodo asci fere soli caerulescunt, deinde sordide subvioletaceo-decolorantur. HNO<sub>3</sub> paraphysum partes coloratae subroseae evadunt.

*Distr.* Supra *Sphagna* muscosque destructos putrescentes, saepe maculas late expansas formans. Kb.: Prope Mujejärvi paroeciae Nurmes (Vain.). Sb.: Pieksämäki (Norrl.). Nyl.: Helsingfors prope rivum Tali (Nyl.).

*Obs.* Norman referred it to *Lecidea (Bialora) turfosa* Mass. as a subspecies. Some authors, e. g. Vainio (1883) and Zahlbruckner (1925) simply united it with *Lecidea turfosa*. The editor found the question doubtful, to judge from a remark by Th. Fries in Lich. Scand. l. c. If they are specifically identical, *turfosa* Mass. is the older species name, dating from Massalongo Ricerche Lich., 1852, p. 128.

The editor found no description in Vainio's manuscript. The above description has been compiled by the editor after Norman, Th. M. Fries and Hedlund, supported by the study of herbarium plants.

## 192. **L. ramulosa** Th. Fr.

N. Bot. Not. 1866 p. 14, Lich. Scand. II (1874) p. 521 (excl. v. *depressa*); Norm. Spec. Loc. Nat. (1868) p. 356 (herb. Nyl.); Nyl. En. Lich. Fret. Behr. (1888) p. 45; Vain. Lich. Exp. Vegae Pitlekai (1909) p. 129; Zahlbr. Cat. Lich. Un. III (1925) p. 682 (excl. v. *depressa* et *L. ementiente*); Lynge Lich. Bear Isl. (1926) p. 28, Lich. Nov. Zeml. (1928) p. 85 (excl. syn.), *L. ementiens* \**L. ramulosa* Nyl. in Hue Lich. Exot. (1892) p. 190 (Nyl. En. Lich. Fret. Behr. p. 45).

Thallus sat crassus, e verrucis elevatis aut toruloso-ramulosus, isidioideis constans, albidus, hypothallo indistincto

albove. Apothecia dispersa aut partim conferta, lat. circ. 1—0.4 mm, basi bene constricta, nigra, nuda, opaca, sat tenuia, disco primum diu plano, demum convexo, margine tenui aut sat tenui, integro aut demum excluso. Hypothecium superne subfuscens vel sordide subrubricosum, inferne decoloratum et irregulariter contextum. Epithecium fuligineum. Paraphyses arcte cohaerentes, leviter gelatinosae. Sporae »oblongae elongatae», long. 0.009—0.016, crass. 0.003—0.004 mm» sec. Th. Fr., »long. 0.010—0.018» sec. adn. Nyl. (in n. 20906 in hb. suo), »long. 0.010—0.013 (—0.014), crass. 0.003—0.0035 (0.004—0.006) mm» sec. Lynge Lich. Bear Isl. p. 30.

*Distr.* LEnont.: Ad terram argillaceam et plantas destructas in reg. subsylv. ad Palojoki (Norrl. Ber. Torn. Lappm. p. 341, n. 20906 in hb. Nyl., neque n. 765 in Mus. Fenn. a »*L. crassipedem* f. *pulverulam*» sec. Th. Fr. pertinens). Kuus.: Ad muscos in latere rupis in reg. subalp. montis Mäntyunturi (Vain. Adj. Lich. Lapp. II p. 85). — Ad var. *evolutam* Th. Fr., thallo sat crasso, verrucis isidiodeis instructam, haec specimina pertinent.

Thallus solutionibus reagentibus solitis non admodum mutatur (Th. Fr.). Hypothecium superne sat dilute aut partim intense (in codem apothecio) anguste subfuscens vel sordide subrubricosum, subtus decoloratum, superne anguste hyphis subrectis, ceterum irregulariter contextis. Peritheciun extus subaeruginoso-fuligineum aut »subolivaceo-obscuratum» (sec. Th. Fr.), intus decoloratum, hyphis radiantibus, leviter pachydermaticis, cavitatibus angustissimis. Hymenium indistincte limitatum, circ. 0.050—0.060 mm crassum, basin versus subfuscens aut sordide subrubricosum, KOH paullo distinctius rubricosum, »jodo caerulescens, dein sordide decoloratum» (sec. Th. Fr.). Epithecium KOH non reagens. Paraphyses tubulis 0.001—0.0005 mm latis, apice non incrassatae. Ascii clavati, in apice membrana modice incrassata. Conidia, »cylindrica, recta, long. 0.005, crass. 0.001 mm» (sec. adn. Nyl. in n. 20907). Gonidia cystococcacea, globosa, diam. circ. 0.010—0.014 mm. »Syngonidimia nulla» sec. adn. Nyl. in bibl. sua.

Obs. *Lecidea ementiens* Nyl. Fl. 1884 p. 223, En. Lich. Fret. Behr. (1888) p. 22, 45, Nyl. in Hue Lich. Exot. (1892) p. 190 n. 1964 (Vain. Lich. Exp. Vegae Pitlekai, 1909, p. 129), sec. specim. orig. n. 20913 in hb. Nyl. hymenio toto punctis fuligineis insperso, epithecio decolorato, hypothecio albido et »thallo tenui, continuo, passim inaequali, sporis long. 0.009—0.014, crass. 0.0025—0.0035 mm, conidiis

rectis, long. 0.005—0.006, crass. 0.0005—0.0006 mm» (sec. Nyl.) instructa, proxima est *L. ramulosae*  $\beta$  *depressae* Th. Fr. (Lich. Scand. p. 521); quae, sec. Lynge Lich. Bear Isl. p. 29 hypothecio decolorato in specim. orig. instructa, a Th. Fr. false disposita est sub *L. ramulosa*, quae hypothecio rubricoso-fuscescente ab eo descripta est. In alio specim. orig. e Kongsvold (1863) in hb. Vain. hypothecium decoloratum et pallidum (in eodem apothecio), irregulariter contextum, hymenium circ. 0.040—0.030 mm crassum, punctis fuligineis nullis inspersum, decoloratum et sordide pallidum, epithecio fuligineo et parce aeruginoso-fuligineo (in eodem apoth.), thallus verruculis (haud »granulis pulveraceis») dispersis. »Var. *depressa*» Th. Fr. (exclusa descr.) igitur vix nisi thallo verruculoso a *L. subdepressa* Vain. (Lich. Exp. Vegae Pitlekai p. 128) recedit. *L. ementiens* Nyl. autem autonoma est species, hymenio ab his differens.

193. ***L. montanella* Vain. (n. sp.)**

Thallus sat crassus, verrucis elevatis, isidioideis, cylindricis, contiguis, albidus, sorediis destitutus, hypothallo indistincto albido. Apothecia lat. circ. 0.6 mm, sat tenuia, basi constricta, disco plano, nigricante, nudo, margine sat tenui, integro, nigro. Hypothecium fuscescens, hyphis irregulariter contextis. Epithecum decoloratum aut leviter obscuratum. Paraphyses arcte cohaerentes, leviter gelatinosae. Sporae ellipsoideae oblongaeve, long. 0.009—0.016, crass. 0.005—0.008 mm.

*Distr.* LENONT.: Ad terram argillaceam in reg. betulina ad Pätkkön (»*Lecidea sabuletorum* \**L. montana*» sec. Nyl. in NORRL. Ber. Torn. Lappm. p. 336, »*Toninia syncomista*» Th. Fr. Lich. Scand. p. 335, »*Lecidea ramulosa*» VAIN. LICH. FENN. II p. 143).

Thallo et facie externa apotheciorum vix differt a *L. ramulosa* et apotheciis intus sicut in *L. fusca* v. *atrofusca* et hymenio similis *L. ementiente*, sporis crassioribus a stirpe *L. ramulosae* differens. Hypothecium KOH demum subpurpureo-rufescens. Perithecum bene evolutum, colore simile hypothecio, sed extus anguste dilutius coloratum, hyphis radiantibus, membranis leviter incrassatis, cavitibus 0.002—0.001 mm latis, materia fuscescente impletis. Hymenium circ. 0.060—0.100 mm crassum, jodo intense caerulescens, corpusculis fuligineis KOH immutatis. Paraphyses simplices, tubulis 0.0005 mm latis, apice non incrassatae. Ascii cylindrici aut anguste clavati, in apicē membrana modice incrassata. Sporae 8:nae, monostichae aut distichae, simplices, apicibus obtusis aut rotundatis, lateribus convexis.

194. **L. assimilata** Nyl.

Lich. Scand. (1861) p. 221, En. Lich. Fret. Behr. (1888) p. 9, 25, 47, 66; Th. Fr. Lich. Scand. II (1874) p. 521; Vain. Adj. Lich. Lapp. II (1883) p. 85, Lich. Amdrup (1905) p. 138, Lich. Exp. Vegae Pitlekai (1909) p. 129; Tuck. Syn. North Am. Lich. (1888) p. 86. *Lecidella* Arn. Lich. Tirol XIII (1874) p. 262 (32). *Lecidea sabuletorum*  $\beta$  *syncomista* b *alpestris* Sommerf. Suppl. Fl. Lapp. (1826) p. 156 (p. min. part., sec. Th. Fr. l. c. p. 522). *L. alpestris* Th. Fr. Lich. Arct. (1860) p. 213 (p. p., sec. Th. Fr. l. c.); Nyl. Lich. Lapp. Or. (1866) p. 158 (p. p., conf. sub *L. crassipede* (species n. 190), et sec. Th. Fr. l. c. p. 521 et 523).

*Exs.* Fellm. Lich. Arct. (1864) n. 164 (in n. 16567 in hb. Nyl.), n. 165 (hb. Nyl.), 166 (sec. Th. Fr. Lich. Scand. p. 538). — Arn. Lich. Exs. (1872) n. 556 a, (1895) n. 556 b (hb. Nyl.). — Havaas Lich. Norv. Exs. (1902) n. 139 (Mus. Fenn., conf. infra). — Malme Lich. Suec. Exs. IX (1911) n. 216 (Mus. Fenn.). — Zahlbr. Krypt. Exs. Vind. XXIII (1915) n. 2268 (Mus. Fenn.).

Thallus modice incrassatus aut sat tenuis aut rarius sat crassus, e verrucis verruculisque constans contiguis aut connatis et crustam areolato-diffractam formantibus, albodus aut impure albodus aut cinereus vel obscure cinerascens aut cinereo-fuscescens, KOH non reagens, opacus, sorediis destitutus, hypothallo vulgo indistincto. Apothecia sat cerebra et partim acervulos majores minoresve formantia aut confluentia vel tuberculato-divisa, adnata, basi non constricta aut raro demum leviter constricta, simplicia, lat. 0.3—0.8mm, modice elevata, jam primitus convexa vel depresso-convexa immarginataque, disco nigro, nudo, opaco. Hypothecium totum rubricosum aut fuscescens, hyphis erectis, in KOH parum turgescentibus, crassum. Hymenium sat tenue. Epithecum aeruginoso- aut partim nigrum vel olivaceo-fuligineum. Paraphyses arcte cohaerentes, leviter gelatinosae. Sporae oblongae aut ovoideo- vel fusiformi-oblongae, long. circ. 0.010—0.013 (0.008—0.019), crass. 0.003—0.006 mm.

*Distr.* Ad plantas destructas et terram arenosam in regionibus borealibus territorii. OKaj.: Ad terram arenosam prope templum in par. Kuhmo (»v. melaenida« Vain. Adj. Lich. Lapp. II p. 85). Kuus.: In reg. subalp. montis Jivara (F. Silén, a Th. Fr. determ. l. c. p. 522, »*L. alpestris*« sec. Nyl.), ad terram arenosam in reg. subalp.

montis Mäntytunturi (Vain. Adj. Lich. Lapp. II p. 85). LKem.: Ollostunturi in Muonioniska (»*L. alpestris* f. *assimilata*« sec. determ. Nyl. in Norrl. Ber. Torn. Lappm. p. 338), in reg. pinifera in Väli-vaara (sec. spec. in Mus. Fenn., »*L. alpestris* f. sp. saepe) et Hetta in Muonioniska (»*L. alpestris*« sec. Nyl. in Norrl. l. c., conf. Th. Fr. l. c. p. 522). LEnont.: In reg. betulina ad Kelottijärvi et nonnullis locis in reg. alp. circa Kilpisjärvi (»*L. alpestris*« sec. Nyl. in Norrl. l. c., conf. Th. Fr. l. c.). LIm.: Ad terram glareosam in reg. alp. infer. ad Lujavrurt (Kihlman 506, det. Nyl.). LIn.: Seidevaara (F. Silén). LTul.: Vaidaguba (F. V. Klingstedt, det. G. Lång), Kola (Fellm. Lich. Arct. n. 165). LMur.: Gavrilova (Kihlman 50, det. Nyl.), Varsina (Fellm., det. Nyl.). LPon.: »Ad terram arenosam, in fissuris rupium et in declivis littorum ad Orlov frequenter, Katschkovka (Kihl. N. Beitr. Flecht. Kola p. 58), Ponoj (Fellm. Lich. Arct. n. 166), Kislajaguba prope Ponoj (»*L. assimilata* f. *alpestris*« sec. Nyl. in Fellm. Lich. Arct. n. 164, specimen totum in 16567 in hb. Nyl., maj. p. in Mus. Fenn. et p. p. ad *L. crassipedem* pertinens, conf. Th. Fr. l. c. p. 521), Babja (M. Brenner).

F. *irrubala* Th. Fr. (emend.). Lich. Scand. II (1874) p. 522; Vain. Adj. Lich. Lapp. II (1883) p. 85. *Lecidea miscella* Nyl. Bot. Not. 1853 p. 182 (sec. Nyl. Lich. Scand. p. 221, non Ach.).

Hypothecium subpurpureum.

*Distr.* Specimina e locis sequentibus, supra indicatis, hue pertinent: Iivaara (F. Silén, sec. Th. Fr. l. c.), Ollostunturi (J. P. Norrlin, sec. Th. Fr. l. c.), Seidevaara (F. Silén), Vaidoguba (F. V. Klingstedt), Kola (N. I. Fellman), Orlov (Kihl. l. c., n. 230).

Thallus albidus aut cinerascens. Hypothecium subpurpureo-rubricosum, KOH distinctius purpureum aut subviolascens. Perithe-rium decoloratum aut colore variabile, hyphis radiantibus, tenuibus, membranis sat tenuibus, KOH haud incrassatis. Hymenium crass. circ. 0.050—0.060 mm. Epithecium KOH parum reagens aut suboliva-ceum. Paraphyses crass. circ. 0.001 mm, apice haud incrassatae. Ascii clavati, in apice membrana modice incrassata. Sporae 8:nae, di-stichae, oblongae aut ovoideo-oblongae, simplices (aut fortuito parce 1-septatae), long. 0.008—0.013, crass. 0.003—0.004 mm. Gonidia parva, diam. circ. 0.005—0.006 mm, globosa, tantum simplicia visa, sed thal-lus plures species algarum continentia.

F. *infuscata* Th. Fr. (emend.), Lich. Scand. II (1874) p. 522; Vain. Adj. Lich. Lapp. II (1883) p. 522, Lich. Exp. Vegae Pitlekai (1909) p. 129 (emend.).

Hypothecium intense fuscum, KOH non reagens. Sporae simplices.

*Distr.* Specimina e locis sequentibus, supra indicatis, hue pertinent: Iivaara (F. Silén, det. Th. Fr.), Ollostunturi (J. P. Norrlin, sec. Th. Fr.), Lujavrurt (A. O. Kihlman, det. Nyl.), Varsina (Fellm.,

det. Nyl.), Orlov (A. O. Kihlman, hb. Vain.), Kislaaguba (Fellm. Lich. Arct. n. 164 p. p.).

Ad f. *infuscata* hic tantum specimina hypothecio fusco, nec purpureo instructa ducimus. Thallus modice incrassatus aut sat crassus aut sat tenuis, obscure cinereus aut cinereo-fuscescens aut albidus (etiam in eodem specimine), KOH non reagens. Hypothecium hyphis KOH non turgescentibus. Peritheciun saepe decoloratum. Hymenium circ. 0.050 (—0.070) mm crassum, jodo caeruleescens aut demum partim fulvescens. Epithecium subaeruginoso-fuligineum aut nigricans, KOH interdum subolivaceo-fuligineum. Sporae 8:nae, distichae, oblongae aut ovoideo- aut fusiformi-oblongae, simplices, long. 0.0010—0.019, crass. 0.003—0.006 mm. Conidia »cylindrica, recta, tenella, long. 0.006—0.008 mm» sec. Th. Fr. Lich. Scand. II p. 522 (in qua forma visa sint, non indicatur).

*Obs. 1.* »*Lecidea assimilata* var. *melaenida*« Vain. Adj. Lich. Lapp. II (1883) p. 85, sporis vulgo simplicibus et parce 1-septatis instructa, non est vera forma systematica. Specimen prope templum in Kuhmo collectum nunc ductum est ad f. *irrubata*, ad quam etiam planta in Iivaara a F. Silén collecta pertinet? Planta e Mäntytynturi commemorata est *L. melaenella* Vain. (n. sp.). — *L. melaenida* Nyl. Fl. 1865 p. 146 (Hue Addend. II p. 152), ad Perrières in Gallia collecta, est diversa species, thallo continuo rimosove (non verrucoso) instructa (sec. specim. orig. in hb. Nyl.).

*Obs. 2.* *Lecidea assimilata* var. *Hardangeriana* Vain. in Havaas Lich. Norv. Exs. (1902) n. 139 (Bergens Mus. Aarbog 1909 n. 1, p. 29), in rupe schistosa in Granvin in Norvegia crescens, hypothallo nigro tenui passim primum conspicuo, dein mox evanescente, areolis verrucisque thalli sat crassis, demum laxe substrato affixis, hypothecio intense rubricoso, sporis visis long. circ. 0.013, crass. 0.005 mm instructa est.

### 195. *L. morbifera* Vain.<sup>1)</sup>

Adj. Lich. Lapp II (1883) p. 99, Oliv. in Bull. Géogr. Bot. XXV (1915) p. 98, 144, Zahlbr. Cat. Lich. Un. III (1925) p. 639. *Lecidea subflexuosa* Nyl. Fl. (1877) p. 459 p. p. (specim. n. 21084 in hb. Nyl., non »*L. subflexuosa*« Nyl. in Mus. Fenn.), Zahlbr. Cat. Lich. Un. III (1925) n. 832 p. p. (Vain. in msgr.).

Tab. I, fig. 1.

Thallus supra muscos et lichenes emortuos crustam tenuem, continuam vel subcontinuam rugulosam,

<sup>1)</sup> Literary quotations by Vainio, the rest by B. Lynge.

fere verniceam, albida vel cinereum vel obscure cinereum format, sorediis isidiisque destitutus.

Apothecia numerosa usque confluentia, parva, diam. 0.2—0.6 vel (sec. Vain.) usque ad 1 mm. supra thallum bene elevata. Discus ater, epruinosus, rugosus, planus, margine elevato persistenti concolori cinctus. Excipulum nigricans, hypothecium pallide fuscescens vel (sec. Vain.) olivaceo-nigricans. Hymenium 55—60  $\mu$  altum, superne fusco-nigricans, granulosum. Paraphyses arcte cohaerentes, (KOH addito) flexuosa, divergenter ramosa, distincte septatae, in apice haud incrassatae. Ascii clavati, octospori. Sporae simplices, incoloratae, ellipsoidea (vel subglobosa), 6—10  $\times$  3—4  $\mu$ .

Pycnides ignotae.

Gelatina hymenialis J e caeruleo vino rubens.

Distr. Ks.: Kuusamo in regione subalpina montium Ukonvaara (Vain.). Lapponia Inarensis: ad Vesloniemi et in insula lacus Inarijärvi in regione pinifera et in regione subalpina montis Hammas-tunturi (Vain.). Polknoivi, Edletsoivi et Putarilauktasoivi (Silén). — Karelia Rossica: Päänuorunen (Vain.).

Obs. 1. Sec. Vain. l. c.: »Facie externa valde similis *Lecideae parasemella* Nyl. Fl. 1868, p. 344, sed interna structura apotheciorum dissimillima. Apothecia vulgo sunt morbosa et sine sporis. Thecium totum interdum olivaceum vel smaragdulum.»

Obs. 2. The thallus is often infested with a parasitic fungus and badly destroyed. The editor examined one apothecium and found a black excipulum, but a practically uncoloured hypothecium (pale brown). — According to Nyl. Flora 1868 p. 344 *Lecidea parasemella* has broader spores: 12—15  $\times$  9—11  $\mu$  and a bluish epithecium. The editor only found elliptical spores in the section of *Lecidea morbifera*, no subglobose spores.

It differs considerably from *Lecidea parasemella* in its concrete paraphyses which must refer it to another section. Unfortunately the observations on the colour of its hypothecium do not agree. If Vainio's observation is correct the editor might suggest the *Lecidea crassipes* section. Its spores are too small for the *Lecidea alpestris* section. It is an isolated species in this genus, difficult of placing.

Sect. **Lecidea alpestris.**

Thallus pallidus, hypothecium saltem primitus pallidum vel dilutius fuscescens, paraphyses cohaerentes. Hyphae medullares non amyloideae. Species terrigenae vel muscigenae.

196. **L. alpestris** Sommerf.

Phys.-oecon. Beskr. ov. Saltdal. (1825) p. 54 (salt. max. p., sec. Th. Fr.). *L. sabuletorum*  $\beta$  *syncomista* b *alpestris* Sommerf. Suppl. Fl. Lapp. (1826) p. 156 (p. max. p., sec. Th. Fr.); Th. Fr. Lich. Scand. II (1874) p. 536 p. p. (excl. saltem *L. Dovrensi* et *L. stenotera*); Zahlbr. Cat. Lich. Un. III (1925) p. 511 p. p. (excl. *L. Dovrensi*, *L. stenotera* et *L. alpestris* v. *toninioide* cet.).

*Exs.* Norrl. et Nyl. Herb. Lich. Fenn., cont. (1921) n. 751, 752 (vide *Lecidea stenotera*).

Thallus crassus aut sat crassus, verrucosus aut subareolatus, areolis verrucoso-inaequalibus aut e verrucis confluentibus formatis, albidis (aut cinerascentibus sec. Th. Fr.), opacis, KOH non reagens, sorediis destitutus. Apothecia majore parte conferta confluentiaque, adnata, basi non constricta, lat. 0.5—1.2 mm (»—2 mm» sec. Th. Fr.), modice elevata, jam primitus convexa immarginataque, disco nigro, nudo, opaco. Hypothecium decoloratum, maculis majoribus minoribusque dilute rubricosis passim instructum aut parte inferiore dilute rubricosum, hyphis KOH parum inturgescensibus, erectis aut parte inferiore angusta etiam irregulariter contextis. Hymenium parte superiore aut totum aeruginosum. Paraphyses arcte cohaerentes, gelatinosae. Sporae oblongae, long. 0.15—0.019, crass. 0.003 mm (long. etiam 0.010—0.017 mm in specim. e Königäss).

*Distr.* »Ad terram nudam camporum alpinorum» (sec. Th. Fr.) in Scandinavia crescit, sed cum aliis speciebus ab auctoribus commixta, nec e territorio nostro adhuc certe cognita. Ad Orlov et Tschapoma in LPon. sec. determinationes Nylandri a Kihlm. in N. Beitr. Flecht. Kola p. 58 indicatur, sed specim. e »Lapp. Or.» (Kihlmann, n. 42 in Mus. Fenn.) ad *L. limosam* pertinet, et »*L. alpestris*» in Norrl. Ber. Torn. Lappm. p. 338 ad *L. assimilatam*, ad quam etiam

»*L. alpestris* Nyl. Lich. Lapp. Or. p. 158 ab eo ipso rite relegata est. Specim. e Kosa-gora, a Th. Fr. l. c. p. 537 huc ductum, ad *L. stenotera* pertinet.

Proxima est *L. stenoterae* Nyl., a qua vix nisi hypothecio differt. Thallus solutionibus reagentibus solitis non tinctus (Th. Fr.), hypothallo nigro primum distincto, demum evanescente. Apothecia minus elevata tenuioraque quam in *L. limosa*. Hypothecium hyphis sat pachydermaticis, cavitatibus circ. 0.001—0.005 mm latis, elongatis. Perithecium saepe decoloratum aut partim superne hymenio concolor aut inferne variabile, hyphis radiantibus, sat pachydermaticis, cavitatibus 0.001—0.005 mm latis, elongatis. Hymenium circ. 0.070—0.100 mm crassum, »jodo primum caerulescens, sordide fulvescenti-decoloratum, ascis saepius subvinose rubentibus» (Th. Fr.). »KOH vix mutatur» (Th. Fr.). Paraphyses tubulis 0.001—0.005 mm crassis, tantum simplices visae, apicibus haud incrassatis. Epithecium aeruginoso-fuligineum. Asci anguste clavati, in apice membrana modice incrassata. Sporae 8:næ, distichæ, decoloratae. Apothecia glomerulos pleurococcaceos non continentia. Gonidia forsitan cystococcacea, tantum simplicia visa, globosa, diam. 0.010—0.005 mm. Haec species sec. specimen in Dovre in Norvegia a Th. Fr. collectum determinatumque descripta est. — Thallus saepe algas cyanophyceas aliasque species continens, sed non parathallos (cephalodia) distinctos formans.

### 197. *L. stenotera* Nyl.

Lich. Lapp. Or. (1866) p. 157; Nyl. in Norrl. Ber. Torn. Lappm. (1873) p. 338 et Ilue Lich. Exot. (1892) p. 212. *L. Dovrensis* var. *stenotera* Nyl. Herb. Mus. Fenn. (1859) p. 111. *L. Dovrensis* \**L. stenotera* Nyl. Lich. Scand. (1861) p. 221. *L. alpestris* \**L. stenotera* Nyl. En. Lich. Fret. Behr. (1888) p. 9. *L. alpestris*  $\beta$  *tonioides* Hellb. Öfvers. K. Vet.-Ak. Förh. XXII (1866) p. 475. *L. alpestris*  $\beta$  *tonineoides* Hellb. Un. Itin. Cr. (1867) n. 53 (in herb. Nyl.).

*Exs.* Fellm. Lich. Arct. (1864) n. 163 p. p. (»*L. arctica*», conf. infra). — Stenh. Lich. Suec. Exs. VIII n. 214 (»*L. alpestris stenotera*», sec. Lyngé). — Un. Itin. Cr. (1867) n. 53 (conf. supra). — Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 325 (»*L. stenotera*») in hb. Vain. — Malme Lich. Suec. Exs. XX (1915) n. 491 (»*L. alpestris*», Mus. Fenn.).

Thallus crassus aut sat crassus aut sat tenuis, e verruculis verrucisque constans connatis et saepe crustam areolato-diffractam formantibus, cinerascens aut albidus aut cinereo-fuscescens, opacus, sorediis destitutus, hypothallo indistincto. Apothecia majore parte conferta confluentiaque, adnata, basi

non constricta, lat. 0.5—2.5 mm, vulgo modice elevata, jam primitus convexa vel depresso-convexa immarginataque, disco nigro, nudo, opaco aut sat opaco. Hypothecium partim dilute intenseve subrubicosum subfuscescensve partim subalbidum pallidumve, in parte superiore hyphis erectis (conf. infra), in parte inferiore hyphis irregulariter contextis et membranis KOH bene inturgescentibus. Hymenium crassum. Epithecium aeruginoso-fuligineum. Paraphyses arcte cohaerentes, gelatinosae. Sporae ovoideo- aut fusiforme-oblongae, long. 0.013—0.021, crass. 0.003—0.0035 mm.

*Distr.* Ad terram arenosam in partibus borealibus et orientalibus territorii crescit. KOn.: Ad Kosa-gora (A. Kullhem, »*L. stenotera*« Nyl. Lich. Lapp. Or. p. 157, Nyl. in Norrl. Fl. Kar. II p. 33, »*L. alpestris*« Th. Fr. Lich. Scand. p. 537). Kuus.: In montibus Nuorunen et Rukavuori (F. Silén). LKem.: Ad terram arenosam in ericeto prope Suorsa in Kemijärvi (»*L. alpestris*« Vain. Adj. Lich. Lapp. II p. 87). LIm.: Rasnjark (= Rasnavolok) ad fl. Kjuringi (P. A. Karsten), Umpjavr (A. O. Kihlman, 54), in reg. alp. in Lujavr-urt (»*L. stenotera*« sec. Nyl. in Kihl. N. Beitr. Flecht. Kola p. 57, n. 70). LKem.: In reg. abiet. ad pedem montis Ollostunturi (Norrl., una cum *L. assimilata*), Ounastunturi (Norrl.). LEnont.: »In reg. alp. pluribus locis (»*L. stenotera*« Norrl. Ber. Torn. Lappm. p. 38, »*L. alpestris*« Th. Fr. I. c. p. 536). LIn. (E. Nylander, F. Silén, H. L. F. n. 325), in reg. subalp. ad Köngäs (»*L. assimilata* f. *infuscata*« Vain. I. c. p. 85), LPon.: Ad Ponoi (Fellm. Lich. Arct. n. 163 p. p., in hb. Nyl. una cum *L. arctica* sec. adn. Nyl.).

A *L. assimilata* et *L. alpestris* praesertim hypothecio differt. Thallus KOH non reagens. Hypothecium modice incrassatum, inferne aut medio subalbidum et membranis KOH bene turgescientibus, tubulis 0.001—0.0012 mm crassis, partibus coloratis. KOH non reagentibus aut distinctius rubricosis. Peritheciun aeruginosum, KOH non reagens, hyphis radiantibus, tenuibus, membranis modice incrassatis aut sat tenuibus, tubulis circ. 0.001 mm crassis. Hymenium sine limite distincto in hypothecium transiens, circ. 0.000 mm crassum, epithecio aeruginoso-fuligineo, ceterum fere totum aut parte superiore aeruginosum, KOH non reagens, »jodo caerulescens, dein vino rubens« (sec. adn. Nyl.). Paraphyses tubulis circ. 0.001 mm crassis, apice non incrassatae. Asci clavati, in apice membrana incrassata. Sporae 8:nae, distichae, vulgo simplices. Gonidia subglobosa aut ellipsoidea aut globosa, long. 0.006, crass. 0.003 aut globosa diam. circ. 0.007 mm, membrana tenuissima, non cystococcoidea. Haec species sec. Norrl. et Nyl. Herb. Lich. Fenn. 325 descripta.

*Obs.* *F. bilocularis* Vain. (*L. limosa* \**L. alpestris* f. *bilocularis* Vain. Adj. Lich. Lapp. II, 1883, p. 87, *L. alpestris* f. *bilocularis* Zahlbr. Cat. Lich. Un. III, 1925, p. 512), sporis p. p. 1-septatis, p. p. simplicibus in eodem apothecio. Ad terram arenosam in reg. subalp. jugi Suoloselkä in LIn. In hoc specimine hypothecium decoloratum, pallidum et subrubricosum in eodem apothecio, in parte inferiore hyphis irregulariter contextis et membranis KOH turgescientibus, in parte superiore hyphis erectis aut partim etiam irregulariter contextis in eodem apothecio. Hymenium jodo leviter caerulescens dein vinoise rubens. Sporae long. 0.012—0.024, crass. 0.003—0.0035 mm. — In specim. in reg. subalp. montis Iivaara in Kuus. sporae simplices aut in aliis apothec. etiam 1-septatis immixtae, long. 0.016—0.023, crass. 0.003—0.004 mm, hypothecium totum pallidum aut in aliis apoth. in parte superiore materia subrubrica crebre inter hyphas instructa.

198. ***L. limosa* Ach.**

Lich. Univ. (1810) p. 182, Syn. Lich. (1814) p. 26 (p. p. sec. Th. Fr.); Nyl. Lich. Lapp. Or. (1866) p. 158, En. Lich. Fret. Behr. (1888) p. 66; Th. Fr. Lich. Scand. II (1874) p. 538; Arn. Lich. Tirol XIII (1874) p. 261 (31), Lich. Fragm. XXXV Neufundl. (1896) p. 29; Vain. Adj. Lich. Lapp. II (1883) p. 86, Lich. Amdrup (1905) p. 138, Lich. Exp. Vegae Pitlekai (1909) p. 127; Tuck. Syn. North Am. Lich. II (1888) p. 85; Zahlbr. Cat. Lich. Un. III (1925) p. 617; Lynge Lich. Nov. Zeml. (1928) p. 90. *L. Dovrensis* \**L. limosa* Nyl. Lich. Scand. (1861) p. 221. *L. Dovrensis* var. *limosa* Nyl. Herb. Mus. Fenn. (1859) p. 89. *L. alpestris* \**L. limosa* Nyl. En. Lich. Fret. Behr. (1888) p. 55. *L. sabuletorum* γ *fuscocinerea* Schaer. Lich. Helv. Exs. VIII (1828) n. 195, Lich. Helv. Spic. III (1828) p. 152 (sec. Arn. et Th. Fr.). *Lecidella borealis* Koerb. Syst. Lich. Germ. (1855) p. 234 (sec. Arn.). *Biatora borealis* Hepp Flecht. Eur. IX (1860) n. 488 (hb. Vain.).

*Exs.* Fr. Lich. Suec. Exs. VIII (1826) n. 213 (»*L. sabuletorum* β», sec. Th. Fr. et hb. Nyl.). — Schaer. Lich. Helv. Exs. VIII (1828) n. 195 (Arn.). — Koerb. Lich. Sel. Germ. I (1856) n. 15 (Arn.). — Hepp l. c. — Fellm. Lich. Arct. (1864) n. 166 (Nyl.). — Arn. Lich. Exs. (1871) n. 467 (hb. Nyl.). — Cromb. Lich. Brit. Exs. I (1874) n. 90 (hb. Nyl.). — Zahlbr. Krypt. Vindob. XXI (1913) n. 2156 (Mus. Fenn.). — Malme Lich. Suec. Exs. XV (1913) n. 363 (Mus. Fenn.).

Thallus tenuissimus tenuisve aut rarius sat tenuis, verruculosus et depresso-verrucosus, verrucis minutis, circ. 0.1—0.3 (—0.05) mm latis, leviter prominentibus, contiguis aut

dispersis, albidus (aut raro obscuratus), KOH non reagens, sorediis destitutus, hypothallo indistincto. Apothecia crebra, saepe partim confluentia aut tuberculosa, lat. 1—0.4 mm, adnata, basi non constricta, mox convexa, hemisphaerica, immarginata aut raro primum tenuissime marginata. Hypothecium decoloratum pallidumve, in parte superiore maculis parvis sordide subochraceis vel dilute subfusciscentibus vel subrubescensibus obsitum, hyphis sat irregulariter contextis et in parte summa angusta sat erectis. Hymenium parte superiore aeruginosum. Paraphyses arcte cohaerentes, gelatinosae. Sporae fusiformi-oblongae ellipsoideaevae aut oblongae aut subovoideaee, long. 0.008—0.015, crass. 0.004—0.005 mm.

*F. ochrophaea* Vain. Lich. Exp. Vegae Pitlekai (1909) p. 127.

Thallus albidus. Apothecia immarginata aut raro primum margine tenuissimo, nigro.

*Distr.* Praesertim ad terram arenosam in regionibus borealibus et orientalibus territorii nostri provenit. KOn.: »In reg. occidentali in campis arenosis, sterilibus, depressis, secus vias inter Soutajärvi et Lintajärvi (pluri sat copiose) et prope Tumasjärvi» visa a Norrl. (Fl. Kar. Oneg. II p. 33). Kb.: Ad viam arenosam in pineto prope Heinävaara in Nurmes (Vain. Adj. Lich. Lapp. II p. 86). OKaj.: Paltamo (F. Silén), ad viam arenosam in pineto prope Nivala in Kuhmo, ad terram in ericeto prope Hossa in Kianta (Vain. I. c.). KPom. occ.: Ad vias arenosas prope Lokka, Luvajärvi, Uhtua, cet. pluribus locis (Vain. I. c.). Ob.: Prope Viantiejoki in Simo (V. Räsänen Flecht. Ostr. Bor. p. 335), »Lapponia Tornoënsis» (E. Nylander sec. Nyl. Lich. Scand. p. 221). Kuus.: Ad viam arenosam prope Iijärvi in reg. abiet. (F. Silén), in reg. subalp. montis Iivaara (Vain. I. c.). LKem.: In campo pinifero prope templum in Muonioniska, Ollostunturi, Lompolotunturi in Kittilä, »ad terram arenosam certis locis in reg. pinifera» (Norrl. Ber. Torn. Lappm. p. 338), »in Lapponia pluribus locis obvia» (Vain. I. c.). LEnont.: »Ad terram humidam subturfosam pluribus locis in territorio alpino» (Norrl. I. c.), ad Palojoki, in monte Leutsovaara (Norrl.). LIn.: Edlehjärvenpahta (F. Silén). LPets.: Ad terram arenosam in reg. subalp. in Petsamo (V. Räsänen). Lapponia Mur.: »Ad terram humidam prope Voroninsk» (Kihlm. N. Beitr. Flecht. Kola p. 58), Ponoi (Fellm. Lich. Arct. n. 166, Nyl. Lich. Lapp. Or. p. 158).

Thallus opacus, »solutionibus reagentibus solitis memorando modo non mutatus» (Th. Fr.). Apothecia leviter nitida aut subopaca, im-

marginata aut raro primum margine tenuissimo, nigricante, non prominente instructa. Hypothecium decoloratum pallidumve, praesertim in parte superiori in intersticiis hypharum maculis difformibus parvis coloratis (KOII decoloratis) plus minus abundanter (sed constanter) instructum, hyphis sat pachydermaticis, irregulariter contextis aut in parte summa angusta sat erectis (in eodem apothecio), cavitatibus cellularum angustissimis. Peritheciun extus tenuiter obscuratum, olivaceum aut subaeruginosum, intus aut totum decoloratum, hyphis radiantibus, modice aut sat pachydermaticis, cavitatibus angustissimis. Hymenium circ. 0.100—0.110 mm crassum, jodo caerulescens, dein vino rubens aut demum partim fulvescens. Epitheciun aeruginoso-fuligineum, ceterum hymenium plus minus late aeruginosum. Paraphyses gelatinosae, cavitatibus angustissimis, apice non incrassatae. Ascii anguste clavati, in apice membrana modice incrassata. Sporae 8:næ, distichæ, long. 0.008—0.015, crass. 0.004—0.005 mm. »Conidangia verrucaeformia, lat. circ. 0.150 mm, aeruginoso-fuliginea. Sterigmata simplicia, basin versus sensim incrassata, long. 0.006—0.007 mm, apicibus conidia efferentibus. Conidia oblongo-cylindrica, recta, apicibus rotundatis, long. 0.006—0.007, crass. 0.0015 mm» (Vain. Lich. Exp. Vegae Pitlekai p. 128). Gonidia cystococcaceæ, globosa, tantum simplicia visa. Hymenium et hypothecium saepe glomerulos *Pleurococcus* majores minoresque, numerosos continent, cellulæ globosis, diam. 0.005—0.008 mm (saepe adhuc pariete in cell. duas divisæ), membrana modice incrassata. Infra thallum saepe *Gloeocapsæ* aliaeque algae obveniunt.

*F. albocincta* Vain. *L. limosa* var. *albocincta* Vain. Adj. Lich. Lapp. II (1883) p. 86; Zahlbr. Cat. Lich. Un. III (1925) p. 617.

Apothecia saepe primum margine albo, tenuissimo, non prominente instructa, demum margine excluso.

*Distr.* OKaj. Ad viam arenosam in pineto prope Hevoisvaara in Kianta (Vain. l. c.).

Thallus sat tenuis, albidus, verruculis et verrucis contiguis et dispersis. Apothecia saepe crebra, mox convexa, p. p. immarginata. Hypothecium pallidum, superne sordidum, maculis parvis sordide ochraceis in intersticiis hypharum instructum, hyphis suberectis in parte summa, ceterum irregulariter contextis, sat pachydermaticis, cavitatibus cellularum vix 0.001 mm latis. Peritheciun totum decoloratum, hyphis sat pachydermaticis, cavitatibus angustissimis. Hymenium circ. 0.100—0.080 mm crassum, parte superiore late dilute aeruginosum, epithecio aeruginoso-fuligineo. Paraphyses gelatinosæ. Ascii anguste clavati. Sporae 8:næ, subdistichæ, simplices, subfusiformes aut ellipsoideæ aut subovoideæ, long. 0.008—0.014, crass. 0.003—0.005 (—0.0025) mm. Hypothecium glomerulos *Pleurococy* parce continet.

199. **L. pallida** Th. Fr.

Th. Fr. Lich. Scand. Exs. I (1859) n. 21 (in herb. Nyl. n. 16587), Lich. Aret. (1860) p. 221, Lich. Scand. II (1874) p. 539 p. p.; Nyl. Lich. Scand. (1861) p. 288, Lich. Lapp. Or. (1866) p. 158; Zahlbr. Cat. Lich. Un. III (1925) p. 645. *Lecidella pallida* Koerb. Par. Lich. 3 Lief. (1861) p. 214. *Lecidea arctica* var. *pallida* Tuck. Syn. North Am. Lich. II (1888) p. 84.

*Exs.* Malme Lich. Suec. Exsic. XXXVI (1924) No. 891.

Thallus e verruculis constans »subglobosis, crenulatisve, primitus dispersis, dein congregatis conglomeratisque, stramineis vel pallide ochroleucis» (sec. Th. Fr.) vel albido-palescentibus, minutis, circ. 0.25 mm latis, hypothallo indistincto. Apothecia adnata, latitudine usque ad 1.4 mm (Th. Fr.), semiglobosa, crassa, convexa, immarginata, nigra, demum nuda, primum tenuissime caesio-pruinosa. Hypothecium crassum, colore e subaeruginoso in subfuscescem vergente, totum ex hyphis erectis formatum. Epithecium aeruginoso-fuligineum. Paraphyses arcte cohaerentes, gelatinosae. Sporae oblongae, long. 0.016—0.022, crass. 0.006—0.009 mm.

*Distr.* »Supra terram e schisto argillaceo destructo ortam subhumidam in alpinis» ad Varangriam in Norvegia (Th. Fr. Lich. Scand. Exs. n. 21, Lich. Scand. II p. 539).

Specimen orig. *L. pallidae* Th. Fr. hypothecio bene differt a *L. Dovrensi* Nyl. Ambae sporis crassioribus a *L. alpestri* Sommerf. distinguuntur. — »Thallus KOH paululum lutescit,  $\text{CaCl}_2\text{O}_2$  non mutatur; hyphae jodo non caerulescunt» (Th. Fr.). Hypothecium hyphis sat pachydermaticis, cavitatibus angustis. Peritheciun extus tenuiter aeruginoso-fuligineum, intus dilute aeruginosum, hyphis sat tenuibus, leviter pachydermaticis, cavitatibus angustissimis. Hymenium circ. 0.080—0.090 mm crassum, dilute aeruginosum, epithecio aeruginoso-fuligineo, »jodo fere soli asci (praecipueque eorum apices) caerulescunt» (Th. Fr.). »KOH colores non mutat» (Th. Fr.). Paraphyses tubulis 0.0005 mm latis, apicibus non incrassatis. Asci clavati, in apice membrana modice incrassata. Sporae 8:næ, distichæ, apicibus obtusis, lateribus convexis.

*Obs.* »Verrucis thallinis immixta sunt parathalli (cephalodia) tuberculato-rugosa, sordide incarnata v. rufescens, *Nostocaceas* continentia» sec. Th. Fr.

200. **L. Dovrensis** Nyl.

Nya Botaniska Notiser 1853 p. 182, Lich. Scand. (1861) p. 221, 288, Flora 1862 p. 83, Lich. Lapp. Or. (1866) p. 158, Fl. 1871 p. 372, Lich. Fret. Behr. (1888) p. 25, 70; Nyl. in Hue Lich. Exot. (1892) p. 212 (Th. Fr. Fl., 1861 p. 454, Lich. Scand. II, 1874 p. 536, 539; Zahlbr. Cat. Lich. Un. III, 1925, p. 512).

Thallus modice incrassatus, verrucosus aut subareolatus, areolis verrucoso-inaequalibus aut e verrucis et verruculis confluentibus formatis, albidis, opacis, KOH non reagens, sorediis destitutus. Apothecia adnata, basi constricta, latitudine usque ad 1.2 mm, elevata, crassa, convexa, immarginata, nuda, opaca. Hypothecium crassum, superne cinerascenti-pallidum hyphis erectis, inferne subpurpureo-fuscescens hyphisque irregulariter contextis et incrassatum aut medio substipitato-elongatum. Epithecium nigricanti- aut fuligineo-aeruginosum. Paraphyses arcte cohaerentes, gelatinosae. Sporae oblongae, »long. 0.020—0.025 (0.014—0.033), crass. 0.008—0.009 mm» sec. Nyl., long. 0.016—0.023, crass. 0.007—0.010 mm a me visae.

Distr. LEnont.: Ad terram arenosam in reg. pinifera inter Palojoki et Karesuanto (»*L. Dovrensis*« secundum determinationem Nylandri in Norrl. Ber. Torn. Lappm. p. 338, »*L. pallida*« sec. determ. Th. Fr., Lich. Scand. II p. 539). Specimen e Gunnarinkorva a Norrl. l. c. indicatum Mus. Fennico et hb. Nyl. deest).

Hypothecium parte inferiore purpureo-fuscescente crassa, materia intense colorante inter membranas hypharum sita. Hymenium ab hypothecio non distinete limitatum, sed asci longitudine circ. 0.090 mm, clavati, in apice membrana modice incrassata. Paraphyses tubulis 0.001—0.0005 mm latis. Sporae 8:nae, distichae, apicibus obtusis, lateribus convexis, simplices. — Etiam in specim. orig., in Dovre a Torsell collecto (n. 5115 in hb. Nyl.), hypothecium crassum, inferne purpureo-fuscescens, irregulariter contextum, substipitato-elongatum, hyphis sat pachydermaticis, cavitatibus angustissimis, peritheciis totum pallidum aut partim fuscescenti-pallidum aut extus tenuiter fuscescens, hyphis radiantibus, sat pachydermaticis, cavitatibus angustissimis, hymenium crassum, epithecium aeruginoso-fuligineum, paraphyses arcte cohaerentes, etiam apice leviter gelatinosae. Sporis majoribus (»long. 0.020—0.025, crass. 0.008—0.009 mm») et apotheciis immarginatis differt a *L. crassipede* Nyl.

201. **L. caesioatra** Schaer.

Naturw. Anz. II (1818) p. 10, Lich. Helv. Spic. III (1828) p. 151, IV (1833) p. 200; Flot. Lich. Exs. (1829) n. 132. *Lecidea sphaeralis* Fr. Vet. Ac. Handl. 1822 p. 254 (sec. Fr. ipso). *L. arctica* Sommerf. Suppl. Fl. Lapp. (1826) p. 540; Fr. Lich. Eur. Ref. (1831) p. 342; Schaer. En. Lich. Eur. (1850) p. 135; Mass. Ric. Lich. Crost. (1852) p. 76; Th. Fr. Lich. Arct. (1860) p. 214, Lich. Scand. II (1874) p. 540; Nyl. Lich. Scand. (1861) p. 220; Arn. Lich. Tirol XIV (1875) p. 458, XXV (1893) p. 375; Zahlbr. Cat. Lich. Un. III (1925) p. 514; Lynge Lich. Nov. Zemlya (1928) p. 92. *Lecidella arctica* Koerb. Syst. Lich. Germ. (1855) p. 243. *Lecidea sabuletorum* var. *geochroa* Wahlenb. Fl. Lapp. (1812) p. 514 (»saltem max. part.» sec. Th. Fr., non autem Ach. Syn. Lich., 1814, p. 20, nec *L. muscorum*  $\beta$  *geochroa* Ach. Vet. Ak. Handl. 1808 p. 261 sec. Th. Fr. Lich. Scand. p. 593).

*Exs.* Sommerf. Pl. Crypt. Norv. I (1826) n. 49. — Flot. Lich. Exs. (1829) n. 132 (sec. Schaer.). — Th. Fr. Lich. Scand. Exs. I (1859) n. 20. — Fellm. Lich. Arct. (1864) n. 163 (una cum »*L. stenotera*« sec. adn. Nyl. in hb. suo). — Erb. Cr. It. XXV (1865) n. 1233 (Arn.). — Rabenh. Lich. Eur. Exs. XXVII (1865) n. 734, XXXIII (1871) n. 88 (Arn.). — Un. It. (1867) n. 54 (Arn.). — Arn. Lich. Exs. (1872) n. 506. — Anzi Lich. Lang. Exs. XIV (1873) n. 553 (Arn.). — Malme Lich. Suec. Exs. VIII (1910) n. 189 (Mus. Fenn.). — Havaas Lich. Norv. Occ. I (1912) n. 13 (hb. Vain.).

Thallus e verruculis constans globosis aut subglobosis, minutissimis (0.1—0.2 mm latis), crebre dispersis aut partim subcontiguis, albidis aut cinerascentibus aut fuscescentibus, opacis, sorediis destitutus, hypothallo indistincto. Apothecia partim crebra confertaque, vulgo minuta, lat. 0.3—0.7 (—1.2) mm, subglobosa vel subhemisphaerica, basi bene constricta, sessilia nec substipitata, nigra nudaque aut tenuiter subcaesiō-pruinosa, immarginata, disco mox convexo. Hypothecium decoloratum aut pallidum aut partim in eodem apothecio dilute subviolaceum, hyphis erectis. Hymenium parte superiore (aut fere totum) plus minus intense aeruginosum aut subaeruginosum. Paraphyses arcte cohaerentes, gelatinosae. Sporae oblongae aut ellipsoideae, long. 0.012—0.016, crass. 0.005—0.007 mm (long. —0.018 mm sec. Th. Fr., conf. infra).

*Distr.* Supra muscos rupium in reg. alpinis et subalpinis Lapponiae haud rara, in Ostrobotnia rara. OKaj.: Supra *Rhacomitrium*

*lanuginosum* loco petroso ad Lehtovaara in Kianta (Vain. Adj. Lich. Lapp. II p. 86). Ob.: Aavasaksa in Ylitornio (M. Brenner), Ounasvaara in Rovaniemi (V. Räsänen Flecht. Ostr. Bor. p. 335). Kuus.: In reg. subalp. montis Nuorunen (Vain. l. c.), Rukavaara (F. Silén). LKem.: Kuolajärvi (E. Nylander), Sallatunturi (Vain.), Isovaara in reg. abietina in Ollostunturi (Norrl. Ber. Torn. Lappm. p. 338). LENont.: »Supra muscos in reg. abiet. haud rara» (Norrl. Ber. Torn. Lappm. p. 338), Leutsuvaara, Saanavaara (Norrl.), »etiam in reg. betulina ad Kilpisjärvi» (Norrl. l. c.). LIn.: Suoloselkä (Vain.), Ruoptuinväara (Vain. l. c.). LPets.: Trifona in Petsamo (V. Ku-jala). LTul.: Kola (N. I. Fellman).

Thallus intus  $\text{CaCl}_2\text{O}_2$  plus minus aurantio-rubens (sec. Th. Fr.), extus KOH non reagens, sed »addito  $\text{CaCl}_2\text{O}_2$  reagens» (sec. adn. Nylandri), jodo non reagens (Th. Fr.), verrucis interdum leviter subisidioideo-elevatis. Apothecia verrucis adnata, prominentia et thallum superantia, interdum demum tuberculata aut confluentia. Hypothecium partibus subviolaceis KOH distinctius intensiusque rubricosis. Peritheciun decoloratum (aut »pallidum sordidumque» sec. Th. Fr.), hyphis tenuibus, leviter pachydermaticis, tubulis 0.0005—0.001 mm latis. Hymenium circ. 0.050—0.060 mm crassum, a hypothecio haud distincte limitatum, »jodo ascis fere solis caerulecentibus» (sec. Th. Fr.). Epitheciun KOH non reagens. Paraphyses tantum simplices visae, tubulis 0.001—0.0015 mm crassis, apice non incrassatae. Asci anguste clavati, in apice membrana modice aut sat bene incrassata. Sporae 8:næ, distichæ, simplices, apicibus obtusis aut rotundatis, lateribus convexis (»long. 0.018—0.026, crass. 0.007—0.008 mm» in Fellm. Lich. Arct. n. 163 e Ponoi sec. adn. Nyl. in Lich. Lapp. p. 157). Gonidia cystococcaceæ, globosa.

*F. pruinosa* Vain. *L. arctica* f. *pruinosa* Vain. Adj. Lich. Lapp. II (1883) p. 86; Zahlbr. Cat. Lich. Un. III (1925) p. 514; Havaas Lich. Norv. Occ. I (1912) n. 13.

Apothecia pruinosa.

*Distr.* Specimina e locis sequentibus, supra indicatis, huc pertinent: Lehtovaara, Rukavaara, Kuolajärvi, Isovaara, Ounasvaara, Aavasaksa, Kola.

*F. nuda* Vain. *L. arctica* f. *nuda* Vain. l. c.; Zah br. l. c.

Apothecia nigra, non pruinosa.

*Distr.* Specimina locis sequentibus supra indicatis collecta huc pertinent: Trifona, Nuorunen, Ollostunturi, Leutsuvaara, Saanavaara, Ruoptuinväara, Lumbovski, Subovi, Ponoi.

Sect. **Lecidea vernalis.**

Apothecia mox immarginata, rufescentia pallidave, hypothecium pallidum, paraphyses arcte cohaerentes, simplices, epithecium si adest KOH non sese dissolvens.

202. **L. cuprea** Sommerf.

Suppl. Fl. Lapp. (1826) p. 165 (excl. syn.); Th. Fr. Lich. Scand. II (1874) p. 426. *Bialora* Fr. Lich. Eur. (1831) p. 265 (conf. Th. Fr. l.c. p. 425, 427); Tuck. Syn. North Am. Lich. II (1888) p. 21.

*Exs.* Fr. Lich. Suec. Exs. XII (1852) n. 349. — Hepp Flecht. Eur. IX (1860) n. 512. — Fellm. Lich. Arct. (1864) n. 152. — Havaas Lich. Norv. Exs. (1907) n. 342. — Malme Lich. Suec. Exs. VIII (1810) n. 185. (Sec. cit.).

Thallus sat crassus aut sat tenuis, e verrucis verruculisque vulgo contiguis subconfluentibusve constans, albidus pallidusve, KOH non reagens, hypothallo albido indistincto. Apothecia sat parva aut medioeria, basi haud constricta, tota adnata, disco cinnamomeo-fuscescente aut rufescente, convexo, margine tenui, depresso, subconcolore obscurioreve, fere mox excluso aut indistincto. Hypothecium pallidum aut partim mediove rufescens, irregulariter contextum. Hymenium totum pallidum aut partim subrufescens, corpusculis fuligineis nullis. Paraphyses arcte cohaerentes, membrana leviter gelatinoso-incrassata. Sporae 8:næ, oblongæ, »long. 0.010—0.022; crass. 0.003—0.006 mm» (sec. Th. Fr.).

*Distr.* Ad terram arenosam et plantas destructas in Lapponia provenit. LENONT.: In montibus Saanavaara et Leutsuvaara ad Kilpisjärvi (»*L. cuprea \*dilutior* Nyl.» in Norrl. Ber. Torn. Lappm. p. 334, conf. infra). LKEM.: Ad pag. Sodankylä (E. Nylander, Vain. Adj. Lich. Lapp. II p. 35). LPON.: Orlov (Kihlm. N. Beitr. Flecht. Kola p. 57), Ponoi (Fellm. Lich. Arct. n. 152, Nyl. Lich. Lapp. Or. p. 144).

Thallus verrucis 0.5—0.2 (1—0.15) mm latis, vulgo depresso-convexus, p. p. leviter lobulatis, nec KOH nec  $\text{CaCl}_2\text{O}_2$  reagens, hypothallo indistincto aut raro inter verrucas conspicuo alboque. Apothecia lat. 0.5—1 (—1.5) mm, saepe p. p. contigua confluentiave aut tuberculato-divisa, nitida aut opaca, cartilaginea, gonidiis destituta. Hypothecium hyphis parum pachydermaticis (cavitatibus irregulari-

bus vel subrotundatis aut ellipsoideis oblongisve, circ. 0.002—0.003 mm latis), in parte subhymeniali tenui suberectis, KOH et jodo non reagens. Perithecium in margine aut late extus rufescens aut rubricoso-rufescens, ceterum pallidum, hyphis radiantibus, parum pachydermaticis, cavitatibus oblongis elongatisve, 0.0015—0.002 mm latis, contento haud intensius colorato. Hymenium 0.060—0.070 mm crassum, haud granulosum, jodo »vinose rubens, praecedente laevi fugaceque caeruleo colore» (sec. Th. Fr.) aut ascis p. p. apice persistenter caerulecentibus. Paraphyses apice leviter incrassato, decolorato, gelatina distincta obducto, simplices. Sporae distichae, simplices. Gonidia cystococcoidea.

*Obs. 1.* *L. cuprea* f. *dilutior* Nyl. in Fl. 1869 p. 298 (*L. cuprea* \**dilutior* Nyl. in Norrl. Ber. Torn. Lappm., 1873, p. 334, Hue Addend. II, 1888, p. 140) ad specimen spectat in Norvegia boreali a Carroll lectum, herbario Nyl. deficiens, in Nyl. Lich. Lapp. Or. p. 144 citatum, neque exactius cognitum. Plantae in Saanavaara et Leutsuvaara a Norrl. (l. c.) collectae disco fusco-rufescente a typo leviter differunt. In Vain. Adj. Lich. Lapp. II p. 35 ad formam facie externa similem *L. Berengerianae* pertinet.

*Obs. 2.* *L. cuprea* f. *subvernalis* Vain., Adj. Lich. Lapp. II (1883) p. 36, perithecio pachydermatico a *L. cuprea* differt et in stirpem *Lecideae vernalis* pertinet.

### 203. *L. vernalis* Ach.

Meth. Lich. (1803) p. 68 (excl.  $\beta$ ), Vet. Ak. Handl. 1808 p. 266, Lich. Univ. (1810) p. 198 (excl.  $\beta$ ), Syn. Lich. (1814) p. 36; Nyl. Lich. Scand. (1861) p. 200 p. p.; Th. Fr. Lich. Scand. II (1874) p. 427; Hedl. Krit. Bem. Lec. Micar. (1892) p. 60 (excl. f. *incana*); A. L. Smith Mon. Brit. Lich. II (1911) p. 33, tab. 6. *Lichen vernalis* L. Syst. Nat. III (1768) p. 234 (sec. Th. Fr. l. c. p. 429 et Lich. Arct. p. 192, conf. etiam Vain. Rev. Lich. Linn. p. 2); Ach. Prodr. Lich. Suec. (1798) p. 51 (p. p., sec. cit., conf. Th. Fr. l. c.). *Biatora* Fr. Vet. Ak. Handl. 1822 p. 271 (sec. Th. Fr.); Th. Fr. Lich. Arct. (1860) p. 191. *B. vernalis* b. *conglomerata* Fr. Lich. Eur. Ref. (1831) p. 261. *B. conglomerata* (Heyd.) Mass. Ric. Lich. Crost. (1852) p. 123; Koerb. Syst. Lich. Germ. (1855) p. 204.

*Exs.* Fr. Lich. Suec. Exs. VIII (1824) n. 224 (sec. Th. Fr.). — Rabenh. Lich. Eur. Exs. VI (1857) n. 162. — Stenh. Lich. Suec. Exs. II (1859) n. 54 a (sec. Th. Fr.). — Hepp Flecht. Eur. III (1860) n. 505 (in herb. meo). — Havaas Lich. Norv. Exs. (1903) n. 198. — Malme Lich. Suec. Exs. XII (1912) n. 285, XX (1915) n. 489.

Thallus sat tenuis aut modice incrassatus, verruculosoinaequalis, verruculis vulgo bene prominentibus convexisque, cinerascenti-albidus aut albido-glaucescens pallescensve aut cinereo-glaucescens aut albidus vel glaucescens, sorediis destitutus, raro subevanescens, hypothallo indistincto. Apothecia vulgo crebra, mediocria et p. p. sat parva, basi vulgo demum sat bene constricta, disco demum bene convexo, testaceo aut rufescenti-testaceo aut raro p. p. subrufescente, nudo, margine concolore, tenui aut sat tenui, vulgo haud prominente, demum excluso. Hypothecium superne pallidum, inferne saepe decoloratum. Hymenium totum pallidum, haud granulosum. Paraphyses arcte cohaerentes. Sporae vulgo oblongae, long. 0.010—0.020 mm ( $\rightarrow$  0.023 mm) sec. annot. Nyl.), crass. 0.004—0.006 mm.

*Distr.* Supra muscos destructos in lateribus rupium et in truncis arborum, rarius ad ipsos cortices putridos arborum crescit, passim et in regionibus montosis sat frequenter proveniens, in omnibus regionibus obvia.

Al.: Bergö (F. W. Klingstedt). N.: Helsingforsia (Lång). Luvalahanjärvi in Hoglandia (Brenner). St.: Ylöjärvi (A. A. Sola). Ta.: Evo in Lammi pluribi (Lång). Taipale in Heinola (V. Kujala). KL.: Kirjavalahti in Sortavala (Lång). Majatsaari in Impilahti (Lång). Oa.: Orisberg in Isokyrö (H. Rancken). Sb.: Kuopio (Lönnbohm, Linkola). Ob.: Rovamaa in Kemi (Räsänen).

Thallus nec KOH nec  $\text{CaCl}_2\text{O}_2$  reagens, verruculis contiguis aut leviter dispersis, interdum granulis sorediorum (chnaumatibus) parcissimis inspersus, sed soraliis (sorediis) destitutus. Apothecia lat. 0.7—1 (0.5—1.2) mm, interdum contigua, simplicia aut demum leviter tuberculosa, disco parum nitido aut opaco, interdum morbose fuscescente, margine nitido. Hypothecium chondroideum, superne ex hyphis formatum erectis, sat pachydermaticis, conglutinatis (tubulis tenuissimis), inferne irregulariter contextis, magis pachydermaticis, parte superiore angusta jodo caerulescens. Peritheciun chondroideum, pallidum, jodo non reagens, hyphis radiantibus, haud ramoso-connexis, pachydermaticis, conglutinatis, cavitatibus oblongis, angustis, bene evolutum, circ. 0.140 mm crassum. Hymenium circ. 0.080 mm crassum, jodo caerulescens, dein mox subfulvescenti-vinose rubens. Paraphyses simplices, apice parum incrassatae, cavitatibus angustissimis, membrana tenui, gelatinosa, KOH parum turgescente. Conidia »bacillaria, recta, long. 0.004 mm» sec. annot. Nyl. in herb. suo, in specim. a Norm. collecto (»cylindrico-acicularia, curvata»

sec. Mudd in »*L. conglomerata*« in Lich. Brit. Exs. II, 1861, n. 162). Gonidia cystococcaceae, globosa, diam. 0.006—0.012 mm, etiam auto-sporas formantia.

*Obs.* *Bialora fallax* Hepp, Flecht. Eur. III (1860) n. 505 (in hb. meo), est forma *L. vernalis*, apotheciis pr. p. minoribus (obscurioribusque) ab ea differens. Apothecia testaceo-rufescens. Hypothecium in parte superiore hyphis erectis, ceterum irregulariter contextis, parte superiore angusta etiam jodo caerulescens. Sporae simplices et partim guttulis oleosis spurie subdivisae. Etiam in Fennia provenit. — *L. chlorotiza* Nyl., Fl. 1866 p. 85, apotheciis pallidis et verruculis thalli bene prominentibus sec. specim. orig. a f. *fallace* (Hepp) diffferebant et sporis constanter 1-septatis sec. annot. Nyl. instructa, peroperam ad eam relata est.

#### 204. *L. subduplex* Nyl.

in Norrl. Ber. Torn. Lappm. (1873) p. 335. *L. subduplex* Nyl. in Norrl. l. c. (1873) p. 348, Nyl. En. Lich. Fret. Behr. (1888) p. 50 (saxicola). *L. vernalis* f. *subduplex* Nyl. Lich. Scand. (1861) p. 201, Lich. Lapp. Or. (1866) p. 145 (Th. Fr. Lich. Scand. II, 1874, p. 428).

Thallus tenuis aut sat tenuis, verruculoso-inaequalis, verruculis minutissimis, convexis, cinereo-glaucescentibus aut cinereo-albidis, sorediis destitutus, hypothallo indistincto. Apothecia sat crebra, sat parva, basi bene constricta, disco convexo aut primum planiusculo sordide testaceo aut testaceo-rufescente, nudo, margine subconcolore, tenui, haud prominente, demum vulgo excluso. Hypothecium pallidum aut inferne subdecoloratum. Hymenium totum pallidum, haud granulosum. Paraphyses arcte cohaerentes. Sporae oblongae, simplices et p. p. 1-septatae, long. 0.014—0.020, crass. 0.005—0.007 mm.

*Distr.* Supra muscos destructos et corticem et lignum putridum Juniperi aliarumque arborum crescit. N.: Helsingforsia (Nyl.). Ka.: Vanha-Viipuri et Uuras prope Viburgum (Vain. Lich. Vib. p. 61, excl. specim. ad Hietala collect.). Ta.: (Specim. habitu in *L. vernalis* transiens, Graeflē). Tb.: Pihlajavesi (J. P. Norrlin). LKem.: Ad Olostunturi in par. Muonioniska (Norrl. Ber. Torn. Lappm. p. 335). In Jugo Norvegico inter Kilpisjärvi et Lyngen (Norrl. l. c. p. 348).

Specimen orig. ad Helsingforsiam collectum supra muscos putridos crescentem hic describimus. Apothecia lat. 0.4—0.5 (—0.7) mm,

crass. circ. 0.380 mm, basi bene constricta, sordide testacea aut testaceo-rufescentia, immarginata (margine excluso), nitida aut leviter nitida, nuda. Hypothecium pallidum, jodo non reagens, hyphis irregulariter contextis, ramoso-connexis, pachydermaticis, conglutinatis, cavitatibus oblongis, 0.003—0.001 mm latis. Peritheciun 0.040—0.120 mm crassum, pallidum, jodo non reagens, hyphis radiantibus, non aut p. p. parcissime ramoso-connexis, pachydermaticis, cavitatibus oblongis, 0.003—0.001 mm latis. Hymenium circ. 0.080—0.090 mm crass., jodo intense caerulescens, dein praesertim asci obscure vinoise rubentes. Paraphyses simplices, apice leviter incrassatae, cavitatibus angustissimis (in apice latioribus), membrana tenui, leviter gelatina, in KOH parum turgescente. Gonidia globosa aut subellipsoidea, diam. 0.007—0.010 mm, autosporis haud visis.

*Obs. 1.* Haec species apotheciis minoribus, sporis (in KOH in immersione visis) p. p. certe 1-septatis et textura hypothecii a *L. vernali* differens, forsan in eam non transit, sed non sit vera *Catillaria* nimis affinitatem cum serie *L. vernalis* ostendens. — In analoga *Bialorina pilulari* Koerb. Par. Lich. 2 Lief. (1860) p. 136 sec. fragm. speciminum orig. n. 2130 et 21377 in herb. Nyl., supra muscos destructos ad truncos arborum in Germania collectorum apothecia lat. 0.4—1 mm, convexa et parce depresso-convexa, pallida aut testacea, tenuiter marginata aut immarginata, »sporae fusiformes, 1-septatae, long. 0.010—0.015; crass. 0.004—0.005 mm, gelatina hymenialis jodo caerulescens, dein mox (praesertim thecae apice) vinoise rubens» sec. annot. Nyl. Est vera *Catillaria* (*Bialorina*), et observante Stizenb. »non *Lichen pilularis* Dav. in Act. Soc. Linn. Lond. 2.» — Nec »*Bialora rugulosa* Hepp Flecht. Eur. IV (1867) n. 742 (Koerb. Lich. Sel. Germ. XI, 1868, n. 315)», nec »*L. subduplex* Nyl.» in Zwackh Lich. Exs. (1891) n. 1131 (= *L. vernalis* sporis simplicibus, in KOH visis) ad *L. subduplicem* nostram pertinent.

*Obs. 2.* Descriptio orig. »f. *subduplicis*» Nyl. in Lich. Scand. p. 201 spectat etiam ad specim. in Tavastia ad »*Pelligeras emortuas*» a Graefle collectum, apotheciis 0.4—0.8 mm latis, testaceis et testaceo-rufescentibus, convexis, »sporis parce septatis, 0.014—0.023 mm longis, 0.006—0.007 mm latis» (sec. annot. Nyl.), et ad specim. ad Sala in Suecia lectum, apotheciis testaceo-rufescentibus, sporis item »p. p. septatis».

## 205. *L. helvola* (Koerb.) Th. Fr.

Stizenb. Lich. Helv. I (1882) p. 154; Hedl. Krit. Bem. Lec. Micar. (1892) p. 61 (excl. v.). *Bialora* Hellb. Rar. Lich. Neric. (Vet. Ak. Förh. 1867) p. 271; Arn. Lich. Tirol XVII (1877) p. 560. *L. vernalis* \**L. helvola* Th. Fr. Lich. Scand. II (1874) p. 429; Nyl. in Norrl.

Fl. Kar. Oneg. II (1876) p. 28. *L. aestivalis* Ohl. Zusamm. Lich. Preuss. (Schrift. Phys.-oekon. Ges. Königsb. XI, 1870), p. 16.

*Exs.* Fr. Lich. Suec. Exs. VIII (1824) n. 225 (sec. Th. Fr.). — Malme Lich. Suec. Exs. II (1897) n. 43. — Arn. Lich. Exs. (1898) n. 1764. — Norrl. et Nyl. Herb. Lich. Fenn. Cont. (1921) n. 737.

Thallus tenuis, verruculoso-inaequalis, verruculis vulgo depresso-convexis parumque prominentibus, raro bene prominentibus, impure albidis aut albido-glaucoscentibus, sorediis destitutus, hypothallo indistincto. Apothecia crenata aut dispersa, sat parva, saepe demum tuberculoso-divisa, late aut vulgo usque ad marginem adnata, disco vulgo depresso-convexo, raro p. p. demum bene convexo, testaceo aut rufescens-testaceo, margine tenuissimo, subconcolor aut obscuriore, haud prominente, demum excluso. Hypothecium pallidum aut subfulvescens superne hyphis erectis. Hymenium totum vulgo subdecoloratum, haud granulosum. Paraphyses arcte cohaerentes. Sporae oblongae, aut parce ellipsoideae, long. 0.008—0.014, crass. 0.004—0.005 mm.

*Distr.* Ad corticem abietum juniorum praesertim in abiegnis paludosis in regionibus silvosis Fenniae mediae sat frequenter aut passim provenit, sat rare aut passim in provinciis meridionalibus obvia. Raro ad corticem betulae et alni. N.: Nonnullis locis ad Helsingforsiam (Vain., Norrl.), Mjölo (Vain.), Kyrkslätt (A. Kullhem). Ka.: Vanha-Viipuri et ins. Uuras (Vain. Lich. Vib. p. 61). Ta.: Sat fr in Tammela (Kullh. Lich. Rar. Must. p. 275), Tiirismaa et alibi in Hollola (Vain., Norrl. H. L. F. Cont. n. 737), Evo (G. Lång), Nyystölä et alibi in Padasjoki (Vain., Norrl.), pluribus locis velut ad Soima et Pohjola in Korpilahti (Vain. Fl. Tav. Or. p. 110). Kb.: Koriseva, Ekypti, Matovaara in Lieksa (Vain. Adj. Lich. Lapp. II p. 55). Suojärvi (V. Kujala), Mökkö (Norrl. Fl. Kar. Oneg. II p. 28). KOn.: Tscholkka in Repola (Vain. l. c.).

Thallus nec KOH nec  $\text{CaCl}_2\text{O}_2$  reagens, verruculis areolaeformibus, disjunctis aut rarius contiguis. Apothecia lat. 0.3—0.5 (—0.6) mm, tuberculosa etiam — 1 mm, saepe leviter difformia, disco leviter nitido. Hypothecium chondroideum, superne ex hyphis formatum erectis, sat pachydermaticis, conglutinatis (tubulis tenuissimis), inferne magis pachydermaticis, irregulariter contextis, ramoso-connexis, jodo non aut superne anguste reagens. Peritheciun chondroideum, pallidum, jodo non reagens, circ. 0.060 mm crassum, hyphis radiantibus, pachydermaticis, conglutinatis, cavitibus angustis, oblongis, in margine brevioribus latioribusque, —0.002 mm latis.

Hymenium circ. 0.045—0.050 mm crassum, jodo caerulescens, dein mox fulvescenti-vinose rubens. Paraphyses apice haud incrassatae, cavitatibus angustissimis, membrana tenui, gelatinosa, KOH bene turgescente, simplices. Sporae 8:nae, distichae, simplices. Gonidia cystococcoidea, globosa aut parce ellipsoidea, diam. 0.008—0.014 mm, parce autosporis visa.

*F. subsylvana* Vain.; Hedl. Krit. Bem. Lec. Micar. (1892) p. 61 (*L. vernalis* \**L. helvola* f. *subsylvana* Vain. Adj. Lich. Lapp. II, 1883, p. 35; *L. sylvana* Th. Fr. Lich. Scand. II p. 430 p. p., sec. Hedl.).

Apothecia intense rufescentia.

Distr. Kb.: Ad corticem *Abietis excelsae* in Ekypti in Lieksa (Vain. I. c.). Ta.: Ad corticem Betulae in Nyystölä in Padasjoki (Vain.).

Verrucae thalli depresso-convexae. Apothecia tota aut fere tota adnata, demum bene convexa immarginataque. Sporae long. circ. 0.014, crass. 0.004—0.005 mm.

#### 206. \**L. minor* Nyl.

in Norrl. Ber. Torn. Lappm. (1873) p. 335. *L. vernalis* corticola (*minor*) Nyl. Lich. Lapp. Or. (1866) p. 145. *L. vernalis* f. *minor* Th. Fr. Lich. Scand. II (1874) p. 428. *L. helvola* f. 2 in Hedl. Krit. Bem. Lec. Micar. (1892) p. 61 p. p.

Thallus sat tenuis, verruculis inspersus, impure albidus, sorediis destitutus, hypothallo indistincto. Apothecia parva, late adnata, basi vulgo haud distincte constricta, disco convexo, vulgo testaceo-rufescente, margine subconcolore, saepe primum distincto tenuique, demum excluso. Hypothecium pallidum aut inferne subdecoloratum, jodo caerulescens, hyphis irregulariter contextis. Hymenium totum subdecoloratum pallidumve, haud granulosum. Paraphyses arcte cohaerentes. Sporae »oblongae, long. 0.009—0.016, crass. 0.0035—0.004 mm.

Dislr. Ad corticem arborum frondosarum, praesertim Salicis, rarius supra muscos in rupibus. LPon.: Ponoi (N. I. Fellman, Nyl. I. c., 21539). Lumbovski (Fellm., 21538). LTul.: Kola (Fellm., 19177). LIN.: Ad Hammasjärvi in Inari (F. Silén, 19152). LENont.: »Pluribus locis ad Kilpisjärvi» (Norrl. I. c., specim. non vidi). LKem.: Ounastunturi (Norrl. I. c.). Ob.: Turtola (Norrl.), Ylitornio (F. Silén), Kemi (V. Räsänen). Tb.: Prope Jyväskylä (Vain., 19349 in hb. Nyl.).

Specim. orig. n. 21539 hic describimus. Apothecia lat. 0.3—0.45 mm, crass. circ. 0.285 mm, simplicia. Hypothecium jodo caerulescens, hyphis sat pachydermaticis, conglutinatis partim anguste erectis, ceterum irregulariter contextis, ramoso-connexis. Perithecium circ 0.080 mm crassum, pallidum, jodo non reagens, chondroideum, hyphis radiantibus, haud ramoso-connexis, pachydermaticis, conglutinatis, cavatibus oblongis aut partim subglobosis, circ. 0.005 mm latis. Hymenium circ. 0.060—0.065 mm crassum, jodo caerulescens, dein vinose rubens. Paraphyses simplices, cavitibus angustissimis, apice parum incrassatae, membrana tenui, gelatinosa, KOH turgescente. Sporae 8:nae, distichae, simplices. — In speciminibus ex Ounastunturi apothecia pallidiora sunt et in spec. e Ponoi obscuriora quam in typo.

*Obs. 1.* A *L. helvola* (Koerb.) haec species hypothecio jodo caerulescente distinguitur et a *L. meiocarpa* Nyl. apotheciis primum marginatis.

### 207. *L. meiocarpa* Nyl.

Flora 1876 p. 577, Lich. Jap. (1890) p. 61 p. p. (sec. herb. Nyl.), Lich. Paris (1896) p. 81. *L. sylvana* \**L. meiocarpa* Nyl. in Stizenb. Lich. Helv. I (1882) p. 155. *L. vernalis* \**L. minuta* Nyl. Lich. Lapp. Or. (1866) p. 145 (excl. exs. cit.). *L. minuta* Nyl. in Norrl. Ber. Torn. Lappm. (1873) p. 335 (haud Mass.). *L. vernalis* f. *minor* Th. Fr. Lich. Scand. II (1874) p. 428 p. p. *L. albohyalina* Th. Fr. Lich. Scand. II p. 431 p. p. sec. Hedl. *L. sphaerella* f. *umbricola* Hedl. Krit. Bem. Lec. Micar. (1892) p. 67.

Thallus tenuis aut sat tenuis, verruculoso-inaequalis, albidus aut cinereo-glaucescens, sorediis destitutus, hypothallo indistincto. Apothecia vulgo minutissima, late adnata, basi haud distincte constricta, disco bene convexo, testaceo rufescente aut pallido, haud pruinoso, margine indistincto aut primum tenuissimo deindeque mox excluso. Hypothecium vulgo sordide pallidum aut superne dilute rufescens aut inferne decoloratum, jodo non reagens, hyphis sat irregulariter contextis. Hymenium totum subdecoloratum, haud granulosum. Paraphyses sat arcte cohaerentes. Sporae oblongae, long. 0.011—0.018, crass. 0.0025—0.003 mm (»—0.004 mm» sec. Nyl.). Gonidia cystococcoidea.

*Distr.* Ad corticem Salicis, Sorbi, Alni et Juniperi pluribus locis collecta. LPon.: Ponoi (N. I. Fellman, »\**L. minuta*« Nyl. Lich. Lapp. Or. p. 145, n. 19157, 19208). LEnont.: Ad Könkämä (»*L. minuta*

Nyl.» in Norrl. Ber. Torn. Lappm. p. 335). OKaj.: In abiegno turfoso prope Hossa in Kianta, Lapinsalmi in Kuhmo (Vain. Adj. Lich. Lapp. II p. 35). Kb.: Nuottivaara in Nurmes (Vain. I. c.), Kuikka-vaara in Lieksa (Vain.).

Thallus saepe subdispersus. Apothecia lat. 0.2—0.35 (—0.5) mm, vulgo crebra, simplicia. Hypothecium etiam in eodem apothecio sordide pallidum et superne dilute rufescens, interdum superne jodo anguste diluteque caerulescens, KOH non reagens, hyphis parum aut sat pachydermaticis, irregulariter contextis et partim superne rectis, cavitatibus 0.001—0.002 mm latis. Perithecium tenue, circ. 0.020 mm crassum aut fere evanescens, jodo non reagens, hyphis radiantibus, leviter pachydermaticis aut sat tenuibus, conglutinatis, cavitatibus vulgo oblongis, angustis. Hymenium circ. 0.045 mm crassum, jodo caerulescens, dein vinoze rubens. Paraphyses simplices, haud gelatinosae, p. p. apicem versus sensim incrassatae (—0.003 mm), p. p. parum incrassatae tenuesque, in KOH sat laxe cohaerentes. Sporae 8:nae, distichae, simplices. Gonidia cystococcoidea, globosa aut ellipsoidea, diam. 0.006—0.017 mm, tantum simplicia visa.

*Obs. 1.* *L. vernalis* \**L. minuta* Nyl., Lich. Lapp. Or. p. 145, sec. specim. orig. n. 19157, ad corticem Salicis in Ponoi collectum, pertinet ad *L. sphaerellam* f. *umbricola* Hedl. I. c., quacum etiam descriptio bene congruit. In descriptione a Nyl. cit. Hepp in Flecht. Eur. n. 487 (»*Biatora sylvana* Koerb.«), ad *L. meiocarpam* Nyl. in Fl. 1882 p. 453 relatus, apothecis majore parte nigricantibus ab ea differt (conf. Hedl. I. c. p. 54).

*Obs. 2.* *Lecidea anomala* γ *minuta* Schaer. Lich. Helv. IV (1833) p. 170, Lich. Helv. Exs. IX (1833) n. 211, En. Lich. Eur. (1850) p. 139, sec. Th. Fr. Lich. Scand. II p. 431, diversa continent, »apothecis planis vel sphaericis, ex carneo pallido-lividis atrisque« descripta.

## 208. \***L. sphaerella** (Hedl.) Vain.

*Lecidea sphaerella* Hedl. Krit. Bem. Lec. Micar. (1892) p. 67 p. p. (excl. f. *umbricola*). *L. sylvana* Th. Fr. Lich. Scand. II (1874) p. 430 p. p. (sec. Hedl.).

Thallus tenuissimus tenuisve, verruculoso-inaequalis, impure albidos vel albido-glaucescens, sorediis destitutus, hypothallo indistincto. Apothecia minuta aut rarius minutissima, tota adnata aut demum basi leviter constricta, convexa, immarginata, fuscescentia aut rarius cinereo-rufescens subrufescientiae, opaca, haud pruinosa. Hypothecium superne subfuscensenti-pallescens vel obscure subpallescens,

parte inferiore subdecoloratum et jodo non reagens. Hymenium haud granulosum, totum decoloratum aut basi pallidum. Paraphyses arcte cohaerentes. Sporae ellipsoideae oblongaeve, long. 0.007—0.011, crass. 0.0035—0.004 mm.

*Distr.* Ad corticem et lignum vetustum Juniperi et ad corticem vetustum *Salicis capreae* et Sorbi (et Alni sec. Hedl.) crescents, sat rara sit in Finlandia, sed distributione defecte cognita, cum aliis speciebus commixta. N.: Kyrkslätt (A. Kullhem, det. G. Lång). Ta.: Ad Kuivajärvi (Kullh., det. Lång) et Mustiala (P. A. Karsten, det. Hedl. l. c.) in Tammela, ad Hersala in Hollola (J. P. Norrlin, n. 19382, »*L. sylvana*» a Nyl. det.), Evo (Norrl., n. 19394, »*L. sylvana*» a Nyl. det.). LTul.: Kola (A. O. Kihlman, n. 185, et »*L. minuta*» Nyl. Lich. Lapp. Or. p. 145, a Fellm. collecta).

Sec. specimen typicum n. 203, in Mustiala a Kullh. collectum, hanc speciem describimus. Apothecia lat. 0.2—0.3 mm (—0.4 mm) sec. Hedl.), crebra, simplicia, hemisphaerica aut elevato-convexa, saepe parte inferiore pallidiora submorbosaque. Hypothecium jodo parte superiore sicut hymenium reagens, parte inferiore lata non reagens, KOH parte superiore subrubicousum, hyphis pachydermaticis, irregulariter contextis, conglutinatis, prosenchymaticis, in parte summa angusta suberectis. Perithecium decoloratum, jodo non reagens, hyphis radiantibus, pachydermaticis, conglutinatis, cavitatibus angustis, oblongis aut brevioribus, in parte marginali parum evolutum. Hymenium 0.045—0.050 mm crassum, jodo dilute caeruleascens, dein subvinose rubescens. Paraphyses simplices, apice clavatae, membrana in KOH non gelatinoso-turgescente. Sporae 8:næ, distichæ, simplices (1 spora distincte 1-septata). Gonidia cystococcoidæ, globosa et parce ellipsoidea, diam. 0.007—0.012 mm, simplicia, parce autosporas continentia. Conidia »filiformia, leviter arcuata, long. 0.010—0.014, crass. 0.0007 mm» sec. annot. Nyl. in specim. n. 563 »*L. meiocarpa*» nominato, in Fennia a Norrl. anno 1880 collecto.

209. *L. sapinea* (Th. Fr.) Vain.

*Bialora sapinea* Th. Fr. in Falk Blek. (1874) p. 15 (sec. specim. nomine »*L. gibberosae*» a Th. Fr. mihi missum), haud *L. sapinea* Nyl. in Lamy Cat. Lich. Mont-Dore (1880) p. 102 (conf. sub *L. lignaria* p. 224). *L. gibberosa* Th. Fr. Lich. Scand. II (1874) p. 430 p. p. (haud Ach.); Hedl. Krit. Bem. Lee. Micar. (1892) p. 57; Malme Lich. Suec. Exs. II (1897) n. 44.

Thallus tenuissimus laevigatusque, evanescens, macula albida indicatus, sorediis destitutus, hypothallo indistincto.

Apothecia sat crebra, late adnata, basi leviter constricta, sat parva, disco primum plano aut depresso-convexo, demum saepe convexo, pallido aut alabastrino-pallido aut stramineo, laevigato, nudo, margine tenui aut sat tenui, demisso, albido pallidove, demum excluso. Hypothecium decoloratum pallidumve. Epithecium granulosum, pallidum, KOH non reagens. Paraphyses arcte cohaerentes. Sporae oblongo-ovoideae aut oblongae, long. 0.008—0.009, crass. 0.003—0.004 mm.

*Distr.* Ad lignum vetustum truncorum pineorum in Suecia pluribus locis sec. Th. Fr. l. c., in Fennia nondum collecta.

Apothecia lat. 0.3—0.6 mm, gonidia non continentia. Hypothecium parte superiore plus minus crassa jodo reagens, in parte subhymeniali tenui hyphis creberrime contextis, ramoso-connexis, tenuissimis, leptodermaticis, in parte media crassa hyphis erectis, leviter pachydermaticis, increbre ramoso-connexis, conglutinatis, membranis in KOH modice turgescentibus, in parte infima irregulariter contextis. Peritheciun decoloratum, bene evolutum, 0.050—0.060 mm crassum, jodo non reagens, hyphis tenuibus, radiantibus, conglutinatis, subsimplicibus, sat leptodermaticis (membranis in KOH parum turgescentibus), cavitatibus angustissimis. Hymenium circ. 0.040—0.045 mm crassum, jodo intense caerulescens, dein sordide violascens. Paraphyses simplices, apice haud incrassatae, cavitatibus angustissimis, membrana tenuiter gelatinosa, KOH leviter turgescente. Gonidia cystococcoidea, globosa, diam. 0.010—0.012 mm. (Sec. specim. ad Uppsaliam a Th. Fr. lectum).

In Vainio's manuscript the editor found the following note:

*Lecidea gibberosa* Ach. sec. specim. orig. e Germania (Schrader in hb. Ach., in n. 21440 a Nyl. delineatum, est *Lecanora* »gonidia in perithecio continens, sporae 8:næ, distichæ, oblongæ, simpl. 8—10 × 3.5 µ, epithecium et peritheciun tenuiter granuloso-inspersa, extus rufescens, paraphyses graciles, hymen. alt. vix 0.050 mm.» Thallus parum evolutus. Apothecia maculis testaceo-rufescens, ceterum morbose fusco-nigricanti-obscurata. Planta in herb. Ach. morbosam nec certe determinabilis, oblivioni tradenda est.

In herb. Nyl. sub *L. gibberosa* Nyl. fragmentum apothecii »*L. gibberosæ*« ex herb. Ach. et *Lecanora paroptoides* morbosa ad Helsingforsiam collecta.

Plantæ nomine *Lecideæ sapineaæ* a Nyl. in herb. suo determinatae pertinent ad *Lecanoram deltrusam* Th. Fr. (ad Helsingforsiam collecta) et ad speciem *Lecideæ helvolæ* subsimilem (vix determinabilem, e Tavastia).

210. **L. cinereopallens** Vain. (n. sp.)

Thallus tenuis, verruculosus, cinerascens aut albido-glaucens, dispersus, aut evanescens, hypothallo indistincto. Apothecia crebra, minuta, tota adnata, basi haud constricta, convexa, immarginata, cinerascentia aut dimidiatim palescentia aut p. p. cinereo-nigricantia, parcissime etiam pallida, opaca, haud pruinosa. Hypothecium pallidum, jodo caerulescens, pseudoparenchymaticum. Hymenium haud granulosum, totum decoloratum. Paraphyses arcte cohaerentes. Sporae oblongae aut ovoideo-oblongae, long. 0.006—0.009, crass. 0.002—0.0025 mm.

*Dislr.* Ad lignum putridum pini ad pag. Hersala in Hollola (a. 1872 lecta a J. P. Norrlin, in Mus. Fenn. a Nyl. nominata »*Lecidea sarcopsoidea*« (Mass.), n. 19384 in herb. Nyl. postea determinata (*L. sylvana*). Una cum *Xylographa parallela* crescit.

*L. sapineae* (Th. Fr.) sit proxima. Thallus verruculis 0.15—0.1 mm latis, convexis, haud sorediosis. Apothecia lat. 0.2—0.4 mm, crebra, simplicia, hemisphaerica aut depresso-convexa, gonidiis destituta (saepe hyphis fungosis fuscis articulatis infestata). Hypothecium crassum, jodo intense caerulescens, KOH non reagens, hyphis conglutinatis erectis, sat leptodermatis (membranis in KOH leviter turgescientibus), pseudoparenchymatice divisus (cavitatibus 0.0015—0.002 mm latis). Peritheciun 0.050—0.060 mm crassum, decoloratum, jodo parte interiore late caerulescens, chondroideum, hyphis radiantibus, ramoso-connexis, membranis leviter incrassatis, KOH turgescentibus, cavitatibus angustissimis. Hymenium circ. 0.050 mm crassum. jodo caerulescens. Paraphyses apice haud incrassatae, parce ramosae et ramoso-connexae, cellulis angustissimis brevibusque, membrana gelatinosa. Sporae 8:næ, simplices, decolores. Gonidia cystococcoidea, ellipsoidea et p. p. globosa. Conidia »filiformia, arcuata, sat longa« (longitudine haud indicata), delineata a Nyl. in sched. n. 19384.

211. **L. albohyalina** Nyl.

*Lecidea luteola* var. *albohyalina* Nyl. Herb. Mus. Fenn. (1859) p. 89 p. p. (conf. infra). *L. anomala* f. 5 *albohyalina* Nyl. Lich. Scand. (1861) p. 203 p. p. (conf. infra). *L. globulosa* var. *albohyalina* Nyl. in Ohlert Zus. Lich. Preuss. (1870) p. 17. *L. albohyalina* Th. Fr. Lich. Scand. II (1874) p. 431 p. p. (sec. Hedl.); Nyl. Fl. 1876 p. 577 (»ad st. *L. globulosa* pertinet«), En. Lich. Fret. Behr. (1888) p. 65; Hedl.

Krit. Bem. Lec. Micar. (1892) p. 68; Vain. Add. Lich. Ant. (1915) p. 128. *L. globulosa* \**L. albohyalina* Nyl. in Hue Addend. II (1888) p. 149. *L. vernalis*\**L. albohyalina* Nyl. in Hue Lich. Exot. (1892) p. 190. *Exs.* Norrl. et Nyl. Herb. Lich. Fenn. Cont. (1921) n. 735 (in herb. meo).

Thallus tenuissimus, verruculis minutissimis albis inspersus, aut obsoletus, hypothallo indistincto. Apothecia minuta et minutissima, basi vulgo demum bene constricta, disco depresso-convexo aut demum bene convexo, carneo-pallido (aut raro cinerascenti-obscurato), saepe tenuissime subpruinoso, margine subconcolore, tenui, vulgo haud prominente, demum excluso. Hypothecium decoloratum, hyphis irregulariter contextis. Hymenium totum decoloratum, haud granulosum. Paraphyses sat arcte cohaerentes, partim apice clavatae. Sporae oblongae, long. 0.009—0.013, crass. 0.002—0.003 mm. Gonidia pleurococcoidea.

*Distr.* Ad corticem arborum, praesertim *Salicis capreae*, crescit. Distributione incerta, cum *L. meiocarpa*, *Lecania cyrtella*, *Catillaria micrococca* aliisque speciebus ab auctoribus commixta, variationibus defecte cognitis.

Hanc speciem sec. specimen a Nyl. determinatum, in Hollola a Norrl. collectum (Norrl. et Nyl. H. L. F. n. 735), hic describimus. Thallus sorediis destitutus, verruculis convexis. Apothecia lat. 0.2—0.3 mm, crebra et rarius partim subdispersa, simplicia aut parce subconfluentia, subopaca, gonidiis destituta. Hypothecium dilute pallidum aut subdecoloratum, jodo non reagens, cavitatibus cellularum 0.002 (—0.003) mm latis, subglobosis aut ellipsoideis, in seriebus sat irregulariter contextis, hyphis conglutinatis, sat leptodermaticis, in parte inferiore pachydermaticis. Peritheciun bene evolutum, circ. 0.040 mm crassum, decoloratum, jodo non reagens, hyphis subradian-tibus, sat pachydermaticis (KOH turgescensibus), conglutinatis, passim parce ramoso-connexis (in KOH aut  $H_2SO_4$  visae), cavitatibus oblongis aut ellipsoideis rotundatisve. Hymenium 0.040—0.050 mm crassum, jodo persistenter caerulescens. Paraphyses simplices, haud distincte gelatinosae, apice saepe clavato-incrassatae. Sporae 8:nae, distichae, simplices, long. 0.009—0.011, crass. 0.002—0.0025 mm. Gonidia globosa aut ellipsoidea, simplicia, diam. 0.005—0.007 mm, saepe glomerulosa. — Sec. annot. Nyl. in n. 19215 conidia »bene aut leviter arcuata, long. 0.012—0.014, crass. 0.001 mm.» —

*Obs.* E speciminibus duobus originalibus f. *albohyalinae* Nyl., in Lich. Scand. p. 203 citatis, tantum planta in Sotkamo in OKaj.

ab A. Chydenio collecta ad *L. albohyalinam* nostram pertinet (conf. Vain. Add. Lich. Antill. p. 128).

*F. prosequens* Vain. hypothecio jodo caerulescente a forma supra descripta *L. albohyalinae* differt.

*Distr.* Tb.: Ad corticem Alni in Laurinniemi et ad corticem Sorbi in Norola in par. Jyväskylä (»*L. albohyalina*» in Vain. Fl. Tav. Or. p. 110). OKaj.: Ad corticem Sorbi in abieguo turfoso in Hossa in Kianta (»*L. meiocarpa*» in Vain. Adj. Lich. Lapp. II p. 35).

Intermedia est inter *L. meiocarpam* et *L. albohyalinam*, perithecio, paraphysibus et gonidiis cum posteriore congruens.

### 212. *L. sphaeroidiza* Vain. n. sp.

Thallus sat tenuis, verruculosus, verruculis vulgo subglobosis basique constrictis, crebre subdispersis et partim contiguis, cinereo-glaucescentibus, sorediis destitutus, hypothallo indistincto. Apothecia crebra, minuta, late adnata, basi saepe demum distincae constricta, p. p. parum constricta, convexa, immarginata, fuscescens aut subcinereo-fuscescens aut p. minore parte cinereo-rufescens, parce etiam testaceo-rufescens, opaca, haud pruinosa. Hypothecium superne intense aut dilute rufescens, parte inferiore pallidum, jodo caerulescens. Hymenium haud granulosum, totum decoloratum aut epithecio tenuiter pallido aut partim subrufescente. Paraphyses arcte cohaerentes. Sporae oblongae, long. 0.008—0.011, crass. 0.0025—0.003 mm.

*Distr.* Ad corticem ramorum et trunci Abietis in ins. Mjölo prope Helsingforsiam sat abundanter cum *L. helvola* et *L. epixanthoidiza* (Vain. a 1882).

Thallo magis evoluto verruculisque elevatis et saepe basi constrictis atque notis internis a *L. sphaerella* et *L. apochroeella* differt. Thallus nec KOH, nec addito  $\text{CaCl}_2\text{O}_2$  reagens, verruculis 0.05—0.15 mm latis. Apothecia lat. 0.25—0.4 mm, simplicia, hemisphaerica aut depresso-convexa, gonidiis destituta. Hypothecium KOH non reagens, hyphis erectis, tenuibus, sat leptodermaticis (in KOH membranis leviter turgescentibus), conglutinatis, cavitatibus saepe ellipsoideis oblongis, vix 0.002 mm latis. Peritheciun decoloratum, jodo non reagens, haud granulosum, circ. 0.030 mm crassum, hyphis radianibus, pachydermaticis, conglutinatis, cavitatibus angustissimis, oblongis. Hymenium 0.040 mm crassum, jodo caerulescens. Paraphyses simplices, apice haud aut parum incrassatae, cavitatibus angustissi-

mis, membranis tenuibus, gelatinosis, KOH leviter turgescentibus. Sporae 8:næ, distichæ, simplices. Gonidia cystococcoidea, globosa, diam. 0.009—0.012 mm.

213. **L. sylvestris** Vain. (n. sp.)

Tab. I, fig. 2.

Thallus modice incrassatus aut sat tenuis, verruculosus, verruculis saepe subglobosis basique constrictis, contiguis aut subconnatis, cinerascentibus, sorediis destitutus, hypothallo indistincto. Apothecia crebra aut subdispersa, minuta, tota adnata, basi haud constricta, convexa, immarginata, fusco-rufescens et p. p. testaceo-rufescens atque fusconigricantia, opaca, haud pruinosa. Hypothecium superne dilute rubricoso-rufescens aut violascenti-rubescens, inferne pallidum, jodo partim reagens. Hymenium haud granulosum, parte inferiore dilute rubricosum, epithecio decolorato. Paraphyses sat arcte cohaerentes, apice clavatae, haud gelatinosæ. Sporae oblongæ, long. 0.008—0.011, crass. 0.0025—0.003 mm.

*Distr.* Ad corticem Sorbi in horto Kaisaniemi Helsingforsiae (Vain. a. 1874, »*L. sylvana?*« (a Nyl. determinata, etiam n. 19381 in herb. Nyl.).

Facie externa subsimilis *L. sphaeroidizae*, thallo crassiore et paraphysis ab ea differens. Thallus nec KOH nec addito  $\text{CaCl}_2\text{O}_2$  reagens, verruculis 0.05—0.3 mm latis. Apothecia lat. 0.3—0.5 mm, hemisphaerica aut depresso-convexa, gonidiis destituta. Hypothecium KOH non reagens, fere totum aut parte superiore jodo sicut hymenium reagens, hyphis erectis, tenuibus, sat leptodermaticis (membranis in KOH leviter turgescentibus), conglutinatis, partim pseudoparenchymatice divisis, cavitatibus circ. 0.002 mm latis. Peritheciun decoloratum, haud granulosum, circ. 0.030—0.040 mm crassum, jodo sicut hymenium reagens, hyphis radiantibus, pachydermaticis, conglutinatis, simplicibus, cavitatibus angustissimis, oblongis. Hymenium 0.045—0.050 mm crassum, parte inferiore saepe dilute subrubicosum, jodo dilute caerulescens, dein vinose rubens. Paraphyses simplices, apice clavatae et modice incrassatae, cavitatibus latioribus, quam in *L. sphaeroidiza*. Sporae 8:næ, distichæ, simplices. Gonidia cystococcoidea, globosa, diam. 0.006—0.012 mm.

214. **L. soraliata** Vain.

*Lepraria expallens* Fr. Lich. Suec. Exs. III (1824) n. 62 (nec *Lepraria expallens* Pers., nec *Lecanora expallens* Ach. Lich. Univ., 1810, p. 374, Syn. Lich., 1814, p. 271, conf. infra). *Lecanora (Zeora) expallens* Fr. l. c. IV (1824) n. 104 (in herb. Nyl.).

Thallus modice incrassatus, verruculo-so-inaequalis soraliiis saepe rotundatis, sat crebris instructus, stramineus, hypothallo indistincto. Apothecia saepe crebra, sat parva, tota adnata, typice convexa, disco lutescenti-pallido, nudo, margine tenuissimo, mox excluso. Hypothecium decoloratum pallidumve. Epithecum granulosum, decoloratum pallidumve, KOH non reagens. Paraphyses arcte cohaerentes. Sporae?

*Distr.* In saepimento ligneo ad Hersala in Hollola (Ta.) a. 1873 legi.

Thallus praesertimque soralia KOH fulvescentia, addito  $\text{CaCl}_2\text{O}_2$  intensius aurantiaca,  $\text{CaCl}_2\text{O}_2$  solo haud reagentia, saepe diffractus, partim late sterilis sorediosusque, colore a *Lecanora collocarpa* var. *sorediata* Räs. differens. Apothecia lat. 0.2—0.5 mm, saepe contigua confluentiaque aut tuberculosa, interdum partim leviter obscurata, thallo gonidioso imposita. Hypothecium pallidum, KOH non reagens, in parte superiore hyphis erectis, ceterum late irregulariter contextis, ramoso-connexis et magis pachydermaticis, totum chondroideum. Perithecium parum evolutum, hyphis ramoso-connexis, conglutinatis. Paraphyses simplices, apice haud incrassatae. Sporae haud visae. Gonidia cystococcoidea, saepe autosporas continentia.

*Obs.* *Lecidea aitema* Ach. Vet. Acad. Handl. 1808 p. 261, Lich. Univ. (1810) p. 178, Syn. Lich. (1814) p. 24 (*Lecanora varia* var. *aitema* Nyl. Lich. Scand. p. 163, \**L. symmicta* f. *aitema* Th. Fr. Lich. Scand. p. 263) sec. herb. Ach. apotheciaris nigricantibus a *L. soraliata* differt. Thallus stramineus, soraliiis parvis, rotundatis instructus, KOH lutescens, addito  $\text{CaCl}_2\text{O}_2$  fulvescens (etiam intus). *Lecanora hypailema* Nyl. (ined.) e Scotia (26687) facie externa similis est, sed *Lecanora symmictera* f. *hypailema* Nyl. in Brenner Bidr. Hogl. Lafv. (1885) p. 70 (nomen nudum) ad *L. symmictam* f. *pumilionis* pertinet.

215. **L. epizanthoidiza** Nyl.

Flora 1875 p. 10; Hue Addend. II (1888) p. 141. *L. vernalis* var. *epizanthoidiza* Nyl. Norrl. Fl. Kar. Oneg. II (1876) p. 28. *L. vernalis* \**L. epizanthoidiza* Vain. Lich. Vib. (1878) p. 61, Adj. Lich. Lapp.

II (1883) p. 34. *Lecidea incana* Sommerf. Suppl. Fl. Lapp. (1826) p. 164 (conf. infra). »*Bialorina? fallax*» Arn. Lich. Exs. (1860) n. 74? (ined.), conf. sub *L. minore* p.

Thallus verruculoso-inaequalis, verruculis convexis aut depresso-convexis, tenuibus, plus minus prominentibus, impure albidis aut subcinerascentibus, sorediis numerosis, vulgo crebris, modice incrassatis aut saepe demum sat crassis, flavescentibus, hypothallo vulgo indistincto. Apothecia vulgo dispersa, sat parva aut fere mediocria, late adnata, saepe basi leviter constricta, disco vulgo depresso-convexo, testaceo aut pallido aut raro rufescenti-pallido, margine subconcolore, tenuissimo, haud prominente, demum excluso. Hypothecium superne pallidum aut totum vel inferne decoloratum. Hymenium totum decoloratum pallidumve, haud granulosum. Paraphyses arcte cohaerentes. Sporae oblongae, simplices aut parce 1-septatae, long. 0.010—0.021, crass. 0.003—0.0045 mm.

Var. *incana* (Sommerf.) Vain. *Lecidea incana* Sommerf. Suppl. Fl. Lapp. (1826) p. 164 (nec Ach. Syn. Lich., 1814, p. 36, nec *Lichen incanus* Ach. Lich. Suec. Prodr., 1798, p. 7, *Lepraria incana* l. c., Meth. Lich., 1803, p. 4, Lich. Univ. 1810, p. 665 sec. herb. Ach. et Th. Fr. Lich. Seand. II p. 428). *L. vernalis* β *incana* Th. Fr. Lich. Arct. (1860) p. 192, Lich. Scand. II p. 428; Hedl. Krit. Bem. Lee. Micar. (1892) p. 60. *Bialora fallax* Hepp Flecht. Eur. IX (1860) n. 505 sec. annot. Nyl.

Apothecia fere mediocria aut sat parva, testacea aut rufescenti-testacea, vulgo demum convexa, basi demum saepe leviter constricta. Soredia saepe demum p. p. dilatata et subconfluentia.

*Distr.* Supra muscos putridos in truncis arborum vetustarum vel putrescentium aut locis umbrosis rupium.

Ab.: Ad Lohjanjärvi (Ch. E. Boldt). Ka.: Prope Vanha-Viipuri. (Vain. Lich. Vib. p. 61). Ta.: Prope Kuivajärvi in Tammela (A. Kullh.). Kl.: Valamo (Räsänen), Rahola in Kurkijoki (Räsänen). Kon.: Ad Maimalampi (Norrl. Fl. Kar. Oneg. II p. 28). Kb.: Prope Koriseva in Lieksa (Vain. Adj. Lich. Lapp. II p. 34). OKaj.: Pietari in Kianta (Vain. l. c.).

Thallus verruculis parcis, saepe convexis, vulgo dispersis. Apothecia parce evoluta, lat. circ. 0.35—1 mm, simplicia aut leviter tuberculosa aut nonnulla contigua, leviter nitida, haud pruinosa. Perithecium circ. 0.080 mm crassum. Hymenium demum usque ad 0.130 aut 0.150 mm crassum, jodo leviter caerulescens, dein subvinose rea-

gens. Sporae simplices aut interdum tenuiter 1-septatis mixtae, long. 0.009—0.014, crass. 0.004—0.006 mm (Vain. Lich. Vib. p. 61).

*Obs.* Haec forma apotheciis proxima est *L. vernali*, sed sine limite transit in *L. epizanthoidizam* f. *veram* Vain., quae magis affinis est *L. helvola*, quam *L. vernali*.

*F. vera* Vain. *L. epixanthoidiza* Nyl. Fl. 1875 p. 10 (sec. specim. orig.).

Apothecia sat parva aut fere mediocria, testaceo-pallida aut rufescenti-testacea, depresso-convexa aut demum convexa, basi haud aut demum leviter constricta. Soredia vulgo minuta aut parce majora confluentiae. Verruculae thalli vulgo depresso-convexae.

*Distr.* N.: Ad ramos Abietis in Mjölkö prope Helsingforsiam (Vain.). Ta.: Ad corticem Betulae putridae prope templum et (pl. in f. *inecanam* transiens) ad lignum putridum trunci arboris prope Nyystölä in Padasjoki (Vain.).

Apothecia lat. 0.3—1 mm, simplicia aut bene tuberculosa, leviter nitida aut opaca. Hypothecium chondroideum, hyphis erectis sat pachydermaticis, conglutinatis (tubulis tenuissimis, oblongis aut parce ellipsoideis), in parte inferiore irregulariter contextis, ramoso-connexis, magis pachydermaticis, jodo non reagens. Perithecium chondroideum, pallidum, jodo non reagens, circ. 0.080 mm crassum, hyphis radiantibus, sat pachydermaticis, conglutinatis, ramoso-connexis, cavitatibus angustis, oblongis aut partim ellipsoideis. Hymenium circ. 0.080—0.075 mm crassum, praesertim ascis jodo caerulecentibus. Paraphyses apice haud incrassatae, cavitatibus angustissimis, membrana tenui, gelatinosa, KOH parum turgescente, simplices.

### 216. *L. efflorescens* (Hedl.) Vain.

*Lecidea helvola* f. *efflorescens* Hedl. Krit. Bem. Lec. Micar. (1892) p. 61. \**Lecanora symmicta* Th. Fr. Lich. Scand. I (1871) p. 262 p. p. (sec. Hedl.).

Thallus verruculoso-inaequalis, verruculis convexis aut depresso-convexis, tenuibus, cinerascentibus, sorediis crebris, parvis aut rarius demum modice dilatatis, sat tenuibus, flavescentibus aut albidis, hypothallo indistincto. Apothecia vulgo dispersa, sat parva aut fere mediocria, tota adnata, tenuia, depresso-convexa aut planiuscula, alabastrino-pallida aut cinereo-albida, haud pruinosa, margine concolore, tenuissimo, haud prominente, demum aut fere mox excluso. Hypothecium subdecoloratum. Hymenium totum decolora-

tum, haud granulosum. Paraphyses arcte cohaerentes. Sporae oblongae, simplices aut tenuiter 1-septatae, long. 0.010—0.016, crass. 0.0035—0.0045 mm.

*F. Ruissaloënsis* Vain.

Thallus sorediis flavescentibus. Apothecia alabastrino-pallida.

*Distr.* Ad corticem Tiliae prope fontem Choraei in Ruissalo vel Runsala prope Aboam sat abundanter (Vain.).

Thallus et soredia nec KOH, nec  $\text{CaCl}_2\text{O}_2$ , nec his solutionibus unitis reagentia. Apothecia lat. circ. 0.3—0.9 mm, simplicia aut parce confluentia, crass. circ. 0.20 (—0.14) mm, sat opaca, haud pruinosa. Hypothecium partim dilute pallidum, jodo non reagens, in parte superiore hyphis partim erectis, partim ramoso-connexis, leviter pachydermaticis, conglutinatis (cavitatibus circ. 0.003 mm latis, subglobosis aut oblongis), in parte inferiore magis pachydermaticis, ramoso-connexis, irregulariter contextis, item conglutinatis. Perithecium chondroideum, decoloratum, jodo non reagens, circ. 0.060—0.070 (—0.100) mm crassum, hyphis radiantibus, ramoso-connexis, membranis sat tenuibus (in KOH turgescentibus), conglutinatis, cavitatibus 0.002—0.0015 mm latis, saepe ellipsoideis. Hymenium circ. 0.045—0.070 mm crassum, jodo caerulescens, dein vino rubens. Paraphyses simplices, apice parum incrassatae, cavitatibus angustissimis, oblongis, membrana gelatinosa, sat tenui, KOH parum turgescente. Sporae 8:næ, distichæ, long. 0.010—0.016, crass. 0.0035—0.0045 mm. Conidangia alabastrina. Sterigmata brevia, tenuissima, simplicia, apicibus conidia efferentia. Conidia bacilliformia, recta aut parcissime leviter arcuata, long. 0.006—0.005 (0.004), crass. 0.0005 mm. Gonidia cystococcoidea, globosa, diam. saepe 0.008—0.005 mm, saepe etiam autosporis impleta et diam. 0.020 mm.

*F. albodocinerea* Vain.

Thallus sorediis albidis. Apothecia albido-cinerea.

*Distr.* N.: Ad corticem Sorbi in luco montis Kasberget in Esbo (H. Lindberg).

Apothecia crass. circ. 0.2 mm. Hypothecium decoloratum, in parte superiore hyphis partim erectis, leviter pachydermaticis, conglutinatis (cavitatibus subglobosis aut oblongis, 0.003—0.0015 mm latis), in parte inferiore magis pachydermaticis, irregulariter contextis. Perithecium decoloratum, chondroideum, circ. 0.080—0.050 mm crassum, hyphis radiantibus, pachydermaticis, conglutinatis, ramoso-connexis (in KOH visis), cavitatibus 0.002—0.0015 mm latis, oblongis ellipsoideisve aut subglobosis. Hymenium circ. 0.050 mm crassum, haud granulosum, jodo caerulescens, dein vino rubens. Paraphyses simplices, apice parum incrassatae, cavitatibus angustis, crebre septatae, membrana gelatinosa, sat tenui, KOH parum turgescente

(demum maxima parte dissoluta). Sporae 8:nae, distichae, oblongae, rectae, simplices (endosporio interdum excrescentias internas defectas formante, quare sporae defecte 1-septatae apparent), long. 0.010—0.021, crass. 0.003—0.0045 mm. Gonidia globosa, saepe diam. 0.006—0.010 mm.

Sect. **Lecidea symmicta.**

Apothecia convexa, straminea, livida vel subnigricantia, hypothecium pallidum, paraphyses arcte cohaerentes, (sec. Hedlund: inferne parce ramosae et anastomosantes), epithecium granulosum, KOH mox sese dissolvens.

217. **L. symmicta** Ach.

Syn. Lich. (1814) p. 36 (emend.); Hedl. Krit. Bem. Lee. Micar. (1892) p. 56. *Bialora* Fr. Lich. Suec. Exs. II (1818) n. 45, Sched. Crit. I (1824) p. 13. *Lecanora varia e symmicta* Th. Fr. Lich. Arct. (1860) p. 109; Nyl. Lich. Scand. (1861) p. 163. *Lecanora varia* \**L. symmicta* Th. Fr. Lich. Scand. I (1871) p. 262 p. p. *Lecanora symmicta* Ach. Syn. Lich. (1814) p. 340 p. p. *Lecidea alabastrina* a Ach. Lich. Univ. (1810) p. 190 p. p., Syn. Lich. (1814) p. 46 p. p. (herb. Ach.). *Lecanora varia* var. *alabastrina* Nyl. Ad Veg. Hels. (1859) p. 231 (Mus. Fenn.).

Exs. Fr. I. c. n. 45. — Sommerf. Pl. Crypt. Norv. I (1826) n. 65. — Hepp Flecht. Eur. II (1853) n. 68, IV (1853) n. 192. — Fellm. Lich. Arct. (1864) n. 132 (in mus. Fenn., n. 133 et 134 ad *Lecan. subintri-catam* pertinent). — Arn. Lich. Exs. (1877) n. 707 a, b, (1883) n. 998, (1888) n. 1390. — Arn. Lich. Monac. (1892) n. 267, (1893) n. 300, (1895) n. 394. — Zwackh Lich. Exs. (1883) n. 759. — Havaas Lich. Exs. (1902) n. 111. — Norrl. et Nyl. Herb. Lich. Fenn. Cont. (1921) Norv. n. 731—734. (p. p. sec. cit.).

Thallus sat tenuis aut modice incrassatus aut tenuissimus, verruculoso-inaequalis aut laevigatus, granulis, sorediorum parce inspersus aut sorediis destitutus, substramineus aut impure albidos, hypothallo raro distincto. Apothecia saepe crebra, vulgo sat parva, tota adnata, convexa, disco pallido aut stramineo-pallido aut lutescente aut rufescente aut cyanescente, nudo aut tenuissime pruinoso, margine tenuissimo, mox excluso. Hypothecium decoloratum pallidumve. Epithecium granulosum, decoloratum pallidumve aut hymenium plus minus rufescens olivaceumve, KOH non

reagens. Paraphyses arcte cohaerentes. Sporae oblongae, long. 0.007—0.016, crass. 0.004—0.005 mm.

*Distr.* Ad corticem Alni, Betulae et Juniperi et ad lignum vetustum crescit, frequenter aut sat frequenter in maxima parte territ. nostri proveniens. In Lapp. Kolaënsi passim, etiam ad Mare Glaciale haud rara (Nyl. Lich. Lapp. Or. p. 133, Kihlm. N. Beitr. Flecht. Kola p. 55). In Lapp. Fenn. sat frequens (Vain. Adj. Lich. Lapp. I p. 160, Norrl. Ber. Torn. Lappm. p. 331).

*F. alnicola* Vain. *Lecidea symmictera* f. *alnicola* Vain. in Norrl. et Nyl. Herb. Lich. Fenn. Cont. (1921) n. 731.

Thallus sat tenuis, verruculoso-inaequalis, granulis sorediorum passim parce inspersus, hypothallo indistincto. Apothecia carneo-pallida testaceave.

*Distr.* Praesertim ad corticem *Alni incanae* provenit, nec rara Thallus KOH subfulvescens, addito  $\text{CaCl}_2\text{O}_2$  distinctius aurantiaco-fulvescens, nequidem intus rubescens, jodo non reagens. Apothecia lat. 0.5—0.9 (—1.5) mm, gonidia non continentia, vulgo tenuissime pruinosa. Hypothecium decoloratum, KOH non reagens, chondroideum, hyphis erectis, pachydermaticis, conglutinatis, passim ramoso-connexis, cavitatibus angustissimis, in parte inferiore hyphis crebrius ramoso-connexis et magis irregulariter contextis, in parte superiore jodo dilute caerulescens. Peritheciun jodo non reagens, hyphis tenuibus, radiantibus, ramoso-connexis, sat leptodermaticis (membranis in KOH leviter turgescentibus), conglutinatis, cavitatibus angustissimis, stramineum, materiam subtilissime granulosam continens. Hymenium circ. 0.070 mm crassum, jodo persistenter caerulescens (»dein thecis fulvescentibus» in *L. symmictera* sec. Nyl. in Lich. Paris, 1896, p. 81). Epithecium impure pallido-stramineum, granulosum, KOH decoloratum. Paraphyses arcte cohaerentes, simplices, apice haud aut parum incrassato, cavitatibus oblongis, angustissimis, membrana tenuiter gelatinosa, in KOH leviter turgescente. Conidia in »*L. symmictera* arcuata, long. 0.023—0.025, crass. 0.001 mm» (sec. Arn. Lich. Münch., 1891, p. 60, Fl. 1872 p. 78 t. 2 f. 5), in »*L. symmicta* arcuata, long. 0.018—0.020, crass. 0.0005 mm» (sec. Nyl. Lich. Nov. Zel., 1888, p. 63). Gonidia cystococcoidea, globosa, diam. 0.010—0.014 mm.

*F. junipericola* Vain. *Lecidea symmictera* var. *junipericola* Vain. l. c. (1921) n. 732.

Thallus sat tenuis, verruculoso-inaequalis, sorediis destitutus, hypothallo indistincto. Apothecia carneo-pallida testaceave.

Ad corticem Juniperi non sit rara.

Thallus KOH subfulvescens, addito  $\text{CaCl}_2\text{O}_2$  distinctius aurantiaco-fulvescens. Apothecia vulgo tenuissime pruinosa. — In f. *alnicolam* transit.

*F. fumosa* Vain.

Thallus sat tenuis, verruculosoinaequalis, sorediis destitutus, hypothallo tenuissimo, obscure cinerascente, praesertim ad marginem thalli conspicuo. Apothecia carneo-pallida testaceave, majore parte demum livido-cinerascentia.

*Distr.* Ta.: Ad corticem *Alni incanae* in Hersala in Hollola (Vain.).

Thallus KOH leviter subfulvescens, addito  $\text{CaCl}_2\text{O}_2$  distinctius fulvescens. Apothecia vulgo tenuissime pruinosa.

*F. subfumosa* Vain.

Thallus sat tenuis, verruculosoinaequalis, sorediis destitutus, hypothallo tenuissimo, obscure cinerascente, praesertim ad marginem thalli conspicuo. Apothecia carneo-pallida testaceave.

*Distr.* Tb.: Ad corticem Betulae et Alni in Pihlajavesi (Vain.).

Thallus KOH intense fulvescens, addito  $\text{CaCl}_2\text{O}_2$  dilutius reagens,  $\text{CaCl}_2\text{O}_2$  non reagens. Apothecia tenuissime pruinosa.

*F. lutea* Vain.

Thallus sat tenuis, verruculosoinaequalis, sorediis destitutus aut granulis sorediorum parcissimis inspersus, hypothallo indistincto. Apothecia pulchre lutea.

*Distr.* Tb.: Ad corticem *Alni incanae* in Pihlajavesi (Vain.).

Thallus KOH intense fulvescens, addito  $\text{CaCl}_2\text{O}_2$  dilutius reagens,  $\text{CaCl}_2\text{O}_2$  solo non reagens. Apothecia haud pruinosa.

*F. ecrustacea* (Nyl.) Vain. *Lecanora symmictera* f. *ecrustacea* Nyl. in Stizenb. Lich. Helv. I (1882) p. 116 p. p. *L. s. f. ecrustacea* (Nyl.) Arn. Lich. Främk. Jur. (Fl. 1884 p. 121, Lich. Münch. (1891) p. 60).

Thallus evanescens, hypothallo indistincto. Apothecia crebra, partim contigua confluentiave, pallida vel impure pallida. Lignicola.

*Distr.* Ad saepimenta lignea et truncos vetustos arborum. Ta.: Hersala in Hollola (Vain.). Tb.: Ad Tourujoki in Jyväskylä (Vain.).

Apothecia haud distincte pruinosa.

*F. saepincola* (Ach.) Vain. *Lecidea saepincola* Ach. Syn. Lich. (1814) p. 263 p. p.

*Exs.* Norrl. et Nyl. Herb. Lich. Fenn. Cont. (1921) n. 733.

Thallus tenuis aut sat tenuis, verruculosus, sorediis destitutus, hypothallo indistincto. Apothecia crebra et partim contigua confluentiave, pallida testaceave aut rufescientia.

*Distr.* Ad saepimenta lignea haud rara.

Thallus KOH fulvescens, addito  $\text{CaCl}_2\text{O}_2$  plus minus distincte dilute rubescens,  $\text{CaCl}_2\text{O}_2$  solo non reagens. Apothecia haud distincte pruinosa. — Norrl. et Nyl. I. c. (1921) n. 734 ad statum hujus formae in f. *ecrustaceam* transeuntem pertinet.

*F. trabalis* (Ach.) Vain. *Lecidea saepincola* var. *trabalis* Ach. Syn. Lich. (1814) p. 35 p. p. (*trabicola* Nyl. in Arn. Lich. Münch., 1891, p. 60 forsitan huc pertinet).

Thallus modice incrassatus aut crassus, verruculoso-inaequalis, diffractus dispersusve, sorediis destitutus, hypothallo indistincto. Apothecia crebra et partim contigua confluentiave, colore variegata (saepe etiam in eodem specimine), testacea, rufescentia, fuscescentia et cyaneo-nigricantia.

*Distr.* Ad saepimenta lignea haud rara.

Thallus KOH fulvescens, addito  $\text{CaCl}_2\text{O}_2$  praesertim intus dilute rubescens,  $\text{CaCl}_2\text{O}_2$  solo non reagens. Apothecia haud pruinosa aut pallida interdum tenuissime pruinosa.

*F. pumilionis* (Rehm) Vain. *Lecanora varia* var. *pumilionis* Rehm in Arn. Lich. Exs. (1861) n. 138 a (b, 1872, c 1882). *Lecanora symmicta* f. *pumilionis* Arn. Fl. 1872 p. 74. *Lecanora pumilionis* Arn. Lich. Exs. Index (1894) p. 5. *Lecidea pumilionis* Nyl. Fl. 1872 p. 248.

Thallus tenuis aut sat tenuis, verruculoso-inaequalis, sorediis destitutus, hypothallo indistincto. Apothecia obscurata, subcyanescens vel livido-fuscescentia, crebra aut subdispersa.

*Distr.* In saepimentis ligneis ad Kiiskinkylä Hoglandiae (»*L. symmictera* f. *hypaitema* Nyl.« in Brenner Bidr. Hogl. Lafv. p. 70). Ad corticem *Alni glutinosae* in Enonsaari in Hollola in Ta. (Vain.). Ad corticem et lignum ramulorum siccorum in reg. subalp. montis Hammastunturi in LIn. (»*v. trabalis*« in Vain. Adj. Lich. Lapp. I p. 160).

Thallus KOH leviter fulvescens, addito  $\text{CaCl}_2\text{O}_2$  distinctius fulvescens. Apothecia haud pruinosa. Hymenium totum sordide olivaceum, jodo pers. caerul. Hypothecium decoloratum.

*Obs. 1.* *Lecanora symmicta* f. *calvescens* Nyl., Fl. 1885 p. 601, En. Fret. Behr. (1888) p. 52 (*Lecidea symmicta* f. *calvescens* Vain. Lich. Exp. Pitlekai, 1909, p. 120), »erustacea et apotheciis fuscescentibus« descripta, vix a f. *pumilionis* distinguenda est nisi apotheciis crebrioribus et p. p. contiguis (sec. specim. orig.). Ad eandem formam etiam f. *hypaitema* Nyl. (in Brenner Bidr. Hogl. Lafv., 1885, p. 70), sine descriptione indicata, ad saepimenta lignea in Kiiskinkylä (leg. Vain.?) et in Lapua Ostrobotniae (Räsänen) collecta, pertinet. Sub v. *saepincola* ab Arn. in Lich. Fränk. Jur. (1884) p. 122 etiam *Parmelia varia* η *denigrata* Schaeer. Lich. Helv. Exs. (1840) n. 327 relata est (haud *Biatora denigrata* Fr.). *Lecanora maculiformis* β *denigrata* Hepp Flecht. Eur. n. 191 ad *L. subintricatam* pertinet (in herb. Nyl.).

*Obs. 2.* »*Lecanora symmicta* f. melius dicenda *L. maculiformis* Hoffm. »Nyl. in sched. sec. Brenner Bidr. Hogl. Lafv. (1885) p. 70. Ad corticem pini collecta et ad *L. symmictam* nostram pertinet. *Verrucaria maculiformis* Hoffm. exactius cognita non est.

*Obs. 3.* »*Lecanora symmicta* f. thallo subleproso Nyl. in litt. et

Scand. p. 163» in Brenner Bidr. Hogl. Lafv. (1885) p. 70 indicata, ad lignum Hoglandiae ab Edwin Nylander collecta, apotheciis pallidis, subpruinosis et thallo verruculoso-inaequali, sat tenui, haud soredioso, KOH sordide flavescente, addito  $\text{CaCl}_2\text{O}_2$  extus intusque dilute rubescente instructa est.

*Obs. 4.* *L. symmicta* nostra sec. Nyl. species sequentes amplectitur:

*Lecanora symmicta* Nyl. Fl. 1872 p. 249, Lich. Nov. Zel. (1888) p. 63, Cramb. (qui auspicio Nylandri scripsit) Mon. Brit. Lich. (1894) p. 433. »Thallus subeffusus, tenuis aut tenuissimus, subleprosus aut minute granulosus,  $\text{CaCl}_2\text{O}_2$  aurantiacus (in specimine orig. Achariano solutione optima hypochloritis calcici non reagens, KOH et  $\text{CaCl}_2\text{O}_2$  unitis praesertim intus leviter rubescens). Apothecia pallido-lutescentia aut pallido-testacea, partim olivacea.» Sub hac specie a Nyl. citatus »Fr. L. S. n. 45», cuius specimen in herb. Nyl. etiam thallum alienum sorediosum continet (n. 26604), et in alia sched. (n. 26614) Nyl. notavit »ap.  $\text{CaCl}_2$  +». »Var. *saepincola* (Ach.)» sec. Nyl. huc pertinet.

Var. *saepincola* Nyl. Fl. 1872 p. 249, Cramb. l. c. p. 434. »Thallus effusus, granulosus aut granuloso-inaequalis, interdum subevanescentia. Apothecia sordide rufescens aut nigricantia.» In specimine orig. Achariano solutione optima hypochloritis calcici soli thallus nec superne nec intus reagens, sed KOH addito  $\text{CaCl}_2\text{O}_2$  leviter rubescens, praesertim intus.

*L. symmictera* Nyl. Fl. 1872 p. 249 (»potissime *Biatora*» sec. Nyl. Lich. Paris, 1896, p. 81), Cramb. l. c. p. 434. »Thallus effusus, subleprosus aut subgranulosus,  $\text{CaCl}_2\text{O}_2$  non reagens. Apothecia thallo concolora, pallide aut obscure olivacea.» Huc Hepp Flecht. Eur. n. 68.»

Var. *ailema* Nyl. Fl. 1873 p. 299, Cramb. l. c. p. 435 (conf. sub *L. soraliata*). Thallus aliquantum incrassatus, leprosus. Apothecia nigra.

*L. trabalis* Nyl. Fl. 1877 p. 458, Cramb. l. c. p. 435. »Thallus effusus, glebuloso-granulatus, subverrucoso-diffractus, sat tenuis aut modice incrassatus, cinerascens, KOH lutescens,  $\text{CaCl}_2\text{O}_2$  non reagens. Apothecia pallide livida, sordide pallido-testacea aut livido-nigricantia.» In specim. orig. Achariano thallus KOH addito  $\text{CaCl}_2\text{O}_2$  praesertim intus leviter rubescens,  $\text{CaCl}_2\text{O}_2$  solo non reagens.

## 218. *L. orosthea* Ach.

Meth. Lich. (1803) p. 72, Syn. Lich. (1814) p. 37; Vain. Lich. Exp. Antarct. Belge (1903) p. 18. *Lichen orostheus* Ach. Lich. Svec. Prodr. (1798) p. 38 (*Patellaria orosthea* Ach. l. c.), non Sm. Engl.

Bot. (1806) t. 1549. *Lecanora orosthea* Ach. Lich. Univ. (1810) p. 400; Fr. Lich. Suec. Exs. VI (1825) n. 165, Sched. Crit. (1825) p. 12; Nyl. Lich. Lapp. Or. (1866) p. 181; Lich. Paris (1896) p. 61 (non Hedl. Krit. Lec. Micar. p. 39). *L. varia* \**L. orosthea* Nyl. Lich. Scand. (1861) p. 165. *Lecanora orosthea* f. *petrophila* Th. Fr. Lich. Scand. I (1871) p. 263. *Lecidea sulphurea* f. *petrophila* Hedl. Krit. Bem. Lec. Micar. (1892) p. 56.

*Exs.* Fr. Lich. Suec. Exs. VI (1825) n. 165 (in herb. Nyl.?) — Lojka Lich. Hung. I (1882) n. 36 (in herb. meo). — Havaas Lich. Norv. Exs. (1902) n. 148, 149.

Thallus sat tenuis aut sat crassus, leviter verruculosoinaequalis aut sat laevigatus, soraliis dispersis aut demum subconfluentibus instructus, stramineus, hypothallo indistincto. Apothecia saepe crebra aggregatae, vulgo sat parva, tota adnata, convexa, disco pallido aut raro obscure livido-cinerascente, margine tenuissimo mox excluso. Hypothecium decoloratum pallidumve. Epithecum granulosum, pallidum aut subcinerascens, KOH non reagens. Paraphyses arcte cohaerentes. Sporae oblongae, long. 0.008—0.011, crass. 0.003—0.005 mm (»long. —0.016, crass. —0.007 mm» sec. Nyl.).

*Distr.* Ad basim rupium saxorumque silicosorum locis siccis luminosis sterilis haud rara in partibus meridionalibus mediisque territorii.

Thallus strato corticali destitutus, continuus aut subdispersus aut saepe demum rimoso-diffractus, KOH fulvescens, addito  $\text{CaCl}_2\text{O}_2$  intensius fulvescens (praesertim soredia intense reagentia),  $\text{CaCl}_2\text{O}_2$  solo non reagentia, medulla alba, jodo non reagens. Apothecia lat. 0.3—0.8 mm, raro tenuissime pruinosa, disco nec KOH nec  $\text{CaCl}_2\text{O}_2$  reagente, gonidiis destituta, strato thallino gonidioso imposita. Hypothecium pallidum subdecoloratumve, KOH fulvescens, jodo caerule-scens, hyphis conglutinatis, suberectis, ramoso-connexis, partim cellulis turgescentibus et ramulis clavatis, 0.003—0.004 mm crassis abundantier instructis. Perithecum tenue subevanescensve, in margine hyphis radiantibus, ramoso-connexis. Hymenium 0.050—0.070 mm crassum, jodo intense caerulescens (»dein violascens» sec. Nyl.). Epithecum granulosum, pallidum aut (in apotheciis lividis) pallido-cinerascens. Paraphyses simplices, crass. 0.001 mm, apice parum incrassatae, parum gelatinosae, in KOH laxe cohaerentes. Sporae 8:nae, distichae, simplices, ellipsoideae oblongaeve aut subovoideae, apicibus vulgo rotundatis. Conidia »filiformia, long. 0.014—0.018, crass. 0.001 mm» sec. Hedl. I. e. p. 55, »long. 0.016—0.020 mm» sec. Nyl.

Lich. Paris p. 61. Gonidia cystococcoidea, globosa aut ellipsoidea, diam. 0.005—0.012 mm.

*F. sublivescens* (Nyl.) Vain. *Lecanora orosthea* var. *sublivescens* Nyl. Fl. 1872 p. 248 (Hue Addend. I, 1886, p. 93), Lich. Paris (1896) p. 61 (haud *L. sublivescens* A. L. Smith Mon. Brit. Lich. I, 1918, p. 292). *L. orosthea* f. *livida* Nyl. in Brenn. Bidr. Hogl. Lafv. (1885) p. 69 (nomen nud.). *L. orosthea* v. *glaucocarpa* Harm. Cat. Lich. Lorr IV (Bull. Soc. Sc. Nancy XXXI?, 1896?) p. 300.

Thallus sorediis abundanter evolutis. Apothecia livido-obscurata.

*Distr.* N.: Ad saxa porphyrica in Ylikäytävä in Hoglandia vel Suursaari, (sf. *livida*) in Brenn. l. c.). Ta.: Ad scopulum syeniticum in Kirkkonkylä in Padasjoki (Vain.).

*Obs.* *F. laevior* Vain. (*Lecanora orosthea* f. *laevior* Vain. in Havaas in Bergens Museums Aarbok 1909 n. 1 p. 18), thallo sat laevigato, rimuloso-diffracto, soralis parcis parvisque instructo, apotheciis pallidis, in latere rupis ad Granvin in Norvegia collecta est.

### 219. *L. sulphurea* (Hoffm.) Ach.

Syn. Lich. (1814) p. 37 (excl. b); Gray Nat. Arr. Brit. Pl. (1821) p. 470; Hook. in Sm. Engl. Fl. V (1833) p. 181; Hedl. Krit. Bem. Lec. Micar. (1892) p. 55 (excl. var.); Vain. Lich. Caucas. (1899) p. 323. *Lichen sulphureus* Hoffm. En. Lich. (1784) p. 32 tab. IV f. 1 sec. Ach. Lich. Suec. Prodr. (1798) p. 58. *Parmelia sulphurea* Ach. Meth. Lich. (1803) p. 159. *Lecanora* Ach. Lich. Univ. (1810) p. 399 (excl. var.); Floerk. Deutsch. Lich. 2 (1815) p. 9; Fr. Sched. Crit. (1825) p. 6, n. 136; Mudd Man. Brit. Lich. (1861) p. 152; Th. Fr. Lich. Scand. I (1871) p. 258; Arn. Lich. Fränk. Jur. (Fl. 1884) p. 119; Nyl. Lich. Paris (1896) p. 60. *Parmelia polytropa* b *sulphurea* Schaeer. Lich. Helv. Spic. VIII (1839) p. 408. *Lecanora varia* \**L. sulphurea* Nyl. Lich. Scand. (1861) p. 165. *Lichen calcareus* Leers Fl. Herborn. (1775) p. 254 (sec. Hoffm.), nec Linn. nec Weis. *Lecidea circumdiluta* Nyl. Fl. 1874 p. 11; Brenner Bidr. Hogl. Lafv. (1885) p. 97; Hue Addend. II (1888) p. 182.

*Exs.* Floerk. Deutsche Lich. II (1815) n. 33. — Fr. Lich. Suec. Exs. V (1825) n. 136. — Schaeer. Lich. Helv. Exs. XIII (1840) n. 324. — Hepp Flecht. Eur. IV (1853) n. 189 p. p. (in herb. meo). — Leight. Lich. Brit. Exs. IV (1853) n. 114 (Mus. Fenn.). — Nyl. Lich. Mont-Dore (1856) n. 38, Lich. Pyr. Or. (1872) n. 58 (in herb. Nyl.). — Arn Lich. Exs. (1862) n. 188. — Lojka Lich. Hung. III (1882) n. 126. — Havaas Lich. Norv. Exs. I (1901) n. 50. — Havaas Lich. Norv. Occ. II (1913) n. 39. — Zahlbr. Krypt. Exs. Vindob. XI (1904) n. 1042. — Malme Lich. Suec. Exs. XXII (1915) n. 547. (Sec. Arn. l. c. cet.).

Thallus modice incrassatus aut sat crassus, leviter inaequalis aut sat laevigatus, sorediis destitutus, sulphureus aut impure stramineus, hypothallo indistincto. Apothecia saepe crebra, vulgo sat parva, primum thallo immersa, dein mox adnata, disco subcaeruleo-nigricante aut nigro aut raro pallido-livescente, tenuissime pruinoso aut nudo, convexo aut rarius subplano, margine pallidiore pallescenteve, tenui, haud prominente, demum aut mox excluso. Hypothecium saepe impure pallidum subdecoloratumve. Hymenium parte superiore plus minus intense subcyanescente aut raro epithecio subolivaceo. Paraphyses arcte cohaerentes. Sporae oblongae ellipsoideaeve aut ovoideo-oblongae, long. 0.009—0.013, crass. 0.004—0.006 mm.

*Distr.* Ad rupes saxaque granitica porphyricaque locis ventosis apertis praesertim ad littora maris. Al.: »Passim» sec. Edvin Nylander (Al. Lafveg. p. 89), ibi etam ab A. Vahlberg collecta. Ab.: Vepsänsaari prope Aboam (Vain.). N.: Mäkiinpäälys et Somerikontvuoret Hoglandiae (Vain.), Mjölö et Observatorium astron. (Vain. a. 1882). St.: Sastmola (A. J. Malmgren). Sa.: »Passim» sec. Edvin Nylander (Lafveg. Sav. p. 73).

Thallus crebre aut partim sat increbre rimoso-diffractus aut rarius distincte areolatus, areolis contiguis, angulosus, interdum partim demum convexis, medulla inferne alba, KOH flavescente, dein saltem maculatim rubescente, addito  $\text{CaCl}_2\text{O}_2$  partim distinctius reagente, jodo fulvescente,  $\text{CaCl}_2\text{O}_2$  solo non reagens, superne KOH parum reagens, addito  $\text{CaCl}_2\text{O}_2$  distinctius flavescens, strato corticali haud evoluto. Apothecia lat. 0.4—1.7 mm, simplicia aut tuberculoso-divisa aut tuberculato-confluentia, opaca, gonidiis destituta, strato thallino gonidioso imposita, novella saepe facie externa zeorina, sed etiam inferne late perithecio gonidiis destituto a thallo disjuncta. Hypothecium pallidum subdecoloratumve, jodo sat dilute caerulescens, KOH haud reagens, hyphis erectis, sat leptodermaticis, conglutinatis, partim parcusque cellulis incrassatis instructum, in parte infima hyphis irregulariter contextis. Perithecium tenue, jodo non reagens, hyphis oblique subradianibus, sat leptodermaticis, conglutinatis (in margine ramoso-connexis et in KOH distinctius turgescensibus), cavitatibus angustis aut sat angustis, extus vulgo obscuratum, intus subpallidum aut subdecoloratum. Hymenium sine limite in hypothecium transiens, jodo caerulescens. Epithecum KOH subolivaceo-nigricans (in ap. obscuratis), haud aut distincte granulosum. Paraphyses simplices, apice clavatae, clava 0.002—0.003 mm

crassa, etiam in KOH arcte cohaerentes. Sporae 8:nae, distichae, simplices, apicibus vulgo rotundatis. Conidangia minutissima, haud rara, thallo immersa, apice vulgo nigro, haud aut parum prominente. Sterigmata simplicia, apice sensim attenuato, filiformi-elongato, basi crass. 0.008 mm, parte incrassata long. circ. 0.008 mm. Conidia bene arcuata aut parce leviter arcuata flexuosave, long. 0.018—0.024, crass. 0.0005 mm. Gonidia cystococcoidea, diam. 0.008—0.015 mm, simplicia, globosa aut subellipsoidea.

*F. pallidolivens* Vain. Apothecia pallido-livescentia aut p. p. dilute cinereo-livescentia, tenuissime pruinosa.

*Distr.* Ad rupem graniticam in ins. Mjölo prope Helsingforsiam (Vain.).

Epitheciun pallido-olivaceum, granulosum. Hypothecium pallidum. Paraphyses arcte cohaerentes (etiam in KOH). Sporae long. 0.009—0.013, crass. 0.004—0.006 mm.

### Sect. **Lecidea lucida**.

Apothecia parva, lutea, ceraceo-flavida vel in olivaceum vergentia, hypothecium pallidum, sporae minutae vel minutissimae.

#### 220. **L. lucida** Ach.

Meth. Lich. (1803) p. 74, Lich. Univ. (1810) p. 209, Syn. Lich. (1814) p. 48; Schaer. Lich. Helv. Spic. IV (1833) p. 187, En. Lich. Eur. (1850) p. 150; Nyl. Prodr. Lich. Gall. (1857) p. 104 (350), Lich. Scand. (1861) p. 195; Th. Fr. Lich. Scand. II (1874) p. 432. *Lichen lucidus* Ach. Lich. Suec. Prodr. (1798) p. 432. *Bialora lucida* Fr. Lich. Suec. Exs. II (1818) n. 42, Sched. Crit. I (1824) p. 13, Lich. Eur. Ref. (1831) p. 279; Koerb. Syst. Lich. Germ. (1855) p. 208. *Psilolechia* Mass. Es. Comp. Alc. Gen. Lich. (1860) p. 20. *Pulveraria alboflava* Floerk. in Berl. Mag. 1807 p. 10 (sec. Ach.). *Lepraria Floerkeana* Ach. Lich. Univ. (1810) p. 663 (sec. Ach. Syn. Lich. p. 48).

*Exs.* Fr. Lich. Suec. Exs. II (1818) n. 42. — Schaer. Lich. Helv. Exs. XIII (1833) n. 225. — Zwackh Lich. Exs. (1851) n. 92. — Hepp Flecht. Eur. IX (1860) n. 484 (in herb. meo). — Leight. Lich. Brit. Exs. XIII (1867) n. 385. — Arn. Lich. Exs. (1885) n. 1119. — Havaas Lich. Norv. Exs. (1901) n. 13. (Lynge I. c.).

Thallus totus farinoso-sorediosus aut p. p. parce verruculosus, tenuis aut crassus, continuus aut areolato-diffractus dispersusve, citrinus aut flavescens, hypothallo indistincto.

Apothecia typice parva, adnata, convexa, immarginata, lutea citrinave aut vitellina. Hypothecium decoloratum. Epithe-  
cium lutescens, KOH non reagens. Paraphyses in KOH  
visae laxe cohaerentes. Sporae oblongae elongataeve aut  
clavatae, »long. 0.003—0.007, crass. 0.001—0.003 mm» sec. Th.  
Fr. et ann. Nyl.).

*Distr.* Locis siccis umbrosis et in cavernis luminosis ad basim ru-  
pium et in saxis graniticis gneissaceisve et dioriticis et porphyricis,  
raro ad terram et cortices lignaque vetusta crescens passim aut sat  
rare per totum territorium provenit. Al.: Passim (E. Nyl. Al. Lafv.  
p. 90), Lindesholm in Finström (K. Linkola). Ab.: Ispoinen (Vain.),  
Katariinanlaakso (V. Räsänen), Härkäläuto ad Bodnäs in Pargas (Lin-  
kola). N.: Suursaari v. Hoglandia (E. Nylander, M. Brenner Bidr.  
Hogl. Lafv. p. 82), Degerö (W. Nyl.), Bölsö in Kyrkslätt (A. Kull-  
heim). Ka.: Vanha-Viipuri (Vain. Lich. Vib. p. 60). Ik.: Pällilä in  
Muola (A. O. Kihlman). St.: Kokemäki (A. J. Malmgren), Björneborg  
(Malmgren). Ta.: Mustiala et Letku in Tammela (Kullh.), Vanaja  
(Norrl.), passim prope Vesijärvi (Norrl. Bidr. Sydöstr. Tav. Fl.  
p. 185), Jokioinen in Padasjoki (Vain.), Luhanka et Korpilahti (Vain.  
Fl. Tav. Or. p. 109). KLad.: Haud rara (Norrl. Symb. Fl. Lad.-Kar.  
p. 29), Valamo (Nyl.). KOL.: Vosnessenje (Elfv. Ant. Veg. Svir p.  
168). KOn.: Sat frequenter (Norrl. Fl. Kar. On. II p. 27). Oa.:  
Bötom (Malmgren), Kvarken (Malmgren), Lapua (V. Räsänen  
Meddel. 46 p. 172). Tb.: Pihlajavesi (Vain.), Piililä, Norola in Korpi-  
lahti (Vain.), Kanavuori, Rutaniemi in Jyväskylä (Vain.). Sb.:  
Kieluvanmäki et Neulamäki prope Kuopio (Linkola, Lång Lich.  
Sav. Bor. p. 33). Kb.: Vieki in Lieksa, Riihivaara in Nurmes (Vain.  
Adj. Lich. Lapp. II p. 34). Om.: Kokkola (Räs. I. c.). Ob.: Muhos  
(M. E. Huumonen, Räs. I. c.). OKaj.: Lehtovaara in Kianta (Vain.  
I. c.). Kuus.: Porontimajärvi (F. Silén). LKem.: Lappea (Norrl.  
Ber. Torn. Lappm. p. 345), Keimioniemi (Norrl. I. c. p. 334), Jeris-  
järvi in Muonioniska (Norrl.). LIn.: In reg. conif. ad Kultala (Vain.  
I. c.), Muddusniemi in Inari (F. Silén). LIm.: Umba (Kihlman).

Thallus nec KHO nec  $\text{CaCl}_2\text{O}_2$  reagens, in parte superiore hyphis  
0.0017—0.0022 mm crassis, in parte inferiore saepe gonidiis destitutus.  
Apothecia lat. 0.2—0.5 (—1) mm, vulgo simplicia, interdum tubercu-  
losa aut nonnulla confluentia, saepe crebra. Hypothecium increbre  
contextum, leptodermaticum, in parte inferiore maculis impellucidis,  
gonidiis destitutum. Perithecium in parte inferiore apothecii evo-  
latum, hyphis radiantibus, tenuibus, leptodermaticis, conglutinatis,  
extus lutescens, intus decoloratum, cellulis oblongis, 0.001—0.0015 mm  
latis. Hymenium circ. 0.030 mm crassum. »Jodo asci primum dilute  
caerulecent, dein vinose rubent, apiee colorem saepe caerulecente.

cetera fulvescunt». Paraphyses simplices, parce septatae, crass. 0.0007—0.001 mm, apicem versus sensim leviter incrassatae. Epitheciū luteo-granulosum. Sporae 8:næ, distichæ. Gonidia cystococcoidea, diam. 0.005—0.014 mm, globosa et parcus ellipsoideo-subglobosa, cystidium et nucleus continentia, autosporas formantia, membrana distincta.

*Obs.* Specimina lignicola ab Ach. nominata sunt *L. lutea*  $\beta$  *thejolea* (Vet. Ak. Handl. 1808 p. 270, Lich. Univ., 1810, p. 209, Syn. Lich. 1814, p. 48, *L. lucida*  $\alpha$  *granulosa* Schaeer. En. Lich. Eur., 1850, p. 150), terrigena  $\gamma$  *satura* Ach. herb. (Th. Fr. I. c.). *L. lucida*  $\beta$  *leprosa* Schaeer. (I. c.) ad specimina saxicola spectat. Specimina ad radices corticola crescentia in Hepp Flecht. Eur. IX (1860) n. 484 nominantur *Bialora lucida*  $\beta$  *leprosa* b *corticola*.

221. **L. symmictella** Nyl.

Flora 1868 p. 163, Obs. Peziz. Fenn. (1869) p. 59; Th. Fr. Lich. Scand. II (1874) p. 433; Hue Addend. II (1888) p. 142. *Bialora* Arn. Lich. Exs. (1883) n. 627, Lich. Fränk. Jur. (Fl. 1884) p. 151. *Aggyrium caesium* Fr. Syst. Myc. II p. 231, Scler. Suec. n. 279 (in herb. Nyl.), haud *Lecidea caesia* Ach. Syn. Lich. (1814) p. 17.

*Exs.* Fr. I. c. — Arn. Lich. Exs. (1875) n. 627, (1883) n. 1001. — Arn. Lich. Monac. (1890) n. 109, 110. — Lojka Lich. Univ. IV (1886) n. 177. — Malme Lich. Suec. Exs. IV (1898) n. 92. (See. Lyngé, cet.).

Thallus evanescens, hypothallo indistincto. Apothecia vulgo dispersa, minutissima, late adnata, basi leviter aut parum constricta, convexa, disco pallido aut carneo- vel stramineo-pallido aut raro albido, immarginata aut margine tenuissimo, concolore aut raro obscurato. Hypothecium decoloratum stramineumve, jodo haud aut parum reagens. Epitheciū stramineo-pallidum, granulosum. Paraphyses arcte cohaerentes, apice haud incrassatae. Sporae oblongae ellipsoideae, long. 0.003—0.008, crass. 0.0015—0.0017 mm (—0.003 mm) sec. Nyl.).

*Distr.* Ad lignum truncorum Pini et Juniperi et ad muscos rara. Ab.: Gunnarsnäs in Pargas (v. *albida*, F. Elfving). N.: Hoglandia (v. *cinctula*, M. Brenner). Ta.: Evo (J. P. Norrlin), prope templum in Korpilahti (Norrl.). KOL: Nikola (v. *albida*, Elfv.), Gorki (v. *cinctula*, Elfv.). Sb.: Kuopio (Linkola). Ob.: Luppio prope Alkula (Norrl. Ber. Torn. Lappm. p. 346).

Facie externa simillima est *Catillariae micrococciae*, sporis simpli-  
cibus ab ea differens. Apothecia lat. 0.1—0.25 mm, depresso-convexa  
aut hemisphaerica, gonidiis destituta, KOH non reagentia. Hypo-  
thecium hyphis erectis, tenuibus, sat leptodermatis et inferne  
modice pachydermaticis, conglutinatis, cavitatibus oblongis vel bre-  
vioribus, circ. 0.0015 mm latis. Peritheciun decoloratum et extus  
pallido-granulosum (superne obscuratum in v. *cinctula*), circ. 0.025—  
0.035 mm crassum, jodo non reagens, hyphis radiantibus, sat pachy-  
dermaticis, conglutinatis, simplicibus, cavitatibus elongatis, angustis-  
simis. Hymenium 0.030—0.040 mm crassum, jodo intense persistenter  
caerulescens (conf. v. *cinctula*). Paraphyses simplices, apice haud aut  
parum incrassatae, tubulis angustissimis, membrana parum gelati-  
nosa. Sporae 8:næ, distichæ, simplices. Gonidia sat parce pro-  
venientia, cystococcoidea, globosa aut raro ellipsoidea, diam. 0.010—  
0.016 mm. (Sec. specim. a Nyl. determinatum, in Evo a Norrl. a. 1865  
collectum, hic descripta est.).

Var. *albida* (Nyl.) Vain. *L. minuta* f. *albida* Nyl. sec. annot.  
(ined.).

Apothecia albida, convexa, immarginata.

*Distr.* Supra *Blepharoziam ciliare*m emortuam collecta. Ab.: Gunnarsnäs in Pargas (Elfv.). KOI.: Nikola prope flumen Svir (»*L. symmictella*« in Elfv. Ant. Veg. Svir p. 168). Ob.: Tiuranen in Simo (Räsänen).

Thallus indistinctus. Sporae oblongae, simplices, »long. 0.006—  
0.007, crass. 0.002—0.003 mm» sec. annot. Nyl.

Var. *cinctula* (Nyl.) Vain. *Lecidea cinctula* Nyl. in Brenn. Bidr. Högl. Lafv. (1885) p. 84 (sec. specim. orig.). *L. symmictella* var. *circumnigricans* Nyl. in Elfv. Ant. Veg. Svir (1878) p. 168 (sec. specim. orig. sub *L. glomerella* n. 19120 in herb. Nyl., etiam in Mus. Fenn.), nomen nudum. *Agrium caesium* Fr. (l. c.) p. p. (sec. specim. in herb. Nyl.).

Apothecia disco depresso-convexo, stramineo-albido, margine  
tenuissimo, nigricante aut cinereo-nigricante, subpersistente.

*Distr.* Ad lignum vetustum truncorum Pini et Juniperi. KOI.: Gorki (Elfv., »v. *circumnigricans* Nyl.«). N.: Mäkiinpäälys in Hoglandia (M. Brenner, »\**L. cinctula* Nyl.« in Mus. Fenn., »*L. symmictella* var. *circumnigricans*« in n. 20638 in herb. Nyl.). Ta.: Prope templum in Korpilahti) Norrl., nonnulla apothecia cum f. typica *L. symmictellæ*.

»Sporae long. 0.004—0.007, crass. 0.0015—0.0025 mm. Jodo gelatina  
hymenialis caerulescens, deinde violaceo-obscurata.« (Sec. Nyl.).

222. **L. clavulifera** Nyl.<sup>1)</sup>

Nyl. Addenda nova, Flora 1869 p. 294, 1877 p. 463 et 1881 p. 539 (sec. Hue Addenda nova p. 133). Th. Fries Lich. Scand. II (1874) p. 133. Arnold Lich. Fragm., Flora 1884 p. 563. — Zahlbr. Cat. Lich. III (1925) p. 748, ubi syn.

Tab. III, fig. 2.

Thallus albidus vel albido-cinerascens, tenuis, granuloso-fatiscens, granulae contiguae vel plus minusve dispersae.

Apothecia numerosa, vulgo dispersa, late adfixa et arcte adpressa, minuta, diam. 0.2—0.3 mm, jam primitus convexa, immarginata, atra vel olivaceo-atrata vel (sec. Nyl.) ochraceo-rufa, madefacta obscure livida vel olivacea, discus epruinosus, nitidiusculus, minute scabrosulus. Hypothecium pallidum, hymenium angustum, 35—40  $\mu$ , impure fuligineo-smaragdulum. Paraphyses arcte cohaerentes, in apice haud incrassatae. Ascii anguste clavati, 6—7  $\mu$  crassi, octospori. Sporae minutissimae, clavatae (saepe male evolutae), 4—6  $\times$  1  $\mu$ .

Pycnoconidia ignota.

Thallus KOH flavescent,  $\text{CaCl}_2\text{O}_2$  +, J +. Hymenium J e caeruleo sordide vinosum, KOH +.

Distr. Supra radices Abietis dejectae et ad terram in abiegnis, in locis humidis. In Fennia nondum saxicola inventa. LKem.: Muonioniska, Keimioniemi, leg. J. P. Norrlin. Ta.: Laurilinna, Koski (Vain.). N.: Mjölk prope Helsingforsiam (Vain.).

Obs. The editor found it very difficult to place this species. Nylander wrote: »e stirpe *L. lucidae*« (Hue Addenda p. 133). If a plant such as *Lecidea clavulifera* f. *subviridicans* Nyl. in Zwackh Lich. exsic. No. 844 really belongs to this species, this statement is probable. Th. Fries regarded it an *Eu-Lecidea* of his sect. *L. elabentis* (Lich. Scand. p. 552: »hyphae non amyloideae, hypothecium pallidum, paraphyses concretae.«) But he suggests the section *L. sylvicola*, the »Micro-Lecideae« as a more probable place (»hyphae non amyloideae, apothecia minuta, mox vel demum convexa, paraphyses concretae.«).

1) By B. Lynge.

To judge from the two plants in herb. Vainio (det. Nyl.) it is a *Bialora*. The editor might also suggest a comparison with the species of the *L. erythrophaea* section of Th. Fries Lich. Scand. p. 465: »apothecia parva, vulgo obscurata, hypothecium (normaliter) pallidum, paraphyses plus minus concretae, sporae mediocres vel minutae, spermatica (ubi visa) minute, brevia.»

## APPENDIX.

### **Crocynia neglecta** (Nyl.) Hue.

*Leucidea neglecta* Nyl. Ad Veg. Lich. Hels. (Not. Sällsk. F. Fl. Fenn. IV, 1859) p. 233 (excl. apoth.), Lich. Scand. (1861) p. 244 (excl. ap.); Th. Fr. Lich. Scand. II (1874) p. 524 (excl. ap.); Vain. Adj. Lich. Lapp. II (1883) p. 86; Zahlbr. Cat. Lich. Un. III (1925) p. 640 p. p.

*Exs.* Arn. Lich. Exs. (1874) n. 601 a, b (hb. Nyl.).

Thallus crustaceus, verruculis et granulis minutis, demum aut fere mox contiguis, interdum brevissime isidioideis, partim granula sorediorum formantibus obtectus, albidus vel cinereo-albidus, modice incrassatus aut sat crassus, KOH non bene reagens (saepe demum subflavescens), hypothallo indistincto, semper sterilis, interdum apotheciis *Nesolechia* *neglectae* Vain. infestatus (conf. infra).

Thallus nec jodo, nec  $\text{CaCl}_2\text{O}_2$  reagens sec. Th. Fr. Gonidia cystococcacea, globosa, saepe autosporas numerosas continentia. Apothecia, a Nylander et Th. Fr. aliisque auctoribus ad hanc speciem ducta descriptaque, revera pertinent ad fungum parasitatem, *Nesolechia* *neglectam* Vain., quae nullae speciei lichenum affinitatem ostendit et hymenio jodo non reagente, ascis omnino leptodermaticis et paraphysibus laxis melius cum fungis congruit. Apothecia ejus »lat. 0.2—0.25 mm, sporae fusiformi-oblongae aut oblongae, long. 0.007—0.14, crass. 0.0025—0.0035 mm» (sec. adnot. Nyl.), distichae, decolores, simplices, rectae. Ascii cylindrico-clavati. Hymenium tenuie. Epithecum fuscum, KOH demum subrubicosum. Paraphyses simplices, non gelatinosae, tenues, apice haud incrassatae, in KOH facile disjunctae. Hypothecium fuscescens, KOH demum rubricosum. Perithecum fusco nigrum, KOH demum subrubicosum. — Etiam in thallo sterili *Buelliae* (*Calolechia*) *epigaeae* var. *cacuminum* (Mass.) Jatta, sorediis destitutae, verrucis paullo majoribus instructae, gonidiis leviter differentibus, crescit. Sic specimina in Pyrenaeis a Nyl.

collecta, in Obs. Lich. Pyr. Or. (1873) p. 26 et 49, Lich. Pyr. Or. (1891) p. 50 et 73 commemorata, sec. hb. Nyl. in thallo hujus *Buelliae* obveniunt. »*Lecidea neglecta*« igitur adhuc melius ad *Leprarias* releganda est.

*Obs. 1.* *Lichen segestria* Neck. Meth. Musc. (1771) p. 113, Ach. Lich. Suec. Prodr. (1798) p. 6 (»*Lepraria segestria*«) forsitan ad *Leprarium neglectam* Vain. spectat, quod tamen est incertum. Specimina Achariana e Suecia nunc indeterminabilia sunt.

*Obs. 2.*<sup>1)</sup> Vainio had written the above description of this species which he referred to the genus *Lecidea*, as *L. neglecta* (Nyl.) Vain.

Its apothecia have repeatedly been described, e. g. by Nylander as well as by Th. M. Fries. The editor was able to study these fertile plants. He got the impression that the apothecia must belong to a parasitic fungus, a *Nesolechia*, and not to the thallus of the lichen.

The fertile plants were submitted to Dr. Nannfeldt, Uppsala, and to Dr. Keissler, Wien. Either of them confirmed the editor's opinion. Dr. Keissler was kind enough to write:

»Betreffs der *Lecidea neglecta* weise ich darauf hin, dass Hue in Monographia Crocyniarum dieselbe im Anhang zu den *Crocynia*-Arten aufzählt und ausführlich beschreibt, und dass der gleiche Autor später in Bull. Soc. Bot. France, vol. 71 (1921) p. 277 sie als *Crocynia neglecta* Hue anführt und auf Grund der Originalexemplare von Nylander eine genaue Beschreibung derselben gibt. Der Querschnitt durch den Thallus der fraglichen Flechte, der in Wien gemacht wurde, zeigt, wie Hofrat Zahlbruckner sagt, nichts auffälliges, was zu einer sicheren Bestimmung derselben eine Handhabe bieten würde, doch gewinnt man nicht recht den Eindruck, dass ein *Lecidea*-Lager vorliegt. Dieser letztere Umstand und die Tatsache, dass die fraglichen Apothecien nicht schlecht auf *Nesolechia vitellinaria* passen, scheinen dafür zu sprechen, dass wir hier einen sterilen Thallus nach Art einer *Crocynia* vor uns haben, auf dem die *Nesolechia* parasitiert. Eine Stütze erfährt diese Anschabung in der Feststellung, dass außerdem am Querschnitt eingesenkte Peritheciens zu sehen sind, die offenbar einem zweiten, auf dem Lager entwickelten Parasiten zugehören, dessen Bestimmung leider nicht möglich war, weil die Gehäuse leer sind.«

The editor has, accordingly, felt it necessary to remove this species from the genus *Lecidea*, and to refer it to the genus *Crocynia*.

<sup>1)</sup> By B. Lynge.

8. **Catillaria** (Ach.) Th. Fr.

Lich. Scand. II (1874) p. 563 (maj. p.); Ach. Lich. Univ. (1810) p. 153 (em.); Mass. Ric. Lich. Crost. (1852) p. 78 (em.); Zahlbr. Ascol. (1905) p. 133 p. p.; Vain. Lich. Fenn. II (1892) p. 129, Lich. Ins. Philipp. IV (1923) p. 47. *Lecidea* \**Catillaria* Ach. Meth. Lich. (1803) p. 33 (emend.); Vain. Étud. Lich. Brés. II (1890) p. 38. *Bialorina* Mass. l. c. p. 134 (maj. p.).

Thallus crustaceus, uniformis, gonidia continens. Sporae 8:nae aut raro 12:nae vel 16:nae, decoloratae, breves aut sat breves, vulgo comparatae crassae, ellipsoideae oblongaeve aut ovoidae, strato gelatinoso haud indutae, 1-septatae; septo tenui. Gonidia pleurococcoidea aut micareina aut cystococcoidea.

Sect. 1. *Eucatillaria* Th. Fr. Apothecia atra, gonidiis destituta. Hypothecium obscuratum.

Ser. A. Apothecia adnata.

§ Apothecia medioeria aut sat parva. Paraphyses arcte cohaerentes.

† Saxicolae.

○ Thallus obscuratus.

1. *C. subnigra* (Nyl.) Blomb. et Forss. Hymenium epithecio aeruginoso-fuligineo, ceterum decoloratum. p. 423.

○○ Thallus subalbidus cinerascensve aut ochraceus.

2. *C. subnitida* Hellb. Epithecium partim cyanescens-nigricans, hymenium ceterum decoloratum aut parte inferiore cyanescens. p. 423.

3. *C. hypochlorella* Vain. Hymenium totum aut inferius smaragdulum, epithecio interdum olivaceo fuligineove. p. 425.

†† Corticolae.

4. *C. Laureri* Hepp. Epithecium aeruginoso-nigricans. Hypothecium rufescens. p. 426.

§§ Apothecia parva. Paraphyses sat laxe cohaerentes.

5. *C. chalybaea* (Borr.) Mass. Epithecium vulgo fuscescens. Hypothecium subfuscum. p. 427.

Ser. B. Apothecia immersa.

6. *C. epigaeella* (Nyl.) Th. Fr. Epithecium fuscescens. Paraphyses arcte cohaerentes. p. 430.

Sect. 2. *Lepolecania* Vain. Apothecia in parte inferiore peritheci parce gonidia continentia, fusca aut nigricantia. Hypothecium decoloratum pallidumve aut parte superiore fuscescens.

7. *C. atropurpurea* (Schaer.) Th. Fr. Sporae 8:nae. p. 431.

8. *C. Neuschmidii* (Koerb.) Th. Fr. Sporae 8—16:nae (in eodem apothecio). p. 433.

Sect. 3. *Bialorina* (Mass.) Vain. Apothecia dilute colorata aut rufescentia fuscescentiave aut nigricantia, gonidiis destituta. Hypothecium decoloratum aut dilute coloratum subrubescensve. Paraphyses simplices.

\* Paraphyses sat laxe cohaerentes.

9. *C. lenticularis* (Ach.) Lindau. Saxicola. Apothecia nigricantia. Epithecium fuscescens, KOH purpurascens. p. 435.

10. *C. nigroclavata* (Nyl.) Vain. Corticola. Apothecia nigra. Epithecium fusco-fuligineum, KOH non reagens. p. 436.

\*\* Paraphyses arcte cohaerentes.

△ Apothecia sat parva aut mediocria, typice obscurata (aut p. p. pallidiora).

11. *C. leucophaeotera* (Nyl.) Vain. Saxicola. Apothecia basi bene constricta, disco fusco. p. 437.

12. *C. Griffithii* (Sm.) Malme (*C. tricolor*). Corticola. Apothecia late adnata, saepe versicoloria, nigricantia aut p. p. pallidiora. p. 438.

△△ Apothecia parva.

○ Apothecia typice pallida testaceave.

13. *C. chloroticella* (Nyl.) Blomb. et Forss. Thallus verruculosoinaequalis, haud sorediosus. Apothecia immarginata. p. 440.

14. *C. Bouteillei* (Desmaz.) Zahlbr. Thallus sorediosus. Apothecia diu marginata. p. 441.

○○ Apothecia typice obscurata (raro pallidiora).

15. *C. globulosa* (Floerk.) Th. Fr. Corticola et lignicola. Epithecium KOH non reagens. p. 444.

16. *C. epiblastematica* (Wallr.) Vain. Peltigericola. Epithecium vulgo aeruginosum. p. 448.

Sect. 4. *Micarea* (Fr.) Vain. Apothecia atra aut dilutius colorata, gonidiis destituta. Hypothecium decoloratum pallidumve aut raro partim rubricosum. Paraphyses partim ramoso-connexae.

a. Conidangia frequentia, atra, confluentia, glomerulos 0.3—0.6 mm latos formantia.

17. *C. graniformis* (Hag.) Vain. (*C. Ehrhartiana*). Apothecia mediocria aut sat parva, stramineo- aut carneo-pallida, KOH non reagentia. p. 450.

b. Conidangia simplicia, minutissima, rara aut in nonnullis speciebus frequentia.

a. Apothecia atra nigricantiave aut subfuscescentia.

+ Apothecia sat parva mediocriave, atra.

18. *C. Dufourei* (Ach.) Vain. Hypothecium subalbidum. p. 452.

19. \**C. Kivakkensis* Vain. Hypothecium pallidum et partim rubricosum. p. 453.

+ + Apothecia parva, atra.

20. *C. intrusa* Th. Fr. Epitheciū KOH non reagens. p. 454.  
 + + + Apothecia parva, fuscescentia nigricantiave.  
 ☐ Epitheciū KOH non reagens.
21. *C. elachista* (Koerb.) Vain. (*C. glomerella*). Thallus verruculosus. Apothecia fuscescentia nigricantiave. p. 455.  
 ☐ ☐ Epitheciū KOH reagens.  
 ☐ Epitheciū KOH rubescenti-violascens.
22. *C. denigrata* (Fr.) Vain. Apothecia concoloria, nigra aut raro fusconigra. Conidangia saepe numerosissima, massa conidiorum albida protrudente. p. 458.
23. *C. hemipoliella* (Nyl.) Blomb. et Forss. Apothecia versicoloria, livida et dimidiatim pallidiora, minutissima. p. 462.
24. *C. sordidescens* (Nyl.) Vain. Apothecia livido-nigricantia aut partim nigricantia aut parce livido-testacea, simplicia sat parva, saepe demum confluentia. p. 463.  
 ☐ ☐ Epitheciū KOH caeruleo-violascens.
25. *C. melanobola* (Nyl.) Vain. Apothecia minutissima, nigra aut parce livido-nigricantia. p. 465.  
 β. Apothecia pallida aut rufescens, KOH non reagentia.  
 † Thallus e granulis minutissimis, prolificantibus constans.  
 Gonidia glomerulosa, pariete communi gelatinoso-incrassato.
26. *C. prasina* (Fr.) Vain. Apothecia simplicia vulgo sat parva aut submediocria, saepe demum tuberculosa confluentiae. p. 466.  
 †† Thallus verniceus aut verruculosus. Gonidia membrana non gelatinoso-incrassata.  
 ☐ Apothecia minutissima, carneo-pallida.
27. *C. micrococca* (Zwakk) Th. Fr. Thallus subdispersus. p. 468.  
 ☐ ☐ Apothecia parva, testacea rufescens.
28. *C. erysiboides* (Nyl.) Th. Fr. Apothecia simplicia. Sporae ovoideae, rectae. p. 469.
29. *C. anterior* (Nyl.) Vain. Apothecia vulgo demum tuberculo-divisa. Sporae elongato-ovoideae, p. p. leviter curvatae. p. 470.

### Sect. 1. **Eucatillaria** Th. Fr.

Lich. Scand. II (1874) p. 580. *Catillaria* Mass. Ric. Lich. Crost. (1852) p. 78 p. p.; Koerb. Syst. Lich. Germ. (1855) p. 231 p. p.; Th. Fr. Lich. Arct. (1860) p. 205, Gen. Heterol. (1861) p. 88 p. p.; Arn. Lich. Münch. (1891) p. 84.

Apothecia atra, gonidiis destituta. Hypothecium saltem parte superiore obscuratum. Sporae minutae mediocresve.

Sect. *Psorothecium* (Mass.) Vain. (Lich. Ins. Philipp. IV, 1923, p. 47) sporis magnis dignotum, in terris calidioribus crescens, in Fennia non provenit.

1. **C. subnigra** (Nyl.) Blomb. et Forss.

Enum. Plant. Scand. (1880) p. 92. *Lecidea subnigra* Nyl. Fl. 1873 p. 21; Norrl. Fl. Kar. Oneg. II (1876) p. 30; Hue Addend. II (1888) p. 237. Non *Lecidea enclitica* f. *subnigra* Nyl. in Blomb. et Forss. l. c. p. 89.

Thallus sat tenuis, verruculosus, verruculis saepe contiguis, glaucescenti- vel subolivaceo-nigricantibus, hypothallo indistincto. Apothecia sat parva, late adnata, nigra, nuda, leviter nitida, disco demum depresso-convexo, primum tenuiter marginata. Hypothecium obscure purpureum. Hymenium epithecio aeruginoso-fuligineo, KOH olivascente, ceterum decoloratum. Paraphyses arcte cohaerentes. Sporae 8:nae, subfusiformi-oblongae, 1-septatae, long. 0.01—0.012 (—0.015), crass. 0.0017—0.003 mm, sec. annot. Nyl. »long. 0.009—0.016, crass. 0.002—0.003 mm.»

*Distr.* Supra lapidem calcareum ferrosum ad Tiudie in KOn (J. P. Norrlin).

Affinis est *C. subnitidae* et *C. hypochlorellae*, quae in eam forsitan transeunt. Thallus verruculis 0.1—0.15 mm latis. Apothecia lat. circ. 0.8 mm, basi leviter constricta, disco laevigato. Hypothecium KOH non reagens, hyphis irregulariter contextis, sat leptodermaticis. Peritheciun purpureum vel dilute subpurpureum, KOH non reagens, hyphis radiantibus, conglutinatis, sat leptodermaticis, tubulis 0.001—0.002 mm latis aut partim cellulis ellipsoideis. Hymenium circ. 0.050—0.060 mm crassum, jodo caerulescens dein vinose rubens. Paraphyses simplices, crass. 0.002—0.0015 mm, apice parum incrassatae, membrana haud aut leviter gelatinosa. Sporae distichae, rectae, apicibus obtusis aut sat acutis. Gonidia cystococcoidea, globosa, diam. 0.009—0.015 mm, vacuolis lateralibus, membrana modice incrassata.

2. **C. subnitida** Hellb.

Nerik. Lafveg. (1871) p. 25, Nerik. Laffl. (1871) p. 92; Th. Fr. Lich. Scand. II (1874) p. 583. *Lecidea platycarpiza* Nyl. Fl. 1873 p. 22 (haud Fl. 1881 p. 534, Hue Addend. II p. 193). *L. subnitida* Nyl. in Norrl. Fl. Kar. Oneg. II (1876) p. 33; Hue Addend. II (1888) p. 175; Harm. Cat. Lich. Lorraine V p. 410, tab. XXVI f. 28, 29.

*Exs.* Arn. Lich. Exs. (1893) n. 1587. — Norrl. et Nyl. Herb. Lich Fenn. cont. (1921) n. 722.

Thallus tenuissimus aut sat tenuis, verruculoso-inaequalis, cinerascens aut virescenti-cinereus albidusve, hypothallo indistincto. Apothecia mediocria aut sat parva, late adnata, nigra, nuda aut raro subpruinosa, leviter nitida, diu planiuscula et margine tenui instructa, demum interdum leviter convexa immarginataque. Hypothecium nigricans. Hymenium epithecio partim cyanescenti-nigricante aut etiam parte inferiore cyanescens. Paraphyses arcte cohaerentes. Sporae 8:nae, ellipsoideae oblongaeve, 1-septatae, long. 0.010—0.012 (—0.014) mm, crass. 0.002—0.005 mm (—0.006 mm» sec. Nyl.).

*Distr.* KLad.: In latere rupis marmoreae uno loco sat copiose in Ruskeala (Norrl. I. c. n. 722, Symb. Fl. Lad.-Kar. p. 30). KOn.: Supra saxa quartzoso-vel granitoso-calcarea ad Suojärvi et Valkeamäki (Norrl. Fl. Kar. Oneg. II p. 33).

Apothecia lat. circ. 0.8—0.4 mm, crass. circ. 0.2 mm, basi leviter constricta, disco laevigato. Hypothecium ex hyphis leptodermaticis, irregulariter contextis, conglutinatis formatum, KOH obscure purpureum. Peritheciun nigricans, KOH in parte summa marginis cyanescens aut aeruginosum, ceterum obscure purpureum, hyphis radiantibus, conglutinatis, membranis in KHO leviter turgescentibus, cavitatibus angustis. Hymenium (in Arn. L. Exs. n. 1587 e loco orig. medio dilute glaucescens), 0.050—0.060 (—0.070) mm crassum, jodo dilute caeruleo-virescens, dein vinose rubens, KOH superne et inferne demum olivaceo-virescens. Paraphyses simplices, membranis gelatinosis, KOH parum aut distincte turgescentibus, tubulis 0.0005—0.001 mm latis, p. p. apice leviter incrassatae. Sporae distichae, rectae, apicibus obtusis aut rotundatis, in specim. orig. long. 0.010—0.012, crass. 0.003—0.004 mm. Conidia »filiformia, curvata, long. 0.012—0.014, crass. 0.0005 mm» sec. annot. Nyl. (conf. etiam Arn. Lich. Tirol XVI p. 391). Gonidia cystococcoidea, simplicia, subglobosa, diam. 0.008—0.012 mm, vacuolis lateralibus, membrana sat tenui.

*Obs. 1.* *C. subnitida* in Arn. Lich. Tirol XVI (1876) p. 390, epithecio obscure smaragdulo et hypothecio parte superiore ei concolore nec rubricoso descripta, saltem descriptione cum *C. hypochlorella* Vain. congruit.

*Obs. 2.* *Bialora alhallina* Hepp Flecht. Eur. IX (1860) n. 496 (*Bialorina lenticularis* γ *acrustacea* (Hepp) Arn. Fl. 1858 p. 502), *Catillaria alhallina* Hellb. Vet. Ak. Förh. 1867 p. 273, Th. Fr. Lich.

Scand. II (1874) p. 584, *Patellaria tristis* (Hepp) Müll. Arg. Princ. Class. Lich. (1862) p. 58, Fl. 1870 p. 261 (*Catillaria tristis* Arn. Lich. Tirol XVI, 1876, p. 391), gonidiis trentepohliaceis, e cellulis formatis 0.010—0.019 mm longis, 0.010—0.014 mm crassis, partim parce concatenatis, pachydermaticis, instrueta, ad *Catinarium acrustaceum* (Hepp) Vain. pertinet, paraphysibus simplicibus ab *Arthonia actinum* Vain. (Cat. Welw. Afr. Pl. Lich. p. 430) differentem et ad *Lecanactinea* pertinentem (conf. Vain. Lich. Fenn. II, 1922, p. 143).

*Obs. 3.* *Lecidea grossa* Pers. in Nyl. Prodr. Lich. Gall. (1857) p. 385 (139), Lich. Scand. (1861) p. 239 (*Catillaria* Blomq. Vet. Ak. Förh. 1867 p. 122, Th. Fr. Lich. Scand. II, 1874, p. 581), paraphysibus opegraphinis, parce ramoso-connexis, praesertim apice flexuosis instructa, rectius ad *Arthonia actinum* Vain. pertinet (conf. Vain. Lich. Fenn. II p. 143).

### 3. *C. hypochlorella* Vain.

*Lecidea hypochlorella* Vain. Adj. Lich. Lapp. II (Meddel. Soc. F. et Fl. Fenn. X, 1883) p. 26.

Thallus tenuis, rimoso-diffractus, sat inaequalis, aut verruculosus dispersusque, ochraceus aut cinereo-virescens, aut partim evanescens. Apothecia mediocria aut parva, diu plana marginataque, saepe demum convexa et fere immarginata, nigra, nuda, opaca. Hymenium totum aut inferius smaragdulum, interdum epithecio olivaceo fuligineo. Paraphyses arcte cohaerentes, apicibus haud incrassatis. Hypothecium parte superiore smaragdulum, parte inferiore perithecio concolor, rubricoso-fuligineum sive atropurpureum. Sporae 8:næ, oblongæ vel fusiformi-oblongæ, long. 0.009—0.014, crass. 0.003—0.004 mm.

*Distr.* Ad lapidem graniticum loco aprico ventoso in reg. subalp. in jugo Suoloselkä in LIn. (Vain.).

Proxima est *C. subnitidae* Hellb., quæ hymenio cyanescente nec smaragdulo ab ea differt. Thallus sorediis destitutus, KOH non reagens, hypothallo indistincto. Apothecia usque ad marginem adnata aut demum leviter constricta, lat. 0.4—0.6 (0.3—0.9) mm, sat tenuia, disco levissime subscabrido aut sat laevigato, nudo, margine tenui, sat integro, haud prominente, nigro, nudo. Hymenium crass. 0.056—0.090 mm, jodo caerulescens deinque vino rubens, KOH non reagens. Epithecium tenue, interdum partim decoloratum. Paraphyses arcte cohaerentes, gelatinam in KOH leviter turgescentem percur-

rentes, simplices, apicibus haud incrassatis. Sporae distichae, decolorantes, apicibus obtusis, 1-septatae. Gonidia parca, globosa, simplicia, diam. 0.009—0.012 mm, membrana modice incrassata.

#### 4. *C. Laureri* Hepp

in Arn. Lich. Exs. (1867) n. 353 (haud *Bialora Laureri* Hepp Flecht. Eur., 1853, n. 4 sec. Th. Fr.); Th. Fr. Lich. Scand. II (1874) p. 582. *Lecidea intermixta* Nyl. Lich. Scand. (1861) p. 194 p. p. (non *L. intermixta* Nyl. Addit. Crypt. Chil., 1855, p. 161, conf. infra), Fl. 1866 p. 374; Hue Addend. II (1888) p. 152 (excl. var.). *Catillaria intermixta* Arn. Verh. Zool.-bot. Gesellsch. Wien (1870) p. 455.

*Exs.* Arn. Lich. Exs. (1867) n. 353, (1874) n. 603. — Rabenh. Lich. Eur. Exs. XXX (1868) n. 804. — Zwackh Lich. Exs. (1888) n. 793. — Malme Lich. Suec. Exs. II (1897) n. 41, XXV (1916) n. 613. — Johns. North Engl. Lich. IX (1900) n. 337. — Zahlbr. Lich. Rar. Exs. (1908) n. 109. (Sec. Lynge Ind. Lich. Exs.).

Thallus tenuis, leviter inaequalis, albidus aut subcinereascens, hypothallo nigricante interdum limitatus. Apothecia medioeria aut sat parva, late adnata, disco citius convexo, nigro, nudo, margine saepe pallidiore, modice incrassato, saepe mox excluso. Hypothecium rufescens, saepe parte infima subfulvescente. Epithecium aeruginoso-nigricans. Paraphyses arcte cohaerentes. Sporae 8:nac, ellipsoideae oblongae aut subovoideae, 1-septatae, long. 0.012—0.014 (»—0.017» sec. Th. Fr.), crass. 0.008 mm (»0.006—0.0075 mm» sec. Th. Fr.).

*Distr.* Ad corticem Fagorum in Dania et Suecia proveniens, in Fennia adhuc collecta non est.

Facie externa saepe parum differt a *Lecidea atroviridi* (Arn.). Thallus KOH lutescens fulvescensve (»obscurior vix mutatur» sec. Th. Fr.). Apothecia sat crebra, lat. 1—0.7 mm (»—1.5 mm» sec. Th. Fr.), basi demum leviter constricta. Peritheciun (in Zwackh L. E. n. 793) extus dilute aeruginosum (sordide), intus subalbidum (sordide), hyphis radiantibus, sat pachydermatieis, cavitatibus angustis. Hypothecium crassum, ex hyphis erectis formatum. Hymenium circ. 0.065 mm crassum, »jodo caerulescit, dein sordide decoloratur, ascis violascentibus» (Th. Fr.). Paraphyses arcte cohaerentes, simplices, apice clavatae. Sporae distichae, apicibus rotundatis obsusivae. Gonidia simplicia, subglobosa, diam. 0.006—0.014 mm.

*Obs.* In specimine orig. (n. 18214 a in herb. Nyl.) e Chili »*L. intermixtae* Nyl.» apothecia basi constricta, fusca, lat. 0.8—0.5 mm, hypo-

thecium subicoloratum (etiam sec. annot. Nyl.), quare ad *C. Laureri* non pertinet. Postea perperam ad *C. intermixtam* specimina *C. Laureri* Hepp (Th. Fr. Lich. Scand. II p. 582), hypothecio fuscenscente instructa, a Nyl. et aliis auctoriis ducta sunt.

### 5. *C. chalybea* (Borr.) Mass.

*C. chalybeja* Mass. Ric. Lich. Crost. (1852) p. 791; Arn. Lich. Tirol XX (1879) p. 356 (*C. chalybeia*), XXIII (1887) p. 101, Lich. Fränk. Jur. (Fl. 1884) p. 175. *Lecidea chalybeia* Borr. Engl. Bot. Suppl. (1831) tab. 2687 f. 2; Nyl. Herb. Lich. Par. III (1855) n. 139, Prodri. Lich. Gall. (1857) p. 136 (382) exel. *L. nigroclavata*, Fl. 1881 p. 185, Lich. Paris (1896) p. 96, Suppl. Lich. Paris (1897) p. 7; Leight. Lich. Great Brit. 3 ed. (1879) p. 327; Vain. Adj. Lich. Lapp. II (1883) p. 25; Hue Addenda II (1888) p. 231. *Biatorina holomelaena*  $\beta$  *chalybeia* Hepp Flecht. Eur. I (1853) n. 13. *Biatorina lenticularis*  $\alpha$  *vulgaris* Koerb. Parerga Lich. 2 Lief. (1860) p. 144. *Catillaria* (*Biatorina*) *lenticularis*  $\alpha$  *vulgaris* Th. Fr. Lich. Scand. II (1874) p. 568. *Biatora deplanatula* Müll. Arg. Fl. 1870 p. 165 (sec. annot. Nyl. in specim. orig. n. 12004).

*Exs.* Hepp l. c. n. 13. — Nyl. l. c. n. 139. — Zwackh Lich. Exs. (1880) n. 599. — Lojka Lich. Hung. II (1882) n. 82 (sec. Lynge l. c. p. 341).

Thallus vulgo tenuis, continuus aut minute areolatus, cinereo-nigricans cinerascensve aut impure albidos, aut evanescens, hypothallo nigricante, tenui, bene evoluto aut evanescente. Apothecia parva, late adnata, nigra, nuda, opaca, disco plano aut demum convexo, laevigato, margine tenui, persistente aut demum excluso. Hypothecium fuscens aut fulvo- vel pallido- aut subrubricoso-fuscens. Hymenium epithecio vulgo fuscenscente vel fusco-nigro, ceterum decoloratum aut praesertim basim versus smaragdulum vel aeruginosum. Paraphyses sat laxe cohaerentes. Sporae 8:næ, vulgo ovoideæ, 1-septatae, »long. 0.007—0.010, crass. 0.0025—0.0035 mm» (sec. Nyl.).

*Distr.* Ad rupes et saxa, granitica, gneissacea et schistosa, praesertim in littore marino, interdum etiam in littore lacuum, raro ad lignum. In insulis Alandiae (E. Nylander). N.: Hangö (E. Häyrén), Rovholmsgrund in Tvärminne (E. Häyrén). Somerikonyuoret (Vain. in M. Brenner Bidr. Hogl. Lafv., 1885, p. 117) et alibi (E. Nylander) Hoglandiae; prope Helsingforsiam (Vain.), insula Träskopan in

Esbo (Vain.). Porkala et alibi in Kyrkslätt (A. Kullhem). Ka.: Uuras Viburgi (Vain.). Ta.: Letku (»*B. lenticularis*« Kullh. Lich. Bar. Must. p. 274) et Mustiala in Tammela (Kullh.), ad Sikolahti in Luhanka, Paljakko et Piililä in Korpilahti (Vain. Fl. Tav. Or., 1878, p. 115). OKaj.: Ad Lammasjärvi in Kuhmo (Vain. Adj. Lich. Lapp. II p. 25).

*F. vulgaris* (Koerb.) Vain. *Biatorina lenticularis a vulgaris* Koerb. Parerga Lich. (1865) p. 144. *C. lenticularis a vulgaris* Th. Fr. l. c. p. p.

Thallus tenuis, continuus aut minute areolatus, cinereo-nigricans, hypothallo nigricante, bene evoluto. Hymenium praesertim basim versus smaragdulum vel aeruginosum.

*Distr.* Ad rupes et saxa, granitica, gneissacea et schistosa, in littore marino et in littore lacus. — Specimens were present in herb. Vainio from the following places: N.: Träskoplan in Esbo (Vain.), and Ta.: Letku in Tammela (Kullhem).

Thallus sorediis destitutus, KOH non reagens. Apothecia lat. 0.3—0.4 (—0.5) mm, crass. circ. 0.160 mm, basi leviter aut parum constricta, margine haud aut leviter prominente. Hypothecium in parte superiore partim cellulis depressis, in seriebus horizontalibus dispositis, in parte inferiore saepe fulvescens. Peritheciun fusco fuligineum, hyphis conglutinatis. Hymenium circ. 0.065—0.070 mm crassum, jodo caerulescens, dein vinose rubens. Paraphyses sat laxe cohaerentes, simplices, tenues, apice capitatae clavatae, clava 0.002—0.003 mm crassa, vulgo fuscescente. Ascii clavati. Sporae distichae, ovoideae aut oblongae ellipsoideae, apicibus rotundatis aut altero apice obtuso, long. 0.006—0.009, crass. 0.0025—0.0035 mm a me visae. Conidangia »punctiformia, elevata, inter apothecia dispersa.« Conidia »oblonga, long. vix 0.002 mm, crass. 0.0005 mm« (Arn. Lich. Tirol XX p. 356). Gonidia cystococcoidea, diam. 0.006—0.010 mm, simplicia. »Leptogonidia haud rara« sec. Th. Fl. l. c. p. 568, sed talia numquam in hac specie vidi, quare fortuito immixta sint.

*F. athalliza* (Nyl.) Vain. *Lecidea chalybeia* f. *athalliza* Nyl. Lich. Pyr. Or. (1891) p. 19.

Thallus tenuis, minute areolatus aut subcontinuus vel crebre rimulosus, impure albidos vel albido-cinerascens, hypothallo indistincto. Hymenium praesertim parte inferiore aeruginosum.

*Distr.* Ad rupes gneissaceas et graniticas in lateribus rupium. N.: Prope Helsingforsiam (Vain.). Ta.: Pililä in Korpilahti (Vain.).

Thallus KOH non reagens. Apothecia late aut usque ad marginem adnata, disco plano aut demum convexo, laevigato, opaco, margine tenui, haud aut leviter prominente, persistente aut demum excluso. Peritheciun fuligineum aut fusco-fuligineum, hyphis sat tenuibus, sat leptodermaticis, conglutinatis. Hymenium circ. 0.040—0.055

mm crassum, saepe etiam sub epithecio fusco-fuligineo anguste aeruginosum, KOH non reagens. Hypothecium totum fuscescens aut rubricoso-fuscescens aut parte inferiore fulvo-fuscescens, KOH non reagens, textura variabile, hyphis irregulariter contextis aut erectis aut in parte superiore horizontaliter dispositis. Paraphyses apice clavatae capitataeve. Sporae vulgo ovoideo-oblongae, altero apice rotundato, altero obtuso, 1-septatae, long. 0.008—0.010, crass. 0.0025—0.003 mm.

*Obs. 1.* *L. chalybeia* f. *athalliza* Nyl. l. c. »thallo nonnisi macula glauco-cinerascente indicato, sporis nonnihil majoribus (long. 0.009—0.011, crass. 0.004 mm)» describitur. »Passim supra lapides olivetorum ad Palada.»

*Obs. 2.* *L. chalybeia* \**L. chloroscolina* Nyl. in Hue Addenda II, 1888, p. 231 (*L. chloroscolina* Nyl. Fl. 1877 p. 565, Fl. 1882 p. 457, Leight. Lich. Great Brit. 3 ed., 1879, p. 352), »thallo cinereo-virente, sporis typice 1-septatis, interdum simplicibus, long. 0.008—0.014, crass. 0.003—0.004 mm, gelatina hymeniali jodo caerulescente, dein fulvescente, paraphysisibus apice nigrescenti-clavatis, »thalamio nonnihil caerulescente», hypothecio nigro vel »fusco», supra caerulescente, KOH nonnihil violascente, »sterigmatibus 3—4-articulatis, articulis conidia efferentibus», conidiis »ellipsoideis, long. 0.002, crass. 0.001 mm», a Nyl. l. c. et in herb. suo descripta est. In specimine orig. hypothallus haud evolutus. Est status intermedium inter f. *athallizam* Vain. et f. *vulgarem* Vain.

*Obs. 3.* *Bialorina nubila* Norm. (Vet. Ak. Forh. 1870 p. 804), »crusta bene evoluta, late expansa, granuloso-scabra, demum rimoso-areolata, fusca v. nigricante insignis ad »*C. lenticularem* & *vulgarem* saxoniam» sec. Th. Fr. et specim. orig. in herb. Nyl. pertinet. — *L. nubila* Vain. Lich. Vib. (1878) p. 69, ad lapidem in Tervaniemi Viburgi parcissime lecta, sporis 1-septatis (vel demum 3-septatis), long. 0.010—0.012, crass. 0.0035—0.004 mm descripta est.

*Obs. 4.* *C. lenticularis* f. *evoluta* Th. Fr. l. c. p. 569, »sporis usque ad 0.016 mm longis et 0.004 mm crassis» instructa, cuius specimen minutum e Mortensnaes Varangiae reportatum est, accuratiore studio a Th. Fr. commendatur.

*F. achlora* Vain.

Thallus tenuis, minute areolatus, impure albidus vel subcinereus, hypothallo indistincto. Hymenium typice haud aeruginosum.

*Distr.* Ad rupes gneissaceas in caverna rupis et in rupe littorali lacus. Ta.: Sikolahti in Luhanka (Vain.), Letku in Tammela (Kullh.). OKaj.: Ad Lammasjärvi in Kuhmo (in Vain. Adj. Lich. Lapp. II p. 25 descripta).

Hypothecium fuscescens aut totum vel parte inferiore fulvo-fuscescens. Epithecum fuligineum aut fusco-fuligineum, ceterum

hymenium decoloratum aut partim praesertimque parte inferiore fulvescens (aut in aliis apothecis etiam aeruginosum). Paraphyses crass. 0.0015 mm, apice 0.003 mm. Sporae visae long. 0.01, crass. 0.003 mm, 1-septatae. Gonidia cystococcaceae.

*F. ilicis* (Mass.) Vain. *Lecidea ilicis* Mass. Mem. Lich. (1853) p. 124. *Catillaria ilicis* Mass. Symm. Lich. (1855) p. 47 (»ap. extus intusque atra» sec. Mass., conf. Arn. Lich. Fränk. Jur. p. 174). *Bilimbia* (?) *minutula* Koerb. Lich. Sel. Germ. VII (1861) n. 190 (sec. herb. Nyl.).

Thallus tenuis, cinerascens vel cinereo-glaucescens, aut evanescens, hypothallo indistincto. Hymenium epithecio fusco-fuligineo, ceterum decoloratum. Hypothecium fuscum aut pallido-fuscescens. Corticola et lignicola.

*Distr.* In Fennia nondum collecta.

*Obs.* *Lecidea nigroclavata* Nyl. in Nya Bot. Not. 1853 (Coll. Gall. Merid.) p. 11 (160), cet., et *Biatorina nigroclavata* Arn. p. p. ad hanc formam pertinent (conf. sub *Catillaria nigroclavata*). »*Biatora synothea* β *chalybeata*» in Hepp Flecht. Eur. I (1853) n. 15, ad *L. nigroclavata* a Stizenb. in Lich. Helv. I (1882) p. 210 dueta, in herb. meo ad *Lecideam glomerulosam* (DC.) Nyl. pertinet.

### 6. C. epigaeella (Nyl.) Th. Fr.

Lich. Scand. II (1874) p. 569. *Lecidea epigaeella* Nyl. Flora 1865 p. 7, Lich. Lapp. Or. (1866) p. 165; Hue Addend. II (1888) p. 239.

Thallus sat tenuis, subcontinuus, sat laevigatus, cinereo-pallidus, hypothallo indistincto. Apothecia minutissima parvave, thallo immersa, disco plano, fusco aut nigricante, nudo, immarginata. Hypothecium fuscum. Epithecum fuscescens. Paraphyses arcte cohaerentes, gelatinosae. Sporae 8:nae, ovoideae oblongaeve, 1-septatae, long. 0.015—0.019 mm (»—0.023 mm» sec. Nyl.), crass. 0.007—0.011 mm.

*Distr.* Supra terram nudam arenosam ad Katschkofka (Katschkoval) prope Mare Glaciale in LPon. (N. I. Fellman). Sec. specimen in herb. Nyl. (conf. etiam Th. Fr. I. c.) collecta etiam ad Thomasdal Varangriae bor. in Norvegia (J. M. Norman).

Ad *Scutulam* in thallo alieno parasitantem apothecia pertinere mihi viderentur, sed thallum talem in nulla alia specie observavi, quam ob causam potius ad *Lecanias* aspicilioideas haec species pertinet. Thallus opacus, sorediis destitutus, KOH non reagens. Apothecia punctiformia, lat. circ. 0.1—0.2 mm, crass. circ. 0.2 mm, sat crebra, tantum thallo marginata aut saepe annulo angusto thallino circumscisso cincta, disco impresso aut thallum aequante, ceterum

gonidiis destituta. Peritheciū inferne tenuē fuscescensque, superne evanescens aut deficiens. Hypothecium KOH non reagens, ex hyphis tenuibus, leptodermaticis, irregulariter crebre contextis, conglutinatis formatum. Hymenium circ. 0.090 mm crassum, »jodo asci soli caerulescunt» (sec. Th. Fr.). Epithecium KOH dilutius coloratum. Paraphyses simplices, tubulis 0.0005—0.001 mm crassis, septatis, membrana gelatinoso-incrassata. Asci clavati, apicem versus membrana saepe sat crassa. Sporae distichae, apicibus obtusis aut rotundatis aut altero apice rotundato, haud constrictae. Gonidia vulgo globosa, diam. 0.005—0.012 mm, simplicia, membrana sat tenui.

Sect. 2. **Leptolecania** Vain.

Apothecia fusca aut nigricantia, in parte inferiore perithecii aut etiam in hypothecio parce gonidia continentia. Hypothecium decoloratum pallidumve aut parte superiore fuscescens. Sporae minutae.

Apothecis stratum myelohypicum, ex hyphis non conglutinatis formatum, haud continentibus, et marginibus lecideinis gonidiisque destitutis, eamque ob causam habitu omnino lecideinis a *Lecania Lecanoraque* haec sectio differt et forsan genus autonomum non constituit, sed potius affine videtur *Catillariae lenticulari*. Ceterum etiam in sect. *Psorothecio* variationes inconstantes (*C. sulphurata* v. *ochrocheila* et v. *lecanocheila* Vain. Lich. Ins. Philipp. III, 1921, p. 105), peritheciis strato thallino obductis instructae, proveniunt.

7. **C. atropurpurea** (Schaer.) Th. Fr.

Lich. Scand. II (1874) p. 565. *Lecidea sphaerooides* β *atropurpurea* Schaeer. Lich. Helv. Spic. IV (1833) p. 165. *Bialorina atropurpurea* Mass. Ric. Lich. Crost. (1852) p. 135; Koerb. Par. Lich. 2 Lief. (1860) p. 142; Arn. Lich. Tirol IV (1869) p. 625, Lich. Münch. (1891) p. 82. *Biatora* Hepp Flecht. Eur. II (1857) tab. 31 n. 279. *Lecanora* Hedl. Krit. Bem. Lee. Micar. (1892) p. 52. *Lecidea* Nyl. Fl. 1873 p. 294. *Bialorina arceutica* Koerb. Syst. Lich. Germ. (1855) p. 192 (errat. typ. pro *arceulina* Ach.), sec. Koerb. I. c. p. 142. *Biatora adpressa* Hepp Flecht. Eur. II (1857) tab. 31 n. 277. *Biatorina adpressa* Koerb. I. c. p. 143; Arn. Lich. Fränk. Jur. (Fl. 1885) p. 172, Lich. Tirol XXIII (1887) p. 142, XXV (1893) p. 395. *Lecidea adpressa* Nyl. Lich. Lapp. Or. (1866) p. 153 (excl. var.). *L. intermixta* var. *lignaria* Nyl. in Not. Sällsk. F. Fl. Fenn. IV (1859) p. 231, Lich. Scand. (1861) p. 194. *L. gyaliza* Nyl. Lich. Scand. (1861) p. 194 (sec. Nyl. Lich. Lapp. Or. p. 153).

*Exs.* Schaer. Lich. Helv. Exs. IX (1833) n. 206. — Zwackh Lich. Exs. (1851) n. 85 A, B, (1859) n. 371, (1861) n. 397. — Hepp Flecht. Eur. II (1857) n. 277 (sec. Arn.), 279 (sec. Stizenb.). — Arn. Lich. Exs. (1860) n. 76 a, b, (1873) n. 595, (1883) n. 1003. — Arn. Lich. Monac. (1889) n. 45, (1894) n. 356. — Rabenh. Lich. Eur. Exs. XXIII (1862) n. 627. — Fellm. Lich. Aret. (1864) n. 160. — Lojka Lich. Univ. I (1885) n. 27. — Lojka Lich. Hung. III (1882) n. 136. — Malme Lich. Suec. Exs. V (1909) n. 114, VII (1910) n. 168. — Norrl. et Nyl. Herb. Lich. Fenn. cont. (1921) n. 723. (Sec Lynge Ind. Lich. Exs., cet.).

Thallus tenuissimus evanescensve aut tenuis, verruculose varieve inaequalis, subcontinuus aut areolatus dispersusve, cinerascens aut cinereo-glaucescens aut rarius subalbidus, hypothallo indistincto. Apothecia crebra, parva, late adnata, gonidia parce aut sat abundanter continentia, disco plano aut raro demum depresso-convexo, fusco aut fusco-nigricante nigrove aut parce etiam fusco-rufescente, margine concolore aut nigricante, tenui, vulgo persistente. Hypothecium decoloratum pallidumve aut raro superne dilute subfuscescens. Epithecium fuscescens subfuscumve, KOH non reagens. Paraphyses sat laxe cohaerentes, apice anguste clavatae. Sporae 8:næ, distichæ, ellipsoideæ oblongæve, 1-septatae, long. 0.010—0.012 (—0.015), crass. 0.005—0.006 mm.

*Distr.* Ad corticem Juniperi et rarius Alni et Sorbi et *Salicis capreae* et Betulae et ad lignum putridum, interdum etiam *Polyporum igniarium* siccum et muscos destructos crescit, toto territorio passim aut sat rare proveniens. Ab.: Merimasku (P. A. Karsten). N.: Mjölo (W. Nylander) et Tali (J. P. Norrlin) prope Helsingforsiam, Gesterby in Kyrkslätt (G. Lång). Ka.: Monrepos et Vanha-Viipuri (Vain. Lich. Vib. p. 64). KOn.: Käpselkä (A. Kullhem), Suojärvi (Norrl. Fl. Kar. Oneg. II p. 29). KOI.: Humbaritsa (Elfv. Ant. Veg. Svir p. 168). Ta.: Mustiala et Letku et Kaukijärvi in Tammela (Kuulh. in Not. Sällsk. F. Fl. Fenn. XI p. 274), Hersala et Kotomäki (Norrl.) in Hollola, Padasjoki (Norrl.), passim in hoc territorio sec. Norrl. (Bidr. Sydöstr. Tav. Fl. p. 189), Judinsalo in Luhanka (Vain. Fl. Tav. Or. p. 114). Oa.: Vasa (P. A. Karsten). Sb.: Puijo ad Kuopio (K. Linkola). Kb.: Pag. Lieksa et Ekypti in par. Lieksa (Vain. Adj. Lich. Lapp. II p. 25). OKaj.: Ohtosenvaara in Kuhmo, Hevoisvaara et Kiannanniemi in Kianta (Vain. I. c.). Kuus.: Nuorunen (F. Silén), Paanajärvi (P. A. Karsten) et alibi (N. I. Fellman). KKer.: Ruankoski (Fellm.). LKem.: Muonio (Norrl. Ber. Torn. Lappm.

p. 337). LIN.: Reg. subalp. montis Hammastunturit, reg. pinif. prope Paatsjoki (Vain. I. c.), Kaamajoki (F. Silén). LTUL.: Kola (Fellm. I. c. n. 160).

Gonidia parce aut sat abundanter in hypothecio et parte inferiore peritheci constanter continet, qua nota cum *Lecanis* (*L. cyrtella*) congruit, defectu strati myelohypothecii, hyphis non conglutinatis instructi, et margine apotheciorum lecideino, gonidia haud continente, ab iis differens et habitum lecideinum ostendens et analogias cum *Lecanora obscurella* (Sommerf.) Hedl. praebens. A *C. nigroclavata* etiam colore apotheciorum et apice paraphysum anguste clavato distinguitur. Thallus sorediis destitutus, KOH non reagens. Apothecia nuda, lat. 0.2—0.6 mm, basi saepe levissime constricta. Perithecium extus rufescens aut violaceo-rufescens aut partim inferne pallidum, intus pallidum aut dilute rufescens aut subalbidum, hyphis radiantibus, conglutinatis, cavitatibus cellularum ellipsoideis oblongisve, 0.0015—0.003 mm latis, membranis sat tenuibus aut modice incrassatis, conglutinatis. Hypothecium hyphis conglutinatis. Hymenium circ. 0.070—0.075 mm crassum, jodo leviter caeruleo-scens deindeque vinose rubens. Paraphyses crass. 0.001 mm, apice clavato 0.002—0.003 mm crasso. Sporae apicibus rotundatis aut rarius obtusis, medio saepe demum leviter constrictae, exosporio saepe distincto. Gonidia cystococcoidea.

*Obs.* In specimine n. 102 in Hollola a. 1863 ab J. P. Norrlin collecto, »*L. gyaliza*« a Nyl. determinato, hymenium inferius et hypothecium superius anguste dilute subfuscans ceterumque albida, paraphyses apice anguste clavatae, clava crass. 0.002—0.003 mm. Perithecium gonidia parce continens. Est forma (f. *gyaliza* Vain.) *C. atropurpureae* ad *C. chalybaeum* f. *ilicis* (Mass.) accedens. — Planta a f. *ilicis* apotheciis sat parce gonidia continentibus differens, hypothecio parte superiore bene fuscans instructa, ad corticem Fagi in Voirons in Sabaudia a Müll. Arg. collecta, his formis est proxima et nominetur *C. Sabaudica* Vain. (sec. determ. Müll. Arg. ad *C. chalybaeum* pertinet).

#### 8. *C. Neuschildii* (Koerb.) Th. Fr.

*C. atropurpurea* \**C. Neuschildii* Th. Fr. Lich. Scand. II (1874) p. 566. *Biatorina Neuschildii* Koerb. Par. Lich. 2 Lief. (1860) p. 143. *Lecanora* Hedl. Krit. Bem. Lec. Micar. (1892) p. 52. *Lecidea atropurpurea* var. *Neuschildii* Nyl. in Vain. Adj. Lich. Lapp. II (1883) p. 25. *L. gyaliza* \**L. pleiotera* Nyl. Lich. Scand. (1861) p. 208. *L. adpressa* var. *pleiotera* Nyl. Lich. Lapp. Or. (1866) p. 153.

Thallus evanescens aut tenuis, verruculosus, dispersus, cinereo-glaucans, hypothallo indistincto. Apothecia crebra,

minuta aut minutissima, gonidia parce aut sat parce continentia, late adnata, disco plano aut demum depresso-convexo, fusco aut fusco-nigricante, margine concolore tenui, vulgo persistente. Hypothecium decoloratum. Epitheciun rufescens. Paraphyses sat laxe cohaerentes, apice anguste clavatae. Sporae 12—16:nae (et saepe p. p. 8:nae), subtristichae, ellipsoideae, 1-septatae, long. 0.010—0.013, crass. 0.005—0.006 mm.

*Distr.* Ad lignum vetustum et ad corticem Juniperi et Alni crevit. Ta.: Tiirismaa in Hollola (Vain.), Vesijako in Asikkala (Norrl. Bidr. Sydöstr. Tav. Fl. p. 189), Padasjoki (Norrl.). Ob. Lappio in Ylitornio (Norrl.). LKem.: Sattanen in Sodankylä (Vain. Adj. Lich. Lapp. II p. 25). LTul.: Kola (N. I. Fellman).

Ascis polysporis a *C. atropurpurea* differt, item ad *Lecanias* accedens. Thallus sorediis destitutus. Apothecia nuda, KOH non reagentia, lat. 0.2—0.4 mm, basi haud aut demum leviter constricta. Peritheciun hyphis conglutinatis, extus rufescens, intus pallidum, basim versus in parte interiore parce aut sat parce gonidia continens. Hypothecium hyphis conglutinatis, plectenparenchymaticc divisum, cavitibus vulgo rotundatis, diam. 0.002 mm, membranis sat tenuibus. Hymenium circ. 0.070 mm crassum, jodo intense caeruleascens. Paraphyses crass. 0.001 mm, apice clavato 0.002—0.0035 mm crasso. Sporae apicibus rotundatis aut rarius obtusis, medio saepe demum leviter constrictae, exosporio saepe distincto, interdum demum dilute fumoso-obscuratae. Gonidia cystococcoidea, globosa, diam. 0.008—0.012 mm, interdum autosporas 0.006 mm latae continentia.

### Sect. 3. **Biatorina** (Mass.) Th. Fr.

Lich. Scand. II (1874) p. 564 maj. p. *Biatorina* Mass. Rie. Lich. Crost. (1852) p. 184 maj. p.; Koerb. Syst. Lich. Germ. (1855) p. 189; Th. Fr. Lich. Arct. (1860) p. 185, Gen. Heterol. (1861) p. 85; Arn. Lich. Münch. (1891) p. 81; Zahlbr. Ascol. (Engl. et Prantl Natürl. Pflanzenfam., 1905) p. 134; Vain. Lich. Ins. Philipp. IV (1923) p. 47. *Lecidea* subg. *Catillaria* st. 1. *Biatorina* Vain. Étud Lich. Brés. II (1890) p. 38.

Apothecia dilute colorata aut rufescentia fuscescentiave aut nigricantia, gonidiis destituta. Hypothecium decoloratum aut pallidum luteolumve aut dilute coloratum subrubescensvc. Paraphyses simplices. Sporae minutae medio-cresve.

9. *C. lenticularis* (Ach.) Lindau

Flecht. (Kryptogamenfl. für Anfänger III, 1913) p. 87. *Lecidea lenticularis* Ach. Syn. Lich. (1814) p. 28; Nyl. Lich. Paris (1896) p. 95, Suppl. Lich. Paris (1897) p. 7. *Biatorina Koerb.* Syst. Lich. Germ. (1855) p. 191. *Zeora lenticularis* v. *erubescens* Flot. Lich. Fl. Siles. (1849) p. 50. *Catillaria lenticularis* β *erubescens* Th. Fr. Lich. Scand. II (1874) p. 568. *Biatorina pulicaris* Mass. Ric. Lich. Crost. (1852) p. 136 (sec. cit.). *B. versicolor* Hellb. in Vet. Ak. Förh. 1867 p. 271, Nerik. Laffl. (1871) p. 81. *B. lenticularis* f. *Heppii* Mass. in Arn. Lich. Tirol IX (1872) p. 306 (XVI, 1876, p. 392).

Thallus tenuis evanescensve et macula albida aut rarius ochracea indicatus aut sat tenuis cinerascensque, hypothallo indistincto albidove. Apothecia parva, late adnata, nigricantia, nuda (»interdum pruinosa» sec. Th. Fr.), plana aut demum depresso-convexa, margine tenui, persistente aut demum excluso. Hypothecium decoloratum (aut »lutescens» sec. Arn.). Hymenium epithecio fuscescente, KOH purpurascente, ceterum decoloratum. Paraphyses sat laxe cohaerentes. Sporae 8:næ, oblongæ aut ovoideo-oblongæ, demum 1-septatae, long. 0.007—0.011, crass. 0.002—0.004 mm.

Var. *typica* (Arn.) Vain. *Biatorina lenticularis* a) planta typica, *vulgaris* Arn. Lich. Tirol XVI (1876) p. 392. *Zeora lenticularis* β *erubescens* Flot. I. c. (nom. inept.) *Catillaria lenticularis* β *erubescens* Th. Fr. I. c. *Lecidea lenticularis* Ach. I. c.; Nyl. I. c. *Biatorina lenticularis* Arn. Lich. Tirol IX (1872) p. 311, XVI (1876) p. 392, XXIII (1887) p. 101, Lich. Fränk. Jur. (Fl. 1884) p. 173, Lich. Münch. (1891) p. 83, p. p. *B. versicolor* Hellb. I. c. (sec. specim. orig. in herb. meo).

*Exs.* Rabenh. Lich. Eur. Exs. IV (1856) n. 108, XXIV (1862) n. 673. — Hepp Flecht. Eur. I (1857) n. 12 p. p. (in herb. meo), IX (1860) n. 498, 502. — Zwackh Lich. Exs. (1858) n. 272. — Anzi Lich. Rar. Langob. III (1861) n. 120, Lich. Ven. II (1863) n. 67, 69, IV n. 175, Lich. Min. Rar. It. VI (1865) n. 254, 255. — Flagey Lich. Franche-Comté I (1882) n. 34. — Arn. Lich. Exs. (1888) n. 1393. (Sec. Arn. Lich. Fränk. Jur. p. 173.)

Saxicola. Thallus vulgo albus (fortuito lutescens vel subochraceus rubensve). Apothecia primum subinnata, dein adnata.

*Distr.* »Calcem primitivam amat, latera praerupta incolens» in Suecia (sec. Th. Fr. I. c.). In Fennia nondum collecta.

Thallus e materiis alienis interdum coloratus. Sec. Flot. I. c. thallus rubescens planta rubricosa immixtus est (»die rosenröhlich schimmernde Kruste hat ihre Farbe einer kleinen *Torula* zu verdanken, welche perl schnurartig dieselbe, und selbst die Keimplatte, durchzieht.«) Hypothallus indistinctus (aut subalbidus in *B. lenticulari* f. *geographica* Mass. in Anzi Lich. Ven. II, 1863, n. 68, Arn. Lich. Tirol XVI, 1876, p. 393, »thallo indistincte albido-decussato«). Apothecia cerebra, lat. 0.2–0.4 mm, basi haud constricta (specim. in Hepp I. c. n. 12 hic descriptum). Perithecium fusco-fuligineum, intus dilutius coloratum, KOH purpureum, hyphis conglutinatis. Hypothecium KOH non reagens, in parte superiore partim cellulis depresso-s, in parte inferiore membranis sat pachydermaticis, cavitatibus angustis, rotundatis aut difformibus. Paraphyses simplices, sat laxe cohaerentes, apice capitato clavatove, parte superiore fusco, KOH purpureo, ceterum hymenium decoloratum, jodo intense persistenter caeruleo-sens. Sporae distichae, saepe altero apice rotundato, altero obtuso. Conidia »oblonga, long. 0.002—0.003, crass. 0.001—0.0015 mm» (Arn. Lich. Münch. p. 83). Gonidia cystococcoidea, globosa aut rarius subglobosa, simplicia, diam. 0.009—0.014 mm.

#### 10. *C. nigroclavata* (Nyl.) Vain.

(Lindau Flecht., 1913, p. 90 p. p.). *Lecidea* Nyl. in Nya Bot. Not. 1853 (Collect. Galt. Merid.) p. 11 (160) p. p., Fl. 1855 p. 247 p. p., Prodr. Lich. Gall. (1857) p. 136, p. p., Lich. Paris (1896) p. 96; p. p. *Biatorina* Arn. Lich. Tirol XVIII, (1878), p. 251, XXIII (1887) p. 145), XXX (1897) p. 211 (11), Lich. Fränk. Jur. (Fl. 1884) p. 174 p. p., Lich. Münch. (1891) p. 83 p. p. *Lecidea lenticularis* var. *nigroclavata* Nyl. Lich. Scand. (1861) p. 242 p. p. *Biatorina chalybeia* \*\**corticola* Krempelh. Lich. Fl. Bay. (1861) p. 202 (sec. Arn. Lich. Münch. p. 83).

Thallus tenuis, dispersus, albido-glaucescens, hypothallo indistincto. Apothecia parva, late adnata, nigra, nuda, opaca, gonidiis destituta, disco plano aut demum depresso-convexo, laevigato, margine tenui, persistente aut demum excluso. Hypothecium pallidum. Hymenium epithecio fusco-fuligineo, KOH non reagente, ceterum decoloratum. Paraphyses sat laxe cohaerentes. Sporae 8:nac, suboblongae, demum 1-septatae, long. 0.008—0.010, crass. 0.002—0.0025 mm.

*Distr.* Ad corticem *Pruni cerasi* prope Beaucaire in Gallia merid. (Nyl.) crescens, ex aliis locis cum *C. chalybea* f. *minutula* (Koerb.) commixta est, nec adhuc in Fennia collecta. »*L. nigroclavata*», in

Lahentausta ad Kirjavalahti in Karelia Ladogensi lecta, sec. determ. Nylandri a Norrl. in Symb. Fl. Lad.-Kar. p. 30 indicata, sicut etiam specimen in Satakunta ab A. J. Malmgren lectum, hoc nomine a Nyl. determinatum, ad *Bilimbiam populorum* (Mass.) pertinent.

Vix nisi statione alia, apotheciis nigris et epithecio KOH minus distincte reagente et forsan non eandem materiam continente a *C. lenticulari* (Ach.) differens, forsan non est autonoma species. Thallus sorediis destitutus, KOH non reagens. Apothecia lat. circ. 0.3—0.5 mm, basi haud constricta. Peritheciun gonidiis destitutum, intus anguste pallidum, extus fusco-fuligineum. Hypothecium impure pallidum (leviter in colorem dilute subfuscescens vergens), KOH non reagens. Epithecium fusco fuligineum, KOH non reagens, sed post tempus longius purpureum. Paraphyses apice fusco-fuligineo-capitatae. Sporae distichae, decoloratae, oblongae aut subovoideo-oblongae. Gonidia cystococcoidea, globosa, diam. 0.008—0.015 mm, vacuolis lateralibus, membrana tenui aut modice incrassata.

*Obs. 1.* Specimen orig. n. 20307 in herb. Nyl., prope Beaucaire in Gallia lectum, supra descriptum est. Specimen n. 12044 supra Ulmum ad Sceaux prope Parisios collectum, item sub »*L. nigroclavata*« a Nyl. in Coll. Lich. Gall. Merid. p. 11 citatum, ad *C. chalybaeum* f. *ilicis* (Mass.) pertinet, hypothecio fusco instructum.

*Obs. 2.* *Lecidea subrimulosa* Nyl., Fl. 1875 p. 445, sec. Blomb. et Forss. En. Pl. Scand. (1880) p. 92 in Fennia et sec. Hue Addenda II (1888) p. 216 in Anglia collecta est, sed hae indicationes erroneae sunt, nam revera ad Kongsvold in Norvegia a Zetterstedt lecta est. Ceterum Hue loca natalia lichenum in opere citato saepe perperam indicat, Kareliam cum Suecia commiscens.

#### 11. *C. leucophaeotera* (Nyl.) Vain.

*Lecidea* Nyl. Flora 1873 p. 293; Blomb. et Forss. Enum. Plant. Scand. (1880) p. 85; Nyl. in Brenner Bidr. Hogl. Lafv. (1885) p. 82; Hue Addend. II (1888) p. 153.

Thallus sat tenuis, areolatus aut p. p. verrucosus verriculosusve, albus (KOH lutescens sec. Nyl.), hypothallo indistincto. Apothecia sat parva aut fere mediocria, elevata et sat crassa, basi bene constricta, disco fusco, plano aut demum depresso-convexo, margine sat crasso, concolore pallidoreve, elevato, persistente aut demum excluso. Hypothecium pallidum aut dilute subrufescens-pallidum aut »incolor» (sec. Nyl.). Epithecium rufum, KOH subpurpureum. Paraphyses

arcte cohaerentes, simplices, haud gelatinosae. Sporae »8:nae, oblongo-fusiformes, 1-septatae, long. 0.014—0.018, crass. 0.005—0.007 mm» (sec. Nyl.).

*Distr.* In pariete porphyrico humido rupis in Majakallio Hoglandiae (M. Brenner).

Facie externa *Lecaniam aiospilam* in memoriam revocans. Thallus sorediis destitutus, areolis verruculisque circ. 0.3—0.15 mm latis, rotundatis aut difformibus, subcontiguis, depresso-convexis. Apothecia »lat. 0.5—0.7 mm» sec. Nyl., crass. circ. 0.220—0.350 mm, gonidiis destituta. Peritheciū dilute rufescens aut partim extus intense rufescens (KOH subpurpureum), hyphis radiantibus, conglutinatis, basin versus sat leptodermaticis, cavitatibus ellipsoideis aut subglobosis, 0.003—0.005 mm latis, in margine angustioribus longioribusque et membranis leviter incrassatis. Hypothecium in parte summa hyphis praesertim subhorizontalibus, conglutinatis, tenuioribus, cavitate 0.001—0.0015 mm lata instructis, leviter pachydermaticis, in parte inferiore irregulariter contextis, leptodermaticis, conglutinatis et distincte limitatis et passim parce etiam cavitatibus intercellularibus disjunctis, cavitate cellularum globosa subglobosave, 0.004—0.006 mm lata. Hymenium 0.0065—0.070 mm crassum, »jodo caerulescens, dein decoloratum, ascis violascentibus» (sec. Nyl.). Paraphyses crass. 0.0015, apice 0.003—0.004 mm. Ascii clavati. Gonidia globosa, diam. 0.006—0.012 mm, simplicia, membrana sat tenui.

## 12. C. *Griffithii* (Sm.) Malme

Lich. Suec. Exs. XVIII (1914) n. 440. *Lichen Griffithii* Sm. Engl. Bot. (1807) tab. 1735 (sec. Cromb. On Lich. With., Grev. XII, p. 60, A. L. Smith Mon. Brit. Lich. II, 1911, p. 118). *Lecidea* Hook. in Sm. Engl. Fl. V (1833) p 177. *Biatorina* Mass. Ric. Lich. Crost. (1852) p. 134; Koerb. Syst. Lich. Germ. (1855) p. 191; A. L. Smith l. c. *Lecidea parasema*  $\zeta$  *microcarpa* Ach. Vet. Ak. Handl. 1808 p. 260, Lich. Univ. (1810) p. 176. *Lecidea anomala* Floerk. Deutsch. Lich. IX (1821) p. 1, n. 161 (haud Ach.). *L. enteroleuca*  $\beta$  *grandinosa* Ach. l. c. p. 177. *L. hamadrys* Ach. l. c. p. 672. *Biatora mixta* Fr. Lich. Suec. Exs. II (1818) n. 40, (conf. hb. Ach.), Vet. Ak. Handl. 1822 p. 267 (sec. Th. Fr.), Sched. Crit. (1824) p. 13, Lich. Eur. (1831) p. 268. *Lecidea tricolor* Nyl. Lich. Scand. (1861) p. 207 (haud *Lichen tricolor* With. Bot. Arr. Brit. Pl. ed. 3, IV, 1796, p. 23, conf. infra), Fl. 1886 p. 102, Hue Addend. II (1888) p. 323. *Catillaria* Th. Fr. Lich. Scand. II (1874) p. 574. *Lecidea discoidella* Nyl. Fl. 1863 p. 306, Lich. Lapp. Or. (1866) p. 149.

*Exs.* Fr. Lich. Suec. Exs. II (1818) n. 40. — Floerk. Deutsch. Lich. IX (1821) n. 161 (in herb. Nyl.). — Bohl. Lich. Brit. XV (1837) n. 119. — Leight. Lich. Brit. Exs. II (1852) n. 60. — Anzi Lich. Sondr. VI n. 172. — Mudd Lich. Brit. Exs. II (1861) n. 155. — Arn. Lich. Exs. (1862) n. 216, (1889) n. 1438. — Stenh. Lich. Suec. Exs. VI (1863) n. 169. — Koerb. Lich. Sel. Germ. X (1864) n. 278. — Hepp Flecht. Eur. (XIII) IV (1867) n. 738 (in herb. Vain.). — Larbal. Lich. Herb. VII (1880) n. 268, IX (1881) n. 345. — Zwackh Lich. Exs. (1889) n. 1084. — Elenkin Lich. Fl. Ross. III (1904) n. 140. — Malme Lich. Suec. Exs. VI (1909) n. 144, XVIII (1914) n. 440. — Merrill Lich. Exs. n. 266. (Sec. cit.).

Thallus modice incrassatus aut tenuis, areolatus aut verrucosus aut parcus verruculosus, areolis verrucisve difformibus aut rotundatis, vulgo depresso-convexis, dispersis aut contiguis, albus aut albidus, aut rarius evanescens, hypothallo albo plus minus distincto. Apothecia mediocria aut sat parva, late adnata, disco plano aut vulgo demum depresso-convexo, saepe versicolore, nigricante, fuscamente aut livido-fuscamente vel sublivido-pallescente vel livido-subcarneo, opaco, margine sat tenui mediocrive, saepe subconcolore, persistente aut demum excluso. Hypothecium subdecoloratum pallidumve. Hymenium parte superiore subviolaceum, KOH distinctius violascens pallidumve. Paraphyses arcte cohaerentes, simplices. Sporae 8:nae, oblongae, rectae, 1-septatae, »long. 0.008—0.016, crass. 0.003—0.004 mm» (sec. Th. Fr.).

*Distr.* Ad corticem et raro ad lignum *Abietis excelsae*, raro ad corticem *Pini* et ad ramulos siccos Alni (in regionibus externis etiam ad corticem *Juniperi*, *Quercus*, *Aceris*, *Betulae*) crescents, rara in Fennia est. Alandia (E. Nylander). Ab.: Ernholm in Nagu (F. Elfving), Tennäs in Pargas (K. Lindholm). N.: Kappelniemi, Jokiinsuu, Kappelkallio, Purjeniemipäälys, Pohjaskorkia in Hoglandia sec. determ. Nyl. in Brenn. Bidr. Högl. Lafv. p. 90, Tammisaari in Lohja (Ch. E. Boldt), Mjölkö (Nyl., Vain.), Degerö (A. Kullhem), Toivola (Vain.), Heikovik ad Strömsby (M. Brenner) et alibi in Kyrklätt (Kullh.). Ka.: Koivisto (E. Nyl.). LTul.: Kola (N. I. Fellm., »*L. discoidella*»).

Thallus areolis verrucisque 0.4—0.2 (—0.1) mm latis, interdum etiam latioribus, sorediis destitutus, KOH leviter subflavescens aut parum reagens. Apothecia lat. 1—0.4 mm, crass. circ. 0.240 mm, basi leviter aut levissime constricta, gonidiis destituta, margine saepe leviter prominente. Peritheciun extus obscure subviolascens aut

totum pallidum, ex hyphis formatum radiantibus, leptodermaticis, conglutinatis, cavitatibus angustis, oblongis ellipsoideisque. Hypothecium hyphis irregulariter contextis et in interna parte hypothecii subhorizontalibus, leviter pachydermaticis, cavitatibus cellularum circ. 0.0015 mm latis, rotundatis oblongisque. Hymenium circ. 0.040—0.060 mm crassum, jodo intense persistenter caerulescens. Paraphyses haud gelatinosae, crass. 0.001—0.0015 mm, apice clavatae et crass. 0.0015—0.003 mm. Conidangia »leviter obscurata» (Flag. Fl. Lich. Franche-Comté p. 384). Sterigmata »pauci-articulata, parce ramosa, apicibus conidia efferentibus». Conidia »oblonga ovoideave, recta, long. 0.003—0.0035, crass. 0.0015 mm» (sec. annot. et icon. in herb. Nyl. et in Lich. Lapp. Or. p. 149) aut »cylindrica, saepius curvata, apices versus attenuata, long. 0.004—0.005 mm» (sec. Flag. I. c.). Gonidia cystococcoidea, globosa aut subglobosa, diam. 0.006—0.012 (—0.020) mm, vacuolis lateralibus, membrana sat tenui, interdum autosporas numerosas continentia.

*Obs. 1.* *Lichen tricolor* Withering, Bot. Arr. Brit. Pl. 3 ed., IV (1796) p. 23, tab. XXXI f. 6, sec. specim. orig. in herb. With., ut indicat Cromb. in Lich. With. Herb., Grevillea XII p. 60, pertinet ad *Gyalectam (Secoligam) Flotowii* (Koerb.) sive *Lecideam querceti* Nyl., his verbis descripta: »saucer very minute, orange-coloured, deeply hollowed, like the cup of a *Peziza*, the border pale-brown». Aliud specimen pertinet ad *Gyalectam carneolam* (Ach.) et *Hysterium pulicare* Pers. sec. Cromb., et specimen Achario missum et descriptioni haud congruens ad *Catillariam Griffithii*, ut affirmat Nyl. in Fl. 1886 p. 102.

*Obs. 2.* Sec. Th. Fr. I. c. ad hanc speciem pertinent etiam *Lecidea enteroleuca*  $\beta$  *grandinosa* Ach. Lich. Univ. (1810) p. 177, Syn. Lich. (1814) p. 19, et *Lecanora anomala*  $\beta$  *ferruginosa* Ach. Lich. Univ. (1810) p. 381.

*Obs. 3.* *Lecidea discoidella* Nyl., Fl. 1863 p. 306, Lich. Lapp. Or. (1866) p. 149, »vix nisi statione hyperborea recedit», ut indicat Th. Fr. I. c. p. 575. »Forsitan subspecies *L. tricoloris* apotheciis nigris et sporis minoribus differens» sec. annot. Nylandri in bibl. sua.

### 13. C. *chloroticella* (Nyl.) Blomb. et Forss.

Enum. Plant. Scand. (1880) p. 91 (Th. Fr. Lich. Scand. II, 1874, p. 571). *Lecidea chloroticella* Nyl. Fl. 1866 p. 85; Norrl. Bidr. Sydöstr. Tav. Fl. (1870) p. 188. *Lecidea cyrtella* \**L. chloroticella* Nyl. in Hue Addend. II (1888) p. 154.

Thallus tenuis, verruculoso-inaequalis, cinereo-glaucescens, haud sorediosus. Apothecia crebra, parvula, late ad-

nata, depresso-convexa, immarginata, testacea (»albidoflavescens« sec. Nyl.), subopaca, haud pruinosa. Hypothecium pallidum. Hymenium totum decoloratum aut epithecio sordide pallido, KOH non reagens. Paraphyses arcte cohaerentes, simplices furcatae, mediocres, apice incrassatae. Sporae 8:nae, oblongae, rectae, long. 0.009—0.011 (»—0.014» mm sec. Nyl.), crass. 0.003 (sec. Nyl. »—0.0045») mm. Gonidia cystococcoidea, simplicia.

Distr. Ad *Polyporum igniarium* vetustum prope Kaila in Asikkala in Ta. (Norrl. l. c.).

Facie externa subsimilis *Lecaniae cyrtellae* et *Lecideae albohyalinæ*. A *C. micrococca* jam paraphysibus et gonidiis differt. Affinis sit *C. globosae*. Thallus subdispersus, verruculis depresso-convexus, hypothallo indistincto. Apothecia lat. circ. 0.25 mm, simplicia, prominentia, tota unicoloria, KOH non reagentia. Hypothecium subchondroideum, hyphis conglutinatis, erectis, pachydermaticis, increbre ramoso-connexis, cavitibus cellularum 0.002—0.0015 mm latis, oblongis aut rotundatis. Peritheciun sat bene evolutum, decoloratum, gonidiis destitutum, hyphis conglutinatis, pachydermaticis, cavitibus oblongis aut ellipsoideis, 0.004—0.0015 mm latis. Hymenium 0.050 mm crassum, jodo dilute aut sat intense caerulescens, dein obscure vino rubens. Paraphyses crass. 0.0015 mm, apice 0.003 mm, simplices aut raro apice furcatae, haud gelatinosae. Sporae distichae, apicibus obtusis aut rotundatis, simplices et p. p. 1-septatae. Gonidia globosa, diam. 0.008—0.013 (—0.016) mm. aut subellipsoidea, diam  $11 \times 7$  et  $12 \times 9$   $\mu$ .

#### 14. *C. Bouteillei* (Desmaz.) Zahlbr.

Vain. Lichenogr. Fenn. II (1922) p. 268. *C. Bouteillii* Zahlbr. Lich. Rar. Exs. (1910) n. 128. *Parmelia Bouteillei* Desmaz. in Ann. Sc. Nat. sér. 3, VII (1847) p. 191. *Lecanora* Pl. Crypt. Fr. XXXII (1847) n. 1595. *Lecidea* Nyl. Lich. Lapp. Or. (1866) p. 152; Vain. Meddel. Sällsk. F. Fl. Fenn. XXII (1896) p. 77. *Bialorina* Arn. Lich. Exs. (1866) n. 331; Sydow Flecht. Deutschl. (1887) p. 167; A. L. Smith Mon. Brit. Lich. II (1911) p. 119. *Lecanora varia*  $\eta$  *Bouteillei* Schaeer. Enum. Lich. Eur. (1850) p. 83. *Lecidea rubicola* Crouan Fl. 1869 p. 294; Nyl. Fl. 1872 p. 251; Hue Addend. II (1888) p. 156. *Lecanora rubicola* Nyl. in Zwackh Lich. Exs. (1880) n. 582 A, B. *Bialorina rubicola* Arn. Lich. Fränk. Jur. (Fl. 1885) p. 169, (1890) p. 35, Lich. Münch. (1891) p. 81, (1892) p. 17, (1897) p. 24. *Bialorina folicola* Millardet sec. Arn. Lich. Exs. (1866) n. 331. *Bialorina Hohenbühelii*

Poetsch Syst. Oesterr. Crypt. (1872) p. 217 (Nyl. Fl. 1872 p. 251).  
*Lecidea cyrtella* \**L. Hohenbuehelii* Nyl. in Hue Addend. II (1888)  
 p. 154.

*Exs.* Desmaz. Pl. Crypt. Fr. XXXII (1847) n. 1595 (Mus. Fenn.),  
 ed. 2, XXIV n. 1195 (herb. Nyl.). — Arn. Lich. Exs. (1866) n. 331,  
 (1889) n. 1439, Lich. Monac. (1895) n. 403. — Rabenh. Lich. Eur. Exs.  
 XXXII (1870) n. 856. — Koerb. Lich. Sel. Germ. XIV (1873) n. 403  
 (sec. Lynge l. c. p. 301). — Zwackh Lich. Exs. (1876) n. 469, (1880)  
 n. 582, 586 (herb. Nyl.). — Erb. Crit. It. ser. 2 XVIII (1879) n. 875  
 (sec. Jatta Fl. It. Crypt. Lich. p. 579). — Roumegu. Lich. Gall. Exs.  
 V (1883) n. 455 (sec. Lynge l. c. p. 466). — Lojka Lich. Univ. I (1885)  
 n. 28 a, b. — Kerner Fl. Exs. Austro-Hung. XIV (1896) n. 2761. —  
 Zahlbr. Lich. Rar. Exs. (1910) n. 128 (sec. Lynge l. c. p. 540).

Thallus tenuis aut modice incrassatus, glaucescens aut albido- vel cinereo-glaucescens, plus minus sorediosus aut partim verruculosus, dispersus aut sat continuus, hypothallo indistincto. Apothecia minutissima, late adnata, basi parum constricta, disco plano aut vulgo demum depresso-convexo, carneo-pallido pallescenteve aut raro obscurato fuscescenteve, tenuissime pruinoso nudove, margine tenui, integro, subalbido cinerascenteve, persistente aut demum excluso. Hypothecium pallidum aut raro dilute subfuscescens. Hymenium totum decoloratum aut epithecio pallido subfuscescenteve, KOH non reagente. Paraphyses increbrae, simplices. Sporae 8:nae, ovoideae aut rarius oblongae, vulgo rectae, long. 0.009—0.013 (»—0.016), crass. 0.003—0.005 mm.

F. *Hohenbühelii* (Poetsch) Vain.

Apothecia disco carneo-pallido aut pallescente, tenuissime pruinoso aut raro demum subdenudato. Thallus soraliis distinctis nullis, at vulgo granulis sorediorum parcissimis inter verruculas thalli dispersis, parum conspicuus.

*Distr.* Supra folia et rāmulis *Abietis excelsae* in Evo in Ta. a. 1894 detexit J. E. Furuhjelm. — In externis etiam ad folia Piceae et Buxi aliarumque arborum et ad corticem Rubi collecta est. — Thallus KOH et  $\text{CaCl}_2\text{O}_2$  parum reagens. Apothecia dispersa aut partim aggregata, lat. 0.2—0.3 mm, gonidiis destituta. Peritheciun decoloratum, hyphis subradiantibus, conglutinatis, leviter pachydermaticis, cavitatibus ellipsoideis oblongisve, 0.002—0.005 mm latis. Hypothecium pallidum, KOH p. p. dilute violascens, p. p. non reagens, hyphis irregulariter contextis, conglutinatis, modice pachydermaticis, cavitatibus cellularum rotundatis et ellipsoideis, parcius etiam

oblongis. Hymenium circ. 0.045 mm crassum, totum decoloratum aut epithecio pallescente, saepe leviter granulosum, jodo intense persistenter caerulescens. Paraphyses sat increbrae parcaeque, simplices aut parce ramosae, crass. 0.0015—0.0005 mm. Sporae distichae, vulgo rectae, apicibus obtusis aut altero apice rotundato, distincte 1-septatae. Conidia »lageniformia, uno apice crassiora, medio apicem angustiorum versus leviter sinuato-constricta, long. vix 0.004, crass. 0.001 mm» (sec. annot. et icon. in n. 18868 et 18870 in herb. Nyl.). Gonidia cystococcoidea, globosa, diam. 0.006—0.010 mm, simplicia, sed vulgo glo-  
meruloso-aggregata (in sorediis), membrana sat tenui.

*F. abieticola* (Nyl.) Vain. *Lecanora rubicola* Nyl. f. *abieticola* Nyl. in Zwackh Lich. Exs. (1880) n. 582. *Lecidea rubicola* Nyl. f. *abieticola* Nyl. in Zwackh Lich. Heidelb. (1883) p. 47 (p. p.).

*Exs.* Zwackh Lich. Exs. (1880) n. 582 A (B p. p.). — Arn. Lich. Monac. (1895) n. 403.

Apothecia disco carneo-pallido pallescenteve, tenuissime pruinoso aut denudato. Thallus soraliis albidis rotundatis aut demum confluentibus instructus. — »Sporae oblongae, apicibus obtusis, 1-septatae, long. 0.010—0.016, crass. 0.003—0.005 mm, gel. hym. jodo caerulescens, dein vinose rubens» sec. annot. Nyl. in n. 18865. — In Fennia nondum collecta est.

*F. degenerans* Vain. *Lecanora rubicola* f. *abieticola* Zwackh Lich. Exs. n. 586 (primum nominata est »*L. micromma* Nyl.», quae hoc non pertinet).

*Exs.* Zwackh Lich. Exs. (1880) n. 586 (in herb. Nyl.).

Apothecia disco obscurato fuscescenteve, haud pruinoso, margine sordide albido. Thallus cinerascens vel cinereo-glaucescens, soraliis rotundatis, sordide albidis instructus.

*Distr.* Ad corticem ramorum Abietis in Heidenknörzel prope Heidelbergam (Zwackh von Holzhausen). In Fennia nondum collecta.

Etiam colore et reactione hypothecii a f. *Hohenbühelii* differt, sed non est autonoma species. Notis anatomicis congruentes. Perithe-  
cium totum aut extus sordide diluteque subfuscescens-pallidum et intus etiam decoloratum, jodo non reagens et KOH demum decoloratum. Hypothecium sordide diluteque subfuscescens-pallidum, KOH demum decoloratum, jodo parte superiore caerulescens. Hyme-  
nium circ. 0.030—0.035 mm crassum, jodo intense persistenterque caerulescens. Epitheciun haud granulosum, tenuiter subfuscescens,  
KOH demum decoloratum. Paraphyses increbrae parcaeque, sim-  
plices, crass. 0.001—0.0015 mm (in KOH distinctae). Sporae ovoideo-  
oblongae, long. 0.010—0.013, crass. 0.003—0.004 mm, rectae, altero apice rotundato, altero obtuso, 1-septatae, distichae. Gonidia cystococcoi-  
dea, globosa aut subglobosa, diam. 0.006—0.012 mm, vacuolis laterali-

bus, saepe etiam autosporas numerosas continentia, membrana sat tenui.

*Obs.* *Lecidea rubicola* Crouan et *B. Hohenbühelii* Poetsch sec. specimina orig. in herb. Nyl. ad *C. Bouteillei* (Desmaz.) pertinent, sicut etiam Nyl. in bibliotheca et herb. suo annotavit. Item etiam *Lecidea rosella* Mérat Add. à la Revue de la Fl. Par. p. 498 sec. Desmaz. Pl. Crypt. Fr. XXII n. 1595 ad eandem speciem pertinet, nec ad *L. rosellam* (Pers.) Ach.

### 15. *C. globulosa* (Floerk.) Th. Fr.

Lich. Scand. II (1874) p. 575. *Lecidea globulosa* Floerk. Deutsch. Lich. (1821) p. 1, n. 181 (sec. Arn. Lich. Fränk. Jur., 1884, p. 173 Nyl. Lich. Scand. p. 202, Lich. Lapp. Or. p. 149); Hedl. Krit. Bem. Lec. Micar. (Bih. Sv. Vet.-Ak. Handl. 18, III, n. 3, 1892) p. 67. *Biatora* Rabenh. in Hepp Flecht. Eur. I (1853) n. 16. *Biatorina* Koerb. Syst. Lich. Germ. (1855) p. 191, Par. Lich. (1865) p. 144; Th. Fr. Lich. Arct. (1860) p. 188; Arn. Lich. Münch. (1891) p. 83. *Biatora anomala* Fr. Vet. Ak. Handl. 1822 p. 266 et Lich. Eur. Ref. (1831) p. 269 (»praecipue haec, admixtis variis melanocarpis« sec. Th. Fr. Lich. Scand. p. 575), Lich. Suec. Exs. XII (1852) n. 350 (sec. Th. Fr.). *Lecidea anomala* Nyl. Lich. Scand. (1861) p. 202 (excl. var.), Lich. Lapp. Or. (1866) p. 149 (excl. var.). *L. vernalis* var. *anomala* Nyl. Veg. Lich. Hels. Sav. Al. (Not. Sällsk. F. et Fl. Fenn. IV, 1859) p. 232.

*Exs.* Floerk. l. c. — Flot. Lich. Exs. II (1829) n. 111 (non vidi). — Zwackh Lich. Exs. (1851) n. 89 A, B, (1859) n. 346, (1881) n. 679. — Fr. l. c. — Hepp l. c. — Rabenh. Lich. Exs. XVI (1859) n. 465. — Anzi Lich. Sondr. n. 173, Lich. Exs. It. VI (1865) n. 258. — Jack, Leiner et Stizenb. Bad. Crypt. X (1861) n. 449. — Stenh. Lich. Suec. Exs. VI (1863) n. 168. — Fellm. Lich. Arct. (1864) n. 155. — Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 176, cont. (1921) n. 725, 726. — Lojka Lich. Hung. Exs. II (1882) n. 56. — Flag. Lich. Franche-Comté VI n. 271. — Malme Lich. Suec. Exs. II (1897) n. 35, XIV (1913) n. 364 (v. *pallens*). — Mig. Crypt. Exs. XV (1904) n. 53. (Sec. Arn. l. c. et Lynge Ind. Lich. Exs.).

Thallus tenuissimus, verruculis minutis inspersus aut verruculosus, albidus, aut evanescens, hypothallo indistincto albido tenuissimoque. Apothecia sat crebra, parva, late adnata aut saepe basi demum bene constricta, vulgo jam primitus convexa immarginataque, nigra aut rarius fusca aut fusco-rufescentia aut livido-testacea, parum nitida aut

subopaca, haud pruinosa. Hypothecium impure pallidum aut decoloratum aut raro partim subfuscens-pallidum. Epithecium fuligineum aut aeruginosum olivaceumve aut fuscens, KOH parum reagens. Paraphyses arcte cohaerentes, simplices, tenuiter gelatinosae. Sporae 8:nae, rectae, long. 0.008—0.010 (0.006—0.016), crass. 0.0025—0.0035 (0.002—0.004) mm. Conidangia rara, nec numerosa.

*Distr.* Praesertim ad lignum in truncis vetustis, ad parietes et saepimenta lignea, saepe etiam ad corticem Alni, *Salicis capreae*, Betulae, Sorbi, Juniperi crescents, sat frequenter in partibus meridionalibus et mediis territorii provenit, adhuc in Karelia bor. et Ostrobothnia Kajanensi. Kuus.: In reg. abiet. montis Näränkävaara (Vain.). KKer.: Reg. abiet. montis Kivakka (Vain.). LEnont.: »Nonnullis locis in reg. abiet, et ad Hetta in reg. pinif.» (Norrl. Ber. Torn. Lappm. p. 336). LKem.: Hietasuanto et Sattanen in Sodankylä (Vain., f. *Ohlertii* et f. *epirhoda*). LIn.: In reg. subalp. jugi Suoloselkä et ad flumen Paatsjoki (Vain. Adj. Lich. Lapp. II p. 26).

*F. lignicola* (Arn.) Zahlbr. Beitr. Flecht. Niederöst. VII (Verh. Z.-bot. Ges. Wien, 1917) p. 16. *Bialorina globulosa* f. *lignicola* Arn. Lich. Tirol XI (1873) p. 518 (34).

Apothecia simplicia aut subsimplicia, convexa, nigra. Epithecium majore parte aeruginoso-nigricans fuligineumve. Hypothecium vulgo pallidum.

*Distr.* Supra indicata.

Thallus saepissime obsoletus, sorediis destitutus, hypothallo indistincto. Apothecia simplicia lat. 0.2—0.5 (—0.6) mm. Peritheciun membranis sat crassis, conglutinatis, cavitatibus cellularum in parte marginali ellipsoideis, 0.002—0.004 mm latis, in parte inferiore angustioribus oblongisque, decoloratum aut partim extus epithecio concolor. Hypothecium vulgo pallidum aut sordide pallidum aut partim in eodem apothecio fulvescens aut fusco-pallidum, chondroideum, irregulariter contextum, membranis conglutinatis, sat crassis et in parte superiore tenuioribus et hyphis crebrius contextis. Hymenium circ. 0.030 mm crassum, late coloratum aut epithecio aeruginoso-nigricante fuligineove aut in eodem apothecio partim violaceo-fuligineo, jodo caerulescens. Conidia »recta, long. 0.005—0.006, crass. 0.001 mm» (sec. Arn. l. c.), »recta, long. 0.004—0.003, crass. 0.0005 mm» (sec. annot. Nyl. in herb. suo), »recta, raro curvata, long. 0.004—0.006 mm» (sec. Flagey Fl. Lich. Franche-Comté p. 387), cylindrica, recta et parce levissime curvata, long. 0.004 mm, conidangio strato aeruginoso instructo (in specim. in Ekypti in Lieksa collecto).

*Obs.* Specim. orig. f. *lignicolae* Zwaakh distributa in ejus Lich. Exs. (1859) n. 347.

F. *Ohlertii* (Koerb.) Vain. *Lecidea Ohlertii* Koerb. Par. Lich. 3 Lief. (1861) p. 217. *L. globulosa* f. *Ohlertii* Vain. Adj. Lich. Lapp. II (1883) p. 26. *Biatorina globulosa* f. *Ohlertii* Arn. Lich. Fränk. Jur. (Fl. 1884) p. 173.

Apothecia simplicia aut subsimplicia, convexa, nigra. Epithecum fuligineum. Hymenium ceterum, praesertim parte superiore, sordidum aut sordide fuscescens aut sordide aeruginosum (in eodem specimine). Hypothecium superne dilute fuscescens aut partim (in eodem apothecio) sordide pallidum.

*Distr.* In tecto ligneo in Padasjoki in Ta. (Vain.). In saepimento ligneo ad Sattanen in Sodankylä in LKem. (Vain.).

Apothecia KOH non reagentia. Hypothecium parte inferiore dilutius coloratum pallidumve. Hymenium 0.035—0.040 mm crassum. Paraphyses apice leviter incrassatae. Gonidia cystococcoidea, globosa, simplicia, diam. 0.007—0.010 mm, membrana leviter incrassata.

F. *fuscopurpurea* (Arn.) Vain. *Biatorina globulosa* f. *fuscopurpurea* Arn. Lich. Tirol XI (1873) p. 518 (34). *Catillaria globulosa* f. *epirhoda* Th. Fr. Lich. Scand. II (1874) p. 576. *Lecidea globulosa* f. *epirhoda* Vain. Adj. Lich. Lapp. II (1883) p. 27.

*Exs.* Malme Lich. Suec. Exs. XV (1913) n. 364 (Mus. Fenn., cf. *pallens*).

Apothecia simplicia, vulgo convexa, nigra. Epithecum fuligineum. Hymenium ceterum, praesertim parte superiore, fusco-rubricosum. Hypothecium fusco-rubricosum aut partim subdecoloratum.

*Distr.* In saepimento ligneo ad Hietasuanto in Sodankylä in LKem. (Vain.).

F. *glomerulascens* (Nyl.) Vain. *Lecidea globulosa* f. *glomerulascens* Nyl. in Mus. Fenn., Vain. Adj. Lich. Lapp. II (1883) p. 27.

Apothecia p. p. aggregata aut plura confluentia, nigricantia aut fusco-nigricantia, convexa. Epithecum vel hymenium parte superiore aeruginoso-nigricans. Hypothecium pallidum aut sordide pallidum aut (in eodem apothecio marginem versus) dilute vel intense rubricosum.

*Distr.* Ad lignum trunci Betulae in Tirismaa (J. P. Norrlin) et in pariete ligneo ad Pyhäniemi (Vain.) in Hollola in Ta. Ad lignum trunci putridi in turfoso ad Mujejärvi in Nurmek in Kb. (Vain.). Ad lignum trunci in Suoloselkä in LIn. (Vain.).

In specimine ad Pyhäniemi collecto, a Nyl. nominato, thallus sat crassus, leviter morbosus, perithecum decoloratum aut intus in hypothecium rubricosum transiens, chondroideum membranisque incrassatis, tubulis saepe angustissimis, brevibus, hypothecium partim pallidum, partim rubricosum, hymenium parte superiore aeruginoso-

nigricans, apothecia KOH non reagentia, paraphyses arcte cohaerentes, simplices, sporae simplices et parcissime 1-septatae, long. 0.007—0.01, crass. 0.002—0.003 mm, gonidia cystococcoidea, globosa aut subglobosa, simplicia, membrana leviter aut sat bene incrassata (—0.002 mm), interdum etiam autosporas continentia. In specimine ad Mujejärvi collecto apothecia habitu similia, thallus evanescens, hypothecium sordide pallidum, epithecium aeruginoso-nigricans (vel partim fuscescens), KOH olivaceo-aeruginosum, sporae long. 0.008—0.01, crass. 0.0035—0.005 mm.

F. *fuscopallescens* (Nyl.) Vain. *Lecidea globulosa* f. *fuscopallescens* Nyl. in Norrl. Ber. Torn. Lappm. (1873) p. 346. *L. globulosa* f. *pallens* Nyl. in Norrl. Bidr Sydöstr. Tav. Fl. (1870) p. 187 p. p. et in Norrl. Fl. Kar. Oneg. II (1876) p. 30.

Apothecia simplicia, fusco-nigricantia aut minore parte etiam livido-fuscescentia vel rufescentia vel subtestacea. Epithecum decoloratum et saepe partim fuscescens aut partim varie coloratum. Hypothecium pallidum aut decoloratum.

Distr. Ad corticem Juniperi et Betulae et lignum vetustum arborum pluribus locis.

Thallus tenuissimus, albidus, hypothallo indistincto. Perithecum decoloratum, cavitatibus cellularum ellipsoideis, 0.002—0.003 mm latis, membranis incrassatis. Epithecum decoloratum aut olivaceum aut sordide caeruleo-violascens aut olivaceum vel smaragdulum, KOH saepe distinctius olivaceum. Hymenium 0.030—0.035 mm crassum. Paraphyses arcte cohaerentes, parum gelatinosae, membranis in KOH demum bene gelatinoso-incrassatis. Gonidia cystococcoidea, simplicia, diam. 0.010—0.012 (—0.021) mm, interdum autosporas continentia.

F. *pallens* Vain.; Th. Fr. Lich. Scand. II (1874) p. 576 (excl. f. *fuscopallescens*). *Lecidea globulosa* var. *pallens* Nyl. in Norrl. Bidr. Sydöstr. Tav. Fr. (1870) p. 187 (Not. Sällsk. F. Fl. Fenn. Förh. XI, 1871) partim (conf. infra).

Apothecia simplicia, rufescentia et p. p. testacea. Epithecum decoloratum. Hypothecium vulgo pallidum aut parlim testaceum.

Distr. Ta.: Ad corticem Juniperi ad Vaania in Hollola (Vain.) et ad Kaila in Asikkala (Norrl. l. c.).

Thallus tenuissimus, albidus. Apothecia KOH non reagentia. Perithecum decoloratum, cavitatibus cellularum saepe oblongis, membranis incrassatis. Hymenium circ. 0.035—0.050 mm crassum, jodo sat dilute caerulescens deindeque fuscescenti-rubescens. Paraphyses arcte cohaerentes, simplices aut parce furcatae, parcissime etiam ramoso-connexae, parum gelatinosae, membranis in KOH demum gelatinoso-incrassatis. Sporae simplices et parce 1-septatae, long. 0.010—0.013, crass. 0.0025—0.0035 mm (in specim. e Vaania).

Gonidia cystococcoidea, globosa aut subglobosa, diam. circ. 0.012—0.006 mm, interdum autosporas continentia.

*Obs.* *L. globulosa* v. *pallens* Nyl. in Norrl. Bidr. Sydöstr. Tav. Fl. p. 187 (haud descripta) sec. specim. orig. n. 553 supra corticem Juniperi ad Kaila in Asikkala collectum tantum nonnullis apothecis ad f. *pallentem* Vain. ceterumque ad f. *fuscopalescentem* (Nyl.) pertinet. Aliud specim. orig. ad corticem *Salicis capreae* in Evo lectum nondum est cognitum.

### 16. *C. epiblastematica* (Wallr.) Vain.

*Patellaria epiblastematica* Wallr. Fl. Crypt. Germ. II t. 4 (1833) p. 464 (sec. determ. Nyl. et Arn.). *Scutula* Arn. Lich. Monac. (1889) n. 76, (1896) n. 451, Lich. Münch. (1891) p. 130 (forsan pr. p. etiam: Rehm in Rabenh. Krypt.-Fl. Asc., 1890, p. 322); Zopf Uebersicht schmaroz. Pilze, Hedwigia XXXV 1896, p. 347; Vouaux Bull. Soc. Myc. Fr. XXIX, 1913, p. 423; Mig. Krypt.-Fl. Asc., 1913, p. 896; Lindau Micr. Pilze, Krypt. Anf. II 1, 1922, p. 159. *Bialorina* A. L. Smith Mon. Brit. Lich. I, 1911, p. 132. *Bialora Heerii* Hepp Flecht. Eur. III (1853) n. 135.

*Exs.* Hepp Flecht. Eur. III (1853) n. 135. — Arn. Lich. Monac. I (1889) n. 76, (1896) n. 451. — Hepp Flecht. Eur. III (1853) n. 135 (in herb. meo).

Thallus tenuis, verruculosus, verruculis minutissimis, dispersis, pallidis, hypothallo indistincto. Apothecia minutissima, late adnata, nigra aut nigricantia, nuda, opaca, disco plano aut depresso-convexo, margine tenui, persistenti aut mox excluso. Hypothecium pallidum aut partim rubricosorufescens. Hymenium parte superiore aeruginosum aut partim ad marginem subpurpureum. Paraphyses sat arcte cohaerentes, simplices. Sporae 8:næ, subovoideæ, long. 0.008—0.010, crass. 0.003 mm (»long. 0.012—0.015, crass. 0.004—0.005 mm» sec. Arn. l. c.).

*Distr.* Supra partes mortuas emorientesque (et vigentes) thalli *Peltigerae caninae* var. *rufescens* ad Hersala in Hollola (apotheciis) et in Sutoisenniemi in Korpilahti (conidiis) a. 1874 legi (Nyl. determ.), ad Mustiala in Tammela (A. Kullhem) in Ta., ad Keret (N. I. Fellman, »*Lecidea cyrtella* \**L. Heerii*» Nyl. Lich. Lapp. Or. p. 152).

Est verus lichen, gonidiis instructus. Verruculae thalli lat. circ. 0.05 mm aut minores, parce etiam majores, gonidia abundanter continentes. Apothecia passim crebra, lat. 0.1—0.25 (0.35) mm (numquam

pallida a me visa). Hypothecium plectenparenchymaticum, cavitibus anguloso-rotundatis aut difformibus, lat. 0.0015—0.004 mm, membranis sat tenuibus aut modice incrassatis. Perithecium hypothecio concolor aut partim obscure subpurpureum (tunc KOH purpureum). Hymenium 0.035—0.045 mm crassum, jodo leviter caerulescens, dein vino rubens. Paraphyses haud gelatinosae, crass. 0.001 mm, apice vulgo aeruginoso, clavato, crass. 0.003—0.004 mm. Sporae distichae, decolores, ovoideae aut subovoideo-oblongae, altero apice rotundato, altero obtuso, haud constrictae, 1-septatae aut partim simplices. Conidangia prominentia, subglobosa, lat. 0.205—0.235 mm, testaceo-pallida aut nigricantia aut apice basive nigricantia (tunc violacea sub microscopio). Basidia brevia, simplicia. Conidia vulgo ovoideo-oblonga ovoideave, altero apice rotundato, altero obtuso, rectae aut saepe p. p. curvatae, long. 0.0045—0.007, crass. 0.002 mm, saepe uno guttulo instructae (conf. Arn. Lich. Tirol VI, 1871, p. 1145). Sec. Arn. Lich. Münch., 1891, p. 130 »spermog. punctif., fusca, spermat. curvula, 0.009 mm long., 0.001 mm lat., pycnides semiglobosae, apice pertusae, lutesc., demum fuscesc., stylospores incol. elongato-obl., rectae, non raro cum 3—4 guttulis, 0.015—0.018 mm long., 0.003 mm lat. (Tul. Mém. p. 119).» Vix ad hanc speciem pertineant. Gonidia globosa (aut subglobosa), diam. 0.007—0.010 mm, vulgo simplicia, parce etiam glomerulosa, membrana vulgo modice incrassata, interdum etiam sat crassa.

*Obs.* Nomen hujus speciei adhuc incertum est. *Scutula epiblastematica* Arn. Lich. Monac. (1889) n. 76 cet. quidem huc pertinet et specimen orig. Wallrothianum ab Arn. visum est (conf. Rehm. I. c. p. 323), sed non thallo descriptum et ab Arn. ad *Scutulam* ductum. Item *Biatora Heerii* Hepp Flecht. Eur. III (1853) n. 135 in herb. meo est *Catillaria epiblastematica* (Arn.) Vain., sed in Hepp Syst. Samml. XVI (1852) n. 211 et Schaer. Lich. Helv. Exs. XXVI (1852) n. 630 (a nobis non visis) forsan pertinet ad *Scutulam miliareum* (Wallr.) nostram, quae multo frequentior et abundantior est, quam *Catillaria epiblastematica* (Arn.) Vain. (vix ad plura exsiccata Hepiana sufficiens).

#### Sect. 4. *Micarea* (Fr.) Vain.

*Micarea* Fr. Syst. Orb. Veg. (1825) p. 257 (emend.); Hedl. Krit. Bem. Lec. Micar. (1892) p. 87 (em.).

Apothecia dilute colorata aut rufescens fuscescentia nigricantiave, gonidiis destituta. Hypothecium decoloratum pallidumve aut raro subrubescens. Paraphyses ramoso-connexae aut p. p. simplices immixtae. Sporae minutae mediocresve.

### 17. *C. graniformis* (Hag.) Vain.

*Lichen graniformis* Hagen Tent. Hist. Lich. (1782) p. XLVII, t. 1 f. 2. *Biatorina* A. L. Smith Mon. Brit. Lich. (1911) p. 117 *Lichen Ehrhartianus* Ach. Prodr. Lich. Suec. (1794) p. 39, tab. 2 f. 1. *Lecidea Ehrhartiana* Ach. Meth. Lich. (1803) p. 73, Lich. Univ. (1810) p. 191, Syn. Lich. (1814) p. 47 (a); Nyl. Lich. Scand. (1861) p. 195; Hedl. Krit. Bem. Lec. Micar. (1892) p. 58. *Catillaria* Th. Fr. Lich. Scand. II (1874) p. 510. *Biatorina* Arn. Lich. Tirol (1876) p. 411, Lich. Fränk. Jur. (Fl. 1885) p. 170, Lich. Münch. (1891) p. 82. *Lecidea corrugata* Ach. Syn. Lich. (1814) p. 18. *Limboria* Ach. Vet. Ak. Handl. 1815 p. 259, t. 6 f. 5, 1817 p. 238. *Rhytisma corrugatum* Fr. Syst. Myc. II (1823) p. 565. *Cliostomum* Fr. Lich. Eur. (1830) p. 455. *Lecidea biformis* Floerk. Deutsche Lich. VII (1821) p. 3, n. 122 (Mus. Berol.).

*Exs.* Floerk. Deutsch. Lich. II (1815) n. 24. — Fr. Lich. Suec. Exs. IX (1824) n. 253. — Schaer. Lich. Helv. Exs. VIII (1828) n. 192. — Zwackh Lich. Exs. (1851) n. 91, 109 A, B, (1881) n. 680. — Hepp Flecht. Eur. I (1853) n. 228, III (1860) n. 497. — Rabenh. Lich. Eur. Exs. IV (1856) n. 94, XXII (1861) n. 607, XXVIII (1866) n. 764. — Stenh. Lich. Suec. Exs. V n. 134. — Leight. Lich. Brit. Exs. XIII (1867) n. 410. — Arn. Lich. Monac. (1891) n. 179. — Kerner Fl. Exs. Austro-Hung. XIV (1896) n. 1896. — Mig. Crypt. Germ. IX (1903) n. 28. — Zahlbr. Krypt. Exs. Vindob. XIII (1905) n. 1231 — Malme Lich. Suec. Exs. VI (1909) n. 143. (Sec. cit.).

Thallus modice incrassatus aut sat tenuis, verrucosus areolatusve, areolis verrucisque rotundatis angulosisve, convexis aut depresso-convexis, dispersis aut contiguis, stramineis aut raro olivaceo-stramineis, hypothallo albido parum distincto aut evanescente. Apothecia mediocria aut sat parva, late adnata, disco depresso-convexo aut primum plano, stramineo- aut carneo-pallido, haud pruinoso, immarginata aut primum tenuiter marginata. Hypothecium decoloratum. Epithecum pallidum. Paraphyses arcte cohaerentes. Sporae 8:næ, oblongæ, rectæ, 1-septatae, »long. 0.007—0.011, crass. 0.0025—0.0035 mm. Conidangia frequentia, prominentia, atra, confluentia, glomerulos rugosos, 0.3—0.6 mm latos formantia.

*Distr.* Ad lignum nudum vetustum, praesertim in parietibus, et ad corticem Querci. Aländia: Frequenter sec. E. Nyl. et locis numerosis collecta. Ab.: Runsala vel Ruissalo (P. A. Karsten, Vain.).

Toijoinen in Hirvenluoto (Vain.), Korpo (G. Renvall), Pargas (nonnullis locis, F. Elfving), Littoinen (Vain.), Kustavi (H. Hollmén et V. Sederholm), ad stationem Perniö (abund. c. apoth., Vain.), Hanhula in Askainen (K. Linkola). N.: Elgö in Tvärminne (K. Linkola), Kyrkslätt (A. Kullhem), Annila in Sjundeå (V. Sederholm). St.: Loimaa (A. J. Malmgren). Ta.: Mustiala (A. Kullhem).

Conidangiis atris, comparate magnis, thallo vulgo stramineo insidentibus, numerosis jam sine apothecis facile discernitur. Thallo interdum partim subsquamuloso-areolato, parce crenulato lobulatove ad *Thalloedaema* accedens. Thallus verrucis areolisque 0.8—0.3 (1.5—0.15) mm latis, totis adnatis aut nonnullis subsquamulose adscendentibus, subnitidis, haud pruinosis, sorediis destitutis, superne strato corticali subcartilagineo circ. 0.015 mm crasso obductis, KOH vix distincte flavescentibus aut parum reagentibus,  $\text{CaCl}_2\text{O}_2$  et jodo inimutatis. Apothecia lat. 1—0.5 (—1.5) mm, basi haud constricta, gonidiis destituta, sed strato gonidioso thallino imposita, interdum demum tuberculosa, parum nitida subopacave, margine disco concolore pallidioreve, haud prominente. Peritheciun decoloratum, jodo non reagens, hyphis subradiantibus, leviter pachydermaticis, conglutinatis, cavitibus oblongis brevibusve, 0.005—0.001 mm latis. Hypothecium decoloratum, parte superiore jodo caeruleo-laceens, hyphis irregulariter contextis, leviter pachydermaticis, cavitibus oblongis, angustis. Hymenium circ. 0.050 mm crassum, jodo intense persistenter caeruleo-laceens et partim demum obscure subvioletaceum. Paraphyses arcte cohaerentes, numerosae, crass. 0.001 mm aut apice levissime incrassatae, simplices et parce ramoso-connexae (immers. visae). Sporae distichae, apicibus obtusis, lateribus convexis aut rarius cylindricis. Conidangia in lamina tenui fusco-fuliginea (»KOH violacea« sec. Arn.), basi dilute violaceo-fuscescentia, parte inferiore thallo immersa, conglomerata, in glomerulo partim partibus superioribus sejunctis et ostiolis diversis, cavitibus confluentibus, irregularibus, partim laceratis. Sterigmata simplicia, long. circ. 0.010, crass. 0.001 mm, apicibus conidia efferentibus, anaphysibus immixta 0.0015 mm crassis, increbre ramoso-connexis, cavitatem conidangii percurrentibus, increbris et sat parcis. Conidia ellipsoidea oblongave, apicibus rotundatis obtusisve, lateribus convexis, recta, simplicia, decoloria, long. 0.003—0.002, crass. 0.001 mm., in f. *ceracella* (Th. Fr. I. c. p. 262, Hedl. I. c. p. 59) crass. circ. 0.0017 mm. Gonidia cystococcoidea, globosa, simplicia, diam. 0.009—0.018 mm, chromatophoro centrali, anguloso, vacuolis lateralibus, nucleo et pyrenoide instructa, membrana sat tenui.

*Obs.* Vulgo sine apotheciis crescit, latae saepe tegens plaga, conidangia abundantiter procreans, quod indicat propagationem conidiis fieri, quum etiam soredia numquam profert. Ad talia specimina

apotheciis destituta, tantum conidangiis instructa, *Lichen graniformis* Hag. et *Lecidea corrugata* (*Rhytisma corrugatum* Fr.) spectant.

### 18. *C. Dufourei* (Ach.) Vain.

*Lichenogr. Fenn.* II (1922) p. 140, 258. *Lecidea Dufouret* Ach. in herb. sec. Nyl. Fl. 1867 p. 373, Nyl. in Norrl. Ber. Torn. Lappm. (1873) p. 336. *L. Dufourii* Hue Addend. II (1888) p. 157. *Calillaria sphaeralis* Koerb. Par. Lich. 3 Lief. (1861) p. 196 (sec. descr.); Arn. Lich. Tirol XIV (1875) p. 26 (458) sec. specim. orig. (nec. Fr., nec Schaeer., conf. Th. Fr. Lich. Scand. p. 383). *Buellia sphaeralis* Anzi Neosymb. (1866) p. 12 (sec. specim. orig.). *Lecidea sphaeroides* \**L. sabuletorum* f. *simplicior* Nyl. Lich. Scand. (1861) p. 205 p. p. (conf. Vain. l. c. p. 140, 258).

Thallus sat tenuis aut modice incrassatus, verruculosus, verruculis circ. 0.15—0.2 mm latis, rotundatis convexisque, confluentibus et partim dispersis, solidis, cinerascentibus aut rarius pallescentibus subalbidisve, haud pruinosis, hypothallo indistincto. Apothecia late adnata, vulgo fere mediocria, convexa, immarginataque, atra, nuda. Hypothecium decoloratum aut sordide albidum. Epithecium vulgo cyanescens vel aeruginoso-fuligineum. Paraphyses arcte cohaerentes, simplices et parce ramoso-connexae. Sporae 8:nae, oblongae aut ovoideo-oblongae, rectae, long. 0.011—0.014 (0.010—0.018), crass. 0.003—0.004 (—0.006) mm.

*Distr.* Supra muscos destructos et terram humosam in rupibus. L.Kem.: Pahtarinne (Kätkäsuanto) in par. Muonioniska (J. P. Norrlin). L'Enont.: Ad basim montis Pietsovaara (Norrl.). L.In.: Pitkävuono (F. Silén), Ruoptuinväara (Vain.).

Thallus sorediis destitutus, nec KOH, nec  $\text{CaCl}_2\text{O}_2$  reagens, verruculis nec clavatis, nec substipitatis, nec fistulosis, quibus notis a *Thalloedaemate squalescente* (Nyl.) haec species differt. Apothecia lat. 0.5—1 mm, parum aut leviter nitida, primum depresso-convexa et vix distincte marginata. Hypothecium crassum, chondroideum, superne vulgo sordide subcinerascens, inferne decoloratum, aut ad marginem sordide diluteque subviolascens, KOH parum reagens, pachydermaticum, cavitatibus cellularum oblongis, 0.001 mm latis, hyphis ramoso-connexis, conglutinatis, in parte superiore suberectis, ceterum irregulariter contextis. Peritheciun tenue, extus aeruginosum aut fuscescens aut totum decoloratum pallidumve, chondroideum, hyphis subradiantibus et ramoso-connexis, pachydermaticis,

conglutinatis, tubulis oblongis, 0.001—0.0015 mm longis. Hymenium 0.060—0.090 mm crassum, jodo caerulescens, dein vinose rubens. Epitheciū cyanescenti- vel aeruginoso- aut rarius olivaceo-fuligineum, KOH non reagens, »ac. nitr. obscure violascens« (sec. Arn.). Paraphyses increbre septatae, membrana gelatinosa KOH parum turgescente instructae, tubulo circ. 0.0015 mm crasso, a strato gelatinoso membranae in KOH facile disjuncto, ita ut haud gelatinosae apparent. Ascii clavati. Sporae distichae, 1-septatae, apicibus obtusis rotundatisve. Conidia »bacillaria, recta, long. 0.0045, crass. 0.001 mm« (sec. annot. et icon. in specimine n. 18839 in herb. Nyl., ab Arn. l. c. e Tirolia commemorato). Gonidia valde variabilia in eadem verruea thallina (sed forsitan non ad diversas species pertinentia), vulgo globosa, cavitate diam. 0.008—0.016 mm, simplicia aut demum glomerulosa, interdum etiam autosporas numerosas continentia, membrana saepe bene incrassata.

19. \***C. Kivakkensis** Vain. n. sp.

Thallus subsquamoso-verruculosus, verruculis difformibus, 0.3—0.1 mm latis, dispersis aut contiguis confluentibusve, depresso-convexus, sat tenuibus, solidis, testaceis aut pallido-fuscescentibus, haud pruinosis, hypothallo indistincto. Apothecia sat parva mediocriave, late adnata, mox convexa immarginataque, atra, leviter nitida, nuda. Hypothecium pallidum et partim rubricosum. Epitheciū aeruginosum aut rarius olivaceum violaceum. Paraphyses arcte cohaerentes, simplices et parce ramoso-connexae. Sporae 8:næ, ellipsoideæ aut rarius ovoideæ, rectæ, long. 0.006—0.01, crass. 0.0035—0.005 mm.

*Distr.* KKer.: Supra muscos vigentes et destructos (praesertim *Andreaea petrophilas*) in rupe in reg. subalp. montis Kivakka (Vain.).

Proxima *Catillariae Dufourei*, colore thalli, hypothecio partim rubricoso et sporis ellipsoideis ab ea differens, sed forsitan var. ejus. Thallus sorediis destitutus, KOH non reagens, verruculis nec clavatis, nec substipitatis, nec fistulosis. Apothecia lat. 0.4—0.7 mm, sat dispersa. Hypothecium crassum, in eodem apothecio partim pallidum et partim rubricosum, KOH non reagens, chondroideum pachydermaticumque, hyphis conglutinatis, in parte crassa superiore erectis, in parte inferiore irregulariter contextis, cavitatibus angustissimis elongatisque et passim parce etiam ellipsoideis latioribusque et moniliiformi-concatenatis. Hymenium circ. 0.060—0.070 mm crassum, interdum totum sordide violaceum, jodo caerulescens (leviter), dein vinose

rubens, KOH non reagens, sine limite distincto in hypothecium continuatum, praesertim colore et hyphis (paraphysibus) minus crebre contextis ab eo differens. Paraphyses increbre aut sat increbre septatae, membrana gelatinoso-incrassata, cavitate 0.0005—0.001 mm lata. Ascii clavati. Sporae distichae, 1-septatae, apicibus rotundatis obtusissive. Gonidia vulgo simplicia, cavitate subglobosa, diam. 0.007—0.012 mm, aut ellipsoidea et cav. 13 × 9 vel 9 × 5  $\mu$ , p. p. glomerulosa, membrana gelatinoso-incrassata

## 20. *C. intrusa* Th. Fr.

Lich. Scand. II (1874) p. 579. *Lecidea intrusa* Th. Fr. Bot. Not. 1867 p. 152 (haud Krempelh., 1867). *Lecideopsis (?) intrusa* Zopf Hedwigia 1897 p. 338. *Lecidea contrusa* Vain. Adj. Lich. Lapp. II (1883) p. 29.

Thallus sat tenuis aut sat crassus, verrucosus areolatusve, dispersus aut areolis pulvinulos dispersos formantibus, obscure cinerascens. Apothecia parva aut sat parva, convexa, immarginata, atra, nuda, late adnata, basi haud constricta. Hypothecium decoloratum, parte infima (subperitheciali) rubricosa. Hymenium praesertim superius aeruginosum. Paraphyses arcte cohaerentes, gelatinosae. Sporae oblongae ellipsoideaeve, long. 0.007—0.018, crass. 0.004—0.007 mm, interdum p. p. globosae et diam. 0.007 mm (tunc simplices).

*Distr.* Inter alios lichenes saxicolas (*Lecidea panaeola*, *L. juliginosa*, *L. lapicida*, *L. macrocarpa*) crescit, sed non est parasita. Ab.: Louhikkomäki (Vain.) Ta.: Heinämaa in Mustiala (A. Kullhem, conf. Th. Fr. I. c. p. 579). Kuus.: Reg. subalp. montis Nuorunen (Vain. I. c.). LIn.: Reg. subalp. in Hammastunturit (Vain.).

Apotheciis rotundatis instructa, ad *Graphideas* pertinere non potest, etiam hypothecio ex hyphis erectis formato ab iis differens. Interdum insulas, ad instar *Lecideae intumescentis* (Flk.) Nyl., in thallo aliorum lichenum format. Thallus verrucis circ. 0.2—0.4 mm latis, saepe in acervulos parvos dispersos confertis. Apothecia lat. 0.25—0.6 mm, crass. usque ad 0.6 mm, crebra, sed parce evoluta, praesertim in ascis morbosis et in hypothecio saepe materiam miniatam, KOH violaceentem, continentia. Hypothecium ex hyphis formatum erectis, sat pachydermaticis, conglutinatis, in parte inferiore parce ramoso-connexis. Perithécium in parte inferiore apothecii distinctius evolutum, extus dilute aeruginosum aut in medio apothecii rubricosum (KOH violascens), hyphis pachydermaticis, increbre ramoso-connexis,

radiantibus, conglutinatis. Hymenium circ. 0.065—0.080 mm crassum, sine limite distincto in hypothecium transiens, KOH non reagens, jodo caerulescens, dein vinoce rubens (aut partim demum decoloratum). Paraphyses simplices et ad latus apothecii parce ramoso-connexae. Ascii clavati aut p. p. subpyriformes. Sporae 8:næ, distichæ, decolores, 1-septatae et p. p. simplices, apicibus vulgo rotundatis, haud constrictæ. Gonidia cystococcoidea, globosa, simplicia, diam. 0.010—0.017 mm, interdum autosporas continentia.

21. *C. elachista* (Koerb.) Vain.

*Biatora sarcopiciooides* Mass. Ric. Lich. Crost. (1852) p. 128 p. p.; Anzi Lich. Ven. II (1863) n. 61 (in Mus. Vindob., sed haud in herb. Nyl.). *Lecidea* Vain. Not. Syn. Lich. (1886) p. 25. *Biatora elachista* Koerb. Par. Lich. 2 Lief. (1860) p. 159 (haud *Parmelia elachista* (Ach.); Zwackh Enum. Lich. Heidelb. (Fl. 1862) p. 510 (in Zwackh Lich. Exs. n. 122 distributa)). *Lecidea anomala* \**L. glomerella* Nyl. Lich. Scand. (1861) p. 203. *Calittaria glomerella* Th. Fr. Lich. Scand. II (1874) p. 578. *Lecidea* Nyl. in Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 314, cont. (1921) n. 724. *Biatorina* Arn. Lich. Exs. (1889) n. 1471, Lich. Münch. (1891) p. 83, Lich. Tirol XXX (1897) p. 4 (212). *Micarea* Hedl. I. c. p. 75, 85

Exs. Zwackh Lich. Exs. (1852) n. 122 (in herb. Nyl. et sec. Zwackh Lich. Heidelb. p. 46), n. 131 (sec. Lyngé Ind. Exs. II p. 170). — Anzi Lich. Venet. II (1863) n. 61. — Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 314, cont. (1921) n. 724. — Arn. Lich. Exs. (1889) n. 1471, Lich. Monac. (1892) n. 246.

Thallus modice incrassatus, verruculosus, verruculis vulgo subglobosis, dispersis aut rarius partim contiguis, cinerascentibus aut impure albidis pallidisve aut olivaceis aut raro obscure cinereo-virescentibus, aut partim evanescens, hypothallo indistincto. Apothecia parva, convexa, basi constricta, immarginata, vulgo fusca aut fusco-nigra, rarius nigricantia, subopaca, haud pruinosa. Hypothecium luteo-pallescens aut decoloratum aut raro sordide pallescens. Epithecium fuscescens aut fuscescenti-pallidum, KOH non violascens. Paraphyses arête cohaerentes, simplices et parce ramoso-connexae. Sporae 8:næ, rectæ aut p. p. leviter curvatae, long. 0.010—0.014 (—0.018), crass. 0.0025—0.003 (—0.002) mm (»—0.004 mm» sec. Nyl.).

*Distr.* Ad truncos pineos putridos, interdum etiam carbonatos, praesertim in paludibus turfosis, raro in tecto ligneo horrei. Sat rara aut passim in provinciis mediis Fenniae (Nyl. Lich. Scand. p. 203, Kullh. in Not. Soc. Fl. Fenn. XI, 1871, p. 274, Norrl. H. L. F. VII n. 314, cont. n. 724, Vain. Fl. Tav. Or. p. 112, Adj. Lich. Lapp. II p. 28) et in prov. austr. Kareliae Rossicae (Norrl. Fl. Kar. Oneg. II p. 30, Elfv. Ant. Veg. Svir p. 168).

*F. simplicata* (Nyl.) Vain. *Lecidea glomerella* f. *simplicata* Nyl. in Norrl. et Nyl. Herb. Lich. Fenn. VII (1882) n. 314; Vain. Adj. Lich. Lapp. II (1883) p. 28. *Micarea glomerella* f. *simplicata* Hedl. l. c. p. 75, 85.

Apothecia simplicia, nec confluentia, nec tuberculosa, vulgo fusca aut fusco-nigra. Thallus haud obscuratus.

*Distr.* Ad truncos putridos et raro in tecto ligneo horrei. Ta.: Evo in Lammi (Vain.), Jutinsalo et Onkisalo in Luhanka (Vain.). Sb.: Pieksämäki (Vain.). Kb.: Prope pag. Lieksa (Vain.).

Thallus verruculosus, verruculis 0.1—0.2 mm latis, impure pallidis aut cinerascentibus olivaceisve, aut partim evanescens. Apothecia lat. 0.2—0.5 mm. Perithecium luteo-pallescens aut extus testaceum, hyphis radiantibus, modice pachydermaticis, cavitatibus 0.001—0.002 mm latis. Hypothecium luteo-pallescens, hyphis modice pachydermaticis, suberectis, ramoso-connexis. Hymenium circ. 0.050 mm crassum. Epithecium fuscescens aut olivaceo-fuscescens aut testaceo-rufescens, KOH non reagens et demum subdecoloratum, »jodo caerulescens deindeque sordide decoloratum» (sec. Th. Fr.). Paraphyses arete cohaerentes et in aqua visae parum distinctae, in KOH conspicuae, 0.0015 mm crassae, apice parum incrassatae, flexuosa, modice ramosae, increbre ramoso-connexae, gelatina hymenia  $\frac{1}{2}$  KOH turgescente. Sporae 8:næ aut abortu pauciores, distichæ, ovoido-oblongæ aut fusiformi-oblongæ aut oblongæ, apicibus obtusis aut altero apice rotundato, rectæ aut p. p. leviter curvatae, typice 1-septatae, long. 0.010—0.014 mm, interdum fortuitoque 2—3-septatae (in uno asco sporas binas, 3-septatas, 0.017 et 0.018 mm longas, 0.0025 mm crassas, apice obtusas distinctissime vidi). Gonidia pleurococcoidea, globosa aut subglobosa, diam. 0.005—0.008 mm, simplicia aut glomerulosa, membrana modice incrassata.

*F. glomerella* (Nyl.) Vain. *Bialora elachista* Koerb. Par. Lich. 2 Lief. (1860) p. 159; Zwackh En. Lich. Heidelb. (Fl. 1862) p. 510. *Lecidea anomala* \**L. glomerella* Nyl. Lich. Scand. (1861) p. 203.

*Exs.* Zwackh Lich. Exs. (1852) n. 122 (in herb. Nyl.). — Arn. Lich. Exs. (1889) n. 1471 (maj. p.), Lich. Monac. (1892) n. 246. — Norrl. et Nyl. Herb. Lich. Fenn. cont. (1921) n. 724.

Apothecia p. p. confluentia tuberculose, vulgo fusca aut fusco-nigra. Thallus haud obscuratus.

*Distr.* Ad truncos putridos. Ta.: Ad templum, Myllynkylä, Haarankorpi, Pähkäjärvi in Tammela (A. Kullhem), Hammo in Hollola (J. P. Norrlin), Evo in Lammi (Norrl.), Onkisalo in Luhanka (Vain.), Tianen in Korpilahti (Vain.). Oa.: Bötom (A. J. Malmgren). Sb.: Mustamäki in Haminanlahti prope Kuopio (K. Linkola). Kb.: Pag. Lieksa et Vieki in par. Lieksa (Vain.), Mujejärvi in Nurmes (Vain.). KPom. oce.: Koroppi et Vuosiniemi in Repola (Vain.).

Thallus verruculosus, verruculis 0.1—0.2 (—0.3) mm latis, impure albidis pallidisve aut cinerascentibus vel cinereo-glaucescentibus olivaceisve, aut partim evanescens. Apothecia saepe p. p. etiam simplicia. Perithecium luteo-pallescens aut praesertim extus testaceum vel fuscescens. Hypothecium pallidum aut impure pallidum subalbidumve, hyphis suberectis, crebre septatis. Hymenium circ. 0.050—0.055 mm crassum. Paraphyses ramoso-connexae, partim etiam simplices. Sporae rectae aut p. p. leviter curvatae, 1-septatae aut parcus simplices (parce etiam 3-septatae sec. annot. Nyl.), long. 0.010—0.014, crass. 0.002—0.003 mm (sec. annot. Nyl. long. —0.018, crass. —0.0035 mm). Conidangia prominentia. Conidia ellipsoidea, long. 0.004, crass. vix. 0.002 mm, recta. Gonidia pleurococcoidea, globosa, diam. 0.004—0.010 mm, saepe demum glomerulosa, membrana modice incrassata.

*Obs.* *Lecidea glomerella* f. *ecrustacea* Nyl. in Elfv. Ant. Veg. Svir (Medd. Soc. F. Fl. Fenn. II, 1878) p. 168 forsitan non pertinet, thallo instructa evanescente, apothecis simplicibus, 0.3—0.5 mm latis, parce confluentibus, nigris aut parce fuscescens, epithecio testaceo-fuscescente aut hymenio livido-fumoso, KOH violascente, jodo persistenter caerulescente, paraphysibus ramoso-connexis, gel. hym. KOH turgescente, tenuissimis, hypothecio pallido, ex hyphis suberectis formato, sporis oblongis, long. 0.008—0.01, crass. 0.002—0.003 mm, simplicibus (unam sporam 1-septatam vidi), pyrenidiis verrucaeformibus, prominentibus, circ. 0.140 mm latis, olivaceo-nigricantibus, massa albida conidiorum protrudentium diu supra ostiolum restante, conidiis fusiformi-oblongis ellipsoideisve, rectis, long. 0.002—0.0035, crass. 0.001—0.0015 mm, apicibus obtusis. Ad Gorki prope Svir in Karelia (F. Elfving). — Infra apothecia gonidia pleurococcoidea et *Gloeocapsae* observantur. E *C. denigrata* sit evoluta, sed a *Lecidea globulari* vix nisi apothecii majoribus differt.

F. *poliococcoides* Vain. *Lecidea glomerella* f. *poliococcoides* Vain. Adj. Lich. Lapp. II (1883) p. 29. *Micarea glomerella* f. *poliococcoides* Hedl. Krit. Bem. Lec. Micar. (1892) p. 75, 85.

Apothecia simplicia et p. p. tuberculosa confluentiae, nigra. Thallus obscure cinereo-glauescens aut p. p. dilutius coloratum, verruculosus.

*Distr.* Ad truncum carbonatum prope Vieki in par. Lieksa in Kb.

Thallus verruculis 0.2—0.1 mm latis, dispersis aut partim subcontiguis, opacis. Apothecia simplicia lat. 0.4—0.25 mm, p. p. etiam tuberculato-confluentia. Perithecium pallido-fuscescens. Hypothecium lutescenti-pallidum, hyphis suberectis. Epithecium rufo-fuscescens, KOH partim dissolutum et nubes rufo-fuscescentes effundens (haud violascens). Hymenium ceterum fulvescens aut decoloratum, circ. 0.015 mm crassum. Paraphyses parce ramoso-connexae, apice ramulosae. Sporae oblongae, leviter curvatae aut rectae, 1-septatae, long. 0.014—0.019, crass. 0.003 mm. Gonidia pleurococcoidea, diam. 0.006—0.004 (—0.008) mm, simplicia aut bicellulosa aut glomerulosa, membrana modice incrassata.

*Obs. 1.* Ab hac forma notis internis leviter differt v. *carbonicola* Vain., in trunco carbonato ad Tianen in Korpilahti collecta (»*Lecidea poliococca*« sec. determ. Nylandri in Vain. Fl. Tav. Or., 1878, p. 112), facie externa similis f. *poliococcoidi*. Thallus verriculosus, obscure cinereo-glaucescens. Apothecia nigra. Epithecium olivaceo-fuligineum. Hymenium ceterum dilute sordide smaragdulo-olivaceum, KOH fuscescenti-olivaceum (haud violascens). Hypothecium colore simile, hyphis suberectis. Sporae subfusiformes, saepe leviter curvatae, long. 0.009—0.012, crass. 0.002—0.003 mm. Gonidia micareoidea, chromatophoris vulgo globosis, diam. 0.004—0.002 mm, viridibus, cellulis 0.004—0.006 mm latis, saepe binis aut glomerulosis, pariete communi gelatinoso-incrassato. Forsan non est autonoma species, etsi praesertim gonidiis a *C. elachista* differt. Ulterius est inquirenda.

*Obs. 2.* *Lecidea poliococca* Nyl., Lich. Scand. (1861) p. 203 (Th. Fr. Lich. Scand. II p. 578), sec. specim. orig. n. 19144 in herb. Nyl., in sylva Parken in Suecia collectum, ad *C. denigratam* f. *poliococcum* Vain. pertinet. Thallus verrucis 0.2—0.3 (0.1—0.5) mm latis, cinereo-pallescentibus, subcontiguis. Apothecia 0.2—0.4 mm lata, convexa, immarginata, nigra. Hypothecium pallidum aut testaceo-pallidum, KOH leviter sordideque violascens, dein rubescens (qua nota forsitan accidentaliter a *C. denigrata* differt), hyphis suberectis. Hymenium pallidum aut testaceo-pallidum (aut epithecio partim decolorato), KOH sicut hypothecium reagens. Paraphyses numerosissimae, ramoso-connexae, tubulis tenuibus, gel. hym. KOH turgescente. Gonidia pleurococcoidea, globosa, diam. 0.005—0.008 mm, membrana modice incrassata, simplicia aut glomerulosa.

## 22. *C. denigrata* (Fr.) Vain.

*C. denigrata* Hedl. Om Bälbldn. Cat. (Bot. Not. 1891) p. 191 p. p. *Bialora denigrata* Fr. Vet. Ak. Handl. 1822 p. 265, Lich. Eur. Ref. (1830) p. 270. *Lecidea* Nyl. Lich. Lapp. Or. (1866) p. 149; Vain.

Lich. Caucas. (1899) p. 320. *Bialorina* Arn. Lich. Tirol XI (1873) p. 518. *L. vernalis* var. *denigrata* Nyl. Lich. Fl. Helsingf. (Not. Sällsk F. et Fl. Fenn. IV, 1858—59) p. 98. *L. anomala* 2) f. *denigrata* Nyl. Lich. Scand. (1860) p. 202. *L. synothea* Ach. Lich. Univ. (1810) p. 169 p. p., Syn. Lich. (1814) p. 26 p. p. (non sit *L. synothea* Ach. in Vet. Ak. Handl. 1808 p. 236, conf. Vain. in Hedl. Krit. Beitr. Lec. Mic. p. 91). *Bialora synothea* Fr. Lich. Suec. Exs. IV (1824) p. 21, n. 98 (sec. Th. Fr.). *Calillaria* Beltr. Cas. Lich. Bassan. (1858) p. 174; Th. Fr. Lich. Scand. II (1874) p. 577; Vain. Lich. Fenn. II (1922) p. 259. *Bialorina* Koerb. Par. Lich. (1865) p. 144; Arn. Lich. Tirol IV (1869) p. 625, Lich. Münch. (1891) p. 82; Flagey Lich. Franche-Comté (1894) p. 389. *Lecidea fungicola* Ach. Lich. Univ. (1810) p. 672 p. p., Syn. Lich. (1814) p. 35 p. p. (sec. Th. Fr. l. c. p. 578, Nyl. l. c. p. 203, etiam nomen ineptum).

*Exs.* Fr. Lich. Suec. Exs. IV (1824) n. 98 (in herb. Nyl.). — Flot. Lich. Exs. (1829) n. 112. — Hepp Syst. Samml. XVI (1852) n. 210, Flecht. Eur. I (1852) n. 14. — Rabenh. Lich. Eur. Exs. XXIII (1862) n. 626. — Anzi Lich. Exs. Min. Rar. It. VI (1865) n. 256. — Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 177. — Malme Lich. Suec. Exs. VI (1909) n. 145 p. p., XV (1913) n. 365.

Thallus tenuis aut evanescens aut sat crassus, cinereo-aut olivaceo- aut nigricanti-virescens, leviter inaequalis aut verruculosus. Apothecia crebra aut dispersa, parva aut minutissima, late adnata, vulgo convexa, immarginata, nigra aut raro fusco-nigra, subopaca, haud pruinosa. Hypothecium luteo-pallescens aut decoloratum. Hymenium partim decoloratum aut olivaceum aut sordide subviolascens aut aeruginosum, KOH mox violascens. Paraphyses arcte cohaerentes, simplices et parce ramoso-connexae. Sporae 8:nae, rectae aut p. p. leviter curvatae, long. 0.007 —0.011 (-0.014), crass. 0.0025—0.003 mm. Conidangia saepe numerosissima, massa albida conidiorum protrudentium diu supra ostiolum restante.

*Distr.* Ad lignum putridum parietum, tectorum, saepimentorum, pontium, truncorum, et ad corticem Alni et Pini crescit, passim proveniens.

F. *synothea* (Fr.) Vain.

Thallus tenuis, leviter inaequalis aut partim subverruculosus. Apothecia parva.

*Distr.* Ad corticem *Alni glutinosae* et ad lignum. Est forma typica hujus speciei.

Thallus dispersus, sorediis destitutus, hypothallo indistincto. Apothecia lat. 0.3—0.4 (—0.2) mm, nigra. Hymenium partim decoloratum, ceterum parte superiore olivaceum aut aeruginosum, KOH violascens, jodo intense caeruleescens. Conidangia prominentia, conoidaea, basi lat. circ. 0.15—0.25 mm, nigra, parte superiore subcyanescens, KOH solutionem pulchre violascentem effundentia et demum denuo subcyanescens. Conidia ellipsoidea aut oblonga aut ovoideo-oblonga, long. 0.003—0.0045, crass. vix 0.002 mm, apicibus rotundatis aut altero apice obtuso, recta, simplicia (conf. etiam Arn. Lich. Münch. p. 82), sec. Th. Fr. l. c. »long. 0.004—0.005, crass. 0.002 mm». Conidia »longiora et saepe curvata», a Hedl. (Om Bålbildn. Cat. p. 199) observata, verisim. ad *Bilimbiam Nitschkeanam* pertinent (conf. Lich. Fenn. II p. 259). Gonidia pleurococcoidea, subglobosa aut globosa, diam. 0.005—0.007 mm aut long. 0.005—0.007, crass. 0.004—0.006 mm, simplicia aut 2—4-cellulosa aut glomerulosa, membrana modice incrassata. Gonidia a Hedl. culta diam. long. 0.010—0.013—0.015 mm (Hedl. l. c. p. 200) et ab eo ad *Protococcum viridem* ducta sunt.

*F. poliococca* (Nyl.) Vain. *Lecidea poliococca* Nyl. Lich. Scand. (1861) p. 203 (Th. Fr. Lich. Scand. II p. 578).

*Exs.* Fr. Lich. Suec. Exs. IV (1824) n. 98 (in herb. Nyl.).

Thallus modice incrassatus aut sat crassus, verruculosus. Apothecia parva.

*Distr.* Ad parietes et saepimenta lignea vetusta collecta. Ab.: Iso-Heikkilä Aboae (Vain.), Ulvala in Lohja (C. E. Boldt). N.: Helsingforsia (W. Nylander). Kyrkslätt (A. Kullhem). Ta.: Koski (Vain.), Hersala in Hollola (Vain., Norrl. et Nyl. Herb. Lich. Fenn. n. 177), Asikkala (Norrl.). LKem.: Sattanen in Sodankylä (Vain. Adj. Lich. Lapp. II p. 28).

Thallus verruculis circ. 0.15—0.3 (—0.4) mm latis, convexis, subglobosis aut rarius difformibus, vulgo laevigatis, cinereo-virescentibus aut obscuris vel rarius albido-cinerascentibus, contiguis aut partim dispersis. Apothecia verruculos thalli parum aut leviter superantia, crebra aut partim subcontigua, lat. 0.3—0.4 (—0.2) mm, nigra aut raro fusco-nigra. Hypothecium luteo-pallescens aut decoloratum, hyphis modice pachydermaticis, crebre septatis, ramoso-connexis, in parte superiore suberectis, in parte inferiore magis irregulariter contextis. Peritheciun pallidum, hyphis radiantibus, conglutinatis, tubulis tenuissimis, membranis modice incrassatis. Hymenium circ. 0.035—0.040 mm crassum, parte superiore olivaceum aut subviolascens fuscescensve, KOH violascens. Paraphyses numerosissimae, simplices et partim (praesertim parte inferiore) ramoso-connexae, crebre septatae, crass. 0.001—0.0015 mm, leviter gelatinosae, gelatina in KOH modice turgescente. Sporae 8:nae, distichae, oblongae aut fusiformi- vel ovoideo-oblongae, rectae aut p. p. curvatae, apicibus

obtusis aut rotundatis, 1-septatae et p. p. simplices, long. 0.01—0.02 (0.007—0.014) mm. Conidia ellipsoidea aut oblonga aut p. p. ovoidea, recta, long. 0.003—0.006, crass. 0.0015—vix 0.002 mm. Gonidia pleurococcoidea, globosa, diam. 0.006—0.010 mm, simplicia aut parce 1-septata, chromatophoro anguloso, membrana sat tenui, vacuolis lateralibus, saepe etiam *Gloeocapsis* (forsan parathallos haud formantibus, etsi hyphosis) intermixta.

*F. pyrenothizans* (Nyl.) Vain. *Lecidea anomala* f. *pyrenothizans* Nyl. Lich. Scand. (1861) p. 203. *L. denigrata* f. *pyrenothizans* Nyl. in Vain. Fl. Tav. Or. (1878) p. 112. *Micarea denigrata* f. *pyrenothizans* Hedl. Krit. Bem. Lec. Micar. (Bihang K. Sv. Vet.-Ak. Handl. 18, III, n. 3, 1892) p. 78, 89.

*Exs.* Malme Lich. Suec. Exs. XV (1893) n. 365.

Thallus tenuissimus dispersusque aut evanescens. Apothecia minutissima.

*Distr.* Ad lignum in truncis putridis in silvis, ad saepimenta lignea, ad corticem Alni et Pini crescens, locis numerosis collecta. OKaj.: Saukko in Kianta (Vain.).

Thallus parum distinctus aut verruculis minutissimis, dispersis, albido-cinerascentibus aut cinereo-virescentibus indicatus. Apothecia crebra aut dispersa, lat. 0.2—0.15 (—0.25) mm, nigra aut p. p. subfuscens. Hypothecium luteo-pallescens aut sordide pallidum aut decoloratum. Hymenium superius vel epithecium subolivaceum aut sordide pallidum, KOH violascens. Sporae ovoideae oblongaeve aut variabiles, rectae aut p. p. leviter curvatae, 1-septatae aut p. p. simplices, long. 0.006—0.011 (—0.014), crass. 0.0025—0.003 (—0.004) mm (»—0.002 mm» sec. annot. Nyl. in herb. meo). — In specimine ad Saukko in Kianta collecto sporae long. 0.012—0.014, crass. 0.003—0.004 mm, 1-septatae, saepe leviter curvatae.

*Obs. 1.* *Lecidea denigrata* var. *submisella* Nyl. (in Vain. Fl. Tav. Or., 1878, p. 112) apotheciis minoribus (lat. 0.0025—0.001 mm) differt a f. *pyrenothizante* (Nyl.). Thallus evanescens. Apothecia vulgo sat crebra. Sporae oblongae aut ovoideo-oblongae, p. maj. p. simplices, in nonnullis ascis demum omnes septatae, »long. 0.007—0.011, crass. 0.002—0.003 mm» (etiam sec. annot. Nyl.). Hypothecium sordide lutescenti-pallidum, chondroideum, hyphis sat pachydermatis, crebre septatis, ramoso-connexis, cavitatibus angustis, subglobosis et ellipsoideis oblongisque. Peritheciun tenue, chondroideum, sordide subviolascens (KOH violaceum) aut extus pallidum. Hymenium superne nigricanti-olivaceum aut sordide subviolaceum, KOH fere totum sordide violascens. Paraphyses sat numerosae, gelatinosae, simplices et p. p. ramosae et ramoso-connexae. Ad truncum putridum in Piililä in Korpilahti (Vain.). A f. *pyrenothizante* non est distinguenda.

*Obs. 2.* *Micarea denigrata* var. *Friesiana* Hedl. (l. c. p. 78, 89), etiam f. *hemipoliellam* (Nyl.) et f. *spododem* (Nyl.) amplectens, in has 8 formas divisa est: 1. f. *pyrenothizans* (Nyl.) sporis l. 7—11, cr. 2—3  $\mu$ , apotheciis 0.1—0.3 mm latis, crusta tenui vel obsoleta, 2. f. sporis l. 7—15, cr. 2—2.5  $\mu$ , crusta obsoleta, 3. f. sporis l. 7—12, cr. 2—3  $\mu$ , apotheciis mox valde tuberculatis, 0.3—0.8 mm latis, crusta fere obsoleta, 4. f. sporis plurimis simplicibus, paucis obsolete 1-septatis, l. 7—13, cr. 2.5—3  $\mu$ , apotheciis 0.1—0.3 mm latis, crusta tenuissima, 5. f. *hemipoliella* (Nyl.) Hedl. (videas sub ea), 6. f. *vulgaris* Hedl. sporis 1-septatis, paucis 3-septatis raro immixtis, l. 7—14, cr. 2.5—3.5  $\mu$ , apotheciis olivaceo-nigricantibus vel nigris, 0.2—0.4 mm latis, crusta bene evoluta — obsoleta (ad *C. denigratam* partim non pertinet), 7. f. *spododes* (Nyl.) Hedl. sporis 1-septatis, paucis 3-septatis interdum immixtis, l. 6—16 (—19), cr. 2.5—3.5  $\mu$ , apotheciis lutescenti vel livido-sordidis vel demum olivaceo-nigricantibus, saepe depresso-convexis, 0.2—0.5 mm latis, crusta tenui-obsoleta (ad *C. denigratam* non pertinet), 8. f. sporis l. 9—14, cr. 2—2.5  $\mu$ , apotheciis 0.2—0.4 mm latis, crusta bene evoluta.

*Obs. 3.* *Lecidea denigrata* var. *bacidiella* Vain., Adj. Lich. Lapp. II (1883) p. 28 (*Micarea denigrata* v. *bacidiella* Hedl. Krit. Bem. Lec. Micar., 1892, p. 79, 90), secund. apothecium magis vetustum sporis 3-septatis, parce etiam 4—5-septatis instructa, ad *Bacidiam minusculam* Anzi (Vain. Lich. Fenn. II p. 200) pertinet. In hoc apothecio hymenium parte superiore sordide violascens, in alio (a. 1883 examinato) olivaceo-smaragdulum vel aeruginosum, quare intermedia est inter v. *obscurorem* et v. *planiorem*. Ad lignum trunci vetusti prope Pyhäntunturi in Sodankylä collecta.

### 23. *C. hemipoliella* (Nyl.) Blomb. et Forss.

Enum. Pl. Scand. (1880) p. 92. *Lecidea denigrata* \**L. hemipoliella* Nyl. Fl. 1875 p. 11; Vain. Lich. Vib. (1878) p. 62; Hue Addend. II (1888) p. 150. *Lecidea hemipoliella* Vain. Fl. Tav. Or. (1878) p. 112. *L. denigrata* f. *sublivescens* Nyl. Fl. 1881 p. 539 (sec. specim. orig.); Hue Addend. II (1888) p. 150.

*Exs.* Zwackh Lich. Exs. (1861) n. 394 (in herb. Nyl.).

Thallus tenuissimus, albido-cinerascens aut obscure cinerascens aut subalbidus. Apothecia crebra aut sat crebra, minutissima, late adnata, convexa, immarginata, disco livido aut subdimidiatum livido aut livido-obscurato et ceterum pallidiore, interdum parceque cinerascenti-pallida, subopaca, haud pruinosa. Hypothecium lutescenti-pallidum aut raro

decoloratum. Epithecum dilute sordide violaceum, partim striis fumoso-lividis, partim subdecoloratum, KOH mox violascens. Paraphyses arcte cohaerentes, simplices et partim ramoso-connexae. Sporae 8:næ, rectæ vel leviter curvatae, long. 0.009—0.011 mm (—0.008 mm) sec. Nyl.), crass. 0.003 mm.

*Distr* Ad corticem Alni, Pini et Abietis et ad lignum vetustum. N.: Kyrkslätt (A. Kullhem). Ka.: Vanha-Viipuri (Vain.). Ta.: Mustiala (»*B. poliococca*« A. Kullh. Not. Sällsk. F. Fl. Fenn. XI, 1871, p. 274), Tiirismaa in Hollola (Vain.), Evo (J. P. Norrlin), Ruta-lahti in Korpilahti (Vain.). Kb.: Koriseva in Lieksa, oppid. Nurmies (Vain. Adj. Lich. Lapp. II p. 28).

Thallus verruculis circ. 0.15 mm latis, dispersis, convexis, subglobosis, hypothallo indistincto. Apothecia lat. 0.15—0.3 mm, prominentia, tota unicoloria aut subdimidiatim pallidiora. Hypothecium hyphis modice pachydermaticis, praesertim in parte superiore vulgo suberectis. Peritheciū subdecoloratum aut dilute sordide violascens, hyphis radiantibus, modice pachydermaticis, cavitatibus saepe 0.0015 mm latis aut tenuissimis, oblongis aut (in parte exteriore) brevibus. Hymenium circ. 0.040 mm crassum, jodo persistenter caerulescens. Paraphyses arcte cohaerentes, simplices et partim ramoso-connexae, membranis gelatinosis, KOH turgescensibus, tubulis 0.001—0.0005 mm latis. Sporae rectæ aut raro p. p. leviter curvatae, apicibus obtutis aut rotundatis, 1-septatae aut parcus simplices. Gonidia pleurococcoidea, globosa aut subglobosa, diam. 0.006—0.008 (—0.014) mm, simplicia aut glomerulosa, membrana modice incrassata

#### 24. *C. sordidescens* (Nyl.) Vain.

*Catillaria prasina* β *byssacea* Th. Fr. Lich. Scand. II (1874) p. 573 (haud Zwackh). *Micarea prasina* f. *byssacea* Hedl. Krit. Bem. Lec. Micar. (1892) p. 77, 87. *Bialorina prasina* var. *byssacea* A. L. Smith Mon. Brit. Lich. II (1911) p. 120. *Lecidea byssacea* Vain. Lich. Caucas. (1899) p. 320. *Micarea prasina* Koerb. Syst. Lich. Germ. (1855) p. 399 (haud Fr.), Par. Lich. 5 Lief. (1865) p. 439 (sec. exs. cit.). *Bialora prasina* Hepp Flecht. Eur. II (1857) tab. XXXI n. 278 (in herb. Nyl.). *Lecidea erysiboides* f. *sordidescens* Nyl. in Norrl. Bidr. Sydöstr. Tav. Fl. (1870) p. 188. *L. sordidescens* Nyl. Fl. 1874 p. 312, Fl. 1880 p. 393; Hue Addend. II (1888) p. 152. *Catillaria prasina* f. *sordidescens* Th. Fr. Lich. Scand. II (1874) p. 445. *C. prasina* β *byssacea* f. *sordidescens* Blomb. et Forssell En. Pl. Scand. (1880) p. 94. *Bialorina sordidescens* Arn. Lich. Fränk. Jur. (Fl. 1885) p. 171, (1890) p. 36. *Micarea prasina* f. *sordidescens* Hedl.

l. c. p. 77. *Lecidea erysiboides* \**L. prasiniza* Nyl. Fl. 1874 p. 312; Hue Addend. II (1888) p. 151. *Catillaria prasina* β *byssacea* f. *prasiniza* Blomb. et Forss. En. Pl. Scand. (1880) p. 94. *L. prasiniza* Nyl. Fl. 1881 p. 7 (excl. var. *prasinoleuca*); Zwackh Lich. Exs. (1880) n. 592 B, C, D. *Bialorina prasiniza* Arn. Lich. Fränk. Jur. (Fl. 1885) p. 171 p. p., (1890) p. 36 p. p., Lich. Münch. (1892) p. 18 (excl. var.), (1897) p. 24 (excl. var.).

*Exs.* Hepp Syst. Saniml. XVII (1852) n. 224 (sec. cit.), Flecht. Eur. II (1857) n. 278 (in herb. meo et Nyl.). — Arn. Lich. Exs. (1865) n. 280 c (in herb. Nyl., a et b sec. Arn. Ind. p. 6, n. 1472 huc non pertineat). — Zwackh Lich. Exs. (1880) n. 592 B, C, D (in herb. Nyl.). — Lojka Lich. Univ. I (1885) n. 29, 31 (in herb. meo et Nyl.).

Thallus tenuis evanescens aut modice incrassatus, subverniceus, verruculoso-inaequalis, subcontinuus aut dispersus, cinereo- aut olivaceo-glaucescens aut nigricanti-virescens, hypothallo indistincto. Apothecia vulgo crebra, simplicia aut demum tuberculosa confluentiae, simplicia, sat parva, late adnata, primum depresso, demum vulgo bene convexa, immarginata, livido-nigricantia aut partim nigricantia aut parce vel subdimidiata livido-testacea, opaca, haud pruinosa. Hypothecium lutescenti-pallidum. Epitheciun decoloratum aut dilute pallidum aut subolivaceum vel viridulo-pallidum, KOH violascens. Paraphyses parcae, tenuissimae, increbre ramoso-connexae. Sporae 8:næ, ovoidæ aut ovoideo-oblongæ, rectæ, long. 0.007—0.010, crass. 0.003—0.004 mm.

*Distr.* Ad trunco putridos arborum et ad corticem Alni in silvis subhumidis. Ka.: In insula Uuras Viburgi (»*L. sordidescens*» in Vain. Lich. Vib. p. 64), in Vanha-Viipuri (»*L. prasiniza*» in Vain. l. c.). Ta.: Haarankorpi et Saukonniemi in Tammela (»*Bialorina prasina*» Kullh. in Not. Sällsk. F. Fl. Fenn. Förh. XI, 1871, p. 274), Nyystölä (Vain.) et Virnajärvi (»*L. erysiboides*» sec. Nyl. in Norrl. Bidr. Sydöstr. Tav. Fl. p. 188) in Padasjoki, Evo (»*L. erysiboides* f. *sordidescens*» sec. Nyl. in Norrl. l. c.), Piililä in Korpilahti (»*L. prasiniza*» sec. determ. Nyl. in Vain. Fl. Tav. Or. p. 112). Tb.: Norola in Jyväskylä (»*L. sordidescens*» Nyl. in Vain. l. c.).

Thallus verruculæ 0.0005—0.0015 mm latis, haud sorediosus. Apothecia lat. 0.15—0.3 mm, tuberculosa confluentiaque etiam majora (circ. 0.5—0.8 mm lata), demum basi etiam bene constricta, vulgo tota unicoloria. Hypothecium hyphis suberectis, indistincte a hy-

menio limitatum, KOH saepe etiam violascens, aut non reagens. Hymenium usque ad 0.060—0.070 mm crassum, jodo caerulescens deindeque violaceo-obscuratum (aut obscuratum in specim. orig. ex Evo). Sporae altero apice rotundato, altero obtuso, sec. annot. Nyl. crass. »—0.0045 mm». Conidia »bacilliformia, recta, long. 0.006—0.007, crass. 0.0007—0.001 mm» sec. annot. Nyl. in n. 21655 et 21611 (»*L. prasiniza*«). Gonidia micareina, glomerulosa, cavitate 0.005 mm lata, pariete communis plus minus incrassato, gelatinoso.

25. *C. melanobola* (Nyl.) Vain.

*Lecidea melanobola* Nyl. Flora 1867 p. 371. *L. erysiboides*\* *L. melanobola* Nyl. in Hue Addend. II (1888) p. 151. *Catillaria prasina*  $\beta$  *byssacea* f. *melanobola* Blomb. et Forssell En. Pl. Scand. (1880) p. 91. *Micarea prasina* f. *melanobola* Hedl. Krit. Bem. Lec. Micar. (1892) p. 77, 87.

Thallus evanescens aut tenuis tenuissimusve, verruculosoinaequalis verruculisve albidis vel impure albicantibus aut cinereo-glaucescentibus, depresso-convexus, subdispersis, hypothallo indistincto. Apothecia sat crebra, minutissima, late adnata, bene convexa, immarginata, nigra aut parce sublivido-nigricantia, opaca, nuda. Hypothecium lutescentipallidum. Epithecum nigricanti-aeruginosum (raro partim subdecoloratum), KOH pulchre caeruleo-violascens. Paraphyses increbrae parcaeque ramosae et ramoso-connexae. Sporae 8:nae, rectae, long. 0.007—0.010, crass. 0.0025—0.003 mm (—0.004 mm sec. Th. Fr. Lich. Scand. p. 574).

Distr. Ad corticem *Abietis excelsae* ad Sarvala in Kuhmo (Norrl. Bidr. Sydöstr. Tav. Fl. p. 188).

Proxime affinis *C. denigratae* (f. *pyrenothizanti*) et *C. hemipoliellae*, ab ambabus praesertim epithecio nigricanti-aeruginoso, KOH pulchre caeruleo-violascente differens. Apothecia lat. 0.15—0.1 mm, simplicia aut parciissime confluentia. Hypothecium chondroideum, tubulis tenuissimis, crebre ramoso-connexis, membranis leviter incrassatis. Perithecum evanescens. Hymenium 0.040—0.035 mm crassum, jodo caerulescens deindeque vinose rubens (in specim. orig.), »dein vinose fulvescens» sec. annot. Nyl., »demum plus minus fulvo-rubescens» sec. Hedl. l. c. p. 88. Paraphyses increbrae parcaeque, tenuissimae, crass. 0.0005 mm, flexuosa, ramosae et ramoso-connexae, in KOH demum dissolutae. Sporae distichae, ovoideae, altero apice rotundato, altero obtuso, simplices et p. p. 1-septatae. Gonidia subglobosa vel sub-

lipsoidea, diam.  $8 \times 6$ ,  $7 \times 5$ ,  $5 \times 4$   $\mu$ , vulgo demum glomerulosa, membrana modice incrassata. — Sec. annot. Nyl. ad »*L. prasinizam*« Nyl. pertinet.

## 26. **C. prasina** (Fr.) Vain.

*Micarea prasina* Fr. Syst. Orb. Veg. (1825) p. 257 (sec. Th. Fr. et Hedl.). *Biatora* Fr. St. Agr. Fems. Ind. (1825) p. 38. *Lecidea* Schaer. Lich. Helv. Spic. IV (1833) p. 164, En. Lich. Eur. (1850) p. 137. *Biatora vernalis* anom. *prasina* Fr. Lich. Eur. Ref. (1830) p. 262. *Biatora byssacea* Zwackh n. 188, non n. 30 (p. 30) ad *Lecid. atroviridem* pertinens, Enum. Lich. Heidelb. (Fl. 1862) p. 510, haud Hampe Linnaea 1852 p. 711 (species dubia). *Catillaria prasina* a *laeta* Th. Fr. Lich. Scand. II (1874) p. 573. *Micarea prasina* f. *laeta* Hedl. Krit. Bem. Lec. Micar. (1892) p. 77, 87. *Biatorina prasiniza* f. *laeta* Arn. Lich. Münch. (1892) p. 18, (1897) p. 25. *Lecidea prasiniza* var. *prasinoleuca* Nyl. Fl. 1881 p. 7; Zwackh Lich. Heidelb. (1883) p. 46. *Biatorina prasiniza* f. *prasinoleuca* Arn. Lich. Fränk. Jur. (Fl. 1885) p. 171, (1890) p. 36. (*Catillaria* in Zahlbr. Krypt. Exs. Vindob. n. 1061 ad *Gyalectam dilutam* pert.). *Lecidea erysiboides*\* *L. micrococca* Nyl. in Hue Addenda II (1888) p. 151 p. p., sec. determ. (haud Koerb.). *L. micrococca* Nyl. Fl. 1881 p. 7 p. p.; Vain. Étud. Lich. Brés. II (1890) p. 38.

Exs. Leight. Lich. Brit. Exs. V (1854) n. 151 (Mus. Fenn.). — Zwackh Lich. Exs. (1880) n. 591 A, B, 592 A, E, 593 A—G (herb. Nyl. et Vain.). — Lojka Lich. Univ. I (1885) n. 30. — Vain. Lich. Bras. Exs. (1891) n. 165, 1103 (1191 ined.), 1335. — Arn. Lich. Exs. (1885) n. 1122 (in *C. micrococcam* acced.), Lich. Monac. (1892) n. 244, 245. — Zahlbr. Lich. Rar. Exs. (1912) n. 175 (non vidi).

Thallus crassus aut sat crassus aut sat tenuis aut raro tenuissimus, e granulis minutissimis, prolificantibus constans, continuus aut dispersus, glaucescens aut cinereo- vel olivaceo-glaucescens, hypothallo indistincto (aut raro evoluto). Apothecia crebra aut dispersa, simplicia aut demum tuberculosa confluentiave, late adnata, depresso aut rarius bene convexa, immarginata aut primum tenuiter marginata, simplicia, vulgo sat parva aut fere medioeria, pallido- aut albido-carnea aut rarius sublivido-carnea aut rufescentia, opaca, haud pruinosa. Hypothecium lutescenti-pallidum pallidumve aut fere decoloratum. Epithecium decoloratum aut partim pallidum, KOH non reagens. Paraphyses parcae, tenuissimae, ramoso-connexae. Sporae 8:nae, ovoideo-oblongae oblongaeve, rec-

tae, long. 0.008—0.012 (—0.014), crass. 0.003—0.004 mm. Gonidia micareina, glomerulosa, pariete communi gelatinoso-incrassato.

*Distr.* Ad trunços putridos et raro ad corticem Alni et ad tecta lignea putrida. Ta.: Haarankorpi, Särkijärvi, Letku et Pähkijärvi in Tammela (»passim» sec. A. Kullhem l. c.), Hersala (Vain., »*L. micrococca* f. *viridella*» sec. determ. Nyl.), Tiirismaa (J. P. Norrlin, »*L. subduplex* f. *prasinalis*» Nyl. n. 21362 in herb. suo, Mus. Fenn.) in Hollola, Virnajärvi in Padasjoki (»*L. erysiboides*» sec. determ. Nyl. in Norrl. Bidr. Sydöstr. Tav. Fl. p. 188, specimen in \**L. sordidescentem* transiens).

Thallus e verruculis constans —0.2 mm latis et e granulis circ. 0.030—0.060 mm latis, irregulariter prolificantibus varieque connatis, sorezia vera haud formantibus, hyphis thallini tenuibus intricatis parietem gelatinoso-incrassatam gonidiorum percurrentibus (Vain. Étud. Lich. Brés. II p. 39), hypothallo indistincto aut (in Lich. Bras. Exs. n. 1335, var. *hypocyanea* Vain.) caeruleo-nigricante, praesertim ad ambitum thalli evoluto. Apothecia lat. 0.2—0.4 (—0.7) mm, tuberculosa — 1 mm, tota unicoloria aut margine etiam pallidiore, haud prominente. Hypothecium subchondroideum, hyphis erectis, modice pachydermaticis, interdum KOH dilutissime, vix distinete violascens. Peritheciū chondroideum, ex hyphis radiantibus formatum, dilute pallidum aut fere decoloratum. Hymenium circ. 0.050—0.060 mm crassum, jodo caeruleoscens, ascis partim demum vinose rubentibus. Sporae apicibus rotundatis aut altero apice obtuso. Conidangia subglobosa, albida (in Zwackh Lich. Exs. n. 593 A). Sterigmata brevissima, simplicia, apicibus conidia efferentibus. Conidia cylindrico-oblonga, recta, long. 0.005—0.007, crass. 0.001—0.002 mm, apicibus obtusis. Gonidia glomerulosa, cavitate subglobosa aut ellipsoidea, long. 0.003—0.008, lat. 0.003—0.004 mm, pariete communi gelatinoso, sat crasso (strato gelatinoso in KOH saepe demum plus minus disso-luto).

*Obs. 1.* *C. prasina* apotheciis pallidioribus, KOH non reagentibus, a *C. sordidescente* differt, sed interdum etiam apothecia leviter obscurata, KOH violascentia parce procreat. Ita in specimine in Padasjoki lecto apothecia pallida KOH non reagunt, sed apothecia leviter obscurata KOH violascentia. In specimine ad Särkijärvi lecto apothecia livido-carnea KOH tantum dilutissime et parum distinete violascentia. — In specimine ad Hersalam collecto apothecia ab hyphis fuscescentibus fungi parasitantis p. p. obscurata, KOH non reagentia.

*Obs. 2.* *Lecidea minula* f. *viridella* Nyl. (in Th. Fr. Lich. Scand. II, 1874, p. 571 sub *Catillaria micrococca* e Dania indicata), thallo tenuiore et apotheciis minoribus, depresso convexis instructa, facie

externa magis *C. micrococcae*, quam »viridellae» in Hersala collecto (thallo crasso, olivaceo-virescente instructae), similis est, sed ambae ad *C. prasinam* pertinent.

*Obs. 3.* *L. vernalis* var. *prasina* Nyl. in Norrl. Bidr. Sydöstr. Tav. Fl. p. 186 sec. Th. Fr. (l. c. p. 574) ad *L. vernalem* inter *Protococcum* vegetantem spectat.

*Obs. 4.* F. *prasinoleuca* (Nyl.) Vain. *Lecidea prasiniza* var. *prasinoleuca* Nyl. Fl. 1881 p. 7 (Zwackh Lich. Exs., 1880, n. 591 A, B, 592 A, E, 593 A—C, ined.), Lojka Lich. Univ. I (1885) n. 30, *L. erysiboides* \**L. prasiniza* var. *prasinoleuca* Nyl. in Hue Addenda II (1888) p. 151, ad corticem abietis prope Heidelbergam in Germania collecta et »apotheciis livido-albis albidisive» descripta, thallo sat tenui vel modice incrassato instructa, a statu typico parum differt.

## 27. *C. micrococca* (Zwackh) Th. Fr.

Lich. Scand. II (1874) p. 571 p. p. *Biatora* Koerb. Par. Lich. 2 Lief. (1860) p. 155; Zwackh Lich. Exs. (1861) n. 416. *Lecidea* Nyl. Fl. 1881 p. 7 p. p; Vain. Lich. Caucas. (1899) p. 321. *Bialorina* Arn. Lich. Fränk. Jur. (Fl. 1885) p. 171, Lich. Münch. (1891) p. 18, (1897) p. 25 (excl. Lich. Monach. n. 243, saltem in Mus. Fenn. ad *Gyaleclam dilutam* pertinente). *Micarea prasina* f. *micrococca* Hedl. Krit. Bem. Lec. Micar. (1892) p. 87.

*Exs.* Zwackh Lich. Exs. (1861) n. 416 (herb. Nyl.). — Koerb. Lich. Sel. Germ. IX (1864) n. 250 (sec. Arn.). — Rabenh. Lich. Eur. Exs. XXVII (1865) n. 733. — Larbal. Lich. Herb. IV (1879) n. 139 (sec. A. L. Smith Mon. Brit. Lich. II p. 47).

Thallus tenuissimus, albido-cinerascens vel subalbidus. Apothecia crebra aut sat crebra, minutissima, late adnata, bene convexa, immarginata, carneo-pallida, subopaca, haud pruinosa. Hypothecium pallidum aut fere decoloratum. Hymenium totum pallidum aut subdecoloratum, KOH non reagens. Paraphyses parcae, tenuissimae, ramoso-connexae. Sporae 8:nae, oblongae, rectae, long. 0.007—0.011, crass. 0.002—0.0025 mm (»—0.0035 mm» sec. annot. Nyl.). Gonidia membrana modice incrassata aut sat tenui.

*Distr.* N.: Ad corticem Abietis in Gumläckt prope Helsingforsiam (Vain.). Ka.: Ad corticem Abietis in abiegno in Vanha-Viipuri (Vain. Lich. Vib. p. 64). Ta.: Ad corticem Alni in Tiirismaa in Hollola (Vain., n. 615, »*L. albohyalina* pulchra» sec. determ. Nyl.). Kb.: Ad corticem Alni in luco ad Jännevaara in Nurmes (Vain.).

Facie externa subsimilis est *Lecideae albohyalinae* Nyl., quae apotheciis vulgo paullo majoribus, sporis simplicibus, cavitate cellularum hypothecii latiore, paraphysibus simplicibus et gonidiis cystococcoideis ab ea differt. Thallo minus evoluto, haud virescente, gonidiis haud gelatinosis et apotheciis vulgo minoribus, numquam medicribus, nec tuberculosis, nec confluentibus a *C. prasina* (Fr.) distinguitur, cum ambabus saepe commixta. Thallus subdispersus, hypothallo indistincto. Apothecia lat. 0.15—0.25 (—0.3) mm, prominenta, tota unicoloria. Hypothecium KOH non reagens, hyphis erectis, ramoso-connexis, pachydermaticis aut sat pachydermaticis, cavitatibus 0.0005 mm latis, brevioribus longioribusve. Peritheciun sat bene evolutum, pallidum, KOH non reagens, chondroideum, hyphis ramoso-connexis (KOH visis), leviter pachydermaticis, cavitatibus oblongis, angustis aut angustissimis. Hymenium circ. 0.050 mm crassum, jodo intense caerulescens (dein decoloratum, ascis fuscescentibus, in solutione magis diluta), KOH non reagens aut partim epithecio dilutissime, vix distincte subviolascente (in n. 615, cum *C. hemipoliella* crescente). Paraphyses flexuosae, sat increbre ramoso-connexae, partim etiam ramosae. Sporae distichae, apicibus obtusis, abundanter 1-septatae, parce simplices. Conidangia »punctiformia, albescentia», conidia »recta, long. 0.005, crass. 0.0015 mm» (sec. Arn. Lich. Münch. 1892 p. 18). Gonidia 2—4-cellulosa glomerulosave aut partim simplicia, cellulis subglobosis aut subellipsoideis, 4—10 mm latis, membrana modice incrassata aut sat tenui.

*Obs.* Nomine haec species incerta est, nam specimen orig. *Biallorae micrococcae* Koerb. exactius adhuc non cognitum, forsan ad formam minus evolutam *C. prasinae* pertinet, sicut plantae hoc nomine a pluribus auctoribus determinatae. Etiam »*Bialtora micrococa*» Arn. in Lich. Exs. (1865) n. 279 (ad Eichstätt collecta) ad *C. prasinam* pertinet, sed algas et gelatinosas glomerulosasque et leptodermaticas simplicesque continet (sec. specim. in herb. Nyl.).

## 28. *C. erysiboides* (Nyl.) Th. Fr.

Lich. Scand. II (1874) p. 572. *Lecidea* Nyl. Ad Veg. Hels. Sav. Al. (Not. Sällsk. F. Fl. Fenn. IV, 1859) p. 232, Lich. Scand. (1861) p. 208, Lich. Lapp. Or. (1866) p. 153, Fl. 1880 p. 394; Hue Addenda II (1888) p. 151; Hedl. Krit. Bem. Lec. Micar. (1892) p. 87. *Biallorina* Arn. Lich. Exs. (1883) n. 1002, Lich. Fränk. Jur. (1885) p. 171, Lich. Tirol XXIII (1887) p. 142.

*Exs.* Fellm. Lich. Arct. (1864) n. 156. — Arn. Lich. Exs. (1883) n. 1002. — Havaas Lich. Norv. Exs. (1904) n. 292. — Malme Lich. Suec. Exs. X (1912) n. 239.

Thallus evanescens tenuissimusve verniceusque, leviter verruculoso-inaequalis, continuus, cinereo-glaucescens pallidusve, hypothallo indistincto. Apothecia parva, depresso-convexa aut rarius primum plana, late adnata, basi leviter aut parum constricta, simplicia, immarginata aut rarius primum tenuiter marginata, testaceo-rufa aut rarius testacea rufescentiave, haud pruinosa. Hypothecium pallidum aut decoloratum. Hymenium totum decoloratum aut epithecio pallido, KOH non reagente. Paraphyses increbrae, ramosae et ramoso-connexae. Sporae 8:næ, ovoideæ, rectæ, long. 0.008—0.009 mm (»0.007—0.008—0.014 mm» sec. annot. Nyl.), crass. 0.003—0.005 mm.

*Distr.* Ad truncoſ putridos praesertim Coniferarum sat rara. N.: Gumtäckt prope Helsingforsiam (W. Nyl.), Kyrkslätt (A. Kullhem). Ta.: Mustiala, Kuivajärvi, Pähkijärvi in Tammela (Kullh.), Tiirismaa et Messilä in Hollola (Vain.), Nyystölä et Arokoski in Padasjoki (Vain.). Evo (Norrl.). Oa.: Vasa (P. A. Karsten sec. Th. Fr. I. c.). Tb.: Kanavuori et Haapakoski in Jyväskylä (Vain. Fl. Tav. Or. p. 112). KOn.: Klimski Monasterium (Th. Simming). Ob.: Turtola (Norrl. Ber. Torn. Lappm. p. 346). KKer.: Ruankoski (Nyl. Lich. Lapp. Or. p. 153).

Apothecia lat. 0.2—0.4 mm, crebra aut sat crebra. Peritheciū distincte evolutum, vulgo decoloratum, cartilagineum, tubulis suboblóngis, tenuissimis, membranis incrassatis (in KOH visum hyphis distincte ramoso-connexis), KOH non reagens. Hypothecium pallidum (KOH solutionem subtestaceam effundens) aut decoloratum, cartilagineum, hyphis crebre ramoso-connexis, tubulis tenuibus vel tenuissimis, membranis sat pachydermaticis. Hymenium circ. 0.055 mm crassum, totum decoloratum aut epithecio tenui pallido, KOH non reagens (nequidem in Arn. n. 1002), »jodo caerulescens, dein vinoſe rubens» (sec. Th. Fr.). Sporae saepe altero apice obtuso, altero rotundato. Gonidia globosa, diam. 7—16  $\mu$ , aut ellipsoidea, diam. 16  $\times$  14 et 10  $\times$  7  $\mu$ , simplicia rarissime 1-septata, pyrenoide, nucleo et vacuolis lateralibus instructa, membrana modice incrassata.

## 29. **C. anterior** (Nyl.) Vain.

*Lecidea anterior* Nyl. Fl. 1875 p. 299. *L. erysiboides* \**L. anterior* Nyl. in Hue Addenda II (1888) p. 152. *Micarea anterior* Hedl. Krit. Bem. Lec. Micar. (1892) p. 76, 86. *Cartularia erysiboides* f. *anterior* Blomb. et Forss. Enum. Pl. Scand. (1880) p. 91

Thallus tenuissimus aut sat tenuis, verniceus, leviter verruculoso-inaequalis, continuus, cinereo-glaucescens vel subpallidus, hypothallo indistincto. Apothecia parva, convexa, late adnata, basi leviter constricta, simplicia aut vulgo tuberculoso-divisa confluentiave, testacea aut testaceo-rufescens, opaca, haud pruinosa, immarginata. Hypothecium pallidum aut decoloratum. Hymenium totum decoloratum pallidumve aut epithecio partim rufescente, KOH non reagens. Paraphyses arcte cohaerentes, sat abundanter ramoso-connexae. Sporae 8:nae, elongato-ovoideae, rectae et p. p. leviter curvatae, long. 0.009—0.016, crass. 0.003—0.0045 mm (sec. Nyl. et Hedl.).

*Distr.* Ad trunços putridos Coniferarum rara. N.: Kerava in Tuusula (Vain.). Ta.: Hersala in Hollola (Vain., determ. Nyl.), Asikkala (J. P. Norrlin, determ. Nyl.).

Apothecia lat. 0.25—0.45 (—0.006) mm, crebra aut sat crebra. Peritheciū parum evolutum, pallidum, KOH non reagens, ex hyphis formatum subparallelis (in sectione paucis), sat pachydermaticis, cavitatibus tenuissimis, brevibus. Hypothecium pallidum aut decoloratum, partim cellulis subglobosis, diam. 0.003 mm, in seriebus subverticalibus dispositis. Hymenium circ. 0.040—0.050 mm crassum, decoloratum aut totum pallidum aut epithecio partim rufescente testaceo-ve, KOH non reagente, jodo caerulescens, dein obscuratum ascisque subfuscescens. Paraphyses arcte cohaerentes, ramoso-connexae, apicibus saepe abundanter ramulosis, membrana gelatinoso-incrassata, tubulis 0.0005—0.0015 mm latis, elongatis aut brevibus. Sporae »elongato-ovoideo-oblongae, p. p. leviter curvatae, altero apice saepe attenuatae» (etiam sec. Hedl. l. c.) aut ovoideae et altero apice obtuso, rectae. Conidangia »prominentia, conoidea» (sec. icon. a Nyl. del. in n. 21655). Conidia »saepissime bacillaria, recta, long. 0.004—0.006, crass. 0.00075 mm» sec. Hedl. l. c.). Gonidia globosa, diam. 0.008—0.004 mm, simplicia aut parce 2-cellulosa, membrana sat tenui, vacuolis lateralibus.

*Obs.* F. *diluta* (Hedl.). M. *anterior* f. *diluta* Hedl. l. c. »Apothecia sordide luteola — luteo-rubella, 0.2—0.4 mm lata. Hymenium decoloratum vel dilute luteolum, jodo levissime caerulescens, dein vinose rubens. In Helsinglandia Sueciae.»

### 9. **Diplophragmia** Vain. (n. gen.)

Thallus crustaceus, uniformis, gonidia continens. Sporae 8:næ, decoloratae, breves aut sat breves, comparate crassæ, ellipsoideæ oblongæve aut ovoideæ, strato gelatinoso haud indutæ, 2-septatae aut p. p. 1-septatae, septo tenui. Gonidia cystococcoidea.

#### 1. **D. Petsamoënsis** Vain. (n. sp.)

Thallus albidus, KOH extus intusque lutescens, in eodem specimine areolatus et verrucosus verriculosusque, areolis modice incrassatis, difformibus, 0.3—0.15 mm latis, contiguis, depresso-convexis planiusculisve, verrucis sat crassis, subglobosis, ~0.7 mm latis, laevigatis, verruculis ~0.1 mm latis, hypothallo indistincto. Apothecia dispersa et partim cæbra, vulgo medioeria, late adnata, convexa, demum immarginata, atra, nuda, opaca. Hypothecium albidum, crassum. Epithecum olivaceo-fuscescens aut subcyanescenti-nigricans, KOH obscure purpureum. Paraphyses arcte cohaerentes, simplices. Sporae 8:næ, ellipsoideæ oblongæve aut ovoideæ, rectæ, »long. 0.011—0.015, crass. 0.005—0.007 mm» (sec. Räsänen), 2-septatae aut p. p. 1-septatae.

*Distr.* LPets.: Ad rupem gneissicam in tundra in Kalastajasaaari in Petsamo (V. Räsänen).

Nulli speciei cognitæ *Catilliarum* affinis et ab hoc genere sporis 2-septatis recedens, quare forsitan rectius genus autonomum constituit. Facie externa *Lecideam stigmataem* f. *diasemoidem* (Nyl.) in memoriam revocans, etiam notis internis a *C. leucophaeotera* (Nyl.) et *C. Dufourei* (Ach.) differt, nec consideranda est ut *Bilimbia*, sporis defecte divisis instructa, nam sporas optime evolutas 2-septatas abundanter continent. Thallus sorediis destitutus, jodo non reagens, verrucis nec clavatis, nec substipitatis, nec fistulosis, qua nota etiam a *Thalloedaemate* differt. Apothecia lat. 1—0.6 mm, primum depresso-convexa et margine tenuissimo nigroque, vix distincto instructa, basi parum aut leviter constricta. Hypothecium crassum, jodo caerulescens, KOH non reagens, hyphis irregulariter contextis, conglutinatis, membrana modice incrassata, cavitatibus elongatis, 0.3—0.15 mm latis. Perithecum dilutissime impure caerulescens aut p. p. extus fuligineum, membranis incrassatis, conglutinatis, cava-

tibus oblongis aut ellipsoideis aut subglobosis, 0.005—0.003 mm latis. Hymenium circ. 0.050 mm crassum, jodo caerulescens, dein mox vinose rubens. Paraphyses gelatinam parcam percurrentes, in KOH demum sat laxe cohaerentes, crass. 0.0015—0.002 mm, apice haud aut parum incrassatae, cellulis oblongis, saepe leviter constrictis. Sporae poly-stichae, apicibus obtusis. Gonidia cystococcoidea, globosa aut rarius subglobosa, diam. 0.008—0.015 mm, membrana sat tenui, pyrenoide et nucleo instructa, interdum autosporas plures continentia.

#### 10. **Scutula** Tul.

Mém. Lich. (Ann. Sc. Nat. III, t. XVII, 1852) p. 118; Koerb. Par. Lich. 5 Lief. (1865) p. 454; Karst. Rev. Asc. (Acta Soc. F. Fl. Fenn. II, 1885) p. 143, 149; Sacc. Syll. Fung. VIII (1889) p. 486, X (1892) p. 25 (XI, 1895, p. 416), XVIII (1896) p. 174; Rehm in Rabenh. Krypt.-Fl. Asc. (1890) p. 291, 321; Vouaux Bull. Soc. Myc. Fr. XXIX (1913) p. 401, 419; Mig. Krypt.-Fl. Asc. (1913) p. 884, 895; Lindau Mier. Pilze (1922) p. 159; Vain. Lich. Fenn. II (1922) p. 129. *Nesolechia* Mass. Symm. Lich. (1855) p. 75 p. p., Misc. Lich. (1856) p. 13 p. p.

Parasitae lichenum, gonidiis destitutae, ad Fungos pertinentes. Sporae 8:nae, decoloratae, breves, ellipsoideae oblongaeve aut ovoideae, strato gelatinoso haud indutae, 1-septatae, septo tenui.

*Catillariis* proxime affinis, ut praesertim *Sc. miliaris* (Wallr.) Karst. et *C. epiblastematica* (Wallr.) Vain., quae posterior gonidiis instructa est, ostendunt.

*a.* Paraphyses arcte cohaerentes.

1. *Sc. miliaris* (Wallr.) Karst. Parasita *Peltigerae* et *Opisteriae* (*Nephromae*). Apothecia lat. 0.4—0.15 mm, p. 473

2. *Sc. solorinicola* (Vain.) Rehm. Solorinicola. Apothecia lat. 1—0.5 (—0.3) mm, p. 476

*b.* Paraphyses sat laxe cohaerentes.

3. *Sc. uniseplata* (Nyl.) Vain. Stereocaulicola, p. 477

#### 1. **Sc. miliaris** (Wallr.) Karst.

Rev. Asc. (1885) p. 149 (em.); Sacc. Syll. Fung. VIII (1889) p. 486 (em.). *Peziza miliaris* Wallr. Fl. Crypt. Germ. II t. 4 (1833) p. 499 (conf. infra). *Scutula Wallrothii* Tul. Mém. Lich. (1852) p. 119, tab. XIV f. 14—24; Koerb. Par. Lich. 5 Lief. (1865) p. 454. *Biatorina Wallrothii* Lönnr. Vet. Akad. Förh. 1858 p. 276. *Lecidea ano-*

*mala* f. *Wallrothii* Nyl. Lich. Scand. (1861) p. 203. *Calloria peltigerae* Fuck. Symb. Myc. p. 283 (sec. Sacc.). *Scutula epiblastematica* Rehm in Rabenh. Krypt.-Fl. Asc. (1890) p. 322 (em.; Arn. Lich. Fränk. Jur. (1890) p. 46 p. p. (sec. cit.).

Apothecia crebra confertave, parva minutissimave, nigra aut p. p. fuscescens, raro etiam pallida, haud pruinosa, plana convexave, tenuiter marginata aut demum immarginata, basi leviter constricta. Hypothecium pallidum aut rarius fuscum. Epithecum fuscescens aut rarius obscure subviolascens vel cyaneo-nigricans. Paraphyses arcte cohaerentes. Sporae vulgo ovoideae aut p. p. oblongae aut ovoideo- vel fusiformi-oblongae, long. 0.007—0.011 (—0.016), crass. 0.003—0.005 mm. Vulgo peltigericola.

Var. *epigena* (Nyl.) Vain. *Lecidea epigena* Nyl. Fl. 1865 p. 4, Lich. Lapp. Or. (1866) p. 149, Hue Add. II (1888) p. 242. *Biatorina epigena* Arn. Lich. Fragm. XVI (Fl. 1872) p. 151 (13). *Scutula epigena* Rehm l. c. (1890) p. 322; Zopf Hedwigia 1896 p. 347; Mig. Krypt.-Fl. Asc. (1913) p. 896.

Exs. Zwackh Lich. Exs. (1876) n. 446 p. p. — Malme Lich. Suec. Exs. XXIV (1916) n. 590.

Apothecia p. p. paullo majora (lat. 0.35—0.4 mm), nigra aut fuscescens. Epithecum fuscescens. Sporae p. p. paullo majores, long. 0.010—0.016, crass. 0.004—0.005 mm (—0.007 mm) sec. Nyl.).

Distr. Supra thallum *Peltigerae caninae* var. *rufescens* pluribus locis. Ab.: Karkkali in Karjalohja et Paloniemi in Lohja (C. E. Boldt). N.: Fredriksberg et Töölö prope Helsingforsiam (Vain.). Ta.: Hollola (Vain.), Renko et Mustiala (A. Kullhem), Nyystölä et Prusila in Padasjoki (Vain.). Ka.: Kalliovaara in Lieksa (»*L. Heerii*« in Vain. Adj. Lich. Lapp. II p. 30). OKaj.: Prope templum in Kianta (»*L. Heerii*« l. c.). Kuus.: Juumajärvi (F. Silén). KKer.: Koutajärvi (N. I. Fellman). LPon.: Orlov (»*L. Heerii*« in thallo *Solorinae saccatae*, Kihlm. Neue Beitr. Flecht. Kola p. 57, videas infra).

Sine limite distincto in var. *versicolorem* Vain. transit. Hypothecium chondroideum, irregulariter contextum, membranis incrassatis, tubulis tenuibus, pallidum aut superne fuscescenti-pallidum. Perithecum hyphis radiantibus, conglutinatis, sat pachydermaticis, cavitatibus oblongis aut ellipsoideis, circ. 0.002—0.003 mm latis. Hymenium circ. 0.060—0.070 mm crassum, parte superiore fuscescens aut (in specim. ad Orlov collecto) p. p. aeruginosum. Sporae ovoideae aut fusiformi-oblongae, 1-septatae, decolores. Macrosporangia (pycnidia, pycnidies) parce cum apotheciis et abundanter in thallis diver-

sis una cum speciminibus fertilibus (et tunc crebre) producta, globosa, diam. 0.160—0.220 mm lata, pallida testaceave. Basidia simplicia, interdum parce septata, long. circ. 0.014, crass. 0.003 mm. Macroconidia (stylosporae), cylindrico-oblonga, curvata aut subflexuosa aut p. p. recta (in eodem macrosporangio), apicibus rotundatis, 1-septata et p. p. simplicia, haud constricta, decolorata, long. 0.013—0.019, crass. 0.005 (—0.0035) mm.

*Obs.* Specimen orig. *L. epigenae* Nyl. in Mus. Fenn. (ad Koutajärvi collectum) ad statum in var. *versicolorem* Vain. vergentem pertinet, margine apotheciorum prominente, persistente, inferne pallido instructum.

Var. *versicolor* Vain. *Scutula Wallrothii* Nyl. Herb. Lich. Par. II (1855) n. 100. *Lecidea Heerii* Nyl. Lich. Lapp. Or. (1866) p. 150 et in determinationibus.

Apothecia minutissima, lat. 0.2—0.3 (—0.15) mm, nigra aut fuscouscentia rufescenscentiave. Epithecium fuscescens aut subpurpureum aut p. p. subaeruginosum. Sporae long. 0.007—0.012 (—0.015), crass. 0.003—0.006 mm.

*Distr.* Supra thallum *Peltigerae caninae* et var. *rufescens* et (sec. Karst. l. c.) raro *P. aphthosae* et *Opisteriae (Nephromae) tomentosae* sat rare vel passim. Ab.: Ispoinen (K. Linkola), Katarinalaakso (V. Räsänen) prope Aboam, Ersby in Pargas (K. Linkola), Merimasku (P. A. Karsten). N.: Krogen ad Tvärminne (K. Linkola), Hagen in Ekenäs (E. Häyrén), Vanhakaupunki et Toivola (Vain.) et Meilans (K. Linkola) prope Helsingforsiam, Kasaberg et ad stationem in Esbo (K. Linkola). Ka.: Hietala ad Viburgum (»*L. Heerii*« Vain. Lich. Vib. p. 64). Ta.: Syrjä (P. A. Karsten) et Kaukola atque Lietso et Mustiala in Tammela (A. Kullhem), sat rare sec. Norrl. (»*L. Wallrothii*« in Bidr. Sydöstr. Tav. Fl. p. 187), in Taaveli et Tiirismaa in Hollola (Vain.), Urajärvi in Asikkala (Norrl.), Evo (Norrl.), Kalliojärvi in Orimattila (K. Linkola), Prusila in Padasjoki (Vain.), Sutoisenniemi in Korpilahti (Vain.). Tb.: Ristikivenlaakso (K. Linkola) et Äijälä (Vain.) prope Jyväskylä. Kb.: Kallioväara in Lieksa (Vain.). OKaj.: Kylmälä in Kuhmo (»*L. Heerii*« Vain. Adj. Lich. Lapp. II p. 28). LKem.: Sulasalmi in Kuolajärvi (Pesola).

Apothecia nigra aut fuscouscentia rufescenscentiave et saepe p. p. in v. *pallidam* Vain., apothecis pallidis instructam, transeuntia. Peritheciun fuscescens purpureumve aut partim rubricosum decoloratumve, membranis sat pachydermaticis, cavitatibus ellipsoideis oblongisve, 0.002—0.004 mm latis. Hypothecium pallidum aut fuscouscenti-pallidum aut parte superiore rubricosum. Hymenium 0.040—0.050 mm crassum, jodo vinose rubens, ascis apice primum dilute caerulecentibus. Epithecium fuscescens aut partim rubricosum deco-

loratumve aut parce aeruginosum. Paraphyses simplices, parce septatae, membrana haud gelatinosa, apice leviter incrassatae clavataeve. Sporae ovoideae aut parcus oblongae. Macrosporangia (pycnidia) globosa, diam. 0.100—0.170 mm, nigricantia aut fuscescens rufescens rufescens (violacea sub microscopio) aut pallida, ostiolo minutissimo. Basidia long. 0.013—0.020, crass. 0.003 mm, simplicia, haud septata. Macroconidia (stylosporae) cylindrico-oblonga aut p. p. elongata, recta aut parce etiam leviter curvata, apicibus rotundatis, simplicia et parce etiam 1-septata (in eodem macrosporangio), long. 0.014—0.017 (—0.028), crass. 0.0035 mm.

Var. *pallida* Vain. *Peziza miliaris* Wallr. Fl. Crypt. Germ. II t. 4 (1833) p. 499 (*Bialorina* Th. Fr. Lich. Arct., 1860, p. 188).

*Exs.* Zwackh Lich. Exs. (1876) n. 446 p. p.

Apothecia minutissima, lat. 0.2—0.15 mm, pallida aut testacea vel rufescens-testacea. Epitheciun decoloratum aut roseum. Sporae vulgo long. 0.009—0.011, crass. 0.005 mm.

*Distr.* Supra thallum *Peltigerae caninae* et var. *rufescens*. Ab.: Ispoisten prope Aboam (K. Linkola), Ajonpää in Naantaali (Vain.). N.: Meilans (K. Linkola) et Toivola (Vain.) prope Helsingforsiam. Ta.: Taaveli et Tiirismaa in Hollola (Vain.), Sutoisenniemi in Korpilahti (Vain.). Tb.: Ristikivenlaakso prope Jyväskylä (K. Linkola). LTul.: Rybatshi (R. Envald).

Saepe una cum var. *versicolore* crescit, sine limite in eam transiens, praesertim in partibus magis umbrosis *Peltigerae* crescens. — *F. testaceorufescens* Vain., apotheciis fusco- aut testaceo-rufescens et epithecio partim rubricoso instructa, intermedia inter has formas, in ambas transit. Ad Prusila in Padasjoki (Vain.), Mustiala (A. Kullh.), Katarinankaakso prope Aboam (V. Räsänen).

## 2. Sc. *solorinicola* (Vain.) Rehm

in Rabenh. Krypt.-Fl. Asc. (1890) p. 324; Vouaux Bull. Soc. Myc. Fr. XXIX (1913) p. 420, 428; Mig. Krypt.-Fl. Asc. (1913) p. 895, 897. *Lecidea solorinicola* Vain. Adj. Lich. Lapp. II (1883) p. 30. *Scutula solorinaria* (Nyl.) var. *solorinicola* Karst. Rev. Asc. (1885) p. 151; Sacc. Syll. Fung. VIII (1889) p. 487. *Scutula solorinica* Zopf Hedwigia 1896 p. 358.

Apothecia crebra confertave, mediocria aut parva, fusco-atra aut nigricantia, haud pruinosa, primum planiuscula marginataque, dein convexa et immarginata, basi leviter constricta. Hypothecium pallidum decoloratumve aut partim fusco-lutescens. Epitheciun fuscescens aut partim palli-

dum. Paraphyses arcte cohaerentes. Sporae subfusiformes aut p. p. ovoideo-oblongae, long. 0.009—0.012, crass. 0.003—0.0035 mm. Solorinicola.

*Distr.* Supra thallum *Solorinae saccatae* loco calcareo prope Königs (LIn.) in regione betulina ad Mare Glaciale (Vain.).

Apothecia lat. 1—0.5 (—0.3) mm, interdum contigua confluentiae. Hypothecium parte superiore sat leptodermaticum et cavitibus cellularum angustissimis, ceterum sat pachydermaticum et cavitibus majoribus. Peritheciun fuscescens, tenui, ceterum peritheciun pallidum, sat pachydermaticum, cavitibus ellipsoideis, 0.004—0.003 mm latis. Hymenium 0.055—0.070 mm crassum, jodo leviter caeruleascens glaucescensve, dein mox vinose rubens. Paraphyses arcte cohaerentes, simplices, p. p. apice fuscescentes et leviter clavatae. Ascii clavati. Sporae 8:næ, distichæ, decolores, p. p. apice sat acutis.

*Obs.* *Lecidea solorinaria* Nyl. (Circa Lich. Armor., 1863, p. 402), »affinis *L. oxysporae* (Tul.)» perperam descripta, sec. specim. orig. sporis distincte 1-septatis ab ea differt. Proxima est *Sc. solorinicolae* Vain., vix nisi perithecio in parte exteriore cavitibus cellularum angustissimis et paraphysisibus apice paullo crassioribus et sporis fusiformibus, apicibus sat acutis ab ea recedens.

### 3. *Sc. uniseptata* (Nyl.) Vain.

Lich. Exp. Vegae Pitlek. (1909) p. 117. *Lecidea* Nyl. Én. Gén. Lich. (1857) p. 117; Vain. Adj. Lich. Lapp. II (1883) p. 29. *L. Stereocaulorum* var. *uniseptata* Nyl. Lich. Lapp. Or. (1866) p. 183. *L. (?) Stereocaulorum* Anzi Lich. Rar. Langob. VII (1861) n. 262, Manip. Lich. (1862) p. 155 (conf. infra). *Biatorina* Arn. Lich. Tirol XIII (1874) p. 280 (51), XV (1876) p. 386, XXIII (1887) p. 89, Lich. Fragm. XXIX (1888) p. 19 (quoad descr.).

Apothecia crebra aut dispersa, parva, adnata aut primum innata, atra aut nigricantia, haud pruinosa, plana aut rarius demum depresso-convexa, tenuiter marginata aut immarginata. Hypothecium pallidum fulvescensve aut decoloratum aut partim subfuscens. Epithecium fuscescens. Paraphyses vulgo sat laxe cohaerentes. Sporae fusiformes aut rarius oblongae vel fusiformi-oblongae, long. 0.013—0.016 (»—0.019» sec. Nyl.), crass. 0.004—0.005 mm (»—0.006 mm» sec. Nyl.). Parasita in *Stereocaulo*.

Var. *stereocaulorum* (Th. Fr.) Vain. Lich. Exp. Vegae Pitlek. (1909) p. 117. *Lecidea uniseptata* var. *stereocaulorum* Vain. Adj. Lich.

Lapp. II (1883) p. 29. *Biatorina stereocaulorum* Th. Fr. Lich. Arct. (1860) p. 188. *Scutula stereocaulorum* Koerb. Par. Lich. 5 Lief. (1865) p. 455; Karst. Rev. Asc. (1885) p. 151; Sacc. Syl. Fung. VIII (1889) p. 486; Rehm in Rabenh. Krypt.-Fl. Asc. (1890) p. 325; Zopf Hedwigia 1896 p. 361; Vouaux Bull. Soc. Myc. Fr. XXIX (1913) p. 420, 429; Mig. Krypt.-Fl. Asc. (1913) p. 895, 896. *Lecidea stereocaulorum* Nyl. Lich. Lapp. Or. (1866) p. 183. *Catillaria stereocaulina* Oliv. Par. Lich. Fr. p. 22 (sec. cit.).

*Exs.* Anzi Lich. Lang. VII (1861) n. 262. — Norrl. et Nyl. Herb. Lich. Fenn. IV (1875) n. 175. — Zwackh Lich. Exs. (1884) n. 911 (in herb. meo).

Hypothecium praesertim sordide pallidum aut fulvescens aut partim subfuscescens.

*Distr.* In thallo specierum plurium *Stereocauli* (*St. alpinum*, *subcoralloides*, *tomentosum*, *paschale*, *denudatum*, *condensatum*) sat rara. Ta.: Lietsa in Tammela (A. Kul' em), Sikomäki (Norrl. H.L.F. n. 175) et Jokioinen (Vain.) in Padasjoki, Evo (Vain.). Tb.: Haukkavuori in Korpilahti (Vain.), Pihlajavesi (Norrl.). OKaj.: Lentiira in Kuhmo (Vain.). Kuus.: Reg. subalp. in Mäntytunturi (Vain. l. c.). Kar. VPom.: Kosagora (Th. Simming, Nyl. l. c.). LENont.: Kilpisjärvi (Norrl. Ber. Torn. Lappm. p. 336). LIn.: Kaamajoki (F. Silén).

Proxima est *Sc. miliari*, praesertim matrice diverso, demum partim deformato, apothecis vulgo primum plus minus immersis, tenuioribus, colore minus variabilibus et notis internis ab ea leviter differens. Apothecia lat. 0.2—0.5 mm, crass. circ. 0.2 mm, primum basi non constricta. Hypothecium leviter pachydermaticum, cavitatibus rotundatis aut subellipsoideis, 0.0015—0.0025 mm latis. Peritheciun hyphis radiantibus leptodermaticis, conglutinatis, cavitatibus oblongis, 0.0015 mm latis, fuscescens (praesertim in margine) aut intus et subtus pallescens. Hymenium 0.045—0.050 mm crassum, ascis solis jodo caerulescentibus (»jodo vinoſe fulvescens, thecae apice caerulescentes, dein ibi violacee tinctorae» sec. Nyl.). Paraphyses sat laxe aut in aliis speciminibus sat arce cohaerentes, simplices, crass. vulgo 0.0015 mm, apice clavatae aut fere capitatae, clava 0.003—0.005 mm lata, summo apice fusco. Sporae 8:næ, distichæ, decolores, apicibus sat acutis aut sat obtusis.

*Obs.* *Phragmonaevia Fuckelii* (Rehm) Zopf (Hedwigia 1896 p. 347, Mig. Krypt.-Fl. Asc. II, 1913, p. 826), apotheciis rotundatis et p. p. ellipsoideis difformibus, disco pallido, plano, margine crenulato, albido, sporis decoloribus, 1-septatis, ovoideo-oblongis instructa, ad *Peltigeras* parasitans, ad Ersby in Pargas (K. Linkola) et ad Korso in Tusby (E. Häyrén), in monte Iivaara in Kuusamo (Vain., »*Cryptomyces peltigerae*» Karst. l. c. p. 167).

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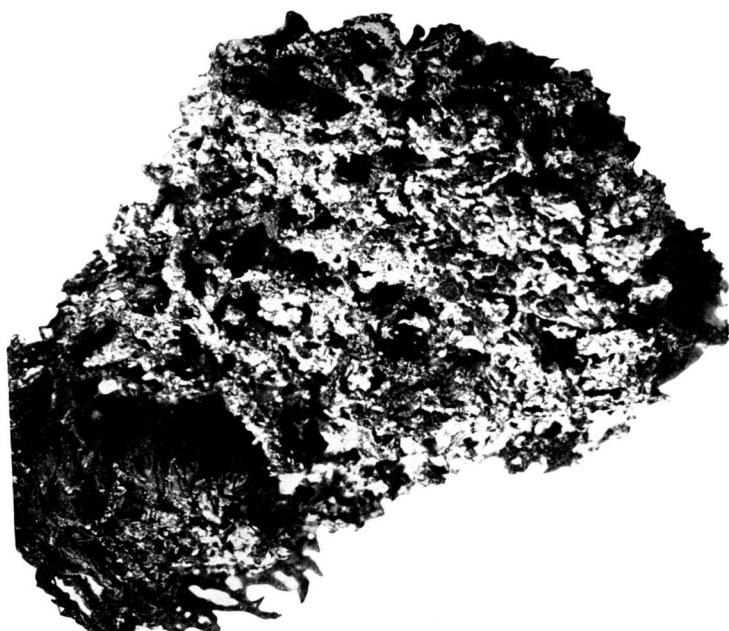
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TABULA 1.

- Fig. 1. *Lecidea morbifera* Vain. Lapponia Inarensis: Inari, leg. Vain. 1878. Vain. herb. No. 25352.  
Fig. 2. *Lecidea sylvestris* Vain. Helsingforsia: Kaisaniemi, ad cort. Sorbi, leg. Vain. 1874. Vain. herb. No. 23029.  
Fig. 3. *Lecidea extenuata* Vain. Aboa, Katarinan-laakso, leg. Räsänen 1923. Vain. herb. No. 24767.



1. [Scale bar] mm.



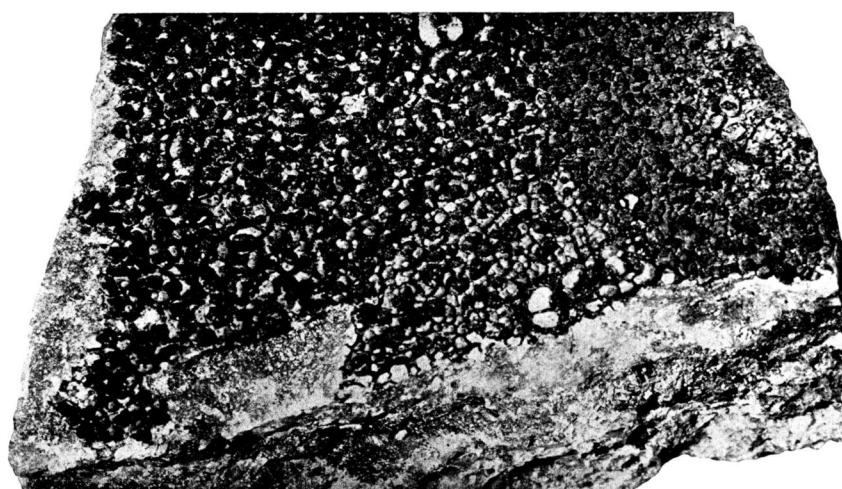
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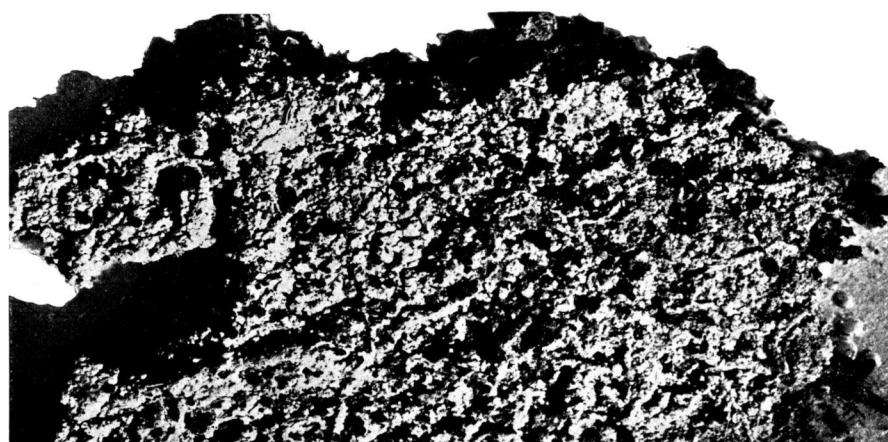
3. [Scale bar] mm.

TABULA II

- Fig. 1. *Lecidea superlata* Vain. Ks. Kuusamo: Nuorunen, leg. Vain. 1877. Vain. herb. No. 24789.
- Fig. 2. *Lecidea clavulifera* Nyl. Ta. Koski: Laurila 1871, det. W. Nyl. (leg. Vain.?). Vain. herb. No. 25379.



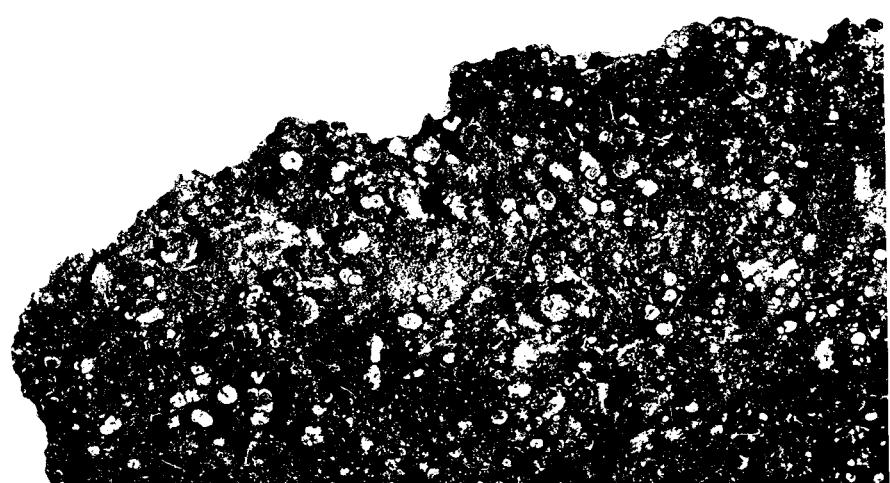
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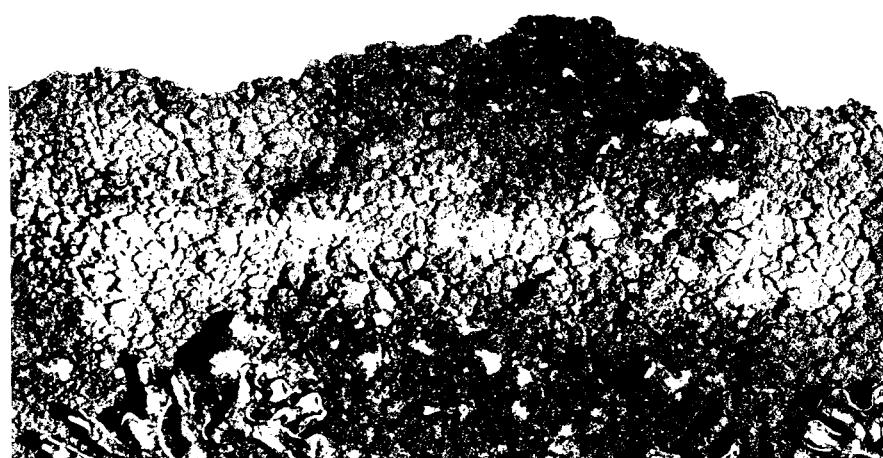
2. mm.

TABULA III

- Fig. 1. *Lecidea submilvina* Vain. Li.: Inari, leg. Vain. 1878. Vain.  
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- Fig. 2. *Lecidea furvella* Nyl. Ok., Kianta: Selkäsaari, leg. Vain.  
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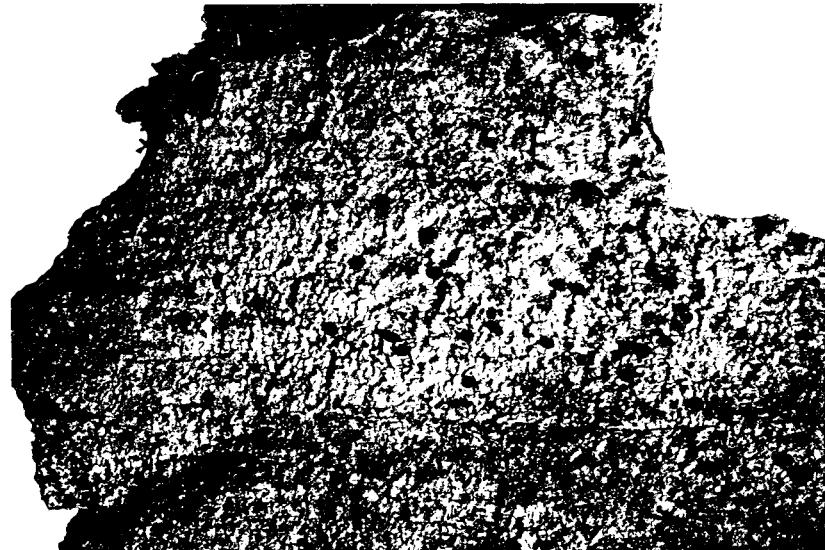
1. mm



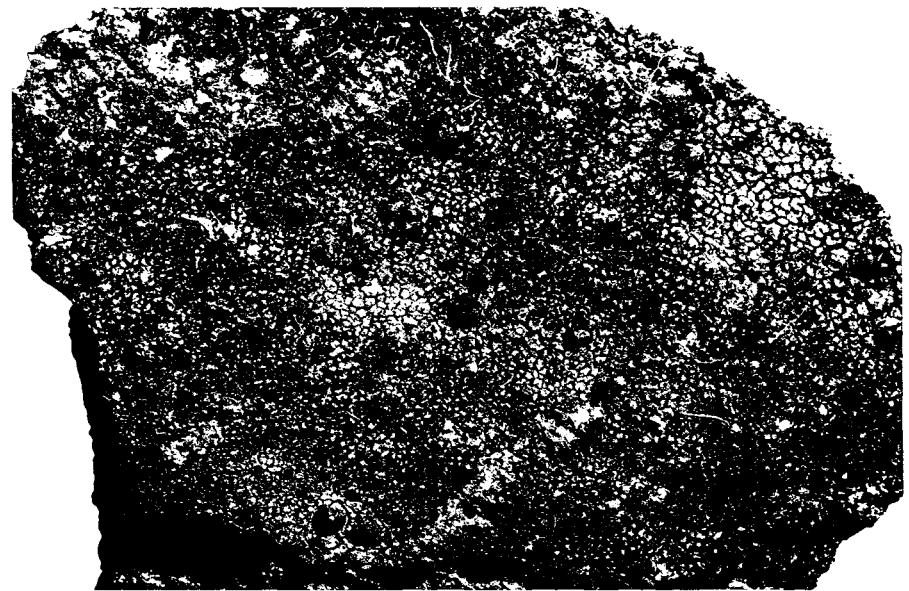
2. mm.

TABULA IV

- Fig. 1. *Lecidea phaeopelidna* Vain. Ok. Kianta, leg. Vain. 1877.  
Vain. herb. No. 23288.
- Fig. 2. *Lecidea griseonigricans* Vain. Kb. Nurmek: Kynsisaari, leg.  
Vain. Vain. herb. No. 24771.



1. [Scale bar] mm.



2. [Scale bar] mm.