

1884, no. 724, saltem pr. p. huc non pertinet). *Porina pustulata* Ach., Lich. Univ. (1810), p. 309, Syn. Lich. (1814), p. 110.

Thallus laeviter verruculoso-inaequalis sublaevigatusque aut inter pseudostromata rugoso-inaequalis, nitidulus, glaucescenti-albidus aut stramineo-glauescens, KHO superne leviter lutescens, intus distincte lutescens, CaCl_2O_2 non reagens, KHO (CaCl_2O_2) intus rubescens, extus haud reagens (in no. XXI) aut rubescens (in no. XL). Pseudostromata 0,5—0,8 (raro —1,5) mm. lata, depresso-subglobosa, basi vulgo demum plus minusve constricta aut abrupta, apice applanato aut demum parum impresso, disco nigro, punctiformi aut raro demum irregulariter dilatato, discum aequante aut raro impresso, apothecia solitaria aut 2—3 (—6) continentia, intus alba, KHO extus leviter lutescentia, intus lutescentia et demum rubescentia (in no. XL) vel aurantiaca (in no. XXI), CaCl_2O_2 non reagentia. Paraphyses increbre ramoso-connexae. Asci subcylindrici. Sporae binae, oblongae, long. 0,064—0,106, crass. 0,024—0,055 mm. In sporis bene evolutis membrana bene incrassata; in KHO visis strati distincti, laevigati et stratum exterius interiore circ. duplo crassius. Sporae et asci jodo persistenter caerulescunt.

In *Porina pustulata* Ach. secund. specimen orig., no. 86, a Dufour lectum, in herb. Ach. pseudostromata KHO intus intense lutescentia, dein distincte aurantiaco-rubescens; in no. 59, item in Gallia lecto, in herb. Ach. pseudostromata intus intense lutescentia, demum intense aurantiaco-fulvescentia, non autem rubentia. In specimine autentico *Pert. melaleucaea* Dub., Bot. Gall. II (1830), p. 673 (no. 23414 in herb. Nyl.) pseudostromata KHO intus demum intense fulvescentia, nec rubescentia.

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (n. XXI, XL, fig. 10).

Area: In zonis temperatis et calidis crescit.

16. ***P. subnegans*** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 170.

Thallus glaucescenti-albidus, tenuis, verruculoso-inaequalis, neque extus, nec intus KHO, CaCl_2O_2 , KHO (CaCl_2O_2) reagens. Pseudostromata 0,5—1 mm. lata, hemisphaerica, basi abrupta, haud constricta, vertice vulgo convexo, thallo concoloria aut partim stramineo-glauescentia, KHO extus leviter flavescens aut non reagentia, intus non reagentia, CaCl_2O_2 non reagentia, KHO (CaCl_2O_2) non reagentia, apothecia 1—2 (—4) continentia, discis punctiformibus, nigricantibus aut obscuratis, KHO non reagentibus, pseudostroma aequantibus aut demum vulgo in verrucula ostiolarum leviter prominente ceracea vel ceraceo-nigricante sitis. Sporae binae, oblongae aut ellipsoideae, long. 0,070—0,090, crass. 0,028—0,040 mm., membrana incrassata, stratis laevigatis, crassitudine sat aequalibus aut strato exteriori duplo crassiore.

In specimine orig. *P. subpustulatae* Nyl., Lich. Guin. (1889), p. 52, Lich. Jap. (1890), p. 51, thallus est laevigatus et pseudostromata KHO intus lutescentia. In *P. Wilmsii* Stizenb., Lich. Afr., p. 140, secund. specim. orig., no. 25453, in herb. Nyl. thallus verruculoso-rugulosus, discus cinereo-nigricans, pseudostromata KHO intus lutescentia. In *P. diffidente* Nyl., Lich. Jap., p. 52, et in *P. denotanda* Nyl., l. c. p. 53, pseudostromata KHO intus lutescentia, et in *P. exalbescente* Nyl., Fl. 1881,

p. 450, pseudostromata KHO intus leviter lutescentia (ex spec. orig. no. 23456 in herb. Nyl.). Hae omnes plantae nostrae habitu subsimiles sunt, at reactionibus ab ea differunt.

Ad corticem *Arecae catechu* prope Stationem navalem Lem Dan in insula Koh Chang (no. X).

Trib. 4. *Theloschisteae*.

1. *Theloschistes* (Norm.) Th. Fr.

17. **Th. flavicans** (Sw.) Müll. Arg., Lich. Beitr. (Fl. 1885), no. 932.

F. glabra Wain., Étud. Lich. Brés. I (1890), p. 114.

Ad corticem *Rhizophorae conjugatae* prope Lem Ngob (no. XXXIII, XXXIV). Ster.

Area: In America, Oceania, Asia tropica, Africa et in Europa occidentali *Th. flavicans* provenit.

2. *Placodium* (DC.) Tul.

18. **Pl.** (subg. **Blastenia**) **testaceorufum** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 170.

Thallus crustaceus, effusus, tenuis, verrucoso vel verruculoso-areolatus inaequalisve, areolis 0,3—0,1 mm. latis, majoribus parum elevatis, minoribus verruculaeformibus, contiguis aut thallus sat continuus aut areolis passim parce dispersis, glaucescenti-albidus aut stramineo-glauescens, sat opacus, neque KHO, nec CaCl_2O_2 , nec KHO (CaCl_2O_2) reagens, hypothallo nigricante limitatus. Apothecia sat crebra, 0,5—0,3 mm. lata, demum convexa aut rarius persistenter planiuscula, adpressa, disco rufo aut rarius rufo-pallescente, raro fusco, opaco, margine proprio, disco vulgo pallidiore aut subconcolore, tenui, subintegro, persistente aut demum excluso. Hypothecium albidum. Epithecium in lamina tenui rufescenti-pallidum, KHO non reagens. Sporae 8-nae, oraculaeformes aut ellipsoideae oblongaeve, apicibus rotundatis, distichae, decolores, placodiomorphae, septo bene incrassato, poro instructo, long. 0,015—0,012, crass. 0,006—0,007 mm.

Gonidia ad *Cystococcum humicolam* pertinentia, diam. circ. 0,010—0,008 mm., simplicia, membrana sat tenui. Apothecia strato gonidioso imposita. Perithecium ex cellulis minutis rotundatis aut ellipsoideis sat leptodermaticis formatum, in lamina tenui pallidum aut albidum. Paraphyses tenues, apice clavatae aut parum incrassatae. Hymenium circ. 0,080—0,120 mm. crassum, jodo intense persistenter caerulescens. Affine *Pl. diplacio* (Ach.) Wain., Lich. Antill. (Journ. of Bot. 1896), p. 7 (68). Ad subg. *Blasteniam* etiam pertinent *Lecidea endochromoides* Nyl., Lich. Nov. Zel. (1888), p. 89, *L. iodomma* Nyl., l. c., et *L. coaddita* Nyl., Lich. Jap., p. 66.

Ad corticem *Rhizophorae* prope Lem Ngob (no. XIV).

Trib. 5. *Buellieae*.

1. *Physcia* (Schreb.) Wain.

Sect. 1. *Euphyscia* Th. Fr.

19. **Ph. crispa** (Pers.) Nyl., Syn. Lich. (1858—60), p. 143 (pr. p.).

Var. **mollescens** (Nyl.) Wain., Étud. Lich. Brés. (1891), p. 144.

Ph. mollescens Nyl. in Jard., Ess. Hist. Nat. Mendana (1857), p. 301.

Thallus KHO superne et intus lutescens, primum tantum margine solediosus, in partibus vetustis demum simul etiam centro solediosus, subtus albidus, rhizinis albidis. Ster.

Ad corticem arboris prope Lem Ngob (no. IX, XXXII).

Area: Var. *mollescens* in insulis tropicis Americae, Africae et Asiae lecta est.

Sect. 2. *Hypomelaena* (Trev.) Wain.

Dimelaena sect. III. *Hypomelaena* Trev., Sul Gen. Dimel. (Atti Soc. Ital. Sc. Nat. XI, 1868), p. 20. *Pyxine* **Dirinaria* Tuck., Syn. North Am. (1882), p. 78.

20. **Ph. picta** (Sw.) Nyl., Syn. Lich. (1858—60), p. 430 (pr. p.); Wain., Étud. Lich. Brés. I (1890), p. 150.

Ad corticem arborum prope Lem Ngob (IX, XXXII). Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (XVII, XXI, XL, fig. 2, 15). In rupe eruptione formata in insula Koh Lom in viciniis insulae Koh Chang (no. XXXI). Fert.

Area: In zonis tropicis et in partibus calidioribus zonarum temperatarum crescit.

2. *Pyxine* Fr.

21. **P. Schmidtii** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 170.

Thallus albus aut albidus, laevigatus, esorediatus, isidiis destitutus, intus albus, KHO superne et intus lutescens, irregulariter laciniatus, laciniis circ. 1—0,4 mm. latis, irregulariter multifidis, contiguis et inter se subcontinuis, applanatis aut summo apice saepe concaviusculis. Apothecia 1—0,5 mm. lata, lecideina, extus tota nigra, disco nigro, nudo. Sporae 1-septatae.

Thallus opacus, pruina destitutus, adpressus, subtus nigricans, rhizinis nigricantibus, KHO intus reactionem luteam solam praebens, at oxidatione aut alia mutatione chemica postea fusco-rubescens. Apothecia omnino gonidiis destituta. Excipulum strato corticali fusco-fuligineo, tenui, KHO prope hymenium rubescens, ceterum non reagente, strato medullari stramineo, KHO non reagente. Hypothecium fuscenscens, KHO non reagens. Hymenium circ. 0,070 mm. crassum, jodo persistenter caerulescens. Epithecium aeruginoso-fuligineum, KHO pulchre violascens. Paraphyses graciles, simplices, apicibus incrassatis, arcte cohaerentes. Sporae 8-nae, distichae, fuscescentes, ellipsoideae, haud constrictae, apicibus obtusis aut rotundatis, in apicibus membrana crassiore, long. 0,016—0,014, crass. 0,007—0,006 mm.

Ad truncos arborum in silva prope Stationem navalem in insula Koh Chang (no. XXV).

22. **P. retirugella** Nyl., Lich. Exot. (1859), p. 240, Enum. Lich. Antill. (1869), p. 10, Syn. Lich. II (1888), p. 3; Wain., Étud. Lich. Brés. I (1890), p. 155; Malme, Gatt. Pyx. (Bih. K. Sv. Vet.-Ak. Handl. 23 III, 1897), p. 33.

Var. **laevior** Wain.

Thallus leviter foveolatus neque reticulato-rugosus, aut parcissime et parum distincte reticulato-rugosus, margine demum sat parce granulato-sorediosus, KHO superne flavescens, zona gonidiali KHO lutescente et demum rubescente. Medulla alba; pars inferior medullae KHO non reagens.

In specimine orig. **P. retirugellae** Nyl. e Nukahiva a Jardin lecto in herb. Nyl., sicut etiam in speciminibus e Taiti et Nova Caledonia a Nyl. postea citatis, thallus bene reticulato-rugosus, margine parce granulato-sorediosus. Ad var. *sorediigeram* Müll. Arg., Anal. Lich. Austral. (1896), p. 91, secundum descriptionem a Müll. datam pertinent. Wain. Lich. Bras. Exs., no. 1178 et 1263, sorediis destituti, ad var. *denudatam* Wain. pertinent.

Ad corticem arborum prope Lem Ngob (no. IX, XXXII). Ster.

Area: Haec species in zonis tropicis obvenit.

23. **P. Asiatica** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 171.

Thallus glaucescens aut albido-glaucescens, levissime reticulato-rugosus, isidiis destitutus, soraliis rotundatis, circ. 0,6—0,3 mm. latis, albidis vel cinereo-glaucescentibus supra laminam thalli in partibus vetustioribus inspersus, intus albus, KHO superne et intus lutescens, iteratim dichotome vel irregulariter laciniatus, laciniis circ. 1—0,4 mm. latis, irregulariter multifidis, contiguis, applanatis aut summo apice saepe concavo.

Thallus nitidiusculus, pruina destitutus, adpressus, subtus nigricans, rhizinis nigricantibus. Rugae striis albidis indicatae. Sorediis *Physciam pictam* in memoriam revocans, at ceterum variationibus laevioribus *Pyx. retirugellae* similis. Ster.

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. X, XXI).

3. **Buellia** De Not.

24. **B. pleiophoroides** (Nyl.) Wain. *Lecidea pleiophoroides* Nyl., Lich. Jap. (1890), p. 81.

Var. **meiospermoides** Wain.

Thallus crustaceus, uniformis, sat tenuis aut crassitudine mediocris (circ. 0,2 mm. crassus), albidus, KHO lutescens, CaCl_2O_2 non reagens, KHO (CaCl_2O_2) non reagens, verruculoso-inaequalis, rimulosus, hypothallo nigricante limitatus. Apothecia mediocria, 1,5—0,7 mm. lata, adpressa, disco plano, nigro, nudo aut pr. p. tenuissime et parum distincte cinereo-pruinoso, margine sat tenui, nigro, nudo, discum vulgo leviter superante. Hypothecium fuscum. Hymenium circ. 0,080 mm. crassum, haud oleosum, jodo intense persistenter caerulescens. Epithecium fuscum. Sporae 8:nae—16:nae, ellipsoideae aut oblongae, fuscae, membrana aequaliter parum incrassata, 1-septatae, septo tenui, haud constrictae, long. 0,010—0,015, crass. 0,005—0,007 mm.

Apothecia saepe ambitu flexuoso irregulariaque, haud raro demum e vetustis apotheciis prolifera et tunc aggregata. Paraphyses sat laxe cohaerentes, 0,001—0,0015 mm. crassae, apice leviter incrassatae. Sporae apicibus obtusis aut rotundatis. Habitu *Lecanactidibus* similis. *Buellia pleiophoroides* (Nyl.) sporis partim majoribus, long. vulgo 0,023—0,015, rarius 0,011 mm., crassit. 0,007—0,005 mm., medio vulgo leviter constrictis, membrana aequaliter parum incrassata, septo tenui, hymenio 0,080 mm. crasso, bene oleoso, paraphysibus laxius cohaerentibus, crassioribus, crassit. vix 0,002 mm., thallo tenui, parum inaequali a var. *meiospermoide* differt, at secund. specimen orig. (no. 10435 in herb. Nyl.) habitu apotheciorum insigni modo plantae nostrae similis, quare hae sine dubio ad eandem speciem pertinent.

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. X).

Area: *B. pleiophoroides* etiam in Japonia lecta est.

25. **B. blastenioides** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 171.

Thallus crustaceus, uniformis, tenuis, sordide cinerascens aut cinereo-glauescens, neque KHO, nec CaCl_2O_2 , nec KHO (CaCl_2O_2) reagens, leviter verruculoso-inaequalis aut sat laevigatus, subcontinuus aut crebre rimulosus, hypothallo nigricante limitatus. Apothecia parva, latit. 0,3—0,4 mm., adpressa, disco plano aut rarius demum convexiusculo, nigro, nudo, margine tenui, persistente aut demum excluso, nigro, nudo. Hypothecium fuscum. Hymenium circ. 0,070—0,080 mm. crassum, haud oleosum, jodo persistenter caerulescens. Epithecium fusco-fuligineum. Sporae 8: nae, oblongae aut parcius ellipsoideae, fuscae, 1-septatae, placodiomorphae, septo plus minusve incrassato, haud constrictae, long. 0,011—0,016, crass. 0,0045—0,006 mm.

Apothecia margine integro. Paraphyses arcte cohaerentes, graciles, apice capitato-incrassatae, capite fuscofuligineo, KHO non reagente. Excipulum fuscofuligineum, KHO non reagens. Sporae distichae, apicibus obtusis aut rotundatis, membrana ad septa leviter incrassata, ceterum parum incrassata, septa ipsa vulgo magis incrassata, poro distincto instructa. Hypothecium KHO non reagens.

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. X).

26. **B. subdives** Wain., l. c.

Thallus crustaceus, uniformis, tenuis aut sat tenuis, albidus, KHO lutescens, CaCl_2O_2 non reagens, verruculoso-inaequalis, verruculis crebris contiguisve, subcontinuus aut rimulosus, hypothallo indistincto. Apothecia parva, latit. 0,4—0,3 mm., adpressa, disco plano planiusculove, nigro, nudo, opaco, margine tenui, persistente, nigro, nudo. Hypothecium fusco-fuligineum. Hymenium circ. 0,060—0,110 mm. crassum, oleosum, jodo persistenter caerulescens. Epithecium fusco-fuligineum. Sporae 16: nae, (— 12: nae), oblongae, fuscae, 1-septatae, septo tenui, membrana aequaliter modice incrassata, haud constrictae, long. 0,010—0,017, crass. 0,004—0,006 mm.

Apothecia margine integro. Excipulum fusco-fuligineum, KHO non reagens. Paraphyses sat arcte (in KHO sat laxe) cohaerentes, graciles,

apice clavato-vel capitato-incrassatae, capite fusco, KHO non reagente. Sporae distichae, apicibus obtusis aut rotundatis, septa poro haud instructa. Reactione thalli a *B. polyspora* (Willey) Wain., Étud. Lich. Brés. I, p. 171, differt et affinis est *B. disciformi*, at *B. polyspora* affinis est *B. myriocarpae* et thallus ejus KHO non reagens. *B. subnexa* (Nyl., Lich. Jap., p. 77) habitu ei subsimilis est et item septo membranaque sporarum modice aequaliterque incrassatis instructa est (secund. specim. orig. no. 10651 in herb. Nyl.).

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. XXI, XL, f. 4).

27. **B. stramineoatra** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 172.

Thallus crustaceus, uniformis, sat tenuis, stramineus aut stramineo-glauescens, KHO intensius flavescens, CaCl_2O_2 rubescens, verruculoso-inaequalis aut e verruculis contiguis subdispersisve constans, hypothallo nigricante limitatus aut inter areolas thalli visibili. Apothecia parva. 0,3—0,25 mm. lata, adpressa, disco plano aut rarius convexiusculo, nigro, nudo, opaco, margine tenui, integro, nigro, persistente aut demum excluso. Hypothecium fuscum. Hymenium circ. 0,060 mm. crassum, haud oleosum, jodo persistenter caerulescens. Epithecium fuscum. Sporae 16:nae, ellipsoideae vel oblongae, fuscae, membrana aequaliter modice incrassata, 1-septatae, septo tenui, haud constrictae, long. 0,014—0,007, crass. 0,005—0,006 mm.

Apothecia KHO non reagentia. Excipulum fusco-fuligineum. Paraphyses graciles, arcte cohaerentes, apice capitato-vel clavato-incrassatae. Asci circ. 0,016 mm. crassi, apice membrana leviter incrassata. Sporae distichae, apicibus rotundatis, poro haud instructae in septo.

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. X, XXI).

Trib. 6. *Collemeae*.

1. *Leptogidium* Nyl.

28. **L. Mooreii** (Hepp) Nyl., Lich. Jap. (1890), p. 14, Lich. Pyr. Or. Obs. Nov. (1891), p. 72; Hue, Lich. Exot. (1892), p. 309, Lich. Extr.-Eur. (1901), p. 2. *Leptogium* Hepp in Journ. of Bot. (1865), p. 287; Leight., Lich. Great Brit., ed. 2 (1872), p. 27 (ed. 3, 1879, p. 13). *Ephebe byssoides* Carring. in Trans. Bot. Soc. Edinb. VII (1862), p. 411, tab. 10 f. 2 (teste Cromb., Lich. Brit. I, 1894, p. 36).

Thallus fruticulosus, altit. circ. 1—1,5 mm., teres aut subteres, iteratim dichotome aut parce trichotome ramosus, ramis (praesertim superioribus) crebris, circ. 0,100 mm. crassus, ramulis superioribus circ. 0,030—0,040 (— 0,050) mm. crassis, papillis apicalibus circ. 0,020—0,025 mm. crassis, caesio-cinerascens, partibus crassioribus cinereo-pallescentibus, ex hyphis irregulariter longitudinalibus, sat leptodermaticis, conglutinatis, formatus, cellulis elongatis, homoeomericus, at demum in partibus crassioribus medulla gonidiis destituta angusta irregularique instructus, etiam in superficie thalli hyphis consimilibus, longitudinalibus, conglutinatis, serie subsimplice

gonidia obducentibus, stratum corticale nullum distinctum formantibus. Gonidia coccocarpoidea (scytonemea), cellulis subglobosis aut compressis ellipsoideisve glaucescentibus in filamenta gyrosa brevia aut sat brevia concatenatis (heterocystis intercalaribus parce visis), vagina gelatinosa tenui induta, diam. circ. 0,012—0,010 mm.

Ab hac specie *Leptogidium dendriscum* Nyl. (Syn. Lich., p. 135, Lich. Jap., p. 14, Lich. Pyr. Or. Obs. Nov., p. 72, Wain., Étud. Lich. Brés. I, p. 220) ramulis crassioribus et colore et textura thalli differt. In specim. orig. *L. dendrisci* in mus. Paris. gonidia crassit. 0,006—0,005 mm.

Supra *Graphidem fissurinoideam* in rupe ad cataractam prope Klong Prao (no. XXIX) et supra muscos et alias plantas vetustas ad cataractam prope Lem Dan (no. XXIV) in insula Koh Chang. Ster.

Area: In Europa et Asia raro obvia.

2. *Leptogium* (Ach.) Gray.

29. *L. caesium* (Ach.) Wain., Étud. Lich. Brés. I (1890), p. 225. *L. tremelloides* var. *caesium* Hue, Lich. Extr.-Eur. I (1891), p. 12. *L. tremelloides* f. *isidiosa* Müll. Arg., Lich. Beitr. (1882), no. 374.

Thallus demum isidiosus. Ster.

Ad truncum arboris in capite septentrionali insulae Koh Kong (no. XI).

Area: In zonis temperatis calidioribusque crescit.

3. *Physma* Mass.

30. *Ph. plicatum* (Pers.) Hue, Physm. (Bull. Soc. Linn. Norm. 5 sér. IX, 1905), p. 18. *Collema plicatum* Pers., Lich. in Gaudich. Bot. apud Freycinet Voy. Uran. Physc. (1826), p. 203. *Physma pulvinatum* Hue, Lich. Extra-Eur. (1898—1901), p. 9, no. 20, Lich. Jav. (Ann. Jard. Bot. Buitenzorg, 2 sér. II, 1901), p. 171.

Thallus humidus crassus aut sat crassus, irregulariter laciniatus, laciniis circ. 5—1 mm. latis, demum plus minusve confertis et passim confluentibus, margine subcrenulatis, verrucis 1,5—0,3 mm. latis, irregularibus et saepe demum tuberculato-inaequalibus, passim demum etiam crebre confertis et thallum omnino obtegentibus, phyllocladia *Stereocauli denudati* in memoriam revocantibus obsitus, rugis parum elevatis, acutis, ramosis flexuosisque, albidis praesertim ambitum versus et supra verrucas instructus, ceterum livido-virescens aut olivaceus, subtus vulgo concolor, rhizinis destitutus. Sporae 8:nae, simplices, decolores, exosporio incrassato gelatinoso instructae, long. 0,014—0,016, crass. 0,006—0,008 mm.

Thallus superne et inferne strato corticali vero destitutus, at in superficie passim hyphis crebre reticulatim ramoso-connexis, paullo vel duplo crassioribus, leptodermaticis, cellulis partim brevibus, partim elongatis. Gonidia nostocacea, sat abundanter mucosa. Apothecia circ. 4—2 mm. lata, strato corticali destituta, margine thallode radiatim ruguloso et verrucoso, thallo consimili, elevato et discum superante, margine proprio tenui passim distincto, ceterum amphithecio (margine thallode) obducto. Parathecium minute parenchymaticum, luminibus cellularum

rotundatis, membranis modice incrassatis. Perithecium basale membranis bene incrassatis, luminibus cellularum elongatis. Hymenium jodo persistenter caerulescens. Epithecium pallidum. Etiam in herb. Nyl. (no. 42369) adest specimen hujus speciei, in insulis Nicobar a Didrichsen lectum, nomine *C. byrsini*. In *Ph. byrsino* Mass. thallus superne et inferne obductus strato ex hyphis formato crebre contextis, partim conglutinis, crassioribus, quam in strato medullari, cellulis brevibus, rhizinis instructus ex hyphis aggregatis constantibus.

Ad truncos arborum in silva littorali in insula Koh Kahdat (no. XXII, V).

Area: In insulis tropicis Asiae crescit.

4. *Lecidopyrenopsis* Wain.

31. *L. corticola* Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 172.

Thallus crustaceus, circ. 1—0,5 mm. crassus, effusus, areolatus, areolis circ. 2,5—1 mm. latis, difformibus, angulosis, contiguis, planis, opacis, fusco-fuligineis, e granulis subfruticulosus connatis constantibus. Apothecia biatorina, 0,25—0,15 mm. lata, disco plano, fusco, opaco, margine tenui, pallido aut pallido-fuscescente, integro. Hymenium circ. 0,060 mm. crassum, jodo persistenter caerulescens. Epithecium fere decoloratum. Asci clavati. Sporae 8 : nae, distichae, decolores, simplices, ellipsoideae aut oblongae, long. 0,013—0,008, crass. 0,005—0,004 mm.

Genus *Lecidopyrenopsis* Wain. apotheciis lecideinis (biatorinis) a *Pyrenopside* differt. Thallus sub microscopio rubescens, KHO violascens. Gonidia gloeocapsioidea, similia iis *Pyrenopsidis*. — Perithecium in hac specie parenchymaticum, ex cellulis 0,008—0,004 mm. latis, sat leptodermaticis formatum. Paraphyses graciles (0,001 mm. crassae), partim apice paulum incrassatae, arcte cohaerentes, hydrate kalico separatae, partim simplices, saepe increbre ramosae, parcissime ramoso-connexae, maxima parte haud connexae. Asci clavati, membrana tenui. Habitu haec species **Lecideam humosam* (Ehrh.) in memoriam revocat.

Ad truncos Palmarum (*Cocos nucifera*) prope Stationem navalem in Koh Chang (no. XXVIII).

Trib. 7. *Lecideae*.

1. *Lecidea* (Ach.) Wain.

32. *L. (Catillaria) testaceolivens* Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 173.

Thallus crustaceus, tenuis, e granulis minutissimis dispersis aut parcius contiguis albis albidisve constans, KHO non reagens, hypothallo indistincto. Gonidia cystococcacea. Apothecia adpressa, 0,5—0,3 mm. lata, disco convexo aut convexiusculo, livido- aut cinereo-testaceo, nudo, margine tenui, pallidiore, mox excluso. Hypothecium pallido-rufescens. Hymenium totum electrino-pallidum, jodo caerulescens, dein sordide vinose rubens. Sporae 8 : nae, decolores, bacillari-oblongae, rectae, apicibus rotundatis aut obtusis, 1-septatae aut pro parte simplices, long. 0,015—0,011, crass. 0,002 mm.

Apothecia interdum proliferationibus ex apotheciis vetustis enata,

colore sicut in speciminibus a Zw. lectis *L. prasinæ* f. *prasinizæ* Nyl. Gonidia ad *Cystococcum humicolam* Naeg. pertinentia, simplicia, diam. 0,010—0,008 mm., membrana modice incrassata, haud gelatinosa. Paraphyses simplices aut furcato-ramosae, haud connexae, membrana gelatinoso-incrassata. Asci clavati. Haec species potius *L. globulosæ* Floerk., quam *Bacidiis*, est affinis.

Ad truncos arborum in silva prope cataractam in insula Koh Chang (no. XXIII).

33. *L. (Catillaria) unicolor* Wain., l. c.

Thallus crustaceus, tenuis, subcontinuus, leviter verruculoso-inaequalis aut sat laevigatus, partim crebre rimulosus, albido-glauescens, KHO lutescens, CaCl_2O_2 non reagens, KHO (CaCl_2O_2) lutescens, hypothallo indistincto. Gonidia cystococcoidea. Apothecia adpressa, 0,5—0,7 mm. lata, disco plano, nigro aut fusco, nudo, margine nigro, crassitudine mediocri, demum saepe excluso. Excipulum basale albidum, KHO lutescens. Hypothecium albidum aut pallidum. Hymenium circ. 0,070 mm. crassum, jodo persistenter caerulescens. Epithecium dilute sordide violascens aut partim decoloratum, KHO non reagens. Sporae 8 : nae, decolores, ellipsoideae aut ellipsoideo-oblongae, apicibus rotundatis, distichae, 1-septatae, halone nullo indutae, long. 0,014—0,011, crass. 0,007—0,005 mm.

Apothecia gonidiis destituta. Excipulum in margine ex hyphis radiantibus pachydermaticis formatum, superne aut extus cyanescens, inferne aut intus violaceum, KHO dilute sordideque olivaceum aut vix reagens, basi albidum et KHO lutescens. Hypothecium guttulas oleosas abundanter continens. Asci clavati, membrana apice modice incrassata. Paraphyses arcte cohaerentes, simplices, sat tenues, apice clavato-incrassatae. Gonidia diam. circ. 0,008 mm. — A *L. tricolore* (With.) Nyl. sporis crassioribus et apotheciis unicoloribus differt, at ei affinis. A *L. atropurpurea* (Schaer.) Th. Fr. thallo et reactione jodetica hymenii ceterisque notis differt. Habitu vix differt a *Buellia disciformi*.

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. X).

Trib. 8. *Gyalectae*.

1. *Gyalecta* (Ach.) Wain.

34. *G. lutea* (Dicks.) Tuck., Lich. Hawai. (1867), p. 227, Syn. North Am. (1872), p. 218; Wain., Lich. Brés. II (1890), p. 71. *Biatorinopsis lutea* Müll. Arg., Lich. Beitr. (Fl. 1881), no. 254, Graph. Féean. (1887), p. 5.

Apothecia 0,3—0,4 mm. lata, disco pallido aut raro lutescenti-pallido, plano aut raro convexusculo, margine tenui, integro aut verruculoso, albido aut raro pallido, discum haud superante. Perithecium in parte exteriori cellulis mediocribus. Hymenium circ. 0,040 mm. crassum, jodo dilute caerulescens, dein vinose rubens. Paraphyses apice leviter incrassatae. Sporae 8 : nae, distichae, fusiformi-oblongae aut oblongae, apicibus obtusis aut rotundatis, 1-septatae, decolores, long. 0,007—0,008, crass. 0,002—0,003 mm.

Ad corticem arborum prope Rangoon in Burma britannica (leg. Johs. Schmidt).

Area: In zonis calidioribus et temperatis provenit.

Trib. 9. *Thelotremeae*.

1. *Thelotrema* (Ach.) Eschw.

35. **Th. (Leptotrema) arecae** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 174.

Thallus sat tenuis aut crassitudine fere mediocris, continuus, leviter inaequalis, cinerascens vel cinereoglauescenti-albicans, sat opacus aut nitidiusculus, KHO haud distincte reagens (olivaceus). Excipulum verrucam depresso-subglobosam, circ. 1 (0,7—1,2) mm. latam, basi constrictam formans, thallo concolor, vertice impresso, ostiolo 0,2—0,4 mm. lato, rotundato, margine ostiolari integro, tenui, thallo subconcolore aut demum anguste nigricante. Apothecia crebra aut increbra, disco livido-nigricante. Perithecium dimidiatum, fuligineum, columella centrali fuliginea, apice circ. 0,140 mm., basi 0,080 mm. crassa. Sporae singulae, demum sat leviter obscuratae, oblongae, murales, cellulis numerosissimis, membrana parietali crassitie mediocri, jodo violaceo-caerulescentes, long. 0,120—0,180, crass. 0,026—0,040 mm.

Perithecium basi deficiens. Hypothecium albidum aut sordidum. Hymenium circ. 0,220 mm. crassum, jodo haud reagens. Epithecium decoloratum, at passim granulis nigricantibus inspersum. Hypothallus indistinctus. — Habitu simile est *Thelotremati* (*Ocellulariae*) *cinchonarum* (Fée) Wain.

Ad corticem *Arecae catechu* in insula Koh Chang (no. XXI).

36. **Th. (Leptotrema) calathiforme** Wain., l. c.

Thallus tenuis aut sat tenuis, continuus, sat laevigatus, glaucescens vel glauco-virescens, nitidus, KHO non reagens. Excipulum verrucam circ. 1—0,5 (—0,3) mm. latam, circ. 0,3—0,5 mm. (aut minus) elevatam, basin versus sensim dilatatam aut sat abruptam formans, ostiolo demum sat lato (circ. 0,8—0,3 mm.), rotundato, margine ostiolari denticulato-crenato aut subintegro, sat tenui, simplice aut rarius duplice, albo. Apothecia sat crebra aut increbra, disco caesio-livido, pruinoso. Perithecium pallidum, integrum, KHO fulvo-fuscescens (margine et basi), columella centrali nulla. Sporae 8:nae, distichae, ellipsoideae vel fusiformi-ellipsoideae, apicibus obtusis aut rotundatis, leviter obscuratae, murales, cellulis haud valde numerosis, septis transversalibus circ. 5—7, jodo violaceo-caerulescentes, long. 0,022—0,024, crass. 0,009—0,011 mm.

Hypothecium albidum vel pallidum. Hymenium circ. 0,100 mm. crassum, jodo non reagens. Epithecium decoloratum aut pallidum, parce granulatum. Paraphyses simplices, tenues, apice vix incrassatae. — *Th. (Brassiam) subcalvescens* Nyl., Lich. Andam., p. 9, in memoriam revocans, at sporis obscuratis et margine apotheciorum magis elevato ab eo differens. *Th. (Brassia) leucomelanum* Nyl. thallo opaco et sporis decoloribus a planta nostra differt.

12. ***L. monodora** Wain. (Lich. Welw., 1901, p. 403).

Ad corticem *Arecae catechu* prope Stationem navalem Lem Dan in insula Koh Chang (no. X).

Ad hanc subspeciem forsan pertinet *L. achroella* Nyl. in Cromb. Lich. Rodrigu. (1877), p. 439, at specimen orig. malum in herb. Nyl. vix certe determinari potest. Pycnoconidiis „arcuatis, long. 0,015—0,018, crass. 0,0005 mm.“ descripta est.

Area: In zonis calidis Asiae et Africae obvenit.

Trib. 3. *Pertusarieae*.

1. *Pertusaria* DC.

13. **P. (Lecanorastrum) Bengalensis** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 169.

Thallus sat tenuis, continuus aut demum rimosus, leviter verruculoso-inaequalis, glaucescens, nitidiusculus, neque KHO, nec CaCl_2O_2 reagens (neque superne, nec intus), KHO (CaCl_2O_2) intus (zona gonidialis et pars superior medullae) intense violascens, superne minus distincte violascens, medulla jodo caerulescens. Pseudostromata 0,7—0,5 (—1) mm. lata, elevata, subcylindrica aut vulgo demum basi plus minusve constricta, crebra, apice demum albo, parce soresioso, apothecium unum continentia aut rarius 2—4 confluentia. Discus neque KHO, nec CaCl_2O_2 reagens, KHO (CaCl_2O_2) intense violascens. Sporae haud evolutae. Paraphyses ramoso-connexae. Gonidia cystococcacea. Affinis est *P. subvaginatae* Nyl., Fl. 1864, p. 619, 1866, p. 290 (Wain., Étud. Lich. Brés. I, p. 107), at reactione thalli ab ea differens. In specimine orig. *P. subvaginatae* in herb. Nyl. (no. 23508, coll. Lindig. no. 2658) medulla jodo passim parce caerulescens.

Ad corticem arboris prope Klong Sarlakpet in Koh Chang (no. I).

14. **P. (Porophora) sphaerulifera** Wain., l. c.

Thallus sat tenuis, continuus, leviter inaequalis aut sat laevigatus, glaucescens, nitidus, CaCl_2O_2 neque superne, nec intus reagens, KHO haud distincte reagens (aut intus demum dilutissime roseus), medulla jodo non reagente, esorediatus, isidiis destitutus. Pseudostromata globosa, diam. 0,5—0,7 mm., basi constricta, albida, opaca, CaCl_2O_2 non reagentia, KHO intus violascentia, extus dilute violascentia, nucleo haud evoluto. *P. thelocarpoidem* Nyl., Prodr. Fl. Nov.-Gran. Addit., p. 546, in memoriam revocans.

Ad rupem in silva prope cataractam in Koh Chang (no. XIII).

15. **P. pustulata** (Ach.) Nyl., Énum. Gén. Lich. (1857), p. 116, Prodr. Lich. Gall. (1857), p. 194, Lich. Scand. (1861), p. 181, Lich. Jap. (1890), p. 51, Lich. Paris (1896), p. 72; Th. Fr., Lich. Scand. (1871), p. 313; Flag., Fl. Lich. Fr.-Comté (1886), p. 322; Oliv., Rev. Bot. (1890), p. 18; Harm., Cat. Lich. Lorr. (1894), p. 324; Darb., Deutsch. Pert. (Engl. Bot. Jahrb. 1897), p. 604 (Müll. Arg., Lich. Beitr.,

in herb. Nyl. reactio omnino similis observatur, et thallus superne flavescens, subtus pallidus, rhizinis concoloribus aut obscuratis, sporae „long. 0,006—0,007, crass. 0,004—0,005 mm.“, pycnoconidia „cylindrica, recta, long. 0,007—0,010, crass. 0,0005—0,0006 mm.“ (ex Nyl. in sched.). A *P. relicina* Fr. (Wain., Étud. Lich. Brés. I, p. 65) variis notis differt et autonoma est species.

Ad corticem arborum in silva prope cataractam in Koh Chang (no. II et XVI).

Area: In insulis Sinus Bengalensis provenit.

Trib. 2. *Lecanoreae*.

1. *Lecanora* (Ach.) Wain.

9. *L. subfusca* (L.) Ach.

Var. **chlarona** Ach., Syn. Lich. (1814), p. 158; Norrl. et Nyl., Herb. Lich. Fenn., no. 133 b; Wain., Adj. Lich. Lapp. I (1881), p. 157.

Thallus verruculoso-inaequalis, sat tenuis, glaucescenti-albidus, KHO lutescens, CaCl_2O_2 non reagens. Apothecia mediocria aut sat parva, circ. 0,8—0,6 mm. lata, disco testaceo aut testaceo-pallido, opaco, nudo, margine tenui, subintegro aut leviter verruculoso-crenulato, discum vulgo aequante.

Ad corticem arborum frondosarum prope Lem Ngob (no. IX, XXXII), ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. XVII).

Area: Fere cosmopolitica et praesertim in zonis temperatis distributa.

10. ***L. subgranulata*** Nyl. apud Cromb., Lich. Ins. Rodrigu. (Journ. of Bot., 1877), p. 439; Hue, Lich. Exot. (1892), p. 145. *L. subfusca* var. *subgranulata* Nyl., Lich. Nov.-Gran. Addit. (1867), p. 542 (secund. specim. orig. no. 27301 in herb. Nyl.), Syn. Lich. Nov. Cal. (1868), p. 26; Stizenb., De Lec. subf. (Bot. Zeit. 1868), p. 9.

Ad corticem *Arecae catechu* prope Stationem navalem Lem Dan in insula Koh Chang (no. X).

Area: In zonis calidioribus provenit.

11. ***L. cinereocarnea*** (Eschw.) Wain., Étud. Lich. Brés. I (1891), p. 80. *L. chlaroterodes* Nyl., Fl. 1876, p. 508, pr. p. (huc pertinet Wr. L. Cub., ser. II, no. 64, no. 27322 in herb. Nyl., ad quem descriptio a Nyl. data spectat, at no. 49 et 67 a ad variationes male evolutas *L. subfuscae* pertinent). *L. achroa* Nyl. in Cromb., Lich. Ins. Rodrigu. (1877), p. 439 (secund. specim. orig. in herb. Nyl.).

Ad corticem *Rhizophorae* et aliorum arborum frondosarum prope Lem Ngob (no. XIV, XXXII), ad corticem *Arecae catechu* prope Stationem navalem Lem Dan in insula Koh Chang (no. X, XVII, XXI).

Area: In zonis calidioribus obvia.

aut rarius oblongae, long. 0,014—0,020, crass. 0,007—0,010 mm., apicibus rotundatis, membrana mediocri aut sat tenui. Hymenium jodo passim caerulescens, dein decoloratum, ascis persistenter caerulescentibus. Pycnospores fusiformi-acicularia, alterum apicem versus crassiora, apicibus acutis, long. 0,007—0,005, crass. 0,0007 mm. Habitu fere sicut *P. mutata* Wain., Étud. Lich. Brés. I, p. 39, Lich. Bras. Exs., no. 539, at reactione ab ea differens et thallo subtus late nudo; revera ad *Amphigymnias* pertinet, at, apicibus et marginibus thalli haud aut parum distincte adscendentibus instructa, ad *Hypotrachynas* tangit.

Ad corticem arboris in limite silvae prope Stationem navalem in insula Koh Chang (no. XXX).

7. *P.* (sect. *Hypotrachyna* **Sublinearis*) **addenda** Wain., l. c. p. 169.

Thallus superne albidus aut glaucescenti-albidus, subtus nigricans et ambitum versus pallidus, adpressus, dichotome laciniatus, laciniis 2—0,3 mm. latis, planis, lacinulatis, laciniis lacinulisque conniventibus axillisque rotundatis aut axillis lacinularum apicalium rotundato-patentibus, apicibus vulgo subtruncatis, esorediatus, lamina crebre isidiosa, isidiis tenuissimis, teretibus, concoloribus, ceterum laevigatus, subtus rhizinis brevibus (circ. 0,2 mm. longis), nigris, crebris fere usque ad apicem laciniarum instructus, KHO superne lutescens, intus non reagens, CaCl_2O_2 non reagens. Habitu similis *P. coronatae* Fée var. *isidiosae* Müll. Arg. (Wain., Étud. Lich. Brés. I, p. 60), at isidiis unicoloribus, teretibus, tenuioribus, supra laminam thalli sparsis ab ea differens et tantum sterilis visa. *P. deformis* Wain. (*P. tropica* v. *deformis* Wain., Lich. Antill., 1896, p. 3) item huic, nec *P. tiliaceae* affinis, isidiis parcissimis increbrisque et habitu paululum ad *P. sublaevigatam* vergente a *P. addenda* distinguitur.

Ad corticem *Arecae catechu* prope Stationem navalem Lem Dan in insula Koh Chang (no. X et XXI).

8. *P.* (sect. *Xanthoparmelia*) **ecoronata** Nyl., Lich. Andam. (1874), p. 5. *P. relicina* **P. ecoronata* Nyl. in Hue, Lich. Exot. (1892), p. 79, no. 681. *P. relicina* var. *ecoronata* Müll. Arg., Lich. Beitr. XXXV (Fl. 1891), no. 1652.

Thallus superne flavescens, subtus pallidus, intus albus, adpressus, crebre iteratim dichotome laciniatus, laciniis circ. 1,5—0,5 mm. latis, planis, laciniis lacinulisque conniventibus axillisque rotundatis aut axillis lacinularum apicalium rotundato-patentibus, apicibus vulgo subtruncatis, esorediatus, isidiis destitutus, subtus rhizinis mediocribus brevibusve (circ. 0,5 mm. longis aut paullo longioribus), fuscescentibus, crebris, fere usque ad apicem laciniarum instructus aut ad apices initiis papillaeformibus rhizarum obductus, KHO superne parum reagens aut leviter lutescens, intus leviter diluteque lutescens, CaCl_2O_2 non reagens, at KHO (CaCl_2O_2) intus rubescens. Apothecia parva, circ. 1,5—1 mm. lata, peltata, sessilia, disco rufo, plano aut concaviusculo, margine leviter crenato (in no. II etiam conceptaculis nigris coronato). Excipulum subtus flavescens, laevigatum, rhizinis destitutum. Hymenium circ. 0,070—0,065 mm. crassum. Asci clavati. Sporae 8 : nae, distichae, ellipsoideae (aut subgloboso-ellipsoideae), long. 0,006—0,007 mm., crass. 0,004 mm. In specimine originali

In *P. urceolata* v. *nuda* Müll. Arg., Lich. Beitr. (Fl. 1880), no. 183, secund. specim. orig. ad Petropolin in Brasilia lectum thallus margine sorediosus, superne rimulosus, subtus ambitum versus late nudus, centrum versus rhizinis brevibus crebris instructus, KHO superne flavescens, intus primo lutescens, dein rubescens. — In *P. urceolata* v. *subcetrata* Müll. Arg., Lich. Beitr. (Fl. 1883), no. 569, secund. specim. orig. ad Twofold Bay ab Hartmann lectum thallus subtus usque ad ambitum rhizinis instructus, KHO superne lutescens, intus primo lutescens, dein rubescens, superne rimulosus, lacinulis sorediosis. Ad *P. cetratam* Ach. pertinet, at thallo subtus partim albedo, partim nigricante a f. *sorediifera* Wain., Étud. Lich. Bres. I (1890), p. 40, differt. In *P. urceolata* v. *cladonioide* Müll. Arg., Lich. Beitr., no. 183, secund. specim. orig. no. 35 ad Petropolin a Deventer lectum thallus sorediis isidisque destitutus, passim margine ciliato, ceterum subtus late nudus albidusque aut partim interdum nigricans, lobis bene lacinulatis et partim etiam rotundatis, KHO superne flavescens, intus non reagens, CaCl_2O_2 neque solo, nec KHO addito, intus reagens. Apothecia ciliis destituta. Observante cel. Zahlbr., Stud. Bras. Flecht. (Sitzungsber. K. Ak. Wiss. Wien 1902), p. 423, thallus KHO intus primo lutescens, dein rubescens. Non annotavi, anne alia species specimini originali immixta sit, at secundum Müll. Arg. crescit cum var. *nuda*, cujus reactio talis est, qualis a cel. Zahlbr. describitur. Ceterum reactio false observatur, nisi penna, quacum solutio reagens ad thallum applicatur, exacte perpurgata est.

5. ***P. adspersa*** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 168.

Thallus superne albidus vel glaucescenti-albidus, subtus niger et ambitum versus castaneus vel testaceo-pallescentis, laciniis circ. 15—3 mm. latis, irregulariter lobatis, lobis apice rotundatis, integris aut rarius rotundato-crenatis, aut minutissime isidioideo-denticulatis, apicibus marginibusque laciniarum plus minusve recurvo-adscendentibus aut adpressis, eciliatus, esorediatus, praesertim medium versus isidiosus, isidiis tenuissimis brevissimisque, medulla alba, subtus rhizinis brevibus passim instructus, ambitum versus late nudus, KHO superne et intus lutescens, CaCl_2O_2 non reagens, at his reagentiis unitis intus rubescens. Habitu similis est *P. coralloideae* (Mey. & Flot.) Wain. (*P. tinctorum* Despr.), at reactionibus ab ea differens et tantum sterilis lecta.

Ad corticem *Rhizophorae* prope Lem Ngob (no. XV et XXXIV).

6. ***P. platyphyllina*** Wain., l. c.

Thallus superne albidus aut albedo-glaucescens, intus albus, subtus niger aut ambitu interdum castaneus, laciniis circ. 20—5 mm. latis, adpressis, irregulariter lobatis, lobis rotundatis, basi vulgo angustatis, adpressis, esorediatus, isidiis destitutus, eciliatus, cortice continuo, subtus rhizinis brevibus passim instructus, ad ambitum late nudus, KHO superne et intus lutescens, addito CaCl_2O_2 intus rubescens, CaCl_2O_2 solo non reagens. Apothecia circ. 7—3 mm. lata, applanato-cupuliformia aut pr. p. applanata, imperforata, peltata, sessilia, disco rufo aut testaceo-rufescente, margine subintegro aut interdum leviter crenulato, vulgo leviter incurvo, eciliato, excipulo extus laevigato. Sporae 8-nae, distichae, ellipsoideae

versus parce aut sat parce inspersus, ceterum laevigatus, medulla alba, ambitum versus subtus late nudus, ceterum rhizinis tenuibus brevibus crebris instructus, margine passim parcissime ciliato aut fere eciliato, subtus fusco-niger, ambitum versus castaneus, ad marginem anguste castaneo-pallescent, KHO superne et intus intense lutescens, CaCl_2O_2 non reagens, KHO (CaCl_2O_2) intus passim levissime obsolete aurantiacus aut passim solum lutescens. Apothecia usque ad 5 mm. lata, cupuliformia, subsessilia, imperforata, disco rufo aut testaceo. Excipulum granulis sorediorum et isidiis parcius inspersum, ceterum laevigatum. Sporae „ellipsoideo-oblongae, long. 0,026—0,036, crass. 0,011—0,016 mm., membrana crassiuscula“. Pycnoconidia „subbifusiformia, long. 0,005 mm.“ (observante Nyl.). In rupe prope Le Paz in Bolivia anno 1891 legit M. Bang (no. 13). Postea etiam ad „v. *ciliatam* DC.“ hoc specimen in herb. Nyl. ductum est.

3. **P. latissima** Fée, Ess. Crypt. Écorc. Suppl. (1837), p. 119, tab. XXXVIII, fig. 1; Hue, Lich. Extra-Eur. I (1901), p. 204. *P. glaberrima* Krempelh., Fl. 1869, p. 223.

Var. **cristifera** (Tayl.) Hue, l. c. p. 205. *P. cristifera* Tayl. in Hook. Journ. of Bot. 1847, p. 165 (Müll. Arg., Lich. Beitr., Fl. 1888, no. 1250).

Thallus margine sorediosus, intus KHO lutescens et demum rubescens, CaCl_2O_2 non reagens, ciliis destitutus, subtus passim rhizinis instructus, ad ambitum late nudus. Ster.

In trunco *Rhizophorae* ad flumen Klong Prao in insula Koh Chang (no. XX).

Secundum specimen no. 35399 in herb. Nyl. var. *cristifera* apotheciis instructa est cupuliformibus, breviter pedicellatis, imperforatis, disco testaceo-rufo, sporis „long. 0,026—0,032 mm., crassit. 0,015—0,018 mm.“, pycnoconidiis „sublageniformibus, long. 0,005—0,007 mm., crass. 0,001 mm.“ (secund. annot. Nylander in specimine a Jardin lecto e loco incerto).

Area: In zona aequinoctiali distributa.

4. **P. Claudelii** (Harm.) Wain. *P. perforata* v. *Claudelii* Harm., Cat. Lich. Lorr. (1894), p. 196; Hue, Caus. Parm. (1898), p. 16.

Thallus margine passim sorediosus, isidiis destitutus, ciliis marginalibus vulgo brevibus (circ. 0,3—2 mm. longis) parce instructus, superne albidus aut glaucescenti-albidus, intus albus, subtus fuscescens aut ambitum versus castaneus testaceusve, cortice continuo, haud maculato, subtus rhizinis passim crebris instructus, ad ambitum plus minusve late aut in eodem specimine quoque solum anguste denudatus, medulla alba, KHO superne lutescens, intus primo lutescens, dein rubescens, CaCl_2O_2 non reagens. Apothecia ignota. Autonoma est species, in *P. perforatam* Ach. haud transiens. Ad species inter *Amphigymnias* et *Hypotrachynas* intermedias pertinet.

Ad corticem *Arecae catechu* prope Stationem navalem Lem Dan in insula Koh Chang (no. X, XL, fig. 1).

Area: Tantum in Europa et Asia hucusque observata.

Lichenes

by **Edw. A. Wainio**, Helsingfors.

I. *Discolichenes*.

A. *Cyclocarpeae*.

Trib. 1. *Parmelieae*.

1. *Ramalina* Ach.

1. *R. farinacea* (L.) Ach.

Ster. Medulla thalli KHO non reagens. Conf. cum **R. subcomplana* Nyl., Mon. Ramal. (1870), p. 36, et *R. Sandwicensi* Zahlbr., Neue Flecht., p. 6 (Annal. Mycol. Vol. I, no. 4, 1903).

Ad *Rhizophoram conjugatam* prope Lem Ngob (no. XV, XXXIII, XXXIV).

Area: Cosmopolita est, at regioni antarcticae deficiens et in regione arctica rara.

2. *Parmelia* (Ach.) De Not.

2. *P.* (sect. *Amphigymnia*) **perlata** Krempelh., Fl. 1869, p. 222; Wain., Étud. Lich. Brés. I (1890), p. 28, et II, p. 256; Hue, Caus. Parm., p. 17 (Journ. de Bot. 1898), Lich. Extra-Eur. I (1901), p. 194.

Thallus margine parce sorediosus, ciliis destitutus, KHO superne et intus lutescens, KHO (CaCl_2O_2) intus rubescens, CaCl_2O_2 solo non reagens. Ster.

Ad *Rhizophoram* prope Lem Ngob (no. XXXVI).

Area: In partibus calidioribus orbis terrarum provenit.

Specimen Swartzianum ex Ind. occ. in herb. Ach. apotheciis instructum est (conf. Wain., Étud. Lich. Brés. II, p. 256). Apothecia ejus cupuliformia, breviter stipitata, imperforata, usque ad 6 mm. lata, disco rufo; sporae long. 0,030—0,022, crass. 0,016—0,010 mm., membrana crassiuscula; thallus ciliis destitutus, intus KHO primum lutescens, demum fulvescens (oxidatione aut alia mutatione chemica postea subrubescens), CaCl_2O_2 non reagens, KHO (CaCl_2O_2) intense rubescens (conf. Th. Fr., Lich. Scand., p. 112).

Descriptiones sporarum, in scriptis Nylanderii datae, secund. herb. Nyl. in museo fennico asservatum spectant ad plantas ad alias species pertinentes. Nomine *P. perlatae* in herb. Nyl. (no. 35500) etiam adest nova species, quae nominetur **P. Bangi** Wain. Thallus ejus statura *P. perlatae* similis, superne albido-glauescens, laciniis irregulariter lobatis, marginibus adscendentibus, basin lorum versus passim parce isidioideo-laceratis, granulis sorediorum et isidiis brevibus irregularibus marginem

Ad truncos arborum in silva prope cataractam in insula Koh Chang (no. XXIII).

37. **Th. (Brassia) Asiaticum** Wain., l. c. p. 175.

Thallus tenuis aut sat tenuis, continuus, crebre aut sparse verruculosus, ceterum sat laevigatus, glaucescens aut stramineo-glaucescens aut olivaceo-glaucescenti-variegatus, nitidus, KHO parum reagens (olivaceus). Excipulum verrucam circ. 0,7—0,3 mm. latam, depresso-hemisphaericam aut parum elevatam, basin versus sensim dilatatam formans, ostiolo circ. 0,1—0,4 mm. lato, rotundato, margine ostiolari tenui, integro, thallo subconcolore aut magis albido. Apothecia sat crebra aut partim sparsa, disco livido-nigricante. Perithecium fuligineum, subintegrum, latere mediocre aut sat tenue, basi tenue, columella centrali fuliginea, crassitudine mediocri. Sporae 8 : nae, distichae, ellipsoideae vel ellipsoideo-oblongae, apicibus rotundatis, decolores, septis transversalibus 5—4, demum murales, cellulis paucis, jodo violaceo-caerulescentes, long. 0,014—0,017, crass. 0,006—0,007 mm.

Thallus linea hypothallina fusconigricante angusta limitatus. Hymenium circ. 0,090 mm. crassum, jodo non reagens. Epithecium decoloratum. Paraphyses simplices. Sporae halone nullo indutae, primum loculis lenticularibus instructae. — Huic habitu subsimilia sunt: *Th. subconforme* Nyl. in Cromb., Lich. East As. (Journ. of Bot. 1882), p. 53, apotheciis incoloribus et sporis paullo majoribus secund. descriptionem recedens (no. 22587 in herb. Nyl.), et *Th. concretum* Fée (*Th. myriocarpoides* Nyl., Lich. Nov.-Gran., p. 326), sporis majoribus et perithecio fulvo differens.

Ad corticem arboris in silva prope cataractam in insula Koh Chang (no. 40).

38. **Th. (Ocellularia) Siamense** Wain., l. c.

Thallus tenuis aut sat tenuis, continuus, verruculis crebre instructus, sordide glaucescenti-albicans, opacus, KHO bene rubescens. Excipulum verrucam circ. 1—1,5 (—2) mm. latam, circ. 0,5 mm. altam, hemisphaericam, basin versus sensim dilatatam aut sat abruptam, plus minusve verruculoso-inaequalem formans, ostiolo circ. 0,1—0,15 mm. lato, rotundato, margine ostiolari tenui, integro, thallo subconcolore aut magis albido. Apothecia sparsa, disco nigricante (circum columellam apice demum albidam, in ostiolo demum visibilem). Perithecium dimidiatum, latere fuligineum tenueque, basi deficiens, columella centrali fuliginea, crassa. Sporae binae aut paucae in ascis, decolores, fusiformes, pluriseptatae, jodo violaceo-caerulescentes, long. 0,030—0,110, crass. 0,012—0,014 mm.

Hymenium circ. 0,270 mm. crassum, jodo non reagens. Epithecium partim decoloratum, partim granulis obscuratis inspersum. Hypothecium decoloratum. Sporae 2 : nae—3 : nae visae, septis 11—17, loculis lenticularibus, membrana sat tenui, halone nullo indutae. Paraphyses simplices. Columella fuliginea, apice strato albido obducta, basi sensim dilatata, circ. 0,800 mm. lata, apice circ. 0,280 mm. crassa. — *Th. dolichotatum* Nyl., Sert. Lich. Lab. (1891), p. 19, huic valde affine videtur et habitu subsimile, at ascis monosporis ab eo differt et, secundum iconem

in sched. speciminis Nylanderiani, columella destitutum. Etiam in Nyl. Lich. Ceyl. (1900), p. 17, commemoratur, at specimina Ceylonensia haud omnino identica cum speciminibus Singaporensibus. In comparabili *Th. porinoide* Mont. (Nyl., Lich. Andam., p. 8, Lich. Ceyl., p. 17) perithecium est albidum.

Ad corticem arboris in silva prope flumen Klong Sarlakpet in insula Koh Chang (no. XXVI).

39. **Th. (Ocellularia) microascidium** Wain., l. c. p. 176.

Thallus tenuis aut sat tenuis, continuus, leviter verruculoso-inaequalis, glaucescenti- vel stramineo-glaucescenti-albidus, leviter nitidus, KHO parum reagens (olivaceus). Excipulum verrucam circ. 0,5—0,4 mm. latam, depresso-hemisphaericam, basin versus abruptam aut partim leviter constrictam, saepe plus minusve verrucoso-inaequalem, vertice applanato instructam formans, ostiolo circ. 0,1—0,3 mm. lato, rotundato, margine ostiolari tenui, integro, thallo concolore, haud aut interdum demum paululum elevato, interdum demum (praesertim in apotheciis morbosis) duplici et perithecium nigricantem ostendente. Apothecia sat crebra, disco livido-nigricante aut morbosus plus minusve pruinoso. Amphithecium intus dilute roseum aut flavescens, KHO rubescens. Perithecium dimidiatum, latere fuligineum, basi deficiens, columella centrali fuliginea. Sporae 8:nae, distichae, oblongae aut fusiformi-oblongae, apicibus obtusis aut rotundatis, 3—5-septatae, decolores, jodo violaceo-caerulescentes, long. 0,017—0,018, crass. 0,007 mm.

Thallus linea hypothallina fusconigricante limitatus. Hypothecium albidum, tenue. Hymenium circ. 0,080 mm. crassum, jodo non reagens. Epithecium decoloratum. Paraphyses simplices, apice parum incrassatae. Sporae halone nullo indutae, loculis lenticularibus. — Affine est *Th. granulatum* Nyl. (Fl. 1876, p. 561), quod jam thallo magis verruculoso-inaequali ab eo differt. Habitu in memoriam revocans *Th. (Leptotrema) Bahianum* Ach. var. *obturascens* Nyl. (Lich. Nov.-Gran., 1863, p. 453, ed. 2 p. 332), in quo amphithecium intus item KHO rubescens, at thallus KHO dilute rubescens deindeque fuscescens.

Ad corticem arboris in capite septentrionali insulae Koh Kong (no. XI).

2. **Gyrostomum** Fr.

40. **G. scyphuliferum** (Ach.) Fr., Syst. Orb. Veg. (1825), p. 268; Wain., Étud. Lich. Brés. II, p. 86.

Ad corticem *Arecae catechu* prope Stationem navalem Lem Dan in insula Koh Chang (no. XVII, XXI).

Area: In regionibus calidioribus distributum.

Trib. 10. **Lecanactideae**.

1. **Lecanactis** (Eschw.) Wain.

41. **L. deminuens** (Nyl.) Wain. *Lecidea premnea* f. *deminuens* Nyl., Fl. 1867, p. 373 (conf. infra), Syn. Lich. Nov. Cal. (1868), p. 54; Norrl.,

Bidr. Syd. Tav. Fl. (1870), p. 191. *Biatora premnea* Sommerf., Cent. Pl. Crypt. Norv. (1826), no. 238 (no. 19094 in herb. Nyl.).

Thallus tenuis aut sat tenuis, subcontinuus aut rimulosus, sat laevigatus, glaucescenti-cinereus, esorediatus, hypothallo nigricante partim limitatus. Apothecia solitaria, elevata, orbicularia, diam. 0,8—0,5 mm., adpressa, basi constricta, lecideina, margine crassitudine mediocri, leviter aut parum discum superante, subintegro aut paululum radiatim fisso, teretirobundato, nigro, nudo. Perithecium fuliginium, integrum. Discus apertus, planiusculus aut demum etiam convexiusculus, tenuiter flavescenti-vel aeruginoso-pruinosis aut denudatus. Sporae 8-nae, distichae, decolores, fusiformes, apicibus obtusis, 3-septatae, long. 0,015—0,016, crass. 0,005 mm.

Hymenium circ. 0,080—0,090 mm. crassum. Perithecium, hypothecium et epithecium fusco-fuliginium. Asci clavati, long. circ. 0,060, crass. 0,010 mm., membrana haud incrassata. Sporae halone nullo indutae. — Commixta cum *Lecanactide premnea* (Ach.) Wain. (*Lecidea premnea* Nyl., Lich. Scand., p. 241, Lich. Jap., p. 76, Lich. Paris, p. 94; Leight., Lich. Great Brit., 3 ed., p. 364), quae sporis 5- et 4-septatis majoribusque ab ea differt. Nomine „*Lecideae premneae*“ in herb. Ach. adest specimen in Anglia ab Afzelio lectum, apotheciis nudis, margine radiatim diffracto instructis, ad *Lecanactidem premneam* pertinens, et alia specimina ad varias species pertinentia. „Var. *taxicola*“ Ach. (Lich. Univ., p. 670) apotheciis flavescenti-pruinosis et sporis 5-septatis instructa est (secund. herb. Ach.). Var. *deminuens* Nyl., Syn. Lich. Nov. Cal. (1868), p. 54, secund. specim. orig. in herb. Nyl. apotheciis nudis et sporis „3-septatis, long. 0,016—0,018, crass. 0,0035—0,0045 mm.“ instructa est, in Fl. 1867, p. 373, et in Norrl., l. c., secund. specimen no. 10790 in herb. Nyl. apothecia habet partim nuda, at nonnulla tenuiter flavido-pruinosa, „sporas 3-septatas“. *B. premnea* Sommerf., l. c. no. 238, secundum specimen no. 19094 in herb. Nyl. apotheciis nudis, „sporis long. 0,015—0,020, crass. 0,003—0,004 mm., 1—3-septatis“ instructa est. *Lecanactis chloroconia* Tuck., Obs. Lich. (Proceed. Am. Ac. of Arts and Scienc. 1864, vol. VI), p. 285 (*L. premnea* v. *chloroconia* Tuck., Gen. Lich., 1872, p. 194, Syn. North Am. II, 1888, p. 115; *Lecidea chloroconia* Nyl. & Cromb., On Collect. Lich. East As., 1882, p. 56, Nyl., Sert. Lich. Lab., 1891, p. 22), secundum specimen Nylanderianum in Malacca lectum apotheciis bene flavido-pruinosis a *L. deminvente* (Nyl.) leviter differt.

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. XVII).

Area: In Europa, Asia et Oceania observata, at distributione defecte cognita.

B. Hysterieae.

Trib. 1. *Graphideae*.

1. *Graphis* (Adans.) Nyl.

Subg. I. *Phaeographina* (Müll.) Wain.

42. **Gr. (sect. *Epiloma*) subrigida** Nyl. in Cromb., On Collect. Lich. East As. (Journ. of Bot. 1882), p. 58; Hue, Lich. Exot. (1892), p. 236, 320. *Lecanactis* Nyl., Sert. Lich. Lab. (1891), p. 24.

Thallus tenuis, epiphloeodes, leviter verruculoso-inaequalis, griseo-olivaceus aut minore parte sordide albicans, nitidiusculus, KHO parum reagens. Apothecia sat approximata, elevata, simplicia aut rarius parce ramosa, vulgo elongata, curvata aut recta, long. 6—1,5 (raro —0,5) mm., lat. 0,5—0,4 mm., basi constricta vel abrupta. Perithecium fuliginum, dimidiatum, basi deficiens, labiis conniventibus, clausis, latere vel parte inferiore amphithecio thallino obductis, superne denudatis, sulca una longitudinali rimae approximata obsolete semel striatulis aut pro parte sat laevigatis. Discus rimaeformis, inconspicuus. Sporae solitariae, fuscescentes, murales, long. circ. 0,070, crass. 0,024 mm.

Thallus linea hypothallina nigricante partim limitatus. Sporae ellipsoideo-oblongae, apicibus rotundatis, cellulis numerosissimis, halone nullo indutae, in speciminibus Nylanderianis „long. 0,115—0,145, crass. 0,026—0,030 mm.“

Ad corticem *Arecae catechu* in insula Koh Chang (no. X).

Area: In regione tropica Asiae obvia.

43. **Gr. (sect. *Epiloma*) heterocarpoides** Nyl. in Cromb., On Collect. Lich. East As. (Journ. of Bot. 1882), p. 57; Hue, Lich. Exot. (1892), p. 240.

Thallus tenuis aut sat tenuis, epiphloeodes, glaucescens vel pallidoglauescens, sat laevigatus aut leviter verruculoso-inaequalis, nitidiusculus, KHO primum dilute rubescens, dein bene rubescens. Apothecia vulgo bene approximata, leviter elevata, semiimmersa, maiore parte simplicia, at partim parce vel etiam bene ramosa, vulgo elongata, partim recta, partim curvata, long. circ. 13—1 (—0,5) mm., latit. 0,4—0,3 mm. Perithecium basi albidum, labiis maiore parte superiore fuliginis, conniventibus, primum clausis, demum anguste hiantibus, amphithecio thallino latere obductis, superne denudatis nigrisque, haud striatis. Discus rimaeformis inconspicuusque aut demum angustus, canaliculato-concavus, nigricans, nudus. Sporae solitariae, obscuratae, murales, long. circ. 0,144—0,120, crass. 0,030—0,028 mm.

Thallus hypothallo vix ullo distincto instructus. Amphithecium thallinum demum basi abrupta. Hymenium circ. 0,180 mm. crassum, modice oleosum, superne fuscescens vel pallidum. Sporae oblongae, apicibus rotundatis, cellulis numerosissimis, jodo intense violascentes, halone anguste indutae. Jodo hymenium dilute violascens, perithecium intense violascens, amphithecium thallinum et thallus distincte violascentes. — *Gr. heterocarpa* Nyl., Lich. Nov.-Gran. (1863), p. 465 (Nyl. & Cromb., On Collect. Lich. East As., 1882, p. 49, 57), Lich. Guin. (1889), p. 29, Lich. Jap. (1890), p. 114, Sert. Lich. Lab. (1891), p. 12, habitu sat similis, thallo KHO haud reagente describitur. Sic res se habet in speciminibus orig. in herb. Nyl. e Marianis et e Rangoon, at thallus KHO revera rubescens in speciminibus orig. e Cayenne, e Malacca et e Labuan. *Gr. internigricans* Nyl., Prodr. Lich. Nov.-Gran. Addit. (1867), p. 566, habitu sat similis, sporis 8 : nis a *Gr. heterocarpoide* distinguitur. *Gr. rudescens* Nyl., Lich. Guin. (1889), p. 29, ei item habitu similis, sporis decoloribus, jodo caerulescentibus et perithecio fuligineo magis evoluto ab ea differt (secund. specim. orig.).

Ad corticem *Arecae catechu* prope Lem Dan (no. XVII, XXI, XL, fig. 8, 14).

Area: In regionibus tropicis Oceaniae et Asiae lecta est.

44. **Gr.** (sect. **Leucogramma**) **chlorocarpoides** Nyl., Fl. 1866, p. 133, Prodr. Fl. Nov.-Gran. Addit. (1867), p. 566, Enum. Lich. Husnot Antill. (1869), p. 21, Lich. Jap. (1890), p. 113, Sert. Lich. Lab. (1891), p. 11; Hue, Lich. Exot. (1892), p. 243, 321.

Thallus tenuis, epiphloeodes, pallido-glauescens aut glaucescenti-albidus, sat laevigatus aut rarius leviter verruculoso-inaequalis, nitidiusculus aut rarius opacus, KHO leviter rubescens. Apothecia sat approximata, elevata, simplicia aut parce vel sat parce ramosa, vulgo elongata, saepe curvata flexuosave, long. 9—2 (—1) mm., lat. 0,6—0,4 mm. Perithecium albidum vel pallidum vel intus lutescens, integrum, basi tenue, labiis conniventibus, clausis, parte inferiore amphithecio thallino anguste obductis, ceterum denudatis, longitrorsum bene striatis, vulgo albido-pallidis vel subalbidis. Discus rimaeformis, inconspicuus. Sporae solitariae aut binae, pallido-fuscescentes, murales, long. 0,060—0,132, crass. 0,018—0,029 mm.

Thallus hypothallo vix ullo distincto aut albedo. Perithecium laterale crassum, KHO fulvescens. Hymenium circ. 0,140 mm. crassum, oleosum, jodo haud reagens. Epithecium olivaceo-pallidum. Sporae oblongae, apicibus rotundatis, jodo violaceo-fuscescentes vel caeruleo-violascentes. — Affinis est *Gr. chrysenterae* Mont. (Wain., Étud. Lich. Brés. II, p. 99), quae sporis typice 8 : nis ab ea differt. *Gr. chrysenterodes* Nyl., Lich. Ceyl. (1900), p. 22 (*Gr. chlorocarpa* var. *excellens* Nyl., Enum. Lich. Husnot Antill., 1869, p. 21), sporis 2 : nis—8 : nis et thallo KHO non reagente a *Gr. chlorocarpoide* distinguitur, et secundum specimen no. 6895 in herb. Nyl. apotheciis haud striatis instructa est, at habitu ei subsimilis. „*Gr. excellens*“ Nyl., Lich. Jap. (1890), p. 112, Sert. Lich. Lab. (1891), p. 11, etiam apotheciis supra non striatulis descripta est. *Gr. chlorocarpoides* Nyl., Fl. 1866, p. 133, secundum descriptionem facie *Gr. frumentariae* et hymenio passim jodo dilute vinose rubente dignota [in specim. orig. no. 6898 ex Java in herb. Nyl. apothecia striata, thallus KHO fusco-rubescens, sporae ex annotatione Nylanderii „2 (—3) : nae, incolores (demum fuscescentes raro visae), long. 0,055—0,110, crass. 0,020—0,035 mm.“], et ex Nyl. ipso, l. c. et in Hue, Lich. Exot. (1892), p. 321, forsán specie non distinguenda a *Gr. eccellente*, at habitu omnino identica cum planta nostra.

Ad corticem *Arecae catechu* et aliarum Palmarum (no. X, XVII, XL, fig. 13) ad Stationem navalem Lem Dan in insula Koh Chang.

Area: In insulis Asiae tropicae obvia.

45. **Gr.** (sect. **Eleutheroloma**) **Schmidtii** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 176.

Thallus sat crassus (crassitudine circ. 0,4—0,3 mm.), sat laevigatus, continuus, substrato adnatus, sat opacus, cinereo-aut olivaceo-glauescens, KHO superne vix distincte reagens, intus dilute rubescens, intus jodo bene caerulescens. Apothecia vulgo sparsa, vulgo elongata, long. circ. 5—1 (—0,5) mm., furcata aut dendroideo-ramosa aut pro parte simplicia, vulgo curvata flexuosave, thallo immersa aut demum parum emergentia. Perithecium dimidiatum, basi pallidum, latere superne fusco-fuli-

gineum, inferne fusco-pallidum, apertum. Discus apertus, concavus, latit. circ. 0,25—0,15 mm., leviter aut parum immersus, fusco- vel livido-nigricans, subnudus, margine proprio cinereo-nigricante vel nigricante, tenui, discum leviter superante, extus strato thallino tenui plus minusve distincte obducto, thallum leviter superante aut fere aequante cinctus. Sporae 8:nae, fuscescentes, septis transversalibus 3—5, demum submurales, long. 0,015—0,018, crass. 0,006—0,007 mm.

Perithecium superne modice incrassatum, etiam in basi maculis pallido-fuscescentibus indicatum. Hymenium circ. 0,090—0,120 mm. crassum, guttulas oleosas haud continens, jodo haud reagens. Epithecium subfuscum. Paraphyses simplices. Sporae subdistichae aut monostichae, oblongae, apicibus obtusis aut altero apice rotundato, diu 3-septatae loculisque lenticularibus, demum nonnullis loculis divisis et tunc murales septisque transversalibus 3—5, jodo parum reagentes. Habitu *Gr. diversulam* Nyl., Fl. 1886, p. 103, Lich. Jap., p. 113, in memoriam revocans (haec autem perithecio pallido a planta nostra differt). *Gr. subdiversa* Nyl., Fl. 1886, p. 103, secund. Wright, Graph. Cub., no. 48, in herb. meo, thallo endophloeode et perithecio pallido a *Gr. Schmidtii* distinguitur. Etiam sporis differunt.

Ad rupem in silva prope Stationem navalem Lem Dan in insula Koh Chang (no. VI).

46. **Gr.* (sect. *Eleutheroloma*) *persimilis* Wain. (n. subsp.).

Thallus crassus aut sat crassus (crassitudine circ. 1—0,5 mm.), sat laevigatus, continuus, substrato adnatus, sat opacus aut nitidiusculus, sordide albido-glaucescens, KHO superne et intus dilute rubescens, intus jodo bene caerulescens. Apothecia sparsa aut passim approximata, vulgo elongata, long. circ. 3—0,8 mm., furcata aut simplicia, vulgo flexuosa curvatave, thallo immersa. Perithecium fusco-fuligineum, integrum, tenue, apertum. Discus apertus, concavus, latit. circ. 0,25—0,1 mm., bene immersus, nigricans, nudus, thallo labia perithecii omnino aut fere omnino obtegente marginata, margine vulgo thallum haud superante, passim circumscisso. Sporae 8:nae, fuscae, septis transversalibus 3—5, demum submurales, long. 0,014—0,017, crass. 0,007—0,009 mm.

Perithecium totum tenue, fusco-fuligineum, integrum. Hymenium circ. 0,090—0,100 mm. crassum, guttulas oleosas haud continens, jodo haud reagens. Epithecium dilute fuscescens. Sporae monostichae, ellipsoideae, apicibus rotundatis aut obtusis, diu 3—5-septatae loculisque lenticularibus, demum nonnullis loculis in duas cellulas divisis et tunc murales, juniores jodo leviter violaceo-fuscescentes. — In *Gr. Schmidtii* transire videtur et forsan ejus variatio.

Ad saxa et rupes in cataracta in insula Koh Chang (no. XII).

Subg. II. *Graphina* (Müll. Arg.) Wain.

47. *Gr.* (sect. *Hololoma*) *Ruiziana* (Fée) Mass., Mem. Lich. (1853), p. 111; Wain., Étud. Lich. Brés. II (1890), p. 106.

Var. *gracilior* Müll. Arg., Lich. Beitr. (Fl. 1882), no. 468.

Thallus tenuis, sat laevigatus aut passim leviter verruculoso-inaequalis,

albidus aut glaucescens vel sordide albicans, sat opacus, KHO primum flavescens, dein rubescens. Apothecia vulgo sat approximata, vulgo oblonga, long. 1,2—0,5, lat. 0,3—0,2 mm., simplicia, recta aut raro leviter curvata, elevata, basi abrupta aut leviter constricta. Perithecium fuliginum, integrum, elevatum, denudatum aut saepius basi anguste vel plus minusve late amphithecio thallino tenui obductum, labiis conniventibus, clausis aut demum anguste hiantibus, laevigatis. Discus rimaeformis, inconspicuus. Sporae 8 : nae, decolores, murales, long. 0,034—0,044, crass. 0,010—0,014 mm.

Hymenium circ. 0,180—0,190 mm. crassum. Epithecium pallidum. Sporae fusiformes aut altero apice rotundato, altero apice sat acuto, halone fere nullo indutae, septis transversalibus 8—11, polystichae, jodo violaceo-caerulescentes. — Reactione thalli et apotheciis minoribus a *Gr. Ruiziana* differt et autonoma sit species (specimen orig. Müllerianum autem non vidi).

Ad corticem *Rhizophorae* prope Lem Ngob (no. XIV).

Area: *Gr. Ruiziana* praesertim in regionibus tropicis crescit.

48. **Gr. (sect. Hemiloma) subintricata** Krempelh., Fl. 1876, p. 420. *Gr. intricata* Eschw. in Mart. Fl. Bras. I (1833), p. 79; Nyl., Lich. Nov.-Gran. Prodr. (1863), p. 472 et 495, ed. 2 (1863), p. 85, Addit. (1867), p. 567, Syn. Lich. Nov. Cal. (1868), p. 72. *Graphina intricata* Müll. Arg., Rev. Lich. Eschw. (Fl. 1888), p. 510. Haud *Gr. intricata* Fée, Ess. Crypt. Exot. (1824), p. 42, Müll. Arg., Graph. Féean. (1887), p. 30 (Hue, Lich. Exot., 1892, p. 234). Haud *Gr. subintricata* Knight, Contr. Lich. New Wales (1882), p. 40 (Müll. Arg., Sert. Austral., 1895, p. 320), quae nominetur *Gr. extricata* Wain.

Thallus tenuis aut sat tenuis, sat laevigatus, albidus vel glaucescenti-albidus, sat opacus, KHO parum reagens. Apothecia vulgo sat approximata, elongata, long. 7—1, lat. 0,25—0,15 mm., ramosa aut pr. p. simplicia, vulgo flexuosa curvatave. Perithecium fuliginum, demum dimidiatum, emergens aut demum elevatum et basi vel fere totum amphithecio thallino tenui obductum vel superne anguste denudatum vel totum pruinatum, labiis conniventibus, anguste hiantibus vel clausis, demum saepe sulco uno striatis, vulgo laevigatis. Discus rimaeformis, caesio-pruinatus, conspicuus angustissimusque aut tantum linea caesio-pruinosa indicatus. Sporae 8 : nae, decolores, murales, septis transversalibus 3—2, cellulis paucis, long. 0,011—0,012, crass. 0,006 mm., jodo parum reagentes.

Thallus linea hypothallina nigricante limitatus, KHO olivaceus [in Wrighti Graph. Cub., no. 9, passim demum dilute subrubescens]. Perithecium primum integrum et basi tenue, demum dimidiatum. Hymenium circ. 0,080 mm. crassum. Epithecium decoloratum. Paraphyses simplices. Sporae distichae, ellipsoideae, apicibus rotundatis, halone vix ullo indutae, jodo parum distincte violascentes. — *Gr. intricata* Eschw. secundum annotationes Nylander in specimine orig. in herb. Nyl. sporis long. 0,014—0,022, crass. 0,007—0,009 mm., I—, septis transversalibus 3—5, cellulis paucissimis, instructa est et habitu identica plantae nostrae.

Ad corticem arboris in capite septentrionali insulae Koh Kong (no. XI).

Area: In regionibus tropicis Americae, Oceaniae et Asiae crescit.

49. **Gr. (sect. Hemiloma) simplex** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 177.

Thallus tenuis, sat laevigatus vel leviter verruculoso-inaequalis, albidus vel glaucescenti-albidus, sat opacus aut nitidiusculus, KHO primum leviter flavescens, dein rubescens. Apothecia sat approximata aut sparsa, vulgo elongata, long. 4—1, lat. 0,3—0,25 mm., simplicia, recta aut raro curvata, elevata, basi abrupta aut vulgo leviter constricta. Perithecium fuligineum, demum dimidiatum, elevatum, basi sat anguste amphithecio thallino tenui obductum, ceterum denudatum, labiis conniventibus, clausis, laevigatis. Discus rimaeformis, inconspicuus. Sporae 2:nae aut singulae, decolores, murales, long. 0,038—0,050, crass. 0,013—0,014 mm.

Hymenium circ. 0,140 mm. crassum. Epithecium fuscescens. Perithecium primum integrum, basi tenue fuligineumque, demum distincte dimidiatum basique deficiens et hypothecium tunc albidum, inferne tenuiter pallidum. Sporae oblongae, altero apice rotundato, altero obtuso, halone fere nullo obductae, septis transversalibus 9—12, cellulis sat numerosis, jodo violaceo-caerulescentes. — *Gr. Ruizianae* var. *graciliori* habitu sub-similis, at apotheciis longioribus, sporis haud 8:nis et perithecio demum dimidiato ab ea differens. *Gr. adtenuans* Nyl. in Cromb., On Collect. Lich. East As. (Journ. of Bot. 1882), p. 57, Nyl., Lich. Jap. (1890), p. 114, Sert. Lich. Lab. (1890), p. 12, apotheciis magis immersis et sporis 8:nis majoribusque a planta nostra differt.

Ad corticem *Arecae catechu* prope Stationem navalem Lem Dan in insula Koh Chang (no. X).

50. **Gr. (sect. Hemiloma) consimilis** Wain., l. c.

Thallus tenuis, sat laevigatus, albidus aut albido-glaucescens, sat opacus, KHO non reagens aut leviter diluteque rubescens. Apothecia vulgo sat approximata, vulgo oblonga, long. 2—0,6, lat. 0,3—0,25 mm., simplicia, recta aut raro leviter curvata, elevata, basi abrupta aut leviter constricta. Perithecium fuligineum, dimidiatum aut primum integrum et demum dimidiatum, elevatum, basi anguste amphithecio thallino tenui obductum, ceterum denudatum, labiis conniventibus, clausis, laevigatis. Discus rimaeformis, inconspicuus. Sporae 8:nae, decolores, murales, long. 0,028—0,040, crass. 0,010—0,011 mm.

Hymenium circ. 0,130 mm. crassum. Epithecium olivaceo-pallidum vel sordide pallidum vel fuscescens. Hypothecium pallidum. Sporae oblongae aut fusiformi-oblongae, apicibus rotundatis aut altero apice obtuso, halone fere nullo indutae, septis transversalibus 8—10, jodo violaceo-caerulescentes. — Perithecio dimidiato et reactione thalli a *Gr. Ruiziana* var. *graciliore* Müll. Arg. differt, at habitu ei consimilis. Forsan ad eandem speciem pertinent.

Ad corticem *Arecae catechu* prope Stationem navalem Lem Dan in insula Koh Chang (no. XVII).

51. **Gr.** (sect. **Thalloloma**) **concolor** Nyl., Énum. Gén. Lich. (1857), p. 129, Lich. Ceyl. (1900), p. 22 (hb. Nyl., no. 6814). *Ustalia Junghuhnii* Mont. et V. d. Bosch, Lich. Jav. (1856), p. 51 (no. 6813 et 6854 in herb. Nyl.); Mont., Syllog. Pl. Crypt. (1856), p. 352. *Graphina Boschiana* Müll. Arg., Lich. Beitr. (Fl. 1882), no. 470 (Lich. Exot. III, Hedwigia 1895, no. 138). Haud *Gr. Junghuhnii* Mont. et V. d. Bosch, Lich. Jav. (1856), p. 45; Mont., Syllog. (1856), p. 347 (secund. Müll. Arg., Lich. Beitr., no. 473).

Thallus tenuis aut sat tenuis, sat laevigatus, continuus aut rimulosus, albidus, opacus, KHO circa apothecia leviter flavescens, ceterum haud reagens. Apothecia vulgo plus minusve aggregata, vulgo elongata, partim ellipsoidea, long. circ. 7—0,5, latit. 0,5—0,2 mm., radiato-vel dendroideo-ramosa vel varie ramosa aut subsimplicia, recta aut leviter flexuosa, thallo immersa. Perithecium tenue, albidum, labiis apertis. Discus apertus, planus, latit. 0,5—0,2 mm., lividus vel caesio-cinerascens, pruinosis, margine thallode saepe demum leviter elevato aut thallum haud superante, fissura circumscisso, albido cinctus. Sporae solitariae, decolores, murales, long. circ. 0,090—0,094, crass. 0,040—0,044 mm.

Thallus linea hypothallina angusta nigricante limitatus. Discus thallo leviter immersus aut vulgo thallum aequans. Hymenium circ. 0,120 mm. crassum, haud oleosum, jodo leviter caerulescens. Epithecium olivaceum aut fuscescens. Sporae ellipsoideae aut oblongae, apicibus rotundatis, cellulis numerosissimis, jodo caeruleo-violascentes, halone fere nullo indutae.

Ad corticem *Arecae catechu* prope Stationem navalem Lem Dan in insula Koh Chang (no. X, XVII, XXI, XL, fig. 12).

Area: In insulis tropicis Asiae lecta.

52. **Gr.** (sect. **Thalloloma**) **fissurinoidea** (Nyl.) Wain. *Gr. reniformis* var. *fissurinoidea* Nyl., Énum. Gén. Lich. (1857), p. 129, Lich. Exot. (Ann. Sc. Nat., 4 sér., Bot. XI, 1859), p. 228 (no. 6940 in herb. Nyl.).

Thallus crassus aut sat crassus (circ. 1—0,2 mm.), sat laevigatus, albidus aut partim glaucescens, opacus, KHO neque superne, nec intus reagens aut dilutissime rubescens, jodo superne et intus intense caerulescens, fragilis, inferne strato hypothallino tenui nigro crebre contexto totus obductus, demum substrato saltem passim laxè adhaerens. Apothecia saepe aggregata aut approximata, vulgo elongata, pro parte ellipsoidea, long. circ. 6—0,5 mm., lat. vulgo 0,5—0,25 mm. [aut demum etiam latiora in Wright, Graph. Cub. no. 26], parce ramosa aut bene dendroideo-ramosa aut simplicia, plus minusve flexuosa aut recta, thallo immersa et demum plus minusve emergentia. Perithecium albidum. Discus apertus, planus aut primum concavus, latit. vulgo 0,5—0,1 mm., caesio-pallidus, pruinosis, margine thallode vulgo demum leviter elevato [aut rarius demum bene elevato: in Wright, Graph. Cub. no. 26], discum superante aut aequante, tenui [aut raro demum crasso: in Wright, Graph. Cub. no. 26], albo aut thallo concolore cinctus. Sporae solitariae, decolores, murales, long. circ. 0,076—0,140, crass. 0,040—0,080 mm.

Apothecia KHO rubescentia, basi sensim dilatata aut abrupta; labia hiantia, amphithecio thallino tenui obducta. Hymenium circ. 0,200 mm.

crassum, haud oleosum, jodo superne dilute caerulescens. Paraphyses simplices aut apice parce ramosae, ad latera hymenii parce ramoso-connexae. Epithecium albidum. Sporae ellipsoideae, apicibus rotundatis, cellulis numerosissimis, jodo caeruleo-violascentes, halone nullo indutae. — *Gr. reniformis* Fée, Ess. Crypt. Écorc. (1824), p. 46, secund. specim. orig. in herb. Nyl. (no. 6932) thallo adnato, KHO ferrugineo-rubescens, hypothallo indistincto instructa est (conf. Müll. Arg., Graph. Féean. p. 43). Wright, Graph. Cub. no. 23 et 26 (in herb. meo) et coll. Lindig no. 2894 (hb. Nyl. no. 6934, sub *Gr. reniformi* Nyl. in Lich. Nov.-Granat., 1863, p. 471) ad *Gr. fissurinoideam* pertinent. *Gr. hologlauca* Nyl., Fl. 1866, p. 133, ex Java (hb. Nyl. no. 7636), thallo crasso et hypothallo indistincto ab ea differt, at in specimine a Glaziou in Brasilia collecto (hb. Nyl. no. 7842, a Nyl. ad eam ducto) thallus sicut in *Gr. fissurinoidea* (KHO non reagens). *Diorygma tinctoria* Eschw. in Mart. Fl. Bras. (1833), p. 67, secund. specim. orig. in herb. Nyl. (no. 6944) thallo passim laxe adhaerente, KHO rubescens, strato hypothallino nigro subtus obducto, apotheciis thallo immersis, immarginatis a *Gr. reniformi* et *Gr. fissurinoidea* differt (ex Müll. Arg., Fl. 1888, p. 508, est *Gr. macrospora* Krempelh., Fl. 1876, p. 380) et autonoma est species *Graphidis*.

In rupe ad cataractam fluminis Klong Prao in insula Koh Chang (no. XXIX).

Area: In regionibus tropicis Americae et Asiae lecta est.

Subg. III. *Phaeographis* (Müll. Arg.) Wain.

53. *Gr.* (sect. *Platygramma*) *diversa* Nyl., Lich. Exot. (1859), p. 227 pr. p. (conf. Müll. Arg., Lich. Beitr., 1882, p. 455), Exp. Lich. Nov. Cal. (1862), p. 50, Syn. Lich. Nov. Cal. (1868), p. 74; Krempelh., Beitr. Lich. Süds. (Journ. Mus. Godeffr. IV, 1873), p. 106; Nyl., Lich. Ins. Andam. (1874), p. 16, Lich. Ins. Guin. (1889), p. 30, Lich. Jap. (1890), p. 113; Hue, Lich. Exot. (1892), p. 239, 320. *Phaeographis diversa* Müll. Arg., Lich. Beitr. (Fl. 1882), no. 455, Rev. Lich. Eschw. II (Fl. 1888), p. 522 (8). *Lecanactis diversa* Nyl., Sert. Lich. Lab. (1891), p. 11. *Solenographa confluens* Mass., Esam. Comp. Gen. Lich. (1860), p. 26; Krempelh., Flecht. Amb. (Verh. K.-K. Zool.-Bot. Ges. Wien 1871), p. 866, tab. VII (haud *Arthonia confluens* Fée, Ess. Crypt. Écorc., 1824, p. 55; conf. Müll. Arg., Graph. Féean., p. 45).

Thallus tenuis, laevigatus, albidus vel pallescenti-glauescens, sat opacus aut nitidiusculus, KHO dilute fusco-rubescens aut olivaceus. Apothecia sparsa [aut aggregata in Wright, Graph. Cub. no. 100 d), elongata aut pro parte ellipsoidea aut subrotunda, long. circ. 5—0,5, lat. circ. 0,5—0,3 mm. [—0,8 mm.: Wright, l. c.], simplicia aut parce ramosa, vulgo plus minusve flexuosa curvatave, thallo immersa et demum plus minusve emergentia elevataque, basi sensim dilatata abruptaque [aut demum constricta: Wright, l. c.]. Perithecium fuligineum, integrum, basi incrassatum, labiis tenuibus, late apertis, extus strato thallino totis obductis, discum vulgo leviter superantibus. Discus apertus, concavus aut demum planus, latit. circ. 0,4—0,2 mm. [—0,8 mm.: Wright, l. c.],

livido- aut fusco-nigricans, tenuiter caesio-pruinosis aut nudus. Sporae fuscae, vulgo 7-septatae, long. 0,024—0,030, crass. 0,007—0,008 mm.

Thallus linea nigricante angusta hypothallina limitatus. Hymenium circ. 0,120 mm. crassum, distincte oleosum, jodo vix reagens. Epithecium fusco-fuligineum. Paraphyses simplices. Sporae oblongae, apicibus obtusis aut rotundatis, halone nullo indutae, septis 6—8, loculis lenticularibus, plures in eodem asco.

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. XVII).

Area: In regionibus tropicis Americae, Oceaniae, Asiae, Africae crescit.

54. **Gr.** (sect. **Platygramma**) **Nylanderi** Wain. *Gr. subinusta* Nyl., Fl. 1886, p. 103 (no. 7983), 326, Lich. Jap. (1890), p. 114; Hue, Lich. Exot. (1892), p. 240, 321. *Lecanactis subinusta* Nyl., Sert. Lich. Lab. (1891), p. 11. Haud *Gr. subinusta* Leight., Lich. Ceyl. (1870), p. 177 (Müll. Arg., Lich. Beitr., Fl. 1882, no. 458).

Thallus sat tenuis aut crassitudine mediocris, sat laevigatus aut leviter inaequalis, albidus, opacus, KHO primum lutescens, dein rubescens, jodo caerulescens. Apothecia bene approximata, elongata aut oblonga aut ellipsoidea aut stellata radiisque 3—7 aut furcata vel dichotome ramosa aut pro parte simplicia, recta aut curvata, thallo immersa. Perithecium fusco-fuligineum, dimidiatum, basi deficiens, laterale, tenue, late apertum. Discus apertus, vulgo planus, latit. 0,35—0,2 mm., nigricans aut fusco-nigricans, nudus, margine proprio nigro tenuissimo saepe cinctus. Sporae 8:nae, distichae, fuscae, septis 5—3, long. 0,014—0,024, crass. 0,005—0,009 mm.

Thallus passim linea hypothallina nigricante angusta limitatus aut hypothallus nullus distinctus, KHO passim bene reagens, passim haud reagens (in eodem thallo reactio variabilis). Hymenium circ. 0,100—0,090 mm. crassum, guttulas oleosas continens, jodo leviter caerulescens aut non reagens. Epithecium fuscescens. Hypothecium albidum vel pallidum. Sporae oblongae aut ovoideo-oblongae, apicibus rotundatis aut altero apice angustiore obtusoque, halone nullo indutae, jodo violascentes vel caeruleo-fuscescentes, loculis lenticularibus. Thallo albido, bene evoluto (haud hypophloeode), apotheciis immersis et perithecio basi deficiente a *Gr. sex-loculari* Wain., Catal. Welw. Afr. Pl. II, P. II (1901), p. 439, differt.

Ad corticem arboris prope Lem Ngob (no. XXXII, IX).

Area: In regionibus tropicis Americae, Australiae, Asiae crescit.

55. **Gr.** (sect. **Platygramma**) **sericea** (Eschw.) Wain., Catal. Welw. Afr. Pl. II, P. II (1901), p. 439. *Leiogramma sericeum* Eschw. in Mart. Fl. Bras. (1833), p. 99. *Glyphis sericea* Nyl., Prodr. Nov.-Granat. Addit. (1867), p. 341. *Phaeographis sericea* Müll. Arg., Fl. 1888, p. 523.

Thallus tenuis, albidus aut partim stramineo-glauescens, KHO haud distincte reagens, sat laevigatus, leviter nitidus aut sat opacus. Pseudostromata haud distincta. Apothecia aggregata confluentiaque et vulgo radiato-ramosa radiisque vulgo numerosis, circ. 0,15—0,1 mm. latis, flexuosis, acervulos 3—0,8 mm. latos formantia, partim circumscissa,

thallo immersa. Perithecium fuligineum, integrum, labiis patentibus. Discus apertus, concavus aut planus, tenuissime pruinosis lividusque aut nudus fuscusque, margine proprio concolore, tenuissimo saepe cinctus. Sporae 8-nae, fuscuscentes, septis 3, long. 13—17, crass. 0,005—0,006 mm. (loculis lenticularibus).

Ad corticem *Arecae catechu* prope Stationem navalem Lem Dan in insula Koh Chang (no. X, XL, fig. 7).

Area: In regionibus tropicis Americae, Africae et Asiae distributa.

56. **Gr.** (sect. **Platygramma**) **subtigrina** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 177.

Thallus tenuis, sat laevigatus, epiphloeodes, albidus, sat opacus aut leviter nitidus, KHO primum lutescens, dein rubescens. Pseudostromata haud distincta. Apothecia aggregata confluentiaque et vulgo radiato-ramosa, radiisque vulgo numerosis, circ. 0,2—0,15 mm. latis, flexuosis, acervulos 5—2 mm. latos formantia, partim circumscissa, thallo immersa. Perithecium tenuissimum, fuligineum, aut latere fuscuscens basi pallidum, labiis patentibus. Discus apertus, concavus aut planus, tenuiter pruinosis lividusque, immarginatus aut margine thallino tenui circumscisso partim cinctus. Sporae 8-nae, fuscuscentes, septis 3, long. 0,010—0,015, crass. 0,005—0,006 mm.

Thallus jodo passim leviter violascens, haud bene reagens, hypothallus indistinctus. Hymenium circ. 0,080 mm. crassum, haud oleosum. Epithecium fuscuscens. Paraphyses simplices. Asci cylindrico-clavati, membrana tenui, apice leviter incrassata. Sporae distichae, ellipsoideae, apicibus rotundatis aut obtusis, loculis lenticularibus. — *Graphis tricosula* (Nyl.) Wain. (*Glyphis* Nyl. apud Cromb., Lich. Ins. Rodrigu., Journ. of Bot. 1877, p. 444) secund. specim. orig. (no. 7130 in herb. Nyl.) thallo albido, tenuissimo, KHO lutescente deinde fulvescente (nec rubescente) et ramis paucis apotheciorum a planta nostra differt. *Gr. tricosula* Ach. (Wain., Étud. Lich. Brés. II, p. 116) praesertim thallo glaucescente, tantum ad apothecia KHO reagentem ab ea recedit.

Ad corticem *Arecae catechu* prope Stationem navalem Lem Dan in insula Koh Chang (no. XXI).

57. **Gr.** (sect. **Platygramma**) **labyrinthica** (Ach.) Wain., Catal. Welw. Afr. Pl. II, P. II (1901), p. 439. *Glyphis* Ach., Syn. Lich. (1814), p. 107; Nyl., Énum. Gén. Lich. (1857), p. 134; Hue, Lich. Exot. (1892) p. 271 et 322. *Sarcographa* Müll. Arg., Graph. Féean. (1887), p. 62, Lich. Beitr. (Fl. 1887), no. 1100 et 1102.

Thallus tenuis, laevigatus, epiphloeodes, leviter nitidus, glaucescens vel stramineo-glaucescens, KHO leviter rubescens. Pseudostromata distincta, elevata, applanata, lateribus sensim dilatatis, extus alba, opaca, KHO primum lutescentia, dein leviter rubescentia. Apothecia in pseudostromatibus crebre aggregata confluentiaque et seriata, humida rotundata aut parcius etiam oblonga, sicca angulosa difformiaque et saepe fissuris separata circumscissaque, long. circ. 0,1—0,3, latit. circ. 0,1 mm. Perithecia fusco-fuliginea, integra, basi crassiora, partim confluentia. Discus

apertus, concavus, tenuiter pruinosis aut denudatus, margine tenui, cinereo aut albo, saepe circumscisso cinctus. Sporae 8 : nae, fusciscentes, 5-septatae, long. 0,018—0,023, crass. 0,005—0,006 mm.

Pseudostromata difformia, long. 16—1,5 mm., interdum etiam confluentia, intus alba. Perithecia labiis patentibus, in statu sicco discum, sed haud superficiem pseudostromatis, superantibus. Hymenium circ. 0,100 mm. crassum, oleosum. Epithecium fusciscentes. Sporae subdistichae, oblongae, apicibus obtusis aut rotundatis.

Ad corticem *Arecae catechu* prope Stationem navalem Lem Dan (no. XXI, X) et ad corticem arborum frondosarum prope cataractam fluminis Klong Majum (no. XXVII) in insula Koh Chang.

Area: In regionibus tropicis Americae, Africae, Asiae et Oceaniae distributa.

Subg. IV. *Scolaecospora* Wain.

58. **Gr.** (sect. **Solenographa**) **subdisserpens** Nyl., Lich. Ins. And. (Bull. Soc. Linn. Norm. 2 sér., t. VII, 1874), p. 16.

Thallus sat tenuis aut tenuis, sat laevigatus, albidus aut sordide albicans vel cinereo-albicans, sat opacus, KHO dilute flavescens et demum sat dilute, sed distincte rubescens. Apothecia dendritice ramosa et radiatim aggregata, valde elongata, long. 13—4 mm., flexuosa, thallo immersa aut demum leviter emergentia. Perithecium fusco-fuligineum, integrum, labiis laevigatis, conniventibus, basi immersis, superne denudatis nigrisque, circ. 0,25—0,1 mm. latum, apicibus sensim attenuatis. Discus rimaeformis, inconspicuus. Sporae 8 : nae, decolores, septis circ. 16—18, long. circ. 0,046—0,053, crass. 0,007—0,010 mm., jodo violascentes, halone tenui aut fere nullo indutae, loculis lenticularibus. Epithecium fusciscentes.

Ad corticem rami sicci arboris in silva prope cataractam in insula Koh Chang (no. XVI). — Hoc specimen ad f. **irregularem** Wain., apotheciis irregulariter intricatis dignotam, pertinet.

F. *arbusculaeformis* Wain.

Apothecia acervulos crebre dendroideo-radiatos, sparsos formantia, parum distincte subcinerascenti-pruinosa. Sporae septis circ. 17—20, long. circ. 0,060—0,068, crass. 0,010—0,012 mm., jodo violascentes. Thallus KHO demum bene rubescens.

Ad corticem *Arecae catechu* in insula Koh Chang (no. X).

Habitu subsimilis est *Gr. assimilis* Nyl. formae „apotheciis radiatoramosis“ Nyl., Lich. Nov.-Gran. Prodr. (1863), p. 465.

In specimine orig. *Gr. subdisserpentis* Nyl. (no. 7156 in herb. Nyl.) thallus albidus, opacus, KHO dilute, sed distincte rubescens, apothecia dendritico-ramosa, ramis longis, labiis immersis thallumque haud superantibus, laevigatis, nigris, nudis, sporae „septis 11—13, long. 0,045—0,060, crass. 0,008—0,009 mm.“ (Nyl. in sched.). In *Gr. disserpente* Nyl., Fl. 1864, p. 618, Lich. Ins. Andam., p. 16 (Müll. Arg., Graph. Féean., p. 40), secundum no. 7415 in herb. Nyl. apothecia dendritico-radiata, labiis haud striatis, sporae murales, „long. circ. 0,045, crass. circ. 0,015 mm.“ *Gr. disserpens* Wain., Étud. Lich. Brés. II, p. 123, nominetur *Gr. proserpens* Wain.

Area: *Gr. subdisserpens* in regione tropica Asiae lecta est.

59. **Gr.** (sect. **Solenographa**) **sauroidea** Leight., Lich. Amaz. et And. (Transact. Linn. Soc. Lond. XXV, 1866), p. 452 (secund. specim. orig. no. 7137 in herb. Nyl.).

Thallus sat tenuis, sat laevigatus, albidus, sat opacus, KHO haud reagens. Apothecia sat approximata, simplicia aut furcata vel parce ramosa, vulgo elongata, long. circ. 4—1 mm., curvata flexuosave, semi-immersa. Perithecium fusco-fuligineum, integrum, labiis laevigatis, conniventibus, basi strato thallino obductis, superne denudatis nigrisque, circ. 0,2—0,15 mm. latum, apicibus sat obtusis. Discus rimaeformis, inconspicuus. Sporae 8 : nae, decolores, septis circ. 10—11, long. circ. 0,032—0,043, crass. 0,007—0,008 mm., jodo violascentes.

Epithecium decoloratum. Sporae polystichae, fusiformes. — *Gr. intricata* Fée, Ess. Crypt. Écorc. (1824), p. 42 (Nyl., Lich. Ins. Andam., p. 16, Müll. Arg., Graph. Féean. p. 30), secund. specim. orig. Féeanum no. 7142 in herb. Nyl. apotheciis immersis, parum emergentibus instructa est et identica cum *Gr. assimili* Nyl. (Wain., Étud. Lich. Brés. II, p. 120). *Gr. anfractuosa* Eschw. apud Mart., Fl. Bras. (1833), p. 86, ex opinione Nylander (Prodr. Nov.-Granat. Addit., 1867, p. 329, 562) ad *Gr. sauroideam* pertinet et teste Müll. Arg., Fl. 1888, p. 512, „lirellis emersis, nudis, dorso non thallino-vestitis“ ei congruens, at secundum specimen forsitan non orig. in herb. Nyl. apotheciis immersis instructa est, quare hoc nomen adhuc dubium.

Ad corticem *Arecae catechu* prope Stationem navalem in Koh Chang (no. X, XL, fig. 3).

Area: In regionibus tropicis Americae, Oceaniae et Asiae lecta est.

60. **Gr.** (sect. **Eugraphis**) **tenella** Ach., Syn. Lich. (1814), p. 81; Nyl., Lich. Nov.-Gran. ed. 2 (1863), p. 358, Lich. Nov.-Gran. Addit. (1867), p. 329, Syn. Lich. Cal. (1868), p. 70, Fl. 1886, p. 174; Müll. Arg., Lich. Beitr. (Fl. 1882), no. 449, Graph. Féean. (1887), p. 32; Wain., Étud. Lich. Brés. II (1890), p. 121.

Var. **epiphaea** Wain.

Epithecium fuscescens. Apothecia labiis nigris, nudis, epruinosis. — Perithecium primum integrum basique tenui, demum dimidiatum basique apotheciorum deficiens. Paraphyses simplices. Sporae septis 9—14, loculis lenticularibus, long. 0,036—0,060, crass. 0,007—0,010 mm.

Ad corticem *Arecae catechu* prope Stationem navalem in Koh Chang (no. XXI).

Var. **leptocarpoides** Wain.

Epithecium fuscescens. Apothecia labiis pruinosis. — Perithecium fuligineum, dimidiatum basique deficiens, thallo immersum et thallum subaequans aut parte superiore leviter emergens aut parte inferiore amphithecio thallino anguste obductum, superne pruinatum, laevigatum. Apothecia long. vulgo 4—2 (7—1) mm., circ. 0,160 mm. lata. Sporae decolores, septis 7—5, loculis lenti-

cularibus, jodo violascentes, long. circ. 0,020—0,025, crass. 0,007—0,009 mm. In var. *epiphaeam* apotheciis epruinosis instructam transit. *Gr. Pavoniana* Fée (Müll. Arg., Graph. Féean., p. 33) secund. specim. orig. in herb. Nyl. (no. 7182) apotheciis magis elevatis a var. *leptocarpoide* differt et apotheciis basi thallo obductis, perithecio dimidiato, labiis pruinosis, laevigatis, sporis long. circ. „0,014—0,015, crass. 0,006 mm., 3-septatis, jodo violascentibus“ instructa est.

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. X).

Area: In regionibus tropicis *Gr. tenella* frequenter obvenit.

61. **Gr. (sect. Eugraphis) lineola** Ach., Lich. Univ. (1810), p. 264, Syn. Lich. (1814), p. 74, 80; Müll. Arg., Graph. Féean. (1887), p. 32. *Gr. scripta* **Gr. comma* Nyl., Syn. Lich. Nov. Cal. (1868), p. 70 (Prodr. Nov.-Gran. ed. 2 in Ann. Sc. Nat. IV sér. Bot. t. XIX, 1863, p. 112). *Gr. comma* Mass., Mem. Lich. (1853), p. 109; Hue, Lich. Exot. (1892), p. 233.

Thallus tenuis, laevigatus, albidus, sat opacus aut leviter nitidus, KHO non reagens. Apothecia approximata, simplicia aut raro furcata, elongata aut oblonga, long. circ. 0,3—1,5 (—2) mm., recta aut curvata flexuosave, vulgo immersa et thallum fere aequantia aut demum semi-immersa. Perithecium fusco-fuligineum, dimidiatum basique apothecii deficiens, latit. circ. 0,1—0,13 mm., labiis conniventibus, laevigatis, epruinosis. Discus rimaeformis, inconspicuus. Epithecium fuscescens. Sporae 8:nae, decolores, septis circ. 5—7, long. circ. 0,022, crass. circ. 0,006—0,007 mm., jodo violascentes.

Hypothecium superne decoloratum, inferne sat dilute fuscescens. Sporae oblongae, altero apice rotundato aut ambobus apicibus obtusis, halone nullo indutae, loculis lenticularibus. — Apotheciis tenuioribus et brevioribus a *Gr. tenella* Ach. differt. In specimine orig. *Gr. lineolae* ex India Occid. in herb. Ach. apothecia long. 0,5—1,2 mm., angustissima, simplicia aut raro furcata, curvata aut subrecta, immersa et thallum fere aequantia, peritheciis nigris, epruinosis, labiis demum hiantibus. In specimine *Opegraphae commatis* Ach. (Syn. Lich., p. 74) ex Guinea in herb. Ach. apothecia elevata, recta (conf. Müll. Arg., Graph. Féean., p. 32).

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. X).

Area: In regionibus tropicis Americae, Oceaniae, Asiae, Africae crescit.

62. **Gr. (sect. Eugraphis) striatula** (Ach.) Nyl., Lich. Nov.-Gran. (1863), p. 467 (excl. syn.); Krempelh., Lich. Beccar. Born. (1875), p. 36, Fl. 1876, p. 418; Müll. Arg., Lich. Beitr. (Fl. 1880) no. 139, (Fl. 1882) no. 453, (Fl. 1884) no. 818, Graph. Féean. (1887), p. 34; Hue, Addend. (1888), p. 246, Lich. Exot. (1892), p. 238, 320; Wain., Étud. Lich. Brés. II (1890), p. 122.

Gr. elegans (Sm.) Ach. (Leight., Lich. Great Brit., 3. ed., 1879,

p. 427) ab hac specie differt peritheciis latioribus, diutius thallo immersis, magis grosse striatis, striis paucioribus.

Ad corticem Arecae catechu prope Stationem navalem in insula Koh Chang (no. XXI).

Area: In regionibus tropicis Americae, Oceaniae, Asiae, Africae et in zona temperata Europae (in Lusitania) crescit.

63. **Gr.** (sect. **Eugraphis**) **ochrocheila** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 178.

Thallus tenuis, sat laevigatus, pallidus aut olivaceo-pallidus, sat nitidus, KHO dilute fusco-rubescens. Apothecia sparsa, simplicia aut raro furcata, elongata, long. circ. 15—2 mm., latit. vulgo 1,1—0,9 (raro —0,5) mm., recta aut curvata flexuosave, elevata, basi bene constricta. Perithecium fusco-fuligineum, dimidiatum, labiis conniventibus, laevigatis, crassis, superne e strato crasso, albido-pallescente, KHO sat dilute fusco-rubescente formatis. Discus rimaeformis, inconspicuus. Sporae 8:nae, decolores, 3-septatae, long. 0,014—0,016, crass. 0,005—0,006 mm.

Hypothecium album, inferne jodo caerulescens. Hymenium circ. 0,120 mm. crassum. Epithecium fuscescens. Sporae irregulariter monostichae, oblongae, altero apice rotundato, altero obtuso, halone nullo indutae, loculis lenticularibus, jodo haud reagentes aut vinose rubentes. — Valde affinis est *Graphidi Afzelii* Ach., Syn. Lich. (1814), p. 85, Nyl., Prodr. Nov.-Gran. Addit. (1867), p. 563, Syn. Lich. Nov. Cal. (1868), p. 75, Sert. Lich. Lab. (1891), p. 23, Müll. Arg., Graph. Féean. (1887), p. 37, Fl. 1888, p. 511, Wain., Étud. Lich. Brés. II (1890), p. 124, Catal. Welw. Afr. Pl. II, P. II (1901), p. 441 (*Dyplolabia Afzelii* Mass., Neag. Lich. 1854, p. 6), at ab ea distinguenda. In *Gr. Afzelii* apothecia alba, nec pallida, breviora et vulgo angustiora, KHO non reagentia, sporae majores et thallus KHO non reagens aut tantum dilutissime et vix distincte violascens, et stratum album labia fuliginea apotheciorum in parte superiore intus et vulgo etiam extus obducens.

Ad truncos arborum prope Cataractam magnam in insula Koh Chang maculas pedales formans (n. III).

64. **Gr.** (sect. **Fissurina**) **glaucocinerea** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 178.

Thallus sat crassus aut crassitudine mediocris, substrato partim laxè affixus et in pustulas rugasque elevatus, glauco-cinereus, opacus, KHO non reagens. Apothecia sparsa, simplicia aut raro furcata, vulgo elongata, long. circ. 10—0,5 mm., vulgo flexuosa curvatave. Perithecium tenue pallidumque, at in parte superiore parathecii crassius et pallido-fuscescens, labiis apertis hiantibusve, amphithecio thallino rugam circ. 0,4—0,7 mm. latam, plus minusve elevatam, basi sensim dilatatam aut rarius abruptam constrictamve formante obductis. Discus concavus, impressus, latit. circ. 0,15 mm., rufus, epruinosis. Sporae decolores, septis 15—17, long. 0,030—0,048, crass. 0,006—0,008 mm., jodo violascentes.

Thallus subtus pallidus. Hymenium circ. 0,120 mm. crassum. Epithecium sordide fuscescens (dilute aut intense). Paraphyses simplices. Sporae oblongae, apicibus obtusis aut rotundatis, halone nullo indutae,

8:nae, ut videtur. — Habitu omnino similis est *Gr. Balbisinae* Nyl., Sert. Lich. Lab. (1891), p. 42 (Hue, Lich. Exot., 1892, p. 243, 321, Müll. Arg., Lich. Exot. IV in Hedwigia 1895, p. 144), at sporis minoribus ab ea differens. *Gr. Balbisina* in Mexicana lecta est (no. 7725 in herb. Nyl.) et sporis long. 0,060—0,100, crass. 0,011 mm. describitur. Ad *Fissurinam Gr. glaucocinerea* rectius pertinet, ut apothecia bene evoluta ostendunt, at in apotheciis plurimis, quae male evoluta sunt, labia clausa.

Ad corticem vetustum pali lignei in capite septentrionali insulae Koh Kong (no. VIII).

65. **Gr.** (sect. **Fissurina**) **pyrrhocheila** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 179.

Thallus sat tenuis, leviter verruculoso- vel ruguloso-inaequalis, albidus, opacus, KHO primum lutescens, dein rubescens. Apothecia sat approximata, simplicia aut raro furcata, vulgo elongata, long. circ. 4—2 (—0,8) mm., latit. circ. 0,5 (0,6—0,4) mm., flexuosa curvatave aut pr. p. recta. Perithecium sat tenue, dimidiatum basique apothecii deficiens, fuligineum, KHO purpureo-fuligineum, labiis apertis hiantibusve, latere amphithecio thallino, crassitudine mediocri, basi abrupto aut leviter constricto et saepe fissura circumscisso obductis, superne anguste denudatis, tenuiter pruinosis, laevigatis. Discus concavus aut planiusculus, impressus, latit. circ. 0,25—0,15 mm., livido- vel subcaesio-pruinosis. Sporae decolores, septis 10—13, long. 0,040—0,046, crass. 0,008—0,012 mm., jodo violascentes.

Thallus linea hypothallina nigricante angustissima passim limitatus. Apothecia modice elevata, apicibus attenuatis aut raro obtusis. Hypothecium fulvescens, KHO purpureo-rubescens. Epithecium fuscescens, KHO non reagens. Paraphyses simplices. Hymenium circ. 0,140 mm. crassum, guttulas oleosas abundanter continens. Sporae numero in ascis variantes, 2:nae, 4:nae et verisimiliter etiam 8:nae (6 sporas in eodem asco observavi), saepe halone 0,002 mm. crasso indutae.

Ad corticem arboris prope Stationem navalem Lem Ngob (no. IX).

66. **Gr.** (sect. **Glyphis**) **cicatricosa** (Ach.) Wain., Étud. Lich. Brés. II (1890), p. 127. *Glyphis cicatricosa* Ach., Syn. Lich. (1814), p. 107. *Gl. favulosa* Ach., l. c.

Var. **confluens** (Zenk.) Wain., l. c.

Ad corticem *Arecae catechu* prope Stationem navalem Lem Dan in insula Koh Chang (no. X, XVII, XXI), prope Stationem navalem Lem Ngob (no. IX).

Area: *Gr. cicatricosa* in regionibus tropicis Americae, Oceaniae, Asiae, Africae, et in zona temperata Asiae (in China) et Europae (in Lusitania) crescit.

2. *Opegrapha* (Humb.) Wain.

67. **O.** **subvulgata** Nyl., Fl. 1869, p. 71; Hue, Lich. Exot. (1892), p. 253; Wain., Catal. Welw. Afr. Pl. II, P. II (1901), p. 442. *O. vulgata*

Nyl., Syn. Lich. Nov. Cal. (1868), p. 56, teste auctore ipso (no. 6782 in herb. Nyl.).

Thallus tenuis, albidus aut cinereo-glauescens, linea nigricante hypothallina angusta limitatus. Apothecia long. circ. 0,5—0,3 mm., latit. 0,12—0,1 mm., simplicia aut pro parte furcata, nigra, nuda, opaca, sat approximata aut sparsa, leviter elevata. Perithecium fuligineum, integrum, labiis conniventibus. Sporae 8 : nae, decolores, aciculares aut fusiformi-aciculares, apicibus attenuatis acutisque, septis circ. 7—8, long. 0,026—0,040, crass. 0,003—0,006 mm.

Hymenium jodo leviter vinose rubens. Asci obovoideo-clavati, long. 0,050, crass. 0,020 mm. Ex annotationibus Nylanderii in herb. suo sporae long. 0,025—0,036, crass. 0,0035—0,0045 mm., 7-septatae, fusiformi-aciculares et pycnoconidia recta, cylindrica, long. 0,004 mm.

Ad corticem *Rhizophorae* prope Stationem navalem Lem Ngob (no. XIV).

Area: In regionibus tropicis Americae, Oceaniae et Asiae obvenit.

68. *O. robusta* Wain. (n. sp.).

Thallus tenuis aut tenuissimus, sat laevigatus, albidus, opacus, linea hypothallina nigricante circ. 1 mm. lata limitatus. Apothecia vulgo sparsa, elevata, partim elongata, long. 7—0,8 mm., latit. 0,5—0,35 mm., simplicia aut interdum approximata, ut ramosa videntur, recta aut leviter curvata, basi constricta, atra, leviter nitida. Perithecium integrum, fuligineum, labiis arcte conniventibus, laevigatis. Discus rimaeformis, inconspicuus. Hymenium jodo vinose rubens. Epithecium decoloratum. Paraphyses ramoso-connexae. Asci clavati. Sporae incognitae.

Planta adhuc defecte cognita, sporis haud visis. Herbario Nyl. deest.

Ad corticem arboris in silva prope flumen Klong Sarlakpet (no. XXVI).

3. *Chiodecton* (Ach.) Wain.

69. *Ch.* (subg. *Enterographa*) *pallidellum* (Nyl.) Wain. *Platygrapha pallidella* Nyl., Fl. 1867, p. 5 (no. 4622 in herb. Nyl.); Krempelch., Reis. Novar. Flecht. (1870), p. 108.

Var. *olivaceo-straminea* Wain.

Thallus stramineus. Apothecia disco olivaceo. — Thallus tenuis, sat laevigatus, continuus aut dispersus, crebre contextus, opacus, $\text{Ca Cl}_2 \text{O}_2$ non reagens, hypothallo indistincto. Apothecia thallo immersa, demum leviter elevata, approximata, vulgo elongata, long. circ. 1,5—0,3 mm., simplicia aut furcata, flexuosa aut curvata. Discus olivaceus, epruinosis, latit. vix 0,1 mm., thallo marginatus. Hypothecium albidum. Sporae 8 : nae, decolores, fusiformi-aciculares, apicibus attenuatis acutisque aut rarius obtusis, septis 7—9 aut pluribus, loculis cylindricis (lumine cellularum cubico), halone nullo indutae, long. 0,028—0,034, crass. 0,003—0,0045 mm.

Pseudostromata nulla distincta. Perithecium indistinctum. Hymenium circ. 0,060 mm. crassum. Epithecium lutescenti-pallidum. Asci obovoideo-clavati, long. circ. 0,046—0,050 mm., crass. 0,016 mm., membrana haud aut parum incrassata. Thallus gonidiis chroolepoideis, ut videtur.

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. X).

Var. **perpallida** Wain. *Platygrapha pallidella* Nyl., Fl. 1867, p. 5.

Thallus continuus, stramineo-albidus. Apothecia conferta, disco pallido aut raro pallide olivaceo-fuscescente.

Var. **olivaceo-alba** Wain.

Thallus dispersus aut subdispersus, albidus. Apothecia disco olivaceo-fuscescente aut pallide olivaceo-fuscescente aut fusco. — „Thallus KHO non reagens et sporae long. 0,025—0,030, crass. 0,003 mm.“ secundum annotationem Nylanderii in herb. suo. Ad Simonsaki in Japonia legit E. Almquist („*Stigmatidium pallidellum*“ Nyl.).

Huic speciei habitu subsimilia sunt: *Ch. anguinellum* (Nyl.) Wain. (*Stigmatidium* Nyl., Prodr. Nov.-Gran. ed. 2, 1863, p. 96, Lich. Jap., 1890, p. 84) et *Ch. praepallens* (*Stigmatidium* Nyl., Lich. Jap., 1890, p. 84, Lich. Ceyl., 1900, p. 19) et *Ch. elegantulum* (*Stigmatidium* Nyl., Fl. 1886, p. 104), quorum posterius autem sporis ovoideis, 3-septatis ab ea differt.

Area: *Ch. pallidellum* in regionibus tropicis Oceaniae et Asiae crescit.

70. **Ch.** (subg. **Stigmatidiopsis**) **subsphaerale** Nyl. in Nyl. et Cromb., On Collect. Lich. East As. (in Journ. of Bot., 1882), p. 59.

Thallus crassitudine mediocris, creberrime contextus, opacus, superficie granulosa aut partim verruculosa, hypothallo nullo distincto. Pseudostromata elevata, rotundata aut rarius ellipsoidea aut confluentia, convexa, basi constricta, albida, intus fusco-nigricantia. Hypothecium fusco-nigricans. Disci rotundati aut diffformes, nigri, epruinosi. Sporae decolores, aciculares, 3-septatae, long. circ. 0,020—0,026, crass. circ. 0,0025 mm.

Pseudostromata in parte exteriori gonidia continentia et crebre contexta, hymenia vulgo numerosissima aut raro solitaria continentia. Hypothecium KHO non reagens. Hymenium parte superiore olivaceo-fuscescens aut fuscescens aut totum smaragdulum, jodo caerulescens deindeque vinose rubens. Sporae 8-nae, aciculares, apicibus attenuatis. — Specimen hic descriptum ob thallum granulosum ad *Ch. subsphaerale* pertinens, sporis longioribus magis cum *Ch. sphaerali* Ach. congruens. In specimine orig. *Ch. subsphaeralis* sporae long. 0,016—0,017, crass. 0,035 mm., 3—5-septatae, at sine dubio in hac specie magis variabiles sunt. *Ch. sphaerali* item habitu simile est *Ch. subordinatum* Nyl., Fl. 1864, p. 618, Prodr. Nov.-Granat. Addit. (1867), p. 352 (574), secund. specim. no. 4525 in herb. Nyl. Haec omnia verisimiliter transeunt.

Ad corticem vetustum trunci arboris in insula Koh Chang (no. XXXIX).

Area: In regione tropica Asiae obvenit.

4. *Arthonia* (Ach.) Wain.

71. *A.* (subg. *Arthothelium*) *Ruana* Mass., Ric. Aut. Lich. Crost. (1852), p. 49; Willey, Syn. Arth. (1890), p. 52. *A. Ruana* Anzi, Lich. Exs. It. Sup. (1865), no. 383 (no. 5660 in herb. Nyl.). *Dermatina Ruana* Almqu., Mon. Arth. Scand. (1880), p. 8.

Thallus tenuis, laevigatus, albidus, continuus, epiphloeodes. Apothecia rotundata aut difformia confluentia, aggregata aut approximata, long. 0,2—1 mm., latit. 0,2—0,5 mm., disco plano aut depresso-convexo, thallum aequante aut leviter superante, primum fragmentis thallinis sparsis obducta, dein nuda nigraeque. Hypothecium albidum vel pallidum. Hymenium jodo intense persistenter caerulescens, ascis dilute violascentibus. Epithecium fusco-fuligineum. Asci obovoidei, parte superiore pachydermatici, long. circ. 0,060 mm., crass. circ. 0,030 mm. Sporae 8:nae, decolores, ellipsoideae aut oblongae aut ovoideae, murales, seriebus cellularum transversalibus 10—9, jodo leviter vinose rubentes, halone nullo indutae, apicibus rotundatis aut altero apice rotundato-obtuso, long. 0,020—0,023, crass. 0,009—0,010 mm.

Ad corticem *Rhizophorae* prope Stationem navalem Lem Ngob (no. XIV).

Ab hac *A. anastomosans* (Ach.) Nyl., Lich. Scand., p. 259 (Willey, Syn. Arth., p. 53), secund. no. 5640 in herb. Nyl. thallo hypophloeode et „gelatina hymeniali jodo vinose rubente“ distinguitur. Etiam in specimen Anziano *A. Ruanae* (Anzi, l. c. no. 383) hymenium jodo caerulescens. *A. abnormis* (Ach.) Nyl., Syn. Lich. Nov. Cal., p. 64, Willey, Syn. Arth., p. 53 (Müll. Arg., Graph. Féean., p. 60), habitu huic congruens, observante Nyl. reactione jodetica ab ea differt (no. 5746 in hb. Nyl.).

Var. *phaeospora* Wain.

Sporae demum fuscесcentes, long. 0,020—0,024, crass. 0,008—0,012 mm., murales, jodo leviter vinose rubentes. Hymenium jodo caerulescens. Hypothecium albidum vel pallidum.

Ad corticem *Arecae* prope Stationem navalem in insula Koh Chang (no. X).

Area: *A. Ruana* in Europa et Asia crescit.

72. *A.* (subg. *Euarthonia*) *complanata* Fée, Ess. Crypt. Écorc. (1824), p. 54; Wain., Étud. Lich. Bres. II (1890), p. 154; Willey, Syn. Arth. (1890), p. 40.

Thallus albidus, opacus, continuus. Apothecia anguloso-rotundata aut difformia, long. 1,2—0,3 mm., latit. 0,7—0,3 mm., crass. circ. 0,080 mm., disco nigro, epruinoso, opaco, plano. Hypothecium pallidum. Hymenium et hypothecium jodo persistenter caerulescentia. Epithecium fuscесcens aut olivaceo-fuscесcens. Asci subglobosi aut pyriformi-subglobosi, long. 0,035, crass. 0,030 mm. Sporae 8:nae, decolores, 5-septatae, cellula apicis crassioris cellulis medianis triplo longiore, etiam cellula apicis tenuioris medianis longiore, long. 0,023—0,025, crass. 0,007—0,008 mm.

Ad corticem *Arecae* prope Stationem navalem in insula Koh Chang (no. XL, fig. 6).

Area: In regione tropica et in vicinis partibus zonae temperatae in America et in Asia crescit.

73. **A.** (subg. **Euarthonia**) **stenographella** Nyl., Lich. Nov.-Granat. (1863), p. 496 (82), ed. 3 (1863), p. 99 (Syn. Lich. Nov. Cal., 1868, p. 61), Lich. Jap. (1890), p. 85 (in Lich. Ceyl., 1900, p. 19, descriptio haud congruens: „gelatina hymenialis caerulescens, dein mox vinose rubens“).

Thallus tenuis, epiphloeodes, albidus, sat opacus, laevigatus, continuus, linea hypothallina nigricante limitatus. Apothecia approximata, thallo immersa, simplicia aut ramosa, vulgo elongata, long. circ. 1—0,3 mm., latit. 0,2—0,1 mm., saepe flexuosa, apicibus obtusis aut acutis. Discus planus, fuscus aut fusco-nigricans, nudus. Hypothecium albidum aut pallidum. Hymenium jodo persistenter caerulescens, ascis dilute violascentibus. Epithecium rufescens. Sporae 8:nae, decolores, ovoideo-oblongae, 3-septatae, cellula apicis crassioris reliquis duplo longiore, long. circ. 0,015 mm., crass. 0,006 mm.

Hymenium circ. 0,060—0,070 mm. crassum. Asci obovoidei, parte superiore membrana sat bene incrassata, long. circ. 0,038—0,030, crass. circ. 0,020—0,016 mm. Sporae jodo violascentes. In specimine orig. *A. stenographellae* in herb. Nyl. apothecia magis ramosa („dendritico-ramosa“) sunt. *A. varia* (Ach.) Nyl., Lich. Nov.-Granat. (1863), p. 496, Syn. Lich. Nov. Cal. (1868), p. 60 (Müll. Arg., Graph. Féean., 1887, p. 54, Willey, Syn. Arth., 1890, p. 14), thallo minus evoluto ab ea distinguitur. In *A. variella* Nyl., Fl. 1886, p. 104, secund. annotationes Nylander in herb. suo (no. 5371) „sporae long. 0,012—0,014 mm., crassit. 0,005—0,006 mm., 3-septatae, ovoideo-oblongae, cellula apicali reliquis duplo longiore, et gelatina hymenialis jodo caerulescens deindeque vinose rubens“ (a Willey in Syn. Arth., 1890, p. 14, inexacte descripta est).

Ad corticem arboris prope Stationem navalem Lem Ngob (n. IX).

Area: In America et Asia lecta est.

74. ***A. obscurata** Wain. (n. subsp.).

Thallus tenuis, epiphloeodes, albidus, sat opacus, laevigatus, continuus, linea hypothallina nigricante limitatus. Apothecia approximata, thallo immersa, ramosa aut rarius simplicia, elongata aut anguloso-rotundata aut subradiata difformiave, long. circ. 1,5—0,2 mm., latit. 0,5—0,1 mm., saepe flexuosa, apicibus obtusis aut acutis. Discus planus, fuscus aut fusco-nigricans, nudus. Hypothecium albidum aut pallidum. Hymenium jodo persistenter caerulescens, ascis demum vinose rubentibus. Epithecium rufescens. Sporae 8:nae, primum decolores, demum fuscescentes, ovoideo-oblongae, 3-septatae, cellula apicis crassioris reliquis duplo longiore, long. 0,016—0,017, crass. 0,005—0,006 mm.

Gonidia chroolepoidea. Hypothecium jodo persistenter caerulescens. Hymenium circ. 0,050 mm. crassum. Epithecium KHO olivaceum. Asci obovoidei, parte superiore membrana bene incrassata, long. circ. 0,034, crass. circ. 0,016 mm. — Sporis demum obscuratis ab *A. stenographella* differt.

Ad corticem *Rhizophorae* prope Stationem navalem Lem Ngob (no. XIV).

75. *A.* (subg. *Euarthonia*) *rhizophorae* Wain. (n. sp.).

Thallus tenuis, epiphloeodes, albidus, sat opacus, laevigatus, continuus, linea hypothallina nigricante limitatus. Apothecia approximata, thallo immersa, ramosa aut rarius simplicia, elongata aut subradiata aut difformia, long. 1,2—0,3 mm., latit. 0,4—0,1 mm., saepe flexuosa, apicibus obtusis aut acutis. Discus planus, nigricans aut fusco-nigricans, nudus. Hypothecium albidum aut pallidum. Hymenium jodo persistenter caerulescens, ascis demum leviter violascentibus. Epithecium fuscum. Sporae 8:nae, decolores, ovoideo-oblongae, septis 3—4, cellula apicis crassioris reliquis duplo longiore, long. 0,016—0,020, crass. 0,005—0,006 mm.

Hypothecium jodo intense persistenter caerulescens. Hymenium circ. 0,060 mm. crassum, jodo intense persistenter caerulescens, ascis leviter caerulescentibus, dein leviter violascentibus. Asci obovoidei, long. circ. 0,040, crass. 0,020 mm., parte superiore membrana incrassata. Sporae vulgo 3-septatae, parcius 4-septatae, halone nullo indutae, jodo vinose rubentes. — *A. radiata* (Pers.) Th. Fr. thallo hypophloeode et cellulis aequalibus sporarum differt ab hac specie, quae magis affinis est *A. variae* (Ach.) Nyl., sporis partim 4-septatis et thallo magis evoluto ab ea recedens.

Ad corticem *Rhizophorae* prope Stationem navalem Lem Ngob (no. XIV).

76. *A.* (subg. *Euarthonia*) *perpallens* Nyl., Lich. Nov.-Granat., ed. 2 (1863), p. 100 (no. 5368 in herb. Nyl.), Fl. 1867, p. 7, Lich. Jap. (1890), p. 85; Willey, Syn. Arth. (1890), p. 4.

Thallus tenuis, epiphloeodes, albidus, opacus, sat laevigatus, hypothallo nullo distincto. Apothecia sparsa, rotundata, diam. 0,7—0,3 mm., aut rarius difformia, plana aut depresso-convexa, immersa aut emergentia. Discus pallidus, nudus. Hypothecium albidum. Hymenium jodo vinose rubens. Epithecium pallidum, granulose. Sporae 8:nae, decolores, ovoideo-oblongae, 3-septatae, cellulis aequalibus, long. 0,014—0,017, crass. 0,0045—0,005 mm.

Hymenium circ. 0,060 mm. crassum, jodo haud caerulescens. Asci obovoidei, long. circ. 0,034, crass. circ. 0,016 mm., parte superiore membrana incrassata. Sporae ovoideo-oblongae, apicibus rotundatis.

Ad corticem arboris prope Stationem navalem Lem Ngob (no. IX). Ad corticem *Rhizophorae* eodem loco (no. XIV).

Area: In orientalibus et meridionalibus partibus Asiae provenit.

77. **A.** (subg. **Euarthonia**) **ochrodes** Nyl., Fl. 1886, p. 104 (no. 5597 in herb. Nyl.); Willey, Syn. Arth. (1890), p. 10.

Thallus tenuissimus, epiphloeodes, albidus aut albido-cinereus aut pallidus, opacus, sat laevigatus, hypothallo nullo distincto. Apothecia approximata et parce etiam aggregata, anguloso-rotundata aut ellipsoidea, long. 0,5—0,1 mm., latit. 0,2—0,1 mm., disco plano aut planiusculo, ferrugineo-fuscescente, nudo aut plus minusve ochraceo-pruinoso, margine tenui, ochraceo-pruinoso. Hypothecium electrino-lutescens. Hymenium jodo caerulescens, dein vinose rubens. Epithecium electrino-lutescens, granulosum, KHO violascens aut rubescens. Sporae 8:nae, primum electrino-lutescentes, demum fuscescentes, ovoideo-oblongae, 3-septatae, cellula apicis crassioris reliquis duplo vel triplo longiore, long. 0,015—0,018, crass. 0,005—0,008 mm.

Gonidia chroolepoidea, diam. circ. 0,006 mm. Perithecium (et margo) tenue, sub microscopio electrino-lutescens, KHO violascens rubescensve. Hymenium circ. 0,060 mm. crassum, dilute electrinum. Asci obovoideo-clavati, parte superiore membrana bene incrassata, long. circ. 0,034, crass. circ. 0,014 mm. Sporae apicibus rotundatis. — Huic speciei proxime affinis est *A. elegans* (Ach.) Almqu., Mon. Arth. Scand. (1880), p. 19, Willey, Syn. Arth. (1890), p. 9 (*A. ochracea* Duf., Rev. Opegr., 1818, p. 8), quae praesertim reactione jodetica hymenii ab ea differt.

Ad corticem *Arecae* prope Stationem navalem in insula Koh Chang (no. X). Ad corticem arboris prope Stationem navalem Lem Ngob (no. XXXII).

Area: In partibus tropicis Americae et Asiae lecta.

II. *Pyrenolichenes*.

1. *Bottaria* (Mass.) Wain.

78. **B.** (subg. **Anthracotheций**) **libricola** (Fée) Wain., Lich. Antill. (1896), p. 31. *Pyrenula* Fée, Ess. Crypt. Écorc. Suppl. (1837), p. 82; Müll. Arg., Rev. Lich. Mey. (Jahrb. K. Bot. Gart. Berl. II, 1883), p. 318. *Verrucaria* Nyl., Syn. Lich. Nov. Cal. (1868), p. 87, Lich. Lab. (1891), p. 16; Hue, Lich. Exot. (1892), p. 288. *Anthracotheций libricolum* Müll. Arg., Pyr. Cub. (Engl. Bot. Jahrb. VI, 1885), p. 415, Pyr. Féean. (Mém. Soc. Phys. et Hist. Nat. Genève XXX, 1888), p. 36.

Thallus macula pallida aut glauco-pallescente indicatus. Perithecium fuligininum, integrum, globosum, latit. 0,5—0,3 mm., immersum, apice elevato, nigricante aut cinereo-nigricante. Sporae 8:nae, distichae, olivaceo-fuscescentes, murales, seriebus transversalibus cellularum 10—6, medianis 4 cellulas continentibus, long. 0,025—0,044, crass. 0,011—0,014 mm. Paraphyses parce ramoso-connexae aut simplices.

Ad truncum arboris in silva littorali in insula Koh Kahdat (no. XXXV) et prope Stationem navalem Lem Ngob (no. IX).

Area: In regionibus tropicis Americae, Africae, Asiae, Oceaniae provenit.

79. **B.** (subg. **Anthracothecium**) **parameroides** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 179.

Thallus endophloeodes, pallidus aut glauco-pallescent, leviter nitidus. Apothecia primum thallo substratoque immersa, dein emergentia et verrucas 0,4—0,25 mm. latas, hemisphaericas, subnudas nigrasque aut tenuissime thallodice velatas, vertice convexas formantia. Perithecium globosum, fuligineum, integrum, sat tenue. Sporae 8 : nae, distichae, ellipsoideae aut oblongae, apicibus vulgo rotundatis, olivaceo-fuscescentes, primum 4—5-septatae loculisque lenticularibus, demum submurales, seriebus cellularum transversalibus 6—5, seriebus medianis 2 cellulas continentibus, long. 0,018—0,021, crass. 0,008—0,010 mm.

Nucleus guttulas oleosas haud continens. Paraphyses simplices aut parce ramoso-connexae. — Habitu similis est *B. libricolae* (Fée) Wain. et *B. paramerae* (*Verrucaria* Nyl. in Cromb., Lich. Chall. Exp., p. 227, Nyl., Lich. Ceyl., p. 24), quae sporis majoribus ab ea differunt.

Ad corticem arboris prope Stationem navalem Lem Ngob (no. XXXII).

80. **B.** (subg. **Anthracothecium**) **rosea** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 179.

Thallus tenuis, roseus, h. e. albidus et pruina tenui rubra inspersus, opacus, linea hypothallina nigricante limitatus. Apothecia approximata, verrucas 0,2 mm. latas, conoideo-hemisphaericas, majore minoreve parte strato tenuissimo thallino rubro obductas, parte superiore demum plus minusve denudatas nigricantesque, vertice conoideas convexasve formantia. Perithecium hemisphaericum, fuligineum, integrum, basi haud dilatatum. Sporae 8 : nae, monostichae, ellipsoideae aut subgloboso-ellipsoideae, nigricantes, submurales, septis transversalibus 2, cellulis paucis, long. 0,007—0,008, crass. 0,004—0,005 mm.

Paraphyses tenues, simplices. Asci cylindrici, membrana tenui. Nucleus albidus, guttulas oleosas non continens. — *B. ochrotropa* (Nyl.) Wain., Étud. Lich. Brés. II (1890), p. 197, apotheciis et sporis majoribus ab hac specie differt. *B. albescens* (Nyl.) Wain. **B. subochracea* (Nyl.) Wain. (Cromb., Lich. Chall. Exp., 1878, p. 227) ei item valde affinis est, at sporis et materia rubra minus evoluta differens. *B. coccinea* (Müll. Arg.) Wain. (Müll. Arg., Lich. Exot. II, 1893, p. 136) perithecio subgloboso et sporis majoribus et *B. palmarum* (Krempelh.) Wain. (Krempelh., Beitr. Lich. Süds., 1873, p. 109) sporis majoribus ab ea distinguuntur.

Ad corticem arboris in capite septentrionali insulae Koh Kong (no. XI).

81. **B.** (subg. **Anthracothecium**) **denudata** (Nyl.) Wain. *Verrucaria denudata* Nyl., Énum. Gén. Lich. (1857), p. 139 (herb. Nyl.: no. 1086 e Nova Caled., no. 1088 e Ceyl.), Lich. Îles Mend. (Mém. Soc. Sc. Nat. Cherb. V, 1857) p. 302, Exp. Syn. Pyrenoc. (Mém. Soc. Ac. Maine-et-Loire IV, 1858), p. 49, Fl. 1867 p. 196, Syn. Lich. Nov. Cal. (1868) p. 90 (excl. var.), Lich. Andam. (1874), p. 21, Lich. Jap. (1890), p. 115, Sert. Lich. Lab. (1891), p. 15, Lich. Ceyl. (1900), p. 25; Nyl. et Cromb., On Collect. Lich.

East As. (Journ. of Bot. 1882), p. 60; Hue, Lich. Exot. (1892), p. 292 (excl. var.). *Anthracothecium denudatum* Müll. Arg., Lich. Afr. Occ. (Linnaea 1880), p. 45, Rev. Lich. Eschw. (Fl. 1884), p. 9, Lich. Beitr. (Fl. 1884) no. 818.

Thallus tenuis, albidus, laevigatus, leviter nitidus, KHO non reagens, linea hypothallina nigricante angusta limitatus. Apothecia sat approximata, verrucas 0,4—0,3 mm. latas, hemisphaericas, nigras, nudas, vertice convexas formantia. Perithecium hemisphaericum, integrum, basi haud dilatatum. Nucleus depresso-subglobosus, basi rotundata. Sporae 8:nae, monostichae aut subdistichae, ellipsoideae aut parcius subglobosae, nigricantes, murales, septis transversalibus 3, cellulis paucis, long. 0,012—0,018 (—0,010), crass. 0,007—0,011 mm.

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. X, XXI). Ad corticem arboris prope Stationem navalem Lem Ngob (no. XXXII). — *Verr. denudata* Nyl. tantum pro parte huc pertinet.

Area: In regionibus tropicis Oceaniae, Asiae, Africae, Americae.

82. **B.** (subg. *Anthracothecium*) **confinis** (Nyl.) Wain. *Verrucaria confinis* Nyl., Addit. Fl. Chil. (Ann. Sc. Nat. 4 sér. Bot. III, 1855), p. 174 (secund. specim. orig. no. 1097 in herb. Nyl.), Exp. Syn. Pyrenoc. (1858), p. 49, Exp. Lich. Nov. Cal. (Ann. Sc. Nat. 4 sér. Bot. XV, 1861), p. 52, Fl. 1867 p. 196, Syn. Lich. Nov. Cal. (1868), p. 90 (no. 1095 e Lifu, Depl., in herb. Nyl.); Hue, Lich. Exot. (1892), p. 292. *Anthracothecium confine* Müll. Arg., Lich. Afr. Occ. (1880), p. 45.

Thallus tenuis, albidus, KHO non reagens, sat laevigatus, sat opacus aut leviter nitidus, linea hypothallina nigricante angusta limitatus. Apothecia sat approximata aut sparsa, verrucas 0,4—0,3 mm. latas, hemisphaericas, cinerascens vel cinereo-nigricantes, strato tenuissimo thallino obductas, interdum partim denudatas, vertice convexas formantia. Perithecium depresso-subglobosum vel fere potius hemisphaericum, lateribus subrotundis, basi haud dilatatum. Nucleus depresso-subglobosus, basi rotundata. Sporae 8:nae, monostichae, ellipsoideae aut parcius subglobosae, nigricantes, murales, septis transversalibus 3, cellulis paucis, long. 0,011—0,017, crass. 0,007—0,012 mm.

Paraphyses simplices. Asci cylindrici, membrana tenui. — Tantum apotheciis inconstanter thallodice obductis a *B. denudata* differt et in eam transire videtur.

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. X). Ad corticem arboris prope Stationem navalem Lem Ngob (no. IX).

Area: In regionibus tropicis Americae, Oceaniae et Asiae obvia.

2. *Pyrenula* (Fée) Wain.

83. **P.** (subg. *Melanotheca*) **subaggregata** Müll. Arg., Pyrenoc. Cub. (Engl. Bot. Jahrb. VI, 1885), p. 410, Lich. Beitr. (Fl. 1887) no. 1212.

Thallus tenuis, olivaceo-pallescent aut olivaceus, sat laevigatus, leviter nitidus, hypothallo nullo distincto aut partim linea hypothallina nigricante limitatus. Apothecia pro parte simplicia approximataque, pro parte 2—3 (—4) confluentia, verrucas depresso-hemisphaericas, (simplices) 0,4—0,6 mm. latas, primum tenuissime thallodice subhyalino-velatas, demum denu-datas, impure nigricantes formantia, ostiolo vulgo levissime umbilicato-impresso, tenuiter pallide marginato, saepe obliquo. Perithecium hemi-sphaericum, integrum, fuligineum. Asci cylindrici. Sporae 8 : nae, mono-stichae, oblongae aut ellipsoideo-oblongae, apicibus obtusis, fuscescentes, 3-septatae, loculis lenticularibus, sat aequalibus, long. 0,015—0,016, crass. 0,007 mm., halone nullo indutae.

Perithecium basi tenue, extrorsum haud anguloso-productum aut rarius anguste productum (observante Müll. Arg., Pyrenoc. Cub. p. 410, extrorsum anguloso-productum). Haec nota inconstans, sicut saepe res se habet in *Pyrenulis*. Nucleus guttulas oleosas haud continens. Paraphyses simplices.

— Haec species bene demonstrat transitum *Melanothecae* in *Eupyrenulam*.
Ad corticem vestutum arboris in silva littorali in insula Koh Kahdat (no. XXXV).

Area: In regionibus tropicis Americae et Asiae lecta est.

84. **P.** (subg. **Eupyrenula** sect. **Pyramidalis**) **feracissima** Wain. (n. sp.).

Apotheciis pro parte 2 (—7) confluentibus, pro parte simplicibus cre-breque approximatis et loculis inaequalibus sporarum a *P. Kunthii* Fée, Ess. Crypt. Écorc. Suppl. (1837) p. 80 (Wain., Étud. Lich. Brés. II p. 201), et *P. mamillana* (Ach.) Trev. differt.

Thallus hypophloeodes aut endophloeodes, albidus, laevigatus, leviter nitidus, hypothallo nullo distincto aut partim linea plus minusve obscurata limitatus. Apothecia verrucas 0,6—0,9 mm. latas, hemisphaericas, nigras, nudas, vertice convexas formantia. Perithecium hemisphaericum, integrum, fuligineum, basi concava, latere anguloso, haud productum. Nucleus guttulas oleosas continens, latere rotundato-anguloso. Paraphyses simplices. Asci cylindrici. Sporae 8 : nae, monostichae, fuscescentes, ellipsoideae, apicibus rotundatis aut rarius obtusis, 3-septatae, loculis apicalibus reliquis multo minoribus, long. 0,016—0,021, crass. 0,009—0,013 mm. — Ad plantas inter *Melanothecas* et *Eupyrenulas* intermedias pertinet.

Ad corticem ramorum siccorum arboris in silva ad flumen Klong Prao in insula Koh Chang (no. XIX).

In specimine, ut videtur, item ad hanc speciem pertinente, ad corticem emortuum arboris in silva littorali in insula Koh Kahdat lecto (no. XXXV), apothecia 0,6—0,7 mm. lata, columella centrali brevi instructa, sporae long. 0,018—0,014, crass. 0,008—0,011 mm., loculis apicalibus reliquis multo minoribus.

85. **P.** (subg. **Eupyrenula** sect. **Pyramidalis**) **approximata** Wain. (n. sp.).

Thallus hypophloeodes, macula pallida indicatus, leviter nitidus, laevigatus, linea hypothallina obscurata nigricanteve limitatus. Apo-thecia majore parte crebre approximata, vulgo simplicia, parce confluentia, basi parum aut leviter substrato immersa, verrucas 0,4—0,3 mm. latas, hemisphaericas, nigras, nudas, vertice convexas

formantia. Perithecium hemisphaericum, basi convexa, latere obtuso aut rotundato, integrum, fuligineum. Nucleus subgloboso-hemisphaericus, basi convexa et latere obtuso aut rotundato. Paraphyses simplices. Asci cylindrici. Sporae 8:nae, monostichae, ellipsoideae, apicibus rotundatis, 3-septatae, long. 0,010—0,014, crass. 0,007—0,008 mm., loculi apicales medianis multo minoribus.

Nucleus guttulas oleosas continens. Perithecium neque distincte hemisphaericum, nec distincte subglobosum. — Ad species inter *Pyramidales* et *Subglobosas* intermedias pertinet. *V. approximans* Krempelh., Fl. 1876 p. 525, secundum specimen orig. (no. 1371 in herb. Nyl.) habitu huic speciei similis est et a Nyl. ad „*V. aspisteam* Ach.“ ducta est. Sporae citriformibus, paullo majoribus descripta est. Sporae adhuc majoribus et perithecio globoso a Müll. Arg. in Rev. Lich. Eschw. (Fl. 1884) p. 6 descripta, cum *P. vitrea* (Eschw.) ab eo conjuncta est. *V. approximans* Krempelh., Lich. Bras. Warm. (Vid. Medd. Naturh. For. Kjöbenh. 1873) p. 396 (32), ut species autonoma a Müll. Arg. in Lich. Beitr. (Fl. 1885) no. 895 commemoratur. *P. approximata* a *P. aspistea* Ach. peritheciis haud immersis distinguitur. Una cum *P. glabriuscula* (Nyl.) Wain. crescit et ab ea apotheciis minoribus, crebre approximatis recedit.

Ad corticem arboris prope cataractam meridiem versus a Statione navali in insula Koh Chang sitam (no. IV).

86. **P.** (subg. **Eupyrenula** sect. **Pyramidalis**) **submarginata** Wain. (n. sp.).

Thallus hypophloeodes, macula albida vel pallida indicatus, leviter nitidus aut opacus, linea hypothallina nigricante partim limitatus. Apothecia sparsa aut approximata, verrucas 1,5—0,6 (—2) mm. latas, conoideo-hemisphaericas, nigras, nudas, vertice minutissime umbonatas aut conoideo-convexas formantia. Perithecium conoideo-hemisphaericum, integrum, fuligineum, latere anguste anguloso-producto. Nucleus latere rotundato aut rotundato-obtuso. Paraphyses simplices. Asci cylindrici. Sporae 8:nae, monostichae, fuscescentes, ellipsoideae aut oblongae, apicibus obtusis aut rotundatis, 3-septatae, loculis sat aequalibus, long. 0,012—0,018, crass. 0,005—0,008 mm.

Nucleus albidus, guttulas oleosas haud continens aut in no. XXIII bene oleosus. Asci membrana tenui. Sporae loculis vulgo anguloso-lenticularibus, halone nullo indutae. — Apotheciis majoribus differt a *P. mamillana* (Ach.) Trev., quae secund. specim. orig. in herb. Ach. apotheciis 0,6 mm. latis instructa est.

Ad truncos arborum prope cataractam meridiem versus a Statione navali in insula Koh Chang (no. IV, XXIII). Ad truncum arboris in capite septentrionali in insula Koh Kong (no. XI).

87. **P.** (subg. **Eupyrenula** sect. **Pyramidalis**) **glabriuscula** (Nyl.) Wain. *Verrucaria* Nyl., Fl. 1886, p. 177, Bol. Soc. Brot. IV (1886), p. 13, Lich. Guin. (1889), p. 35.

Thallus hypophloeodes, macula albido-pallescente indicatus, partim linea hypothallina nigricante limitatus. Apothecia vulgo sparsa, verrucas 0,4—0,6 mm. latas, hemisphaericas aut conoideo-hemisphaericas, nigras, nudas, vertice convexas aut conoideo-convexas, leviter nitidas formantia.

Perithecium hemisphaericum aut conoideo-hemisphaericum, integrum, fuligineum, latere anguloso, haud producto. Nucleus latere obtuso anguloso. Paraphyses simplices. Asci cylindrici. Sporae 8:nae, monostichae, fusciscentes, ellipsoideae, apicibus rotundatis, 3-septatae, loculis apicalibus mediano multo minoribus, long. 0,014—0,017, crass. 0,008—0,010 mm.

Nucleus albidus, oleosus. — Specimen orig. no. 1261 in herb. Nyl. habitu omnino simile est plantae nostrae. *P. laevigata* Pers., Ann. Wett. II (1810), p. 11, Arn., Lich. Fränk. Jur. (Fl. 1884), p. 269, Lich. Münch. (1891) p. 118 (*Verrucaria glabrata* Ach., Syn. Lich., 1814, p. 91, Nyl., Exp. Syn. Pyrenoc., 1858, p. 47, Garov., Tent. Lich. Longob. III, 1866, tab. VII fig. 3, Leight., Lich. Great Brit. 3. ed., 1879, p. 479, Hue, Lich. Exot., 1892, p. 291, Harmand, Cat. Lich. Lorrain., 1894, p. 477; *Pyrenula glabrata* Mass., Ric. Aut. Lich., 1852, p. 163, Hepp, Flecht. Eur. no. 227, Müll. Arg., Lich. Beitr., 1885, no. 898), perithecio basi tenuiore, thallo albo, magis evoluto et sporis paullo majoribus ab ea differt.

Ad corticem arboris prope cataractam meridiem versus a Statione navali in insula Koh Chang sitam (no. IV).

Area: In partibus tropicis Africae et Asiae obvia.

88. **P.** (subg. **Eupyrenula** sect. **Subglobosa**) **aspistea** Ach., Syn. Lich. (1814), p. 123 (emend.); Müll. Arg., Lich. Beitr. (Fl. 1885), no. 894. *Verrucaria* Ach., Meth. Lich. (1803), p. 121 (secund. specim. orig. in herb. Ach. et no. 1353 in herb. Nyl.); Nyl., Syn. Lich. Nov. Cal. (1868), p. 88, Lich. Nov. Zel. (1888), p. 131. *Pyrenula Bonplandiae* Fée, Ess. Crypt. Écorc. (1824), p. 74; Müll. Arg., Pyr. Féean. (1888), p. 31.

Thallus macula pallida indicatus. Apothecia substrato immersa, apice parvulo (circ. 0,2 mm. lato in hoc specimine) emergente, verruculam hemisphaericam, nigricantem aut cinereo-nigricantem, tenuissime thallodice obvelatam aut subnudam formante. Perithecium subglobosum aut depresso-subglobosum, integrum, fuligineum (circ. 0,280—0,350 mm. latum in hoc specimine), latere rotundato, haud producto. Nucleus depresso-subglobosus aut subglobosus. Sporae 8:nae, monostichae, fusciscentes, ellipsoideae, apicibus rotundatis, 3-septatae, loculis sat aequalibus aut mediis paullo majoribus, long. 0,016—0,019, crass. 0,008—0,009 mm.

Nucleus haud oleosus. Paraphyses simplices. Sporae loculis lenticularibus. — In specimine orig. *V. aspiptae* Ach. e Guinea in herb. Ach. (cujus fragmentum sub no. 1353 in herb. Nyl.) verrucae externae apotheciorum 0,2 mm. latae et sporae ex annotatione Nylanderii long. 0,016—0,017, crass. 0,006—0,007 mm.

Ad corticem arboris prope Stationem navalem Lem Ngob (n. IX).

Area: In regionibus tropicis Americae, Oceaniae, Asiae, Africae provenit.

3. **Pseudopyrenula** (Müll. Arg.) Wain.

89. **Ps.** (subg. **Trypethelium**) **ochroleuca** (Eschw.) Wain., Étud. Lich. Brés. II (1890), p. 209.

Var. **subdissocians** Nyl. *Trypethelium ochroleucum* var. *subdissocians* Nyl., Fl. 1864, p. 618; Hue, Lich. Exot. (1892), p. 300.

Apothecia crebre approximata, at maxima parte simplicia, parce seriatim 2 vel plura connata. Pseudostromata nulla distincta.

Ad corticem arboris vigentis in capite septentrionali insulae Koh Kong (no. XI).

Area: *Ps. ochroleuca* in regionibus tropicis Americae, Oceaniae, Asiae, Africae crescit.

90. *Ps.* (subg. **Heterothelium** sect. **Homalothecium**) **endoxanthoides** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 180.

Thallus endophloeodes, albidus, laevigatus, leviter nitidus, linea hypothallina nigricante limitatus. Apothecia sat approximata, simplicia, elevata, verrucas circ. 0,3 (—0,25) mm. latas, hemisphaericas aut rarius conoideo-hemisphaericas, atras, nudas, parum nitidas formantia, vertice convexo aut minutissime subconoideo-umbonato. Perithecium depresso-subglobosum aut elevato-hemisphaericum, fuligineum, integrum, latere abrupto, haud attenuato-producto, basi tenui, fuliginea, applanata aut depresso-convexa. Nucleus depresso-subglobosus aut elevato-subhemisphaericus, latere rotundato aut obtuso, materiam luteam, KHO non reagentem continens. Paraphyses ramoso-connexae. Asci subcylindrici. Sporae 8:nae, distichae, decolores, 3-septatae, loculis lenticularibus aut demum sphaeroideis, long. 0,018—0,022, crass. 0,006—0,008 mm.

Materia lutea in nucleo inclusa KHO haud violascens, at tantum diluta. Sporae oblongae, altero apice rotundato, altero apice vulgo paululum attenuato obtusoque, halone nullo indutae. — *Ps. endoxanthae* Wain., Lich. Antill. (Journ. of Bot. 1896), p. 32 (292), et *Ps. subgregariae* Müll. Arg., Pyrenoc. Cub. (1885), p. 408, Wain., Étud. Lich. Brés. II (1890), p. 213, subsimilis, at sporis minoribus et reactione nuclei ceterisque notis ab iis differens.

Ad corticem emortuum in silva prope cataractam in insula Koh Chang (no. XVI).

91. *Ps.* (subg. **Heterothelium** sect. 3. **Hemithecium**) **diluta** (Fée) Müll. Arg., Lich. Beitr. (Fl. 1883), no. 602, Pyrenoc. Cub. (1885), p. 408, Pyrenoc. Féean. (1888), p. 28. *Verrucaria* Fée, Ess. Crypt. Écorc. Suppl. (1837), p. 85; Nyl., Syn. Lich. Nov. Cal. (1868), p. 91; Hue, Lich. Exot. (1892), p. 294.

Var. **degenerans** Wain.

Thallus evanescens, albidus. Apothecia sat approximata, simplicia, elevata, verrucas circ. 0,35—0,25 mm. latas, hemisphaericas aut conoideo-hemisphaericas, atras, nudas, opacas aut parum nitidas formantia, vertice convexo aut conoideo-convexo. Perithecium hemisphaericum aut conoideo-hemisphaericum, fuligineum, dimidiatum, basi deficiens aut tenue, latere abrupto, haud attenuato-producto. Nucleus hemisphaericus, latere rotundato, basi vulgo plana, albidus. Paraphyses ramoso-connexae. Asci subcylindrici aut medio leviter incrassati, membrana tenui. Sporae 8:nae, distichae, deco-

lores, 3-septatae, loculis lenticularibus, long. circ. 0,020, crass. circ. 0,006 mm.

Ab hac *Ps. Bengoana* Wain., Catal. Welw. Afr. Pl. II, Part II (1901), p. 457, apotheciis minoribus differt, et *Ps. illota* (Nyl.) Wain. (*Verrucaria illota* Nyl., Fl. 1876, p. 364, „*V. diluta*“ in Nyl., Lich. Antill., 1869, p. 24) secund. specim. orig. no. 418 in herb. Nyl. apotheciis majoribus, 0,5—0,7 mm. latis et perithecio subgloboso vel leviter depresso, integro, basi tenuiore distinguitur.

Secundum annotationem Nylanderi in herb. suo pycnoconidia in *Ps. diluta* (Wright, Pyr. Cub., no. 133, no. 1031 in herb. Nyl.) cylindrica, long. 0,004, crass. 0,0005 mm. In specimine no. 1029 (e Nova Granata) pycnoconidia long. 0,0045 mm. observante Nyl.

Area: *Ps. diluta* in regionibus tropicis Americae, Oceaniae et Asiae crescit.

4. *Thelenella* (Nyl.) Wain.

92. **Th.** (subg. **Euthelenella** sect. **Microglaena**) **interrupta** Wain., Lich. Nov. Rar. IV (Hedwigia 1907), p. 180.

Thallus crassitudine mediocris, stramineo-glauescens, sat laevigatus aut verrucoso-inaequalis, leviter aut parum nitidus. Apothecia sparsa, simplicia, verrucas formantia 1,5—0,7 mm. latas, mammaeformes, basi vulgo abruptas, haud constrictas, latere strato thallino thallo concolore obductas, vertice albido-pallescente, decorticato, opaco inaequalique, ostiolo nigricante, 0,2 mm. lato, rarius paululum elevato. Perithecium subglobosum, fuligineum, sat tenue. Nucleus albidus, gonidia hymenialia non continens, jodo non reagens. Paraphyses parce evolutae, ramoso-connexae. Sporae 8:nae, distichae, decolores, murales, cellulis numerosissimis, oblongae, apicibus rotundatis aut obtusis, jodo non reagentes.

Thallus epiphloeodes et partim endophloeodes, maculis difformibus, tenuioribus, albido-pallescentibus, hypothallinis, pycnoconidangia fusconigra, hemisphaerica, minutissima, imperfecte evoluta, continentibus interruptus, gonidiis chroolepoideis, concatenatis, circ. 0,008 mm. crassis. Nucleus guttulas oleosas continens. Asci subclavati, membrana sat tenui, long. 0,300, crass. 0,065 mm. Sporae halone nullo indutae, jodo fulvescentes, juveniles pluriseptatae loculisque anguloso-lenticularibus, long. 0,130—0,140 mm., crass. 0,030—0,036 mm. Thallus KHO leviter fulvescens. Apothecia vertice decorticato pallescenteque, KHO intense fulvescente. — Affinis *Th. fulvae* Wain., Cat. Welw. Afr. Pl. II, Part II (1901), p. 451, et habitu ei subsimilis, at praesertim colore thalli et verrucarum ab ea differens.

Ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (no. XVII).

5. *Microthelia* (Koerb.) Wain.

93. **M. Asiatica** Wain., l. c.

Thallus tenuissimus, hypophloeodes, evanescens, macula subalbida indicatus. Apothecia sparsa, simplicia, verrucas 0,4—0,5 (—0,3) mm. latas, depresso- aut conoideo-hemisphaericas, nigras, nudas, vertice con-

vexas aut conoideo-convexas formantia. Perithecium fuliginium, dimidiatum. Paraphyses ramoso-connexae. Asci subcylindrici. Sporae 8 : nae, distichae aut subdistichae, demum obscuratae aut pro parte decolores, ovoideae, 1-septatae, septo fere in medio sporae aut cellula crassiore etiam paullo longiore, halone nullo indutae, long. 0,014—0,015, crass. 0,005—0,006 mm.

Apothecia opaca. Perithecium lateribus acutis, at non attenuato-productis, basi deficiens, at columella centrali fuscescente instructum. Nucleus albidus, lateribus acutis, guttulas oleosas haud continens. Paraphyses tenues. Asci long. circ. 0,070, crass. 0,010 mm., apice membrana incrassata. Sporae medio leviter constrictae, altero apice rotundato, altero obtuso. Thallus in hoc specimine evanescens, forsitan gonidiis chroolepoidis instructus, at talia non satis distincte observavi.

Ad corticem arboris prope cataractam meridiem versus a Statione navali Lem Dan in insula Koh Chang sitam (no. IV).

Didymella Sacc.

Genus ad fungos pertinens.

D. cinchonae (Ach.) Wain., Étud. Lich. Brés. II (1890), p. 233, Lich. Antill. (Journ. of Bot. 1896), p. 36, Cat. Welw. Afr. Pl. II, Part II (1901), p. 462. *Verrucaria* Ach., Syn. Lich. (1814), p. 90; Nyl., Lich. Nov.-Gran. ed. 2 (1863), p. 122; Hue, Lich. Exot. (1892), p. 296. *Arthopyrenia* Müll. Arg., Lich. Beitr. (Fl. 1883), no. 615, Pyrenoc. Cub. (1885), p. 404, Pyrenoc. Féean. (1888), p. 26. *Verrucaria prostrans* Mont., Cent. Pl. (Ann. Sc. Nat., 2 sér., Bot. XIX, 1843), p. 53, no. 81, Syll. Cr. (1856), p. 365; Nyl., Exp. Syn. Pyrenoc. (1858), p. 57.

Thallus hypophloeodes, macula pallida aut partim subalbida indicatus, linea nigricante hypothallina limitatus, gonidiis carens. Apothecia sparsa, rarissime parce confluentia, maculas rotundatas, nigras, 1—0,5 mm. latas, medio in verrucam hemisphaericam aut conoideam elevatas, formantia. Perithecium fuliginium, dimidiatum, latere attenuato-producto aut acutato. Nucleus depresso-hemisphaericus, albidus. Paraphyses ramoso-connexae. Asci subcylindrici. Sporae 8 : nae, distichae aut subdistichae, decolores, ovoideo-oblongae aut oblongae, apicibus obtusis aut rotundatis, 1-septatae, septo fere in medio, long. 0,014—0,027, crass. 0,006—0,008 mm.

Apothecia nigra, strato tenuissimo substrati, tantum sub microscopio viso, obducta. Perithecium fuliginium, basi deficiens patensque, at in centro columella rudimentaria verrucaeformi instructum. Paraphyses sat numerosae. Asci long. circ. 0,090 mm., crass. circ. 0,012—0,014 mm. Sporae membrana modice incrassata, halone tenui interdum indutae, medio haud aut parum constrictae.

Ad corticem *Carapae obovatae* in insula Koh Saket (no. XXXVIII).

Area: In regionibus tropicis Americae, Oceaniae, Asiae et Africae crescit.

Lichenes imperfecti.

1. *Dictyonema* Ag.

94. **D. sericeum** (Sw.) Hariot, Bull. Soc. Myc. de France VII (1891), p. 41 (Bot. Centralbl. 1892, Beibl., p. 19).

Supra *Parmeliam latissimam* Fée in trunco *Rhizophorae* ad flumen Klong Prao in insula Koh Chang in statu juvenili parce fortuito lectum. Ad var. *laxam* (Müll. Arg.) Hariot, l. c. (*Dictyonema laxum* Müll. Arg., Exp. Gazell., 1883, p. 57; *Laudatea caespitosa* Johow, Hymenolich., 1884, p. 386), forsan pertinet.

Area: *D. sericeum* in regionibus tropicis Americae, Oceaniae, Asiae et Africae crescit.

2. *Lepraria* Ach.

95. **L. xanthina** Wain., Catal. Welw. Afr. Pl. II, Part II (1901), p. 463.

Una cum *Arthonia ochrode* Nyl. ad corticem *Arecae catechu* prope Stationem navalem in insula Koh Chang (n. X).

Area: In regionibus tropicis Americae, Africae et Asiae lecta est.



Vainio, Edv. A. 1909. "Lichenes." *Botanisk tidsskrift* 29, 104–152.

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