REVISION OF THE LICHEN GENUS *PYRENULA* FROM SRI LANKA

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Abstract

The paper deals with 14 species of *Pyrenula* from Sri Lanka. A key for their identification is provided. Two new species namely *Pyrenula columellata* Upreti & A. Singh and *P. zeylanica* Upreti & A. Singh are described.

Introduction

The collection of *Pyrenula* by Thawaites and Almquist from Sri Lanka (Ceylon) which were investigated by Leighton (1869) and Muell. Arg. (1885) and Nylander (1900) comprises 10 species. Malme (1929) brought to light a very useful character, the spore types in *Pyrenula*, a large genus otherwise quite homogenous and difficult to work out. His classification of spores of this genus takes into account the shape and orientation of spore chambers. Singh and Upreti (1987) in describing genus *Pyrenula* from Aandman Islands, followed the same concept with slight modification to a great advantage in segregating taxa at specific level. This character is being employed here as well and one spore-type observed in Sri Lankan material in addition to five previously observed spores types in *Pyrenula* from Andamans, is *Pyrenula pinguis* type in which the spore chambers are elongated longitudinally and apices thick-walled. The species representing this spore-type is *P. pinguis* (Fig. 32).

Key to the Sri Lankan species of *Pyrenula*

1. Spores *P. cayennensis* type.....2. *P. cayennensis*
1. Spores not *P. cayennensis* type.....2
2. Spores *P. pinguis* type .....12. *P. pinguis*
2. Spores not. *P. pinguis* type 3
3. Spores *P. brunnea* type 4
3. Spores not. *P. brunnea* type 5
4. Ostoiles papillate-mamillate, nucleus with oil globules .....9. *P. mamillana*
4. Ostioles plain, nucleus without oil globules.....13. *P. submarginata*
5. Spores *P. mastophora*-type 6
5. Spores *P. subducta*-type .....9.
6. Ascocarps columellate .....4. *P. columellata*
6. Ascocarps not columellate 7
7. Nucleus T+ blue .....11. *P. nitidella*
7. Nucleus I− 8
8. Ascocarps 0.4-0.6 mm in diameter, spores 16-22 × 7-9 μm .....1. *P. aspistea*

8. Ascocarps ca 1.0 mm in diameter, sopres 22-30 × 10.15μm .....10. *P. mastophora*
9. Perithecium spreading laterally .....7. *P. interducta*
9. Perithecium not spreading laterally 10
10. Fertile thalline verrucae 1-12-carpous, oculate .....14. *P. zeylanica*
10. Fertile thalline verrucae 1-carpous, non-oculate 11
11. Thallus pseudocyphellate .....8. *P. introducta*
11. Thallus smooth 12
12. Ascocarps completely immersed 13
12. Ascocarps naked .....4. *P. ectypa*
13. Thallus smooth .....5. *P. immersa*
13. Thallus verruculose .....6. *P. impressa*

1. *Pyrenula aspistea* (Afz. ex Ach.) A ch., Ges., Naturf. Freunde Berlin Mag. 6 : 17, 1814- *Verrucaria aspistea* Afz. ex Ach. Method., Litch., : 121, 1803.

Figs. 1, 15, 31

Thallus corticolous endophoedal, yellow-buff, shining, K-, C-, KC-, P-, hypothallus like black border line ; corticiform layer 30-70 μm thick, algal layer 15-16 μm thick, medulla indistinct.

Ascocarps solitary or 2-3 aggregated, 0.4-0.6 mm in diameter, 200-300 μm high, conico-globose, covered with corticiform layer, dull black, ostioles indistinct; perithecium black and carbonaceous, conical, not spreading laterally; nucleus I-, without oil globules; paraphysoid threads simple ; asci clavate, 8-spored, 90-120 × 12-15 μm ; spores uniseriate in ascus, brown 4-locular, locules *P. mastophroa* type, oblong-ellipsoid, 16-22 × 7-9 μm.

The species is distinguished by shining, yellow-buff thallus and with conico-globose ascocarps. It is similar to *P. velata* Muell. Arg., but spores in the latter are smaller (12-16 μm long).

Specimen examined—Sri Lanka (Ceylon), Almquist s.n. (H-Nyl 7276, 7277).

2. *P. cayennensis* Muell. Arg., Flora 67 : 662. 1884.

Type—Matto Grosso : Serra da chapada, inter Buriti et Sao Jeronmo s.n. (Holotype : G).

Figs. 3, 30

Thallus corticolous endophloedal, ochre to yellow brown, smooth, K-, C-, KC-, P, black hypothallus line present; corticiform layer 25-40 μm thick, algal layer 15-120 μm thick, medulla indistinct.

Ascocarps solitary or 2-3 grouped, 0.3-0.5 mm in diameter, 150-250 μm high, convex, covered with corticiform layer, naked around obtioles, black and nitidus; ostioles plain; perithecium black and carbonaceous, globose, uniformly thick all-around; nucleus-I, with abundant oil globules ; paraphysoid threads simple ; asci clavate, 8-sprored, 60-80 × 11-18 μm; spores uniseriate in ascus, brown 4-locular, locules *P. cayennensis* type, ellipsoid to oval, 13-18 × 8-10 μm.

This species is similar to *P. pinguis* in outward appearance but the spores in the former are *P. cayennensis* tyep whereas in *P. pinguis* they are *P. pinguis* type.

Specimen examined Sri Lanka (Ceylon), no precise locality, Thwaites CL 93C (BM)-annotated as *Verrucaria aspistea* Fée (non Ach).

3. *P. columellata* Upreti & A. Singh sp. nov.

Thallus corticolous, epiphoedus flavido-fuscescentus vel fuscescentus nitidus, linea nigra limitatus. Ascocarpia solitaria, 1.0-3.5 mm diam, deprosso-conica, starta thallina non-algifere obducta, nigra ; perithecium fuliginosum, late laterali expansum, columellatum, nucleus oleoso-inspersus, 8-spori ; sporae oblongo-ellipsoidae, 16-20 × 40 μm.

Type—Sri Lanka (Ceylon) Central Province, Thwaites CL89/A (Holotype B : M)-annotated as *Verrucaria marginata* Hook Figs. 2, 16, 31.

Thallus corticolous epiphloedal, yellow, brown to brownish, shining, K-, C-, KC, P-, black hypothallus line present; corticiform layer 25-60 μm thick, algal layer 15-25 μm thick, medulla indistinct.

Ascocarps solitary, 1.0-3.5 mm in diameter, 400-700 μm ligh, depressed-conical, covered with corticiform layer, dull black; ostioles indistinct; perithecium black, carbobaceous, conico-hemispherical, spreading laterally, 50-100 μm thick at top, 100-200 μm thick at sides, a central columella arising at bottom ; nucleus I-, with abundant oil globules ; paraphysoid threads simple ; asci cylinderical, 8-spored, 90-120 × 12-16 μm ; spores uniseriate in ascus, brown, 4-locular, locules *P. mastophora* type, oblong-ellipsoid, 16-20 × 7-10 μm.

P. columellata is close to *P. pileata* Vainio and *P. castanca* (Eschw.) Muell. Arg. in columellate condition of ascocarps but both the latter species have smaller ascocarps attaining a maximum size up to 2.5 mm in diameter. In size of ascocarps *P. columellata* is close to P. *gigas* Zahlbr. ; but the ascocarps in the latter are non-columellate.

Known from the type locality only.

4. *P. ectypa* (Krempelh.) Zahlbr., Cat. lich. univ. 1 : 428. 1922—*Verrucaria ectypa* Krempelh., Nuovo Giorn, Bot. Ital. 7 : 47. 1875.

Figs. 4, 17, 33

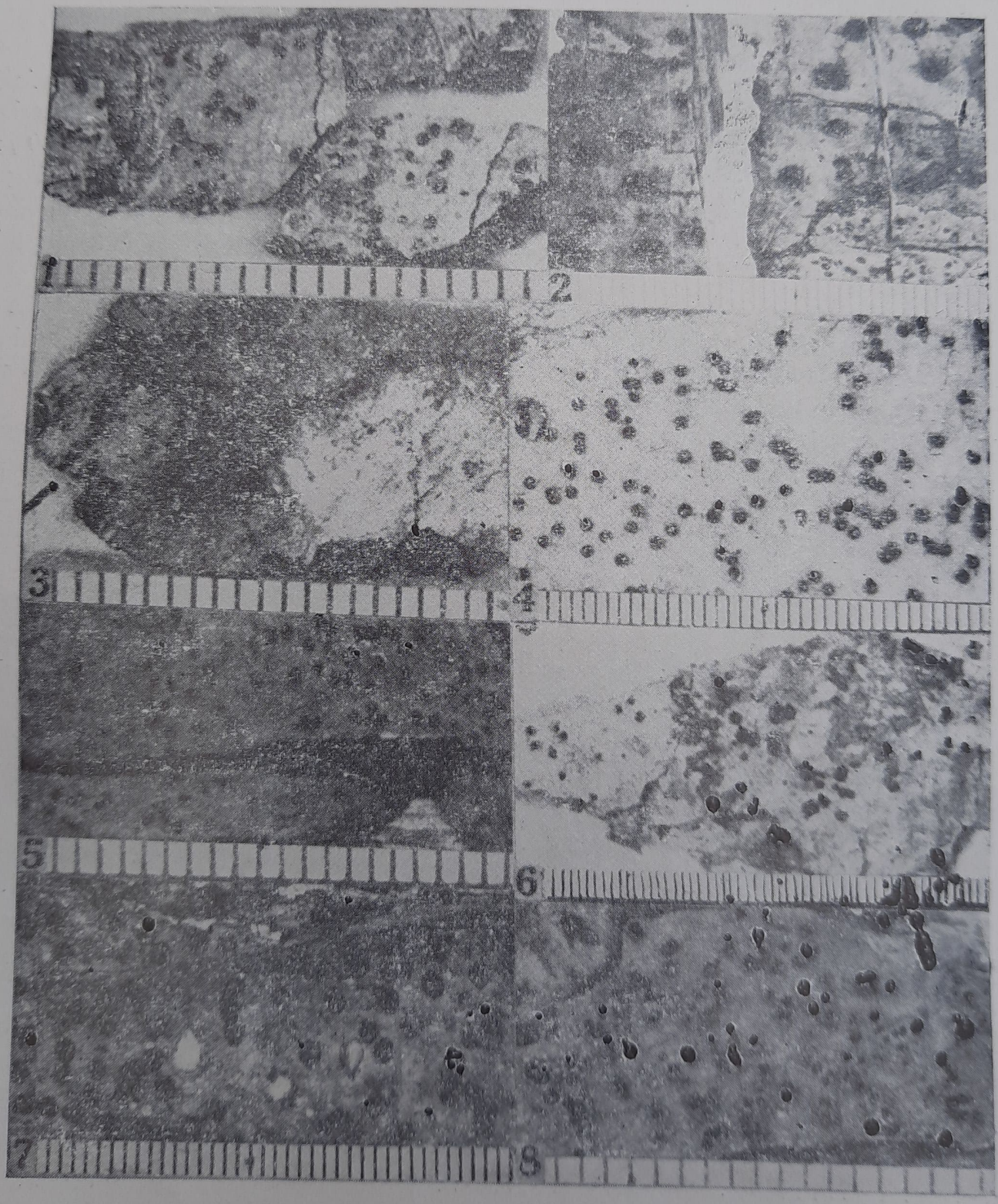
Thallus corticolous, epiphloedal, buff to brownish-yellow, smooth, K-, C-, KC, P hypothallus indistinct ; corticiform layer 20-35 μm thick, algal layer 15-25 μm thick, medulla indistinct.

Ascocarps verruca-forming, solitary, sometimes 3-5 aggregated, 0.5-1.0 (-1.2) mm in diameter, 500-800 μm high, hemispherical, naked, embedded or in verrucae at base, covered with corticiform layer, dull black or naked, black and nitidus, ostioles distinct, plain, whitish; perithecium black, carbonaceous, globose, not spreading laterally, 100-200 μm thick all-round ; nucleus I+winose red, without oil globules ; paraphysoid threads simple ; asci clavate, 8-spored, 100-200 × 20-40 μm, spores uni-or biseriate in ascus, brown, 4-locular, locules, *P. subducta* type, oblong-ellipsoid, 30-50 × 15-20 μm.

The specimen from Sri Lanka was annoted as *Verrucaria punctella* (=*Pyrenula pinguis*). This specimen, however, hardly shows any resemblance with *P. pinguis*. The protologue of *P. pinguis* by Fée (1824) does not contain any distinguishing feature about importnat characters of the lichen. Malme (1929, p. 22), however, has given a detailed account of the species and observes, "Appothecia 0.4—0.6 mm latas.....satis alte thallo obductas (raro demum denudata). Sporae.....loculis intermediis vulgo longitudinaliter ovoideis, rarius subglobosis, apicali fere duplo minoribus, subglobosis, membrana in apicibus ccrassa."

Malme (1929) identified several specimens from Paraguay as *P. pinguis* and cited the Ceylonese specimen as a good examples of the species as follows "Alia specimina optima, a THWAITES in Ceylona collecta, non nisi apotheciis saepe paullulo majoribus recedunt."

The Ceylonese specimen, however, shows some major differences from *P. pinguis*. Larger ascocarps, measuring 0.5-1.0 (-1.2) mm in diameter, and their naked condition as contrast to "satis alte thallo obducta (raro demum denudata)" are the characters that place this specimen with *P. ectypa* rather than with *P. pinguis*. The orientation of the spore-



Figures 1-8 (Habit : scale 1 division = 1.0 mm) : 1. *Pyrenula aspistea*; 2. *P. columellata*; 3. *P. cayennensis*; 4. *P. ectypa*; 5. *P. immersa*; 6. *P. interducta*; 7. *P. mamillana*; 8. *P. mastophora*.

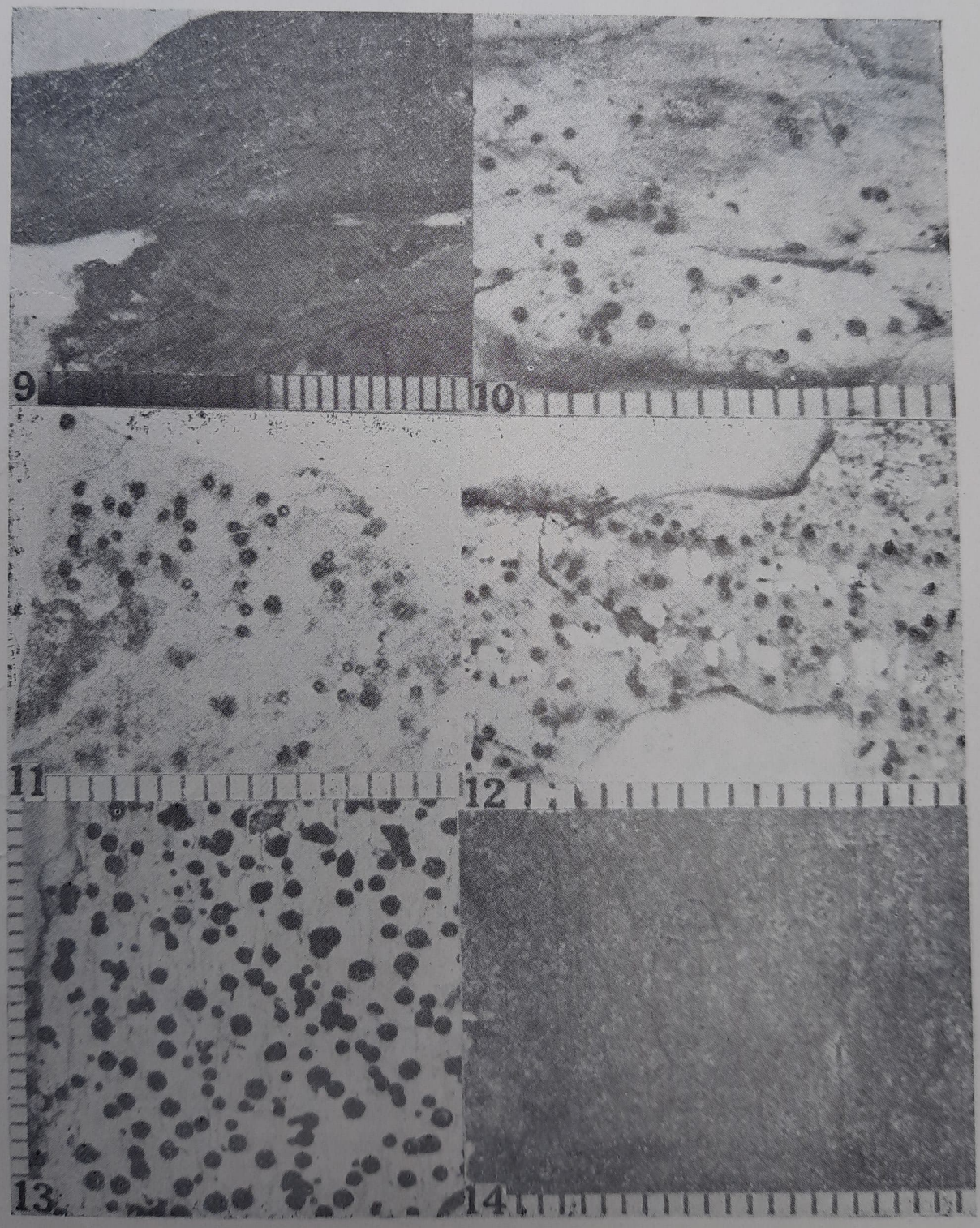
chambers in this specimen that is of *P. subducta* type rather than of *P. pinguis* type lends further spport to our observations.

Specimen examined—Sri Lanka (Ceylon) no precise locality Thwaites; Leighton 180. In Trans. Linn. Soc. 26 : 16. 1871. (EM.)—annotated as *Verrucaria punctella* Nyl.

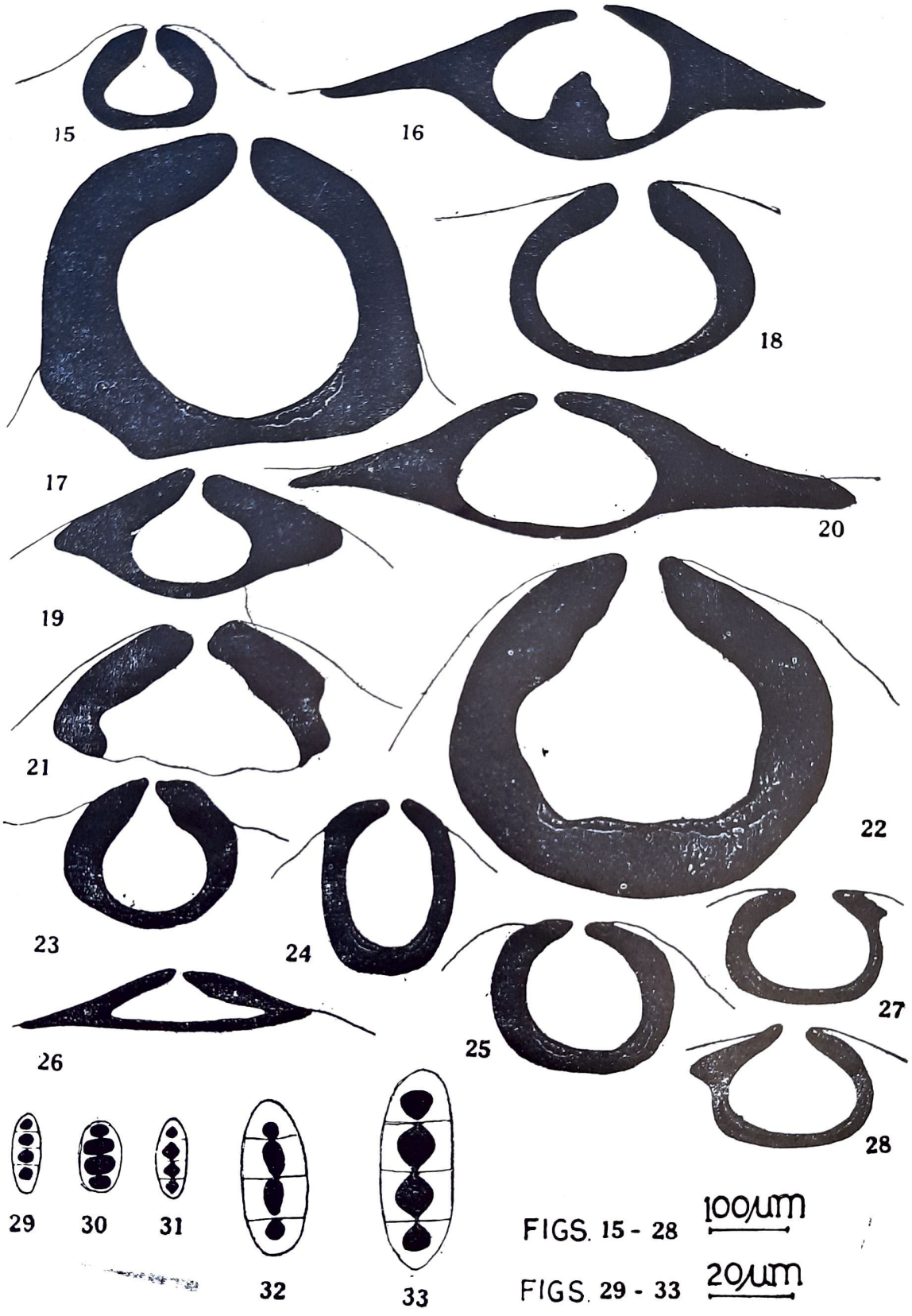
5. *P. immerse* Muell. Arg., Flora 70 : 429. 1887.

Type : Australia ; Toowoomba, Mueller 1214 (holotype : G.) Figs. 5, 18, 31.

Thallus corticolous, endophoedal, light brown, smooth, K- C-, KC-, P-, hypothallus indistinct; corticiform layer 20-50 μm thick, algal layer 15-25 μm thick, medulla indistinct.



Figures 9-14. *Pyrenula nitidella;* 10. *P. pinguis;* 11. *P. impressa;* 12. *P. introducta;* 13. *P. submarginata;* 14. *P. zeylanica.*



Figures 15-28. (Vertical section of ascocarps) : 15. *P. aspistea;* 16. *P. columellata;* 17. *P. ectypa;* 18. *P. immersa;* 19. *P. interducta;* 20. *P. mamillana;* 21. *P. mastophora;* 22. *P. nitidella;* 23. *P. pinguis;* 24. *P. impressa;* 25. *P. introducta*; 26. *P. submarginata;* 27 & 28. *P. zeylanica*; 29-33. (Spore types): 29. *P. burnnea* type; 30. *P. cayennensis* type; 31. *P. mastophora* type: 32. *P. pinguis* type; 33. *P. subducta* type.

Ascocarps verruca-forming, solitary, rarely paired, 0.5-0.8 mm in diameter, 500-700 μm high, immersed to emerging and convex, base embedded in verruca, upper part covered with corticiform layer, dull black, ostioles distinct, area around ostioles whitish, plain; perithecium black, carbonaceous, globose, not spreading laterally, 50-100 μm thick at top, 20-50 μm thick at bottom, with colourless crystals ; uncleus I + blue, without oil globules; paraphysoid threads simple; asci cylindrical, 8-spread, 126-1250 × 15-22 μm ; spores, uni-or biserate in ascus, brown 4-locular, locules *P. subducta* type, oblong ellipsoid, 25-32 × 11-18 μm.

The specimen resembles in all respects to *Pyrenula immersa* except the ascocarps, that are mentioned in the protologue as naked to subnaked (Muell Arg. 1887). Those of the Ceylon species however, are covered with corticiform layer, representing perhaps somewhat earlier stages of ascocrap development.

Specimen examined : Sri Lanka (Ceylon), Central Province, Thwaites, CL90/D1 Herb. Leighton. (BM)-annotated as *Pyrenula punctella*.

6. *P. impressa* Muell. Arg., Flora 74 : 113.1891. Type : *Japan :* Tamba Miyoshi s. n. (Holotype : G.)

Figs. 11, 24, 33

Thallus corticolous, epiphoedal, ochre, smooth, K-C-, KC-, P-, hypothallus indistinct; corticiform layer 22-42 μm thick, algal layer 12, 14 μm thick, medulla indistinct.

Ascocarps verruca-forming, one in each verruca, 0.5-0.8 mm in diameter, ca. 700 μm high ; completely immersed, later emerging, a small part around ostiole to major part of the ascocarp covered with corticiform layer, and dull black or naked and black, convex to hemispherical, ostioles prominent, like pale circular areas ; perithecium black, carbonaceous ±uniformly thick all-round; nucleus I-, without oil globules; paraphysoid threads simple ; asci cylindrical to clavate, 4-8-spored ; spores uni-or biseriete in ascus, brown 4-locular, locules *P. subducta* type, oblong to fusiform, 25-58 × 13-22 μm.

Remarks : *P. impressa* resembles *P. immersa* in spore size and spore-type but the latter has I + blue reaction in nucleus.

Specimen examined—Sri Lanka, no precise locality, Thwaites s.n. (ex. hb. Leighton 184/A, 184/C) (BM). annotated as *Verrucaria variolosa*.

7. *P. interducta* (Nyl.) Zahlbr., Cat. lich. univ. 1 : 433.1922 *Verrucaria interducta* Nyl. Flora 49 : 134.1866.

Figs. 6, 19, 33

Thallus corticolous endophoedal, buff, smooth, shining, K-, C-, KC-, P-, black hypothallus line present ; corticiform layer 30-70 μm thick, algal layer 20-35 μm thick, medulla in distinct.

Ascocarps solitary or 2-4 aggregated, 0.5-1.0 mm in diameter, 150-250 μm high, conico-depressed, +flat, covered with corticiform layer, dull black; perithecium black and carbonaceous, conical, 100-150 μm thick at bottom, slightly spreading laterally; nucleus I-, without oil globules; paraphysoid threads simple; asci clavate, 8-spored, 90-110 × 20-27 μm ; spores monthly biseriately arranged in ascus, brown, 4-locular, locules *P. subducta* type, oblong-ellipsoid, 30-37 × 10.16 μm.

P. interducta is close to *P. subducta* and *P. nitida*, but in *P. subducta* the spores are larger, up to 50 μm long and *P. nitida* has smaller, up to 27 μm long spores.

Specimen examined—Sri Lanka (Ceylon) Paradeniya, Almquist (H-Nyl. 1320).

8. *P. introducta* (Stirton) Zahlbr., Cat. lich, uni. 1 : 433. 1922.—*Verrucaria introducta* Stirton, Proc. Phil. Soc., Glasgow **13** : 191 1881. Type : India, Assam, on tea plant, G. Watt, s. n. (Holotype B : M).

Figs. 12, 25, 33

Thallus corticolous, endophloedal, yellow, shining, pseudocyphellate, K-, C-, KC-, P-, hypothallus indistinct ; corticiform layer 25-27 μm thick, algal layer 20-30 μm thick, medulla indistinct.

Ascocarps verruca-forming, mostly solitary or 1-2 aggregate, 0.5-0.7 mm in diameter, 200-400 μm high ; hemispherical, immersed to half immersed, covered with corticiform layer, or naked near the ostoile, dull black, ostioiles distinct, plain or slightly depressed ; perithecium black, carbonaceous, globose, 50-75 μm thick at top and sides and 30-50 μm thick at bottom, not spreading laterally, with colourless crystals ; nucleus I-, without oil globules ; paraphysoid threads simple ; asci cylindrical, 8-spored, 100-130×15-22 μm spores uni-or biseriate in ascus, brown, 4-locular, locules *P. subducta* type, oblong, ellipsoid, 30-35×10-15 μm.

The taxon is distinguished by hemispherical, half or completely immersed, 0.5-0.7 mm in diameter, ascocarps with yellow, shining, pseudocyphellate thallus. It is close to *P. interducta* and *P. mastophora* but both the latter have thallus without pseudocyphellae.

Specimen examined—Sri Lanka (Ceylon), Central Province, Thwaites, CL90/C (exhb. Leighton)—annotated as *Pryenula punctella*.

9. *P. mamillana* (Ach.) Trevisan, Conspect. Verruc., 13. 1860-*Verrucaria mamillana* Ach., Meth, Lich. 120. 1803.

Figs. 7, 20, 29

Thallus corticolous, endophloedal, yellow ochre, smooth, K-, C-, KC-, P-, hypothallus indistinct ; corticiform layer 20-45 μm thick, algal layer 15-30 μm thick, medulla indistinct.

Ascocarps solitary, 1-1.5 (-2.0) mm in diameter, 300-500 μm high convex-depressed conical, basal part spreading, covered with corticiform layer, a small area around ostoiles naked, black, nitidus or dull black, ostioles papillate-mamillate ; perithecium black, carbonaceous, conical, spreading laterally, 20-40 μm thick at top and bottom ; nucleus I-, with oil globules; paraphysoid threads simple ; asci clavate, 8-spored, 80-100×11-14 μm; spores uni- or biseriate in ascus, brown, 4-locular, locules *P. brunnea* type, oblong-ellipsoid, 14-20×5-7 μm.

The ascocarps in *P. mamilllana* is reported to be 1.0 mm or less in diameter. Vainio (1918) mentioned it as 0.5-1.0 mm in diameter in general and in the original specimen in herb. Ach. 0.6 in diameter. Eschweiler (1833) observed "Perithecia 1 mm lata" in *Verrucaria phaea* (=*Pyrenula mamillana*). The Ceylon specimen, however, has the size range that is ± double to that reported earlier.

Specimen examined—Sri Lanka (Ceylon), no precise locality Thwaites s.n. (Leighton no. 177a) (BM).

10. *P. mastophora* (Nyl.) Muell. Arg., Flora, 66 : 246. 1883.-*Verrucaria mastophora* Nyl. Annal. Sci., Nat. Bot., Ser. 4, **15** : 52.1861.

Figs. 8, 21, 31

Thallus corticolous, epiphloedal, greenish-grey, shining, cracked aerolate, K-, C-,

KC-, P-, hypothallus indistinct; corticiform layer 25-60 μm thick, algal layer 15-30 μm thick, medulla indistinct.

Ascocarps verruca-forming, 3-7 aggregated, rarely solitary, 1.0 mm in diameter, 300-450 μm high, hemispherical, immersed, upper portion near ostioles naked, dull black, oculate, covered with corticiform layer, ostioles distinct, areas around ostioles whitish, plain; perithecium black, carbonaceous, hemispherical, not spreading laterally, 50-100 μm thick at top, 25-50 μm thick at bottom ; nucleus I-, without oil globules; paraphysoid threads simple; asci cylindrical, 8-spored, 100-150 × 15-23 μm ; spores uniseriate in the ascus, brown, 4-locular, locules *P. mastophora* type, oblong-ellipsoid, 22-30 × 10-15 μm.

The size of ascocarps and spores in *P. mastophora* is more or less same with *P. immersa*, but the latter has convex ascocarps with *P. subducta* type of spore locules.

Specimen examined—Sri Lanka (Ceylon), Central Province, Thwaites, CL90/B, Herb. Leighton (BM)—annotated as *Pyrenula punctella*.

11. *P. nitidella* (Flörke) Muell. Arg., Engler Bot. Jb. **6** : 414. 1885.-*Verrucaria nitida* var. *nitidella* Flörke ex Schaerer, Lich. Helvet. Spicil. Sec. 2 : 98. 1826.

Figs. 9, 22, 31

Thallus corticolous, endophloedal, straw-coloured to yellowish-brown, smooth, shining, K-, KC-, C-, P-, hypothallus line present ; corticiform layer 90-135 μm thick, algal layer 35-75 μm thick, medulla indistinct.

Ascocarps solitary, 0.5-1.0 mm in diameter, 500-800 μm high, conical, immersed or covered with corticiform layer, dull black, ostioles indistinct ; perithecium black, carbonaceous, ±uniformly 100-200 μm thick all-around ; nucleus I+ blue, with oil globules ; paraphysoid threads simple ; asci cylinderical ; 8-spored, 100-160x15-21 μm ; spores mostly uni- or rarely biseriate in ascus, brown, swollen at septa, 4-locular, locules *P. mastophora* type, oblong-ellipsoid, 20-30 × 10-15 μm.

P. nitidella is commonly distributed in tropical regions of world and is characterized by ± conical, nitidus ascocarps. It is close to *P. nitida* (Weig.) Ach., but the latter has globose ascocarps and larger spores.

Specimen examined—Sri Lanka (Ceylon), Pedrothallegalle, Almquist 879. (H-Nyl. 1150).

12. *P. pinguis* Fée, Essai Crypt. Ecorc. Officin., : 75. 1824.

Figs. 10, 23, 32

Thallus corticolous, endophloedal, buff, shining, smooth, K-, KC-, C-, P-, hypothallus indistinct ; corticiform layer 20-40 μm thick, algal layer 15-30 μm thick, medulla indistinct.

Ascocarps mostly solitary, 0.4-0.7 mm in diameter, 200-300 μm high, immersed to emerging and depressed to convex, covered with corticiform layer or naked, dull black or nitidus, ostioles indistinct, plain ; perithecium black, carbonaceous, semiglobose—conical, spreading laterally, 80-150 μm thick at top and sides, 20-40 μm thick at bottom, with colourless crystals ; nucleus I-, without oil globules ; paraphysoid threads simple ; asci cylindrical-clavate, 8-spored, 90-155 × 25-35 μm, spores biseritate in ascus, brown, 4-locular, locules *P. pinguis* type ; oblong-ellipsoid, 30-42 × 15-18 μm.

P. pinguis is characterized by generally solitary, depressed to convex ascocarps that

are usually covered with corticiform layer. The most distinguishing feature is the spore chamber type, that has been named by Malme (1929) as *Pinguis* type, based on this species.

Specimen examined—Sri Lanka (Ceylon), South, Thwaites CL 182/B2 (BM). annotated as *Verrucaria marginata* Hook.

13. *P. submarginata* Vainio, Bot. Tidsskrift, 29 : 146. 1909.

Type—Thailand : Gulf of Siam, Insula Kohchang, Koh Kong, Schmidt s. n. (Holotype : TUR).

Thallus corticolous, endophloedal, buff to yellow-brown, smooth, K-, C-, KC-, P-, hypothallus like a black surrounding line ; corticiform layer 30-45 μm thick, algal layer 15-25 μm thick, medulla indistinct.

Ascocarps solitary or 2-3 grouped, 0.5-1.7 mm in diameter, 300-500 μm high, ± flat, convex to depressed conical, naked, basal portion spreading, covered with corticiform layer, dull black, ostioles indistinct, plain ; perithecium black, carbonaceous, conical, spreading laterally, 50-70 μm thick at top and bottom, 100-150 μm thick at sides ; nucleus I-, without oil globules ; paraphysoid threads simple ; asci clavate, 8-spored, 70-100 × 15-10 μm ; spores uni or biseriate in ascus, brown, 4-locular, locules *P. burnnea* type, oblong-ellipsoid, 12-20 × 5-9 μm.

The material (Thwaites CL 182) arranged in two different groups on the sheet and annotated as *Verrucaria marginata*, actually consists of nine different taxa of which only four belong to *Pyrenula* (all different).

The specimens A1 & C2 are not *Pyrenula marginata* (syn. *Verrucaria marginata*) as the latter is characterized by verruca forming hemispherical ascocarps and spores of larger size (1.7-2.0 mm in diameter and 20-25 μm long respectively) and ± tally with the characters of *P. submarginata*.

Specimens examined—Sri Lanka (Ceylon), South side of the Island, Thwaites CL 182/A1, 182/C2 (BM).

14. *P. zeylanica* Upreti & Singh sp. nov.

Thallus epiphloedus, carneo-testaceous vel brunneolus, undulatus vel verrucolous, verruca thallina 1-12-carpa, irregularia ambita, convexa vel hemisherica ; ascocarpia immersa praeter area parva circa ostiola, usque ad 0.4 mm diam., perithecium fuliginosum, haud expansum ; nucleus I+ winose rubens, haud oleosoinspersus ; asci-6-8-spori ; sporae fuscae, oblongae vel fusiformae, 3-septate, cellulis *P. sunducta* typis, 11-30 μm longae, 11-15 um crassae.

Type—Sri Lanka, no precise locality, Thwaites s.n. (ex. hb. Leighton 184/B) (Holotype BM)—annotated as *Verrucaria variolosa*.

Figs. 14, 27. 28, 33

Thallus corticolous, epiphloedal, yellow-brown to brownish, undulate to verrucose, sometimes pustulate, K-, C-, KC-, P-, hypothallus indistinct ; thalline verruca sterile or fertile, fertile ones-1-12-carpous, irregular in outline, convex to hemispherical, up to 2.0 mm accross, top of verruca presenting ±oculate condition around ostiole of each ascocarp.

Ascocarps ± completely embedded in thailine verruca except a small area around ostiole, covered with corticiform layer, dull black, up to 0.4 mm in diameter, ca 350 μm

high, ostioles pale, punctate; perithecium black and carbonaceous, ±uniformly thick-all-around; nucleus I±winose red, without oil globules; asci clavate, 6-8-spored, 110-125×22-30 μm; spores uni-or biseriate in ascus, brown, 4-locular, locules *P. subducta* type, oblong to fusiform 21-40×10-15 μm.

P. zeylanica resembles *P. bahiana* Malme, in the aggregation, as well as in size of ascocarps and spores, but the latter differs in the types of spore cells, all of which are small, ±equal in size and are cubical-subglobose.

Additional specimen examined Sri Lanka, Central Province, Thwaites CL 93/B (BM)-annotated as *Verrucaria variolosa*.

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