

Syo KUROKAWA*: A note on the lichen genus *Tornabenia* Trev.**黒川 造*: *Tornabenia* Trev. についての一見解**

Feb. 26, 1853, Trevisan published a book "*Tornabenia et Blasteniospora nova Parmeliarum genera*". In it he proposed the genus *Tornabenia*, citing two species, *T. montagnei* Trev. and *T. intricata* (Desf.) Trev. *Tornabenia montagnei* is a new name for *Evernia intricata* var. *cylindrica* Mont., which is now regarded as a synonym of *Anaptychia intricata* (Desf.) Mass.

In 1853, but after Trevisan's publication, Massalongo reduced *Tornabenia* to a synonym of *Anaptychia* and also transferred *T. intricata* to *Anaptychia*.

Accordingly, *Anaptychia intricata* and the related species *A. ephebea*, both with fruticose thalli, have long been members of *Anaptychia*, because they have polarbilocular brown spores and a nonparaplechtenchymatous cortex. They have also been considered to be closely related to *A. ciliaris* (L.) Körb. and *A. kaspica* Gyel. However, as a rule, the thallus of *Anaptychia* is foliose and dorsiventral, even though some of the species have ascending or suberect lobes. Although, for example, the lobes of *A. ciliaris* and *A. kaspica* are ascending towards the tips, sometimes very narrow, and tomentose on the uppersurface, just as in *A. intricata* and *A. ephebea*, the thallus is not fruticose, and the lobes are apparently dorsiventral and lack a lower cortex. The genus *Anaptychia* includes the several other species which have ascending or suberect lobes: *A. erinacea*, *A. podocarpa*, *A. hypochraea*, *A. himalayensis*, *A. incana*, *A. leucomelaena*, *A. neoleucomelaena*, *A. lutescens*, etc. However, all of them are dorsiventral and lack a lower cortex. In addition, the lobes of all these species, including *A. ciliaris* and *A. kaspica*, have marginal rhizines, which are completely absent in *A. intricata* and *A. ephebea*.

In a few species of *Anaptychia*, the lobes are corticate on the uppersurface, the undersurface, and the margin, for example, in *A. fusca*, *A. palmulata*, *A. speciosa*, *A. pseudospeciosa*, and *A. formula*. However, they are definitely foliose and dorsiventral and have rhizines below, which originate from the lower cortex. It is noteworthy that these species have adnate or closely adnate thalli, and the lobes are not at all ascending or suberect.

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As already mentioned above, there is another reason why *A. intricata* and *A. ephebea* have long been considered as *Anaptychias*; namely, because they produce polarbilocular brown spores. There is one median septum in mature spores of *A. intricata* and *A. ephebea*. Although the wall is sometimes thickened only at the septum and much thinner at the ends, the development of spores in these two species is almost the same as that in *A. ciliaris*, *A. kaspica*, *A. fusca*, *A. palmulata*, etc. However, *A. ciliaris* and *A. kaspica* are quite different from *A. intricata* and *A. ephebea* in structure of lobes and life form; the lobes of *A. fusca* and *A. palmulata* are dorsiventral and closely adnate to the substratum.

The genus *Anaptychia* is characterized by producing 1-septate brown spores and by having a nonparaplechtenchymatous cortex, which is composed of conglutinated thick-walled hyphae oriented mostly in a longitudinal direction. Although *A. intricata* and *A. ephebea* produce 1-septate brown spores and have the same cortical structure, there is no species which is intermediate between these two species and the other species of *Anaptychia* in structure of lobes and life form.

For the reasons mentioned above, the author feels that it is desirable to resurrect *Tornabenia* Trev.

I wish to express my sincere thanks to Dr. Rolf Santesson, Uppsala University, for his suggestions in some nomenclatural problems.

Tornabenia Trev. Tornab. et Blast. 3. 1853.

Thallus fruticose or caespitose; branches dichotomously branched, terete or often more or less flattened and angular, entirely corticate, generally intricate; cortex composed of conglutinated thick-walled hyphae mostly oriented in a longitudinal direction, sometimes covered with a hyaline layer.

Apothecia lateral, sessile, lecanorine; hymenium hyaline, I+blue; paraphyses more or less thickened, branched, and brownish near the tips; spores brown, ellipsoid, 1-septate, with 2 locules.

Lectotype: *Evernia intricata* var. *cylindrica* Mont. = *Tornabenia montagnei* Trev.

This genus is characterized by having a fruticose or caespitose thallus and by producing polarbilocular brown spores with one median septum. The lobes are entirely corticate, and the cortex is composed of conglutinated thick-walled hyphae oriented mostly in a longitudinal direction. Because of the polarbilocular

brown spore it seems to be related to *Anaptychia*, *Physcia*, and *Pyxine*, and therefore it should be considered as belonging to the family Physciaceae.

Tornabenia resembles *Letharia*, *Evernia*, and *Alectoria* in life form, but it differs from these genera in producing brown spores. Some species of *Theeloschistes* have fruticose thalli and produce polarbilocular spores, but the spores are colorless.

Key to the species of *Tornabenia*

Medulla composed of loosely interwoven hyphae.....

.....(1) *T. atlantica* (Ach.) Kurokawa

Medulla composed of strands of conglutinated longitudinal hyphae

and loosely interwoven hyphae.....(2) *T. ephebea* (Ach.) Kurokawa

1. *Tornabenia atlantica* (Ach.) Kurokawa comb. nov.

Parmelia atlantica Ach. Meth. Lich. suppl. 50. 1803. Holotype: Atlantic region (H) and isotype (UPS).

Lichen intricatus Desf. Fl. Atlant. 2: 420. 1800. *Tornabenia intricata* (Desf.) Trev. Tornab. et Blast. 3. 1853. *Anaptychia intricata* (Desf.) Mass. Mem. Lichenogr. 36. 1853. Non *Lichen intricatus* (Hoffm.) Ehrh. (= *Ephebe lanata*). Type: In ramis Lentisci et in aliis arboribus Atlanticis (not seen).

Evernia intricata var. *cylindrica* Mont. in Webb et Berthel. Hist. Nat. Isl. Canar. 3 (2): 97. 1840. Isotype: Canarie Islands, P.B. Webb (K).

Tornabenia montagnei Trev. Tornab. et Blast. 3. 1853. (Nom. nov. for *Evernia intricata* var. *cylindrica* Mont.).

Parmelia ciliaris f. *deformis* Jatta Nuov. Giorn. Bot. Ital. 14: 117. 1882. Isotype: Cacumine, St. Nicolai, Ischia, Italy, A. Jatta. (Lich. Ital. Merid. no. 2) (M).

Theeloschistes intricatus var. *spinigerus* Mah. et Gill. Mém. Soc. Sc. Nat. du Maroc. 8: 287. 1924. Holotype: Ecorce d'Arganier, entre Mogador ex Agadir, April 1921, P. Dusnée (PG: Mahue herb.).

Theeloschistes bioreti des Abbayes Bull. et Mem. Soc. a'emul. des Gotes du Nord 62: 83. 1931. Type: Vallée maritime du Moulin-Roland, près Morieux, France (not seen).

Anaptychia intricata var. *denudata* B. de Lesd. Rev. Bryol. Lich. 8: 16. 1935. Lectotype: Ponta da Cruz 700 m, St. Lago, Iles du Capvert, Portugal, A. Chevalier in 1934 (PG: Mahue herb.).

Thallus fruticose or caespitose, grayish to reddish brown; branches dichotomous.

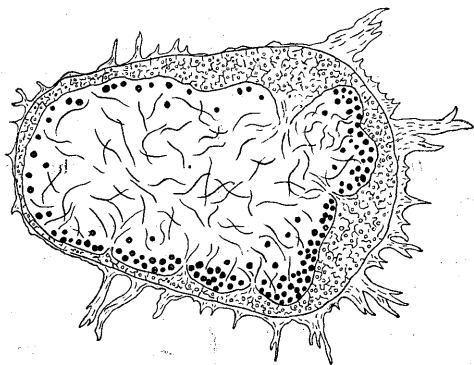


Fig. 1. Transverse section of the thallus of *T. atlantica* ($\times 70$).

Reaction: Thallus K—; medulla K—, K (C)—, PD—.
 Chemical ingredients: No lichen substances present.
 Habitat: On rocks or twigs.

This lichen is well known under the name *Anaptychia intricata* (Desf.) Mass., which is based on *Lichen intricatus* Desf. Although I have not seen the type specimen of *L. intricatus* Desf., this name is a later homonym of *Lichen intricatus* (Hoffm.) Ehrh., which is now recognized as a synonym of *Ephebe lanata* (L.) Vain. Therefore, the oldest valid name for this species is *Tornabenia atlantica* (Ach.). There are three different species in the literature with the name "*Lichen intricatus*". They are as follows:

Lichen intricatus (Hoffm.) Ehrh. in Schrader, Journ. Bot. 1: 82. 1799.

= *Ephebe lanata* (L.) Vain.

Lichen intricatus Desf. Fl. Atlant. 2: 420. 1800.

= *Tornabenia intricata* (Desf.) Trev.

Lichen intricatus Schrad. Journ. Bot. 1 (1): 72. 1802.

= *Lecanora mutabilis* Sommerf.

Recently Tavares (1957) published an article on variation in *Anaptychia*

intricata. He recognized three varieties, *intricata*, *cylindrica*, and *spinigera*, emphasizing "indument" and "capacity of sorediiform proliferation". These characters, however, seem to be ecological variations and probably do not deserve taxonomic rank.

I have examined types of the following taxa which Tavares was apparently not able to see. The holotype of *Parmelia atlantica*, preserved in the Acharian herbarium at Helsinki, has branches that glabrous with older lobes more or less angular. The holotype of *Anaptychia intricata* var. *denudata* B. de Lesd. was destroyed at Dunkirk during the Second World War, but I have been able to select the lectotype and isotype preserved in the Mahue herbarium (PG). The holotype of *Theloschistes intricatus* var. *spinigerus* Mah. et Gill. is also preserved in the Mahue herbarium. Jatta described *Parmelia ciliaris* var. *deformis* from his own collection from Ischia, Italy. The isotype of this variety, which is preserved in M, is identical with *T. atlantica*.

Tornabenia atlantica occurs on rocks and twigs in the Atlantic regions of Europe, the Mediterranean regions of Europe and Africa, and the Canary Islands. Skoliczka has collected a specimen at the north-west Himalayas in China, so that the range of this species may be extended to Asia.

Representative specim. exam.: Lancerotta, Canarie, *E. Bourgeau* (Plantae Canariensis no. 610) (K). Orri in südlichen Sardinien, *Canepa* (Lich. Exs. Vindobonensis no. 783) (K). NW. Himalayas, China, *Skoliczka* 503 (H: Nyl. herb. no. 32830; W).

2. ***Tornabenia ephebea*** (Ach.) Kurokawa comb. nov.

Parmelia ephebea Ach. Meth. Lich. 269. 1803. *Borrera ephebea* (Ach.) Ach. Lich. Univ. 501. 1810. *Physcia intricata* var. *ephebea* (Ach.) Nyl. Memoir. Soc. Imp. Sci. Natur. Cherb. 5: 106. 1857. *Anaptychia ephebea* (Ach.) Sant. Ark. Bot. 30 (B), 5: 2. 1942. Holotype: Peru, *Dombey* (H: Ach. herb.) and isotype (BM, K, UPS).

Evernia sprengelii Fr. Kgl. Vetensk. Akad. Handl. 41. 1820. Holotype: Peru (UPS).

Cenomyce hirta Tayl. in London Journ. Bot. 6: 185. 1847. Holotype: Peru (FH: Tayl. herb.) and isotype (K).

Thallus fruticose or caespitose, grayish brown to brown; branches dichotomously or irregularly branched, terete to subterete, gradually attenuated towards the apices, tomentose or pubescent, 0.2—1.0 mm in diameter; cortex

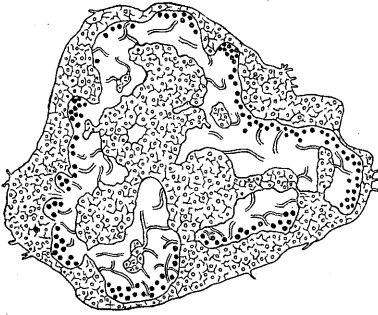


Fig. 2. Transverse section of the thallus of *T. ephebea* ($\times 70$).

irregularly thickened, 15–100 μ thick, often connected with medullary strands of hyphae; gonidial layer discontinuous, often interrupted by the cortex, gonidia 8–15 μ in diameter; medulla composed of strands of conglutinated hyphae oriented mostly in a longitudinal direction and loosely interwoven hyphae. Apothecia lateral, sessile, 0.5–1.5 mm in diameter; margins entire; receptacle tomentose or pubescent; disc blackish brown, epruinose, almost

plane; hymenium I+blue, about 130 μ high; asci cylindrical to subclavate, 16–19 \times 80–100 μ , 8-spored; spores dark brown, ellipsoid, 10–14 \times 25–31 μ .

Reaction: Thallus K—; medulla K—, G—, K(G)—, PD—.

Chemical ingredients: No lichen substances present.

Habitat: On rocks or twigs.

Although several lichenologists have reduced *Parmelia ephebea* to a synonym of *Anaptychia intricata*, Nylander recognized it as a variety of *Physcia intricata*. Santesson (1942) made a new combination *Anaptychia ephebea*, considering it as a valid species. Externally *T. ephebea* is very similar to *T. atlantica*; the spore size of the two species agrees closely. *T. ephebea*, however, is clearly distinguished by the structure of the medulla. As already pointed out by Santesson (1942) and Tavares (1957), this species is endemic to Peru, and therefore its range is quite distinct from that of *T. atlantica*.

Representative specim. exam.: Peru. Gay (G); Waura (BM, M, S); Winterfeld (S).

References

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