



# TRAVAUX MYCOLOGIQUES

dédiés à

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**PLICARIA ACANTHODICTYA,  
A NEW FIREPLACE DISCOMYCETE  
FROM DENMARK**

by Henry DISSING

Summary. — *Plicaria acanthodictya* Dissing et Hauerbach *nov. sp.* is described from a fireplace in Jylland. Comments are given on the delimitation of the genus *Plicaria*. Development of the spores and characters of the anatomy of *Boudiera echinulata* (Seaver) Seaver is briefly discussed.

***Plicaria acanthodictya* Dissing et Hauerbach *sp. nov.***

*Carposoma carnosum*, 2-6 mm latum, primum regulariter subturbinatum supra cavum, deinde magis expansum disco plano numquam pulvinato, saepe ab affinibus pressum irregulare, carposomatibus plerumque conferte congregatis; margo latus, hymenio ab excipulo non bene distincto; hymenium subfuscum purpureo affectum; excipulum supra furfuraceum, hymenio concolor, ad basim versus sensim pallescens.

Excipuli stratum exterius 80-165  $\mu$  crassum; cellulae angulatae vel breviter cupiformes, 30-40  $\mu$  longae, 15-22  $\mu$  latae, axibus longitudinalibus in superficiem directis, prope marginem tamen subsphaericae vel claviformes, series breves superficiei subparallelas formantes; pili 2-4celluli hyalini hyphis similes basi e cellulis superficialibus orientes.

Excipuli stratum medullare crassum e variis cellulis compositum, aliis hyphis similibus 6-8  $\mu$  latis, aliis subsphaericis 30-75  $\mu$  diam. per formas intermedias cum illis conjunctis.

Subhymenium ab excipulo medullari bene separatum, 50-65  $\mu$  crassum, e hyphis brevibus septatis ramificatis dense intertextis compositum.

Asci 265-300  $\mu$  longi, 15-16.5  $\mu$  lati, operculati, cylindrici, paulum, omnino aequaliter, amyloides; paraphyses plerumque ascos maturos paulum superantes, septatae, apice ad 4-6  $\mu$  leniter incrassatae, substantia amorpha subfusca cellulae apicali adhaerente. Sporae globulares, initio biseriatae, glabrae, hyalinae, quaeque 5-10 guttulas olei continens; maturae uniseriatae, pallide fuscae, 11.9 - 12.9 - 13.5  $\mu$  diam., reticulo cyanophilo 1-2  $\mu$  elevato spinis brevibus tenuibus regulariter armato ornatae.

Typus die 8 Aug. anni 1970 in loco deusto, solo humoso argilloso post urendum arena strato, ad Skovbakker prope vicum Lovns ab oppido danico Skive inter septentriones et orientem 18 km distantem sub numero 461 ab A. Hauerbach lectus, siccus in Museo Botanico Haumiensi depositus.

*Plicaria acanthodictya* Dissing & Hauerbach sp. nov.

Figs. 1-2.

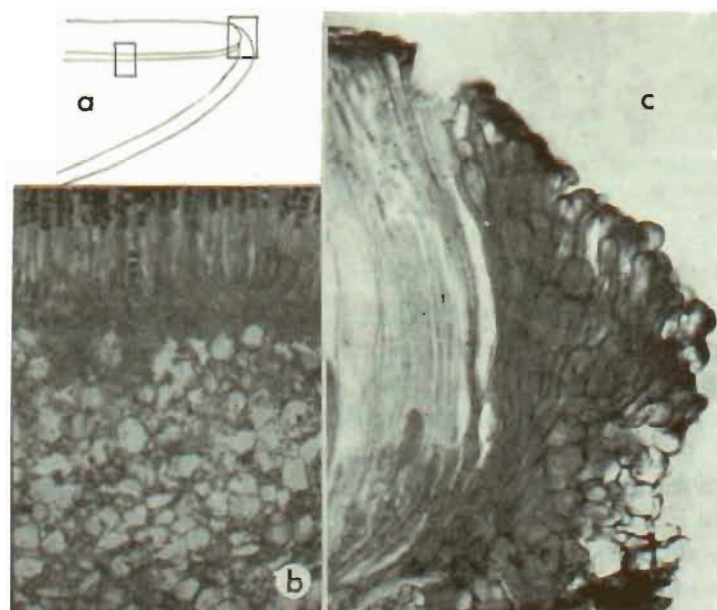


Fig. 1. — *Plicaria acanthodictya*. a. marginal section, schematic, showing position of the sections in b and c, which are stained in cotton blue. Hauerbach 461 (type) (C). a  $\times 20$ , b-c  $\times 325$ .

Fruit bodies fleshy, mostly gregarious, 2-6 mm broad, first subturbinate, regular in outline, later expanding, then with a flat disc, but never becoming pulvinate; when mature the fruit bodies may become irregular in outline, due to mutual pressure; margin broad, without distinct separation between hymenium and excipulum; hymenium brownish with a purplish tinge; outside scurfy in the upper part, concolorous with hymenium, paler towards the base.

Outer excipulum 80-165  $\mu$  thick, individual cells angular to short barrel shaped, 30-40  $\times$  15-22  $\mu$ , with the long axis towards the outside, near

the margin forming short rows of globose to club shaped cells, subparallel to the surface; towards the base 2-4 celled hyphoid hyaline hairs arise from the outermost cells.

Medullary excipulum thick, of a mixture of cell types, ranging from hyphoid, 6-8  $\mu$  broad, to nearly globose, 30-75  $\mu$  broad, with all intermediate types in between.

Subhymenium well separated from the medullary excipulum, 50-65  $\mu$  thick, of short, densely interwoven, septate, branching cells. Asci 265-300  $\mu$  high, 15-16.5  $\mu$  broad, operculate, cylindrical, uniformly, weakly amyloid in their whole length; paraphyses mostly a little longer than mature asci, septate, slightly enlarged above to 4-6  $\mu$ , with an amorphous brownish substance adhering to the walls of the uppermost cell.

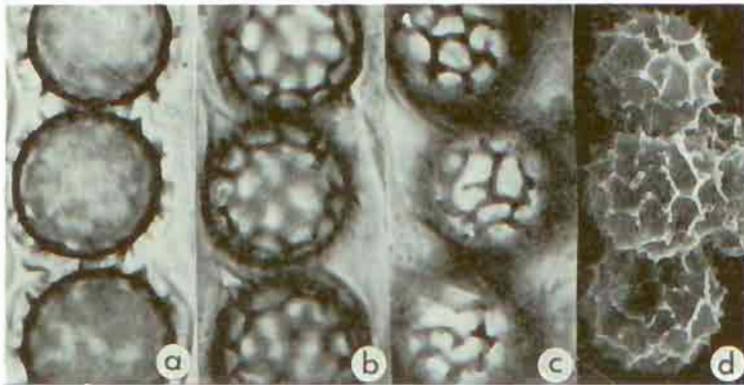


Fig. 2. — *Plicaria acanthodictya*. spores. a-c. stained in cotton blue and photographed in a light microscope, d. SEM photo. Hauerbach 461 (type) (C) a-d  $\times$  1 500.

Spores globose, first biseriata, smooth, hyaline, with 5-10 small oil guttules, when mature uniseriate, pale brownish, 11.9-12.9-13.5  $\mu$  in diam., with a 1.2  $\mu$  high reticulate, cyanophilic pattern, which is regularly set with delicate, low spines on the ridges.

Material: Denmark, Jylland, Skovbakker near Sogns, 15 km NE of Skive, fireplace on rich, mouldy-clayey soil, 8. viii. 1970, leg. A. HAUERBACH 461 (Holotype in C.).

*Plicaria acanthodictya* was growing on a few fireplaces arranged for cooking by scouts. After the burn the places were covered with sand. The places were situated in a grass-grown clearing in the forest, where *Quercus* were the main tree. In 1970 and 1971 fruiting was abundant, while in

1972 only a few fruit bodies were seen. While the Holotype is in C. all other collections are at present in Mr. A. HAUERBACH's private herbarium.

The burns were arranged early in 1970. During the three seasons in which they have been inspected, the following other fungi were recorded : *Anthracobia melaloma*, *Geopyxis carbonaria*, *Plicaria trachycarpa*, *Scutellinia insignispora*, *Sphaerosporella hinnulea*, *Pholiota carbonaria*, and *Lycophyllum ambustum*.

Discussion : *Plicaria alveolata* (Rodway) Rifai is another *Plicaria* species with reticulate spores, but difference in spore size and lack of the very characteristic spines found in *P. acanthodictya* makes it easy to distinguish the two species. Also the habitat is different but more collections have to be found to see if this is a significant character.

The genera *Plicaria* and *Peziza* are no doubt closely related and I do understand that some authors merge them. The only significant difference seems to be the shape of the spores. It is therefore with much hesitation that I place my fungus in the genus *Plicaria*. However, at present I prefer, like ECKBLAD (1968) and RIFAI (1968) to keep the two genera apart. Mostly because the distinguishing characters between *Plicaria* and such genera as *Boudiera* Cooke, *Pulparia* Karst. (= *Marcelleina* Brumm., Korf & Rifai), *Sphaerosoma* Klotzsch, *Sphaerozonia* Zobel and *Svrcekia* Kub. are not at all clear.

If main emphasis is placed on the amyloid reaction of the ascus species of *Pulparia*, *Sphaerozonia* and (?) *Svrcekia* are very easily keyed out, but still there is *Boudiera* and *Sphaerosoma* left. *Sphaerosoma* is by most authors considered to belong in Tuberales, but its delimitation is poorly understood. Unfortunately no species of the genus have been available to me. Some characters of *Boudiera* will be considered below. But there is another genus which should also be considered when relationship to *Plicaria* is discussed, namely *Pachyphloeus* Tul. At least one of the species, viz. *P. melanoanthus* (Berk.) Tul. has amyloid asci, and the spores of the recognized species of *Pachyphloeus* show a similar pattern of variation as that found in *Plicaria*. In Denmark two collections of a species (genus ?) new to the flora have been seen, which probably represent a taxon between *Plicaria* and *Pachyphloeus*. This material will be dealt with in a separate paper.

The systematic position of the genus *Boudiera* is much disputed. LE GAL (1947) placed it in Humariaceae, ECKBLAD (1968) in Ascobolaceae, and RIFAI (1968) in Pezizaceae. It is characteristic that all proposals were tentative. One reason for this might be that the anatomy of all species of the genus is little known. In the summer 1972 the present author found a collection of *Boudiera echinulata*. Comments on the anatomy and the

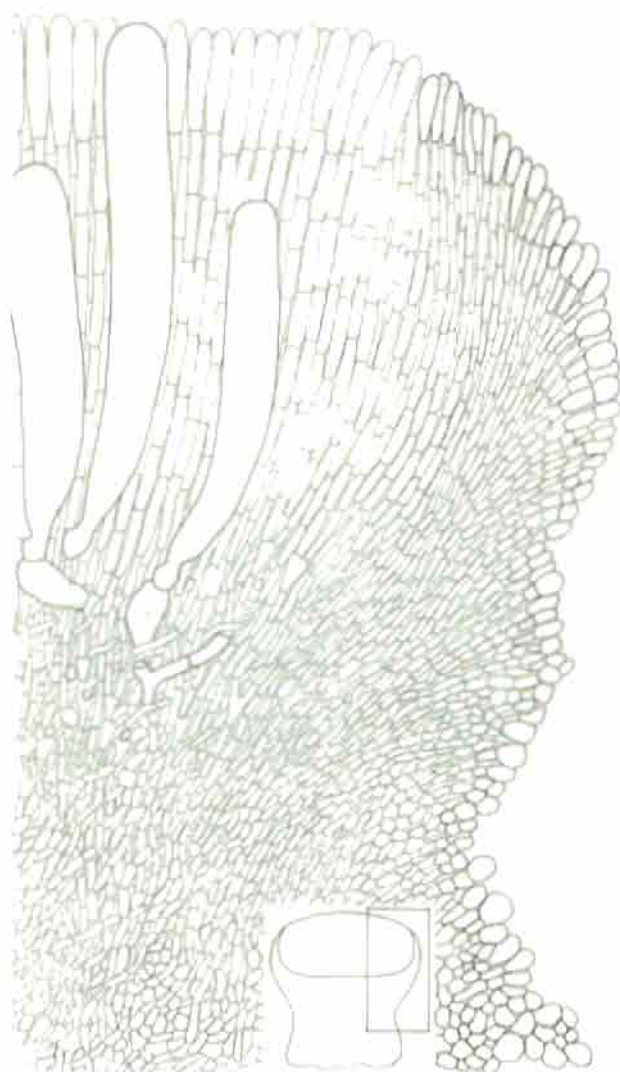


Fig. 3. — *Boudiera echinulata*. marginal section. Inserted figure below shows its position in the fruit body. H D. 16. viii. 1972 (C). Section  $\times 166$ , inserted figure  $\times 20$ .

spore formation is given below, but since the species seems to be very rare, a full description is provided.

*Boudiera echinulata* (Seaver) Seaver

Figs. 3-5.

Fruit bodies turbinate to pulvinate, 1 mm broad; hymenium purplish brown, outside paler.

Outer excipulum 65-85  $\mu$  thick, heavily staining in cotton blue, innermost cells cylindrical to barrel shaped, 6-13 x 16-30  $\mu$ , outermost cells club shaped to nearly globose, 16-26 x 30-35  $\mu$ . Medullary excipulum of thin walled, branching, septate hyphae, weakly staining in cotton blue, individual cells densely interwoven, varying in size and shape, but it is very characteristic that all hyphae tend to develop subparallel to the outer surface (Fig. 3).

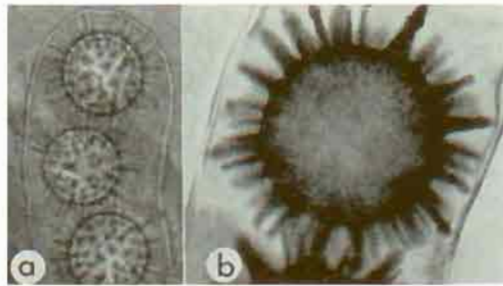


Fig. 4. — *Boudiera echinulata*. spores. a, fresh material, first mounted in water, which was substituted by cotton blue, and then photographed, b, freezedried material, in cotton blue. H.D. 16. viii. 1972 (C). a x 500, b x 1000.

Subhymenium not distinct. In the area below the hymenium a few hyphae more densely staining in cotton blue can be recognized in some sections. Asci very large, 380-450  $\mu$  long, 38-51  $\mu$  broad, much protruding at maturity, amyloid all over; paraphyses gradually widening to 11-16  $\mu$  above, in the uppermost cells with a purplish brown content, below with many septa.

Spores globose, hyaline, with oil guttules; first bi-triseriate, smooth, with a hyaline covering which disappear when the spores are mature. Mature spores uniseriate, 21.5-22.8-26.4  $\mu$  in diam. exclusive the cyanophilic spines, which are 4-6  $\mu$  long. The spines are mostly regular, straight,

It might be wrong to regard my study of the spores in only one fruit body more than a preliminary contribution. It may indicate, however, that a more detailed study from fresh material is highly wanted. This could also elucidate the spore morphology and thereby decide whether it is correct to regard *B. echinulata* as a distinct species. Fig. 3 shows the anatomy of the excipulum in *B. echinulata*. Since only one fruit body could be used for the sectioning on a freeze microtome, it was necessary, carefully of course, to make a drawing from more than one section (no sections made showed all characters). But it seems evident that the very characteristic medullary excipulum will not bring support for any of the taxonomic proposals mentioned above. Together with the very large, amyloid asci, with a very large operculum (and perhaps a unique type of spore formation) it rather indicates an isolated position, perhaps intermediate between Ascobolaceae and Pezizaceae.

Acknowledgement.

I want to express my best thanks to Mr. A. HAUERBACH, who put at my disposal the very interesting material of *Plicaria acanthodictya*. He also gave valuable information about the type locality. The latin diagnosis was prepared by Dr. TYGE CHRISTENSEN.

Mr. J. FUGLSANG NIELSEN, Institut for historisk geologi og palaeontologi, University of Copenhagen, operated the Cambridge Scanning electron microscope, and Miss KATE RAFN prepared the photographs.

I highly appreciate their co-operation.

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