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The status of the ordinal name Leotiales

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Korf R. P. and Lizoň P. (2001): The status of the ordinal name Leotiales – Czech Mycol. 52: 255–257

The ordinal name Leotiales S. E. Carp. was proposed by Carpenter in 1988 as a substitute for the invalid ordinal name Helotiales, but Carpenter's ordinal name was also not validly published. Helotiales Nannf. has since been validated. The ordinal name Leotiales Korf et Lizoň is proposed for a much smaller group of Discomycetes.

Key words: Helotiales, nomenclature, invalid publication

Korf R. P. and Lizoň P. (2001): Postavenie mena radu Leotiales – Czech Mycol. 52: 255–257

Meno radu Leotiales S. E. Carp. navrhol Carpenter r. 1988 ako náhradu pre neplatné meno radu Helotiales, ale Carpenterovo meno bolo tiež neplatne uverejnené. Meno radu Helotiales Nannf. bolo medzičasom platne uverejnené. Meno radu Leotiales Korf et Lizoň je navrhované pre podstatne menšiu skupinu diskomycétov.

Carpenter (1988) proposed the ordinal name Leotiales S. E. Carp. as a "nomen novum" to replace the ordinal name Helotiales Nannf. (Nannfeldt 1932), which was based on the invalid generic name Helotium Pers., a later homonym of Helotium Tode: Fr. His arguments for rejecting Helotiales were apparently flawless. His reasoning that one should not adopt any of the available ordinal names, Cyttariales Korf ex D. Hawksw. et O. E. Erikss., Medeolariales Korf, or Phacidiales Höhn., in each case in a necessarily greatly enlarged sense, we support wholeheartedly. Unfortunately, as pointed out to us some years ago by Prof. Werner Greuter, Berlin, Carpenter overlooked the fact that his new ordinal name lacks either a Latin

description or diagnosis, or reference to a previously and effectively published Latin description or diagnosis (International Code of Botanical Nomenclature, Art. 36.1). His name is thus not validly published, as it does not follow the Code.

We choose not to provide a Latin diagnosis to validate Carpenters name, since we do not need at this point to have a substitute for Nannfeldt's Helotiales. In an earlier paper, we have already validated Nannfeldt's ordinal name (Korf and Lizoň 2000).

Quite to the contrary, we remain convinced that a very few genera, centered on the genus Leotia Pers., that have typically been placed in the Helotiales, deserve ordinal recognition as different from the Helotiales, and we have thus recognized the Leotiaceae Corda emend. as a separate family (Lizoň et al. 1998) in a separate order from the Helotiaceae Rehm, nom. conserv. (Korf et al. 1996), a name which was conserved at the last International Botanical Congress. Lizoň et al. (1998) placed the Leotiaceae in this restricted sense in a separate order, Leotiales (no author citation given), with only one family recognized. This is a very different use of the name Leotiaceae than the greatly expanded one proposed by Korf (1973). We know from correspondence with several colleagues that our position of recognizing two orders for these fungi is viewed with some skepticism, but our proposal here is to provide a valid ordinal name for such fungi whenever others agree with us that both orders deserve recognition. If our position is proven to be incorrect, our new ordinal name proposed here would merely become a later synonym of Helotiales Nannf. Both ordinal names will now become validly published.

Leotiales Korf et Lizoň, ord. nov.

Ordo discomycetum inoperculatarum, distinctarum apotheciis strato excipuli ectalis exteriore praeditis ex textura intricata vel porrecta in gelatino copioso immersa formato (hoc strato interdum restricto ad pulvinum basalem gelatini ad basim stipitis vel partim supra latera apotheciorum), strato interiori hypharum parietibus exilibus vel textura cellulari non in gelatino praeditarum, et strato medullari hypharum denuo in gelatino immerso.

An order of inoperculate discomycetes characterized by apothecia with the outermost layer of the ectal excipulum composed of textura intricata to textura porrecta immersed in a copious gel (sometimes this layer restricted to a basal pad of gel at the base of the stipe or only part way up the flanks of the apothecia), with an inner layer of thin-walled hyphae or a cellular tissue not in a gel, and a medullary layer of hyphae again immersed in a gel.

Typus: *Leotia* Pers.: Fr (Persoon 1794) [automatic typification: ICBN Art. 16.1]

Families included: Leotiaceae Corda (Corda 1842)

Other genera included: *Calloriopsis* Syd. et P. Syd. (Sydow & Sydow 1917), *Gelatinopsis* Rambold et Triebel (1990), *Gelatinopulvinella* Hosoya et Y. Otani

(1995), *Geocoryne* Korf (Korf et al. 1978), *Neobulgaria* Petrak (1921), and *Pezoloma* Clements (1909).

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Plicaria (Pezizales) in Britain, and Plicariella reinstated

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Spooner B. M. (2001) Plicaria (Pezizales) in Britain, and Plicariella reinstated – Czech Mycol. 52: 259–265

Species referred to *Plicaria* Fuckel in Britain are considered and a key provided for their identification. One of them, *Peziza radula* Berk. et Broome, the lectotype of *Plicariella* (Sacc.) Rehm, proves congeneric with *Peziza scabrosa* Cooke, the type of *Scabropezia* Dissing et Pfister. *Plicariella* (Sacc.) Rehm therefore provides an earlier name for *Scabropezia*.

Key words: Pezizaceae, *Plicaria*, *Plicariella*, *Scabropezia*, *Peziza radula*, *Peziza scabrosa*, British Isles.

Spooner B. M. (2001): Plicaria (Pezizales) v Británii a návrat k rodovému jménu Plicariella. – Czech Mycol. 52: 259–265

Hodnocení druhů řazených do rodu *Plicaria* Fuckel v Británii a návrh klíče na jejich určování. Jeden z těchto druhů, *Peziza radula* Berk. et Broome, lektotyp rodového jména *Plicariella* (Sacc.) Rehm byl zjištěn jako identický s *Peziza scabrosa* Cooke, což je typový druh rodového jména *Scabropezia* Dissing et Pfister. *Plicariella* je tudíž starším jménem pro *Scabropezia*.

INTRODUCTION

Recent and ongoing studies on British Pezizales have included an investigation of *Plicaria* Fuckel, to which four British species are currently referred (Cannon et al. 1985). *Plicaria* is closely related to *Peziza* Fr., having cupulate to discoid apothecia and amyloid asci which stain more intensely at the apex. In addition, a *Chromelosporium* anamorph is known for some species of both genera and some authors, following Korf (1961), have preferred not to separate them. However, as currently circumscribed, *Plicaria* is distinguished from *Peziza* by its globose, pigmented ascospores, less complex excipular structure, and adherent paraphyses (Dissing & Korf 1980; Dissing & Pfister 1981; Hirsch 1985). In addition, its constituent species have dark hymenial pigments and occur on burnt ground, although these characters are shared by some species of *Peziza*. A broader concept of *Plicaria* to include certain species with ellipsoid, ornamented, pigmented ascospores currently referred to *Peziza* was suggested by Moravec & Spooner (1988), and a similar conclusion was presented by Egger (1987) based on a study of extracellular tyrosinase as indicated by phenoloxidase tests. Further discussion on the delimitation of *Plicaria* is given by Rifai (1968) and Hirsch (1985).

Plicaria is also closely allied to *Scabropezia* Dissing & Pfister (Dissing & Pfister 1981) which is similar in having globose spores and amyloid asci but differs in ecology and in excipular structure. Species of *Scabropezia* are not associated with burnt ground, and the receptacle surface is unlike that of *Plicaria* in having conspicuous conical pustules composed of large, globose to angular cells (Dissing & Korf 1980; Dissing & Pfister 1981). Several other genera of Pezizaceae are also similar in having globose spore, and are reviewed by Dissing & Korf (1980). These include *Boudiera* Cooke, distinguished from the above most notably by its uniformly amyloid ascus wall, and by its small, pulvinate apothecia which occur on damp, unburnt ground. A key to distinguish these genera is given by Dissing & Pfister (1981). *Sphaerozone* Zobel, has indehiscent asci and subglobose to irregular, convoluted ascomata which are sub-hypogeous in development. Further discussion of this genus in Britain is given by Pegler et al. (1993).

Well over 100 names have been referred to *Plicaria*, though the majority of these do not belong in the genus as currently circumscribed, and others can be placed as synonyms. Only about ten species of *Plicaria* are currently recognised (Hawksworth *et al.*, 1995).

Amongst the four species reported as British is *Plicaria radula* (Berk. & Broome) Boud., a little-known fungus that was described from England in 1846 and which has remained uncollected for almost 150 years. The species has been placed in *Plicaria* on account of its globose spores and amyloid asci but previous studies by Eckblad (1968), Dissing & Pfister (1981), and Hirsch (1985) have concluded that its true disposition is unclear. It was selected as lectotype of the genus *Plicariella* by Eckblad (1968) which he placed as a synonym of *Plicaria*. However, examination of the holotype and later collection of *P. radula* strongly suggests it is congeneric with *Peziza scabrosa* Cooke, the type of *Scabropezia* Dissing & Pfister. *Plicariella* therefore provides an earlier name for that genus.

A redescription and discussion of *P. radula* based on the holotype material preserved in K is presented here, and a combination in *Plicariella* for *Peziza scabrosa* is proposed. A comparative description of the genus *Plicaria* and a key for the identification of the three remaining British species are also provided.

Plicariella (Sacc.) Rehm in Rabenhorst, Krypt.-Fl. 1(3): 993 (1894)

Lectotype: *Peziza radula* Berk. et Broome

Phaeopezia Sacc. subgen. *Plicariella* Sacc., Bot. Centralbl. 18: 218 (1884)

Plicariella radula (Berk. et Broome) Rehm in Rabenhorst, Krypt. Fl. Deutschland, Oesterreich und der Schweiz 1, 3: 997 (1894)

Peziza radula Berk. et Broome, Ann. Mag. Nat. Hist. 18: 77 (1846)
Aleuria radula (Berk. et Broome) Quélet in Enchiridion Fungorum p. 281 (1886)
Phaeopezia radula (Berk. et Broome) Sacc. in Syll. Fung. 8: 471 (1889)
Curreyella radula (Berk. et Broome) Massee in Brit. fung.-fl. 4: 401 (1895)
Plicaria radula (Berk. et Broome) Boud. in Hist. Class. Discom. d'Europe p. 50 (1907)

Apothecia shallow cupulate, sessile, rather thick-fleshed, c. (0.5?-) 1–2.5 cm diam., disc 'dark vinous brown', surface of receptacle 'black' when fresh (now appearing dark blackish-brown), bearing conspicuous, conical pustules. Paraphyses filiform, septate, obtuse, 4–6 μm diam., slightly enlarged towards the apex, with pale yellow-brown content. Asci 8-spored, cylindric, c. 330–400 × 23–32 μm, 8-spored, wall amyloid throughout, more intensely stained at the apex. Ascospores globose, pale brownish, 14–17 μm diam. excluding ornament, ornamented either (at first?) with blunt, fairly regular warts 1–1.5 μm high × 1–2 μm wide, or (at maturity?) with regular to irregular, bluntly conical spines c. 2–2.5 μm high.

Anamorph: unknown

Saprobic, on soil.

Specimens examined

ENGLAND: Gloucestershire (?), near Bristol, 'on the ground in woods', 25 Oct. 1845, ex herb M. J. Berkeley, K(M) 57723 (holotype). — Gloucestershire, Hanham, 22 Oct. 1853, C. E. Broome, K(M) 57721.

The above description is based on the cited collections, supplemented for size range and colour of the apothecia from the original description. The collector and exact locality of the type specimen is not stated. However, it is not impossible that the later collection by Broome is from the same locality, given as Hanham, then a village in Gloucestershire c. 5 km to the east of Bristol.

As noted by Eckblad (1968) there are two collections under this name preserved in K, cited above. These include the holotype which, due to an error in reading of the date of collection as 1865 rather than 1845, was not recognised as such by Eckblad. His designation of this collection as neotype is, therefore, superfluous. Furthermore, as noted by Dissing & Pfister (1981) and Hirsch (1985), part of the holotype is also preserved in Massee's herbarium in NY.

Examination of the two collections in K shows them to be conspecific. Both are now in poor condition so that details of excipular structure are impossible to fully evaluate. However, the surface of the receptacle is, as stated in the original description, clearly pustular with coarse, conical warts. These are composed of large, rounded to slightly angular, pale brown cells (20-) 25–40 (-50) μm diam. with thin or slightly thickened walls 1–2 μm thick. This structure was noted by

Massee (1895) based on an examination of the type collection, and is clearly shown in a coloured illustration by Carleton Rea. The latter was copied from Massee's drawing of the type and is held at Kew. Though paraphyses are difficult to examine, spore and ascus characters can be clearly observed. The latter are amyloid throughout their length and more intensely so at the apex, confirming the observation by Hirsch (1985). The holotype includes two packets, one with a single apothecium c. 4 mm diam. in the dried state (so noted also by Eckblad, 1968), dark brown, rather thick-fleshed and with a distinctly pustular surface to the receptacle. The second packet includes part of a single apothecium c. 7 mm diam. which is conspecific. The second, later collection contains part of a single apothecium c. 10 mm diam. This also has a distinctly pustular surface to the receptacle and, contrary to the statement by Eckblad (1968), does contain asci and spores. Asci in this specimen again have an amyloid wall more intensely stained at the apex. Ascospores, present in the asci, are uniseriate, globose, brownish, ornamented, and measure 14.5–16 μm diam. excluding ornament. The spore ornament comprises irregular, rounded to somewhat conical warts 1–1.5 μm high × 1–1.5 μm across.

According to Hirsch (1985) two kinds of spores differing in their ornamentation are found outside the asci in the holotype collection, and he concluded that the "identity of this material is far from being clear". Also, as noted by Hirsch, Dissing & Pfister (1981) referred to this as 'mixed collection'. However, this seems not to be the case as variation in spore ornamentation from low, regular or irregular, rounded warts to conical, truncate spines has, in the present study, been observed in spores within the asci. This variation presumably reflects either the stage of development or variation in form of the ornament in this species.

Plicariella radula appears to be a distinct species which requires recollection to ascertain details of its ecology and anatomy. However, it shares with species of *Scabropezia* a rather thick-fleshed apothecium with a pustular surface to the receptacle atypical of *Plicaria* as well as globose, pigmented, verrucose ascospores. It is here considered congeneric with the type of *Scabropezia*, and the following combination is, therefore, required:

Plicariella scabrosa (Cooke) Spooner, comb. nov.

Peziza scabrosa Cooke in Mycographia p. 170 (1877) – basionym
Phaeopezia scabrosa (Cooke) Sacc., in Syll. Fung. 8: 472 (1889)
Scabropezia scabrosa (Cooke) Dissing & Pfister, Nord. J. Bot. 1: 103 (1981)

Plicaria Fuckel, Jahrb. Nass. Vereins f. Naturkunde 23–24: 325 (1870)
Lectotype: *P. trachycarpa* (Currey) Boud.
Curreyella Massee in Brit. fung.-fl. 4: 401 (1895)
Detonia Sacc. in Syll. Fung. 8: 105 (1889)

Apothecia solitary to gregarious, cupulate or discoid, sessile or with narrowed attachment. Disc concave, smooth, brown to dark brown or reddish-brown. Receptacle concolorous or paler than disc, surface almost smooth or finely pustular, rarely coarsely warted. Flesh unlayered. Excipulum comprising globose to angular, pale brown, thin-walled cells becoming more elongated and hyphal in the medullary tissue. Asci operculate, cylindric, apex truncate-rounded, blue in Melzer's Reagent, wall brownish with age. Ascospores globose, hyaline at first, becoming brownish at maturity, guttulate, sometimes with a de Bary bubble, smooth or ornamented with warts, spines or a reticulum; ornament cyanophilous. Paraphyses cylindric, apically clavate, sometimes curved, contents sometimes brownish, sometimes apically agglutinated by brown amorphous matter forming a pseudo-epithecium.

Anamorph: *Chromelosporium* Corda

Saprobic, on burnt ground or rarely on peat or sterilised soil.

British species of Plicaria

Plicaria carbonaria (Fuckel) Fuckel, Jahrb. Nass. Vereins Naturk. 23–24: 326 (1870)
Plicaria anthracina (Cooke) Boud. in Icon. mycol. 2, pl. 307 (1906)
Peziza anthracina Cooke in Mycographia p. 235 (1879)
Peziza trachycarpa var. *muricata* Grelet, Bull. Soc. bot. Centre-Ouest 6: 44 (1937) (nom. inval.)
Galactinia muricata (Grelet) Le Gal, Bull. Soc. mycol. France 78: 212 (1962) (nom. inval.)

For discussion and description see Breitenbach & Kränzlin (1984), Hirsch (1985), Maas Geesteranus (1967), Dennis (1978).

Plicaria endocarpoides (Berk.) Rifai, Verhand. Koninkl. Nederlandse Akad. Weten., Natuurk. 57 (3): 255 (1968)
Peziza endocarpoides Berk. in Hook. f., Fl. nov. – zel. 2: 199 (1855)
Peziza leiocarpa Currey, Trans. Linn. Soc. Lond. ser. 2, 24: 493 (1864)
Plicaria leiocarpa (Currey) Boud., Bull. Soc. mycol. France 1: 102 (1885)
Galactinia leiocarpa (Currey) Le Gal, Bull. Soc. mycol. France 78: 212 (1962)

For discussion and detailed description see Rifai (1968), Hirsch (1985), Dennis (1978).

Plicaria trachycarpa (Currey) Boud., Bull. Soc. mycol. France 1: 102 (1885)
Peziza trachycarpa Currey, Trans. Linn. Soc. Lond., Bot. ser. 2, 24: 493 (1864)
Curreyella trachycarpa (Currey) Massee, Brit. fung.-fl. 4: 401 (1895)
Galactinia trachycarpa (Currey) Le Gal, Bull. Soc. mycol. France 78: 212 (1962)

For a full description and discussion see Hirsch (1985), Dennis (1978).

Key to British species of *Plicaria*

1. Spores smooth, 8–9 (-10) μm diam.; apothecia 2–6.5 cm diam., exuding yellow juice ..... *P. endocarpoides*
1. Spores ornamented, (10-) 11–16 μm (excl. ornament), apothecia 1–3 cm diam., notexuding yellow juice 2
2. Spore ornament of warts and short ridges to c. 1 μm high; spores 10–13 μm diam. excl.ornament ..... it P. trachycarpa
2. Spore ornament coarser, of cylindric, truncate to conical warts and/or spines 1.5–2 (-2.5)μm high; spores 12–13 μm diam. excl. ornament ... *P. carbonaria*

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Ascomycetes from burnt places in the NW Patagonia, Argentina

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Gamundí, I. J. and L. E. Lorenzo (2001): Ascomycetes from burnt places in the NW Patagonia, Argentina. – Czech Mycol. 52: 267–275

Two Pezizales and three Sordariales are described from burnt places in an indigenous forest of *Nothofagus* and patagonian steppe in Southern South America, about one year after a spontaneous fire occurred. A brief account of the vegetation is given, as well as methods employed. *Tricharina gilva* and *Ascobolus archeri* are described on the Pezizales; *Coniochaeta saccardoi, Strattonia carbonaria*, and *Jugulospora rotula* on the Sordariales.

Key words: Ascomycetes, burnt places, Patagonia, Argentina

Gamundí I. J. a Lorenzo L. E. (2001): Ascomycetes ze spálenišť v severozápadní Patagonii (Argentina). – Czech Mycol. 52: 267–275

Dva zástupci řádu Pezizales a tři řádu Sordariales jsou popisovány ze spálenišť v původních lesích s *Nothofagus* a z patagonské stepi v jižní části Jižní Ameriky. Houby byly zjištěny rok po vypuknutí spontánního požáru. Je podán stručný náčrt vegetace a metod, které byly použity. Byly zjištěny druhy z řádu Pezizales — *Tricharina gilva* a *Ascobolus archeri* a dále z řádu Sordariales — *Coniochaeta saccardoi, Strattonia carbonaria* a *Jugulospora rotula*. Popisy jmenovaných druhů jsou uvedeny.

INTRODUCTION

The analysis of the mycobiota of natural burnt sites is part of a comprehensive project on Fungal Diversity in NW Patagonia.

There is no previous studies on the mycobiota of burnt sites in Argentina. Only sparse records of carbonicolous species can be found mainly in papers dealing with taxonomy as Gamundí (1964, 1975, 1986), Gamundí & Giaiotti (1998) and Singer (1969).

Studies approached here were performed in natural environments, forest and steppe, in the neibourghood of San Carlos de Bariloche, Río Negro, Argentina, after fires occurred in summer 1999.

From the phytogeografical point of view, those places belong to the Subantarctic Province, and fall into the districts of the Pre-Andean Evergreen Forest ("Bosque Preandino Perennifolio") and Preandean Steppe of *Festuca pallescens* ("Preandino de las Estepas de *Festuca pallescens*") according to Roig (1998).

Vegetation of the forest before the burning was mainly composed by a canopy layer dominated by *Nothofagus dombeyi and Austrocedrus chilensis,* a shrub layer of *Nothofagus antarctica, Schinus patagonicus, Diostea juncea, Berberis darwinii, Chusquea culeou, Mutisia decurrens and M. spinosa.*

The original steppe vegetation was mainly herbaceous-shruby. The herbaceous layer was dominated by " coirones" such as *Festuca pallescens* and *Stipa speciosa* associated with cushions of *Acaena splendens.* The shruby layer was represented by *Mulinum spinosum, Escallonia virgata, Colletia hystrix* and *Discaria chacayae,* among other species.

In this first contribution species of Ascomycetes are recorded, which were collected recently on burnt sites. Only those insufficienltly known are described and illustrated.

MATERIAL AND METHODS

Three sampling sites were choosen. Sites 1 and 2 in the burnt forest are located in the SW slopes of Cerro Catedral, at 1500 m alt. (41 °10' S; 71 ° 26' W) in the neibourghood of the path "Los Eslovenos" to the Refugio Frey. The fire on Cerro Catedral burned from February 22-March 2, 1999.

Site 3 is located on the burnt steppe, Provincial Road No. 23 to Pilcaniyeu, about 50 m along the road, which is 6 km from Laguna de los Juncos, near railway station Perito Moreno, at 900 m alt. (41 °10' S; 71 ° W). The fire occurred on Febrary 22, 1999 and controlled approximately a week later.

The first sampling was performed in spring (September 1999). Sampling sites were visited monthly with the purpose to obtain fruitbodies in the field. Bimonthly burnt soil samples were collected, incubated in a moist chamber in the laboratory and observed periodically until fructification, mainly to detect small ascomata.

The material is kept in the Herbarium of Centro Regional Universitario Bariloche, Universidad Nacional del Comahue (BCRU).

Hawksworth et al. (1995) is used for the taxonomic position of species. Author's names are abbreviated according Brummit & Powell (1992).

Pezizales
Otideaeceae

Tricharina gilva (Boud. in Cooke) Eckbl., Nytt. Mag. Bot. **15**: 60. 1968.
≡*Peziza gilva* Boud. in Cooke, Mycographia: 240, fig. 406. 1879.

Measures of our collections are given here:

Apothecia diameter: 5–7 mm; asci: 180–205 × 10–15 μm; paraphyses: 4–5 μm diam at the apex; ascospores: 14–15.5 (17.5) × 9.5–10 μm, l:w = 1.5:1;

marginal hairs (type I): 110–230 × 5–7.5 μm; ectal excipulum: 60–75 μm thick, globose cells 15–50 μm diam.; medullar excipulum: 35–60 μm thick, hyphae 3.4–5 μm diam.

Although congruent in some aspects to Yang & Korf (1985) description, we found some differences: a) the disc colour is consistently more brilliant in our collections, "aurantiacus" in fresh specimens; b) hairs are shorter, up to 400 μm in Yang & Korf's description; c) our collections are strictly carbonicolus. These authors stated that *Ascorhizoctonia* Yang & Korf is the anamorph.

The material agrees in apothecial colour, shape, micromorphology (excipulum, hypothecium, hairs, asci, ascospores and paraphyses) to the description and magnificent illustrations given by van Brummelen (1983). We accept this description of the species, more ample than the one given by Yang & Korf (1985).

There are two other pyrophilous species *of Tricharina: T. praecox* (Karst.) Dennis and *T. cretea* (Cooke) Boud., both reduced to varieties of *T. praecox* by Yang & Korf (1985). Our collections differs from the first one in having smooth epispore, without any trace of cyanophilic ornamentation nor polar granules in the spores; from *T. cretea* in shape of ascospores, more elongated in this species and with disc colour paler.

We accept the emendation of *Tricharina* given by Yang & Korf (1985) who place species which have hairs upon the entire excipulum, forming mycorrhiza and possessing anamorphs in *Complexipes* under *Wilcoxina* Yang & Korf. Molecular studies (Egger 1996) support the segreggation of the both genera.

This is the first record of *Tricharina gilva* for Argentina.

Collections. ARGENTINA, Río Negro, Nahuel Huapi Nat. Park, Cerro Catedral, path "Los Eslovenos", to Refugio Frey, leg. L. Lorenzo, M. Havrylenko & E. Bernasconi, 14-II-2000. Site 2. On burnt soil, 12 month after fire, BCRU. 4180, Ibidem, 3-V-2000, site 2., BCRU 4182, Ibidem, leg. L. Lorenzo, M. I. Messuti, M. Havrylenko & E. Bernasconi, 3-V-2000, site 1, BCRU 418. Additional material studied. France, Caen, leg. R. Maire, III-1911, "in caldariis", det. J. L. E. Boudier, Herbarium Boudier (P), under *Tricharia gilva* Boud.

Habitat. On burnt soil, 15 month after fire.

Illustrations. Boudier, J. L. E., Icones Mycologicae III, Pl. 347. 1904 as *Tricharia gilva*; Svrček, M. České Druhy Podčeledi Lachneoideae, Tab. I, fig. 10–11, 1948 as *Lachnea gilva*; Dennis, R. W. G., British Ascomycetes, Pl. IX. 1981; Breitenbach, J. & Kränzlin, F. Pilze der Schweiz, I, Pl. 71, 1981. Brummelen v., J. Observations on the variability of *Tricharina gilva*, Crypt., Mycol. 4. figs. 1–2. 1983.

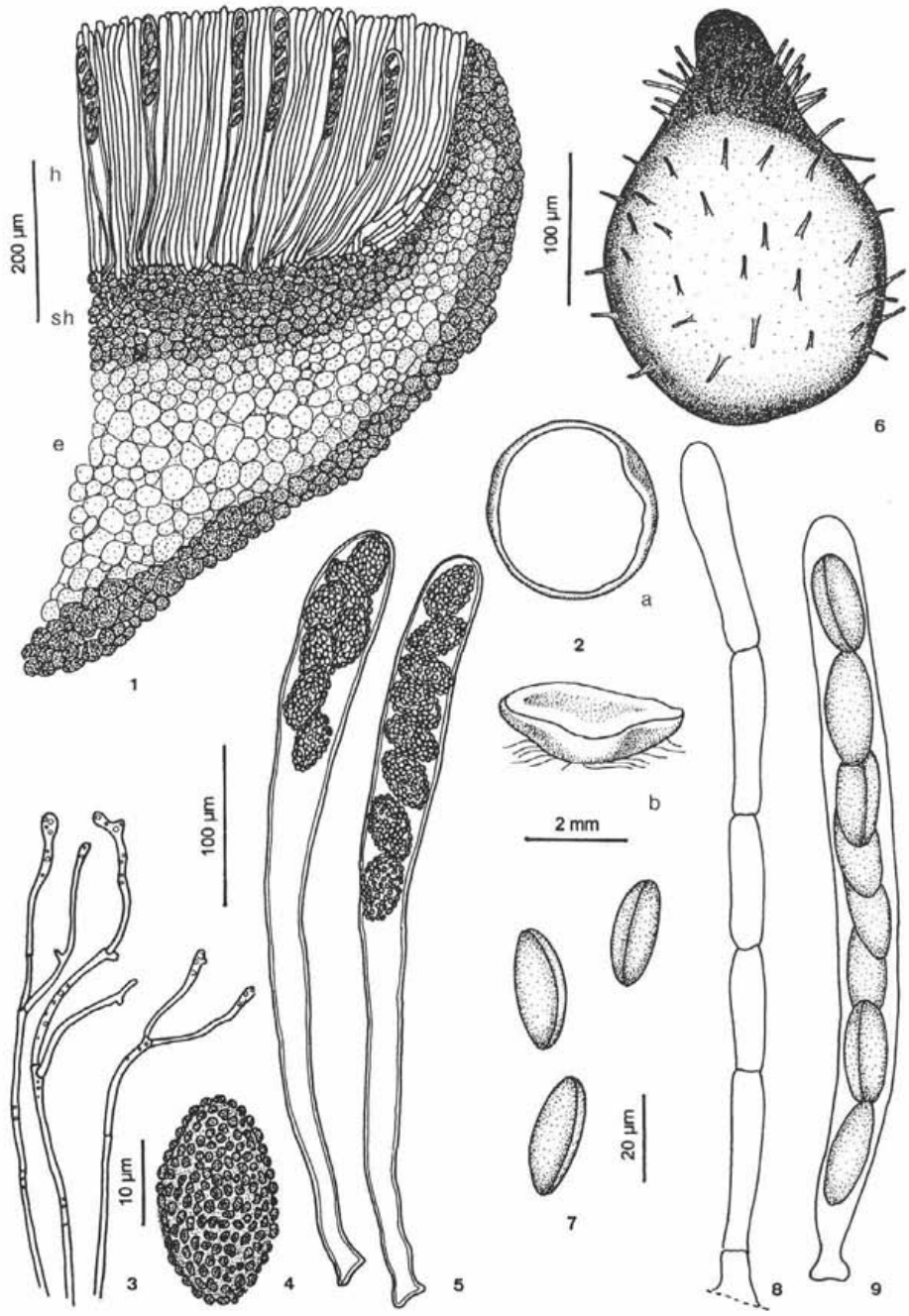

Fig. 1. *Ascobolus archeri* 1–5, *Coniochaeta saccardoi* 6–9

Ascobolaceae

Ascobolus archeri Berk. in Hooker f., Botany Antarctic voyage III, 2: 276. 1860.

(Fig. 1: 1–5).

Apothecia discoid to patelliform, 3–5 mm diam.; disc "umbrinus" to "fuligineus" in fresh, due to the mature asci, hymenial mucus greenish; margin entire, thin, inflexed when drying; receptaculum glabrous, pale brownish with a greenish tinge, brown at the base. Asci cylindrical, 8-spored with walls slightly amyloid, immature asci dextrinoid, (145-) 190–225 × (17-) 20–25 μm. Paraphyses filiform, hyaline, flexuous, branched in the upper part, embedded in the hymenial mucus, 2–5 μm diam. Ascospores 1-seriate to 2-seriate, dark brown, ellipsoidal, eguttulate, verrucose, with coarse verrucae uniform in diameter, 18.4–21 × 11.7–14.5 μm. Inmature ascospores slightly amyloid.

Excipulum of a textura globulosa, homogeneous, the 2–3 external layers brownish, cells with brown walls, 12.5–50 μm diam., the colour diluting to become hyaline in the inner part. Subhymenium brownish, of a textura globulosa, the cells smaller than in the excipulum.

Collections. Argentina, Río Negro, Nahuel Huapi Nat. Park, Cerro Catedral, path Los Eslovenos to Refugio Frey, leg. L. Lorenzo, M. Havrylenko & E. Bernasconi, Site 1 & 2, 14-II-2000, BCRU 4183; Ibidem, 22-VI-2000. Appeared in moist chamber at the laboratory after 45 days of incubation, BCRU 4174.

Habitat on burnt soil among mosses.

Ascobolus archeri is similar to *Ascobolus carbonarius* P. Karst., from which is distinguished by the smaller and elliptical ascospores without truncate ends and more uniform verrucae. The collections agree with van Brummelen's description (1967:146).

Initially described for Tasmania, Australia, this is the first record for South America. Figs. 1–5 illustrate this peculiar carbonicolous species.

Sordariales

Coniochaetaceae

Coniochaeta saccardoi (Marchal) Cain, R. F. University of Toronto Studies, Biol. Ser., 38: 65. 1934.

≡*Hypocopra saccardoi* Marchal, Bull. Soc. Roy. Bot. Belgique 24: 59. 1885.
(Fig. 1: 6–9

Perithecia scattered, superficial, dark brown to nearly black and opaque, ostiolate, globose to pyriform, 220–308 × 148–220 μm; with a short papillate neck; covered with sparse dark brown setae, septated, swollen at the base, rounded apically, straight to slightly undulate, 16–80 × 3–4 μm at the base; peridium pseudoparenchymatous, outer peridial cells isodiametric and angular. Asci 8-spored, 97–110 × 7–9 μm, cylindrical, rounded apically, without apical ring, shortly estipitate. Paraphyses filiform, longer than asci, septate, ca. 4 μm wide. Ascospores uniseriate, unicellular, dark brown, narrowly ellipsoid, smooth, 12–15 × 4–5.5 × 4–5 μm, germ slit longitudinal, running full-length.

Collections. ARGENTINA, Prov. Río Negro, Dpto. Pilcaniyeu, Ruta Provincial N° 23, Estación Perito Moreno, on burnt soil incubated in moist chamber, 3-VII-2000, Lorenzo, BCRU 4177.

Habitat: on burnt soil.

This species has been reported on dung, soil, stems and decaying leaves (Cain, 1934; Kobayashi et. al., 1969; Furuya & Udagawa, 1973, Mahoney & LaFavre, 1981; Spooner, 1984 and Checa et al. 1988, Ellis & Ellis, 1988). *C. saccardoi* has not been registered to date growing on burnt soil and is the first recorde from Argentina.

C. saccardoi appeared on steppe burnt soil (site 3) in a moist chamber at the laboratory after two months of incubation.

Lasiosphaeriaceae

Strattonia carbonaria (Phill. et Plowr.) Lundq. Symb. Bot. Upsal 20: 269. 1972.

≡*Sphaeria carbonaria* Phill. et Plowr. Grevillea 2:188. 1874.

Illustration: Lundqvist, 1972: 269.

Measures of our collections are given here:

Perithecia 366–430 × 220–310 μm; asci 180–220 × 11–12 μm; ascospores upper cell 18–22 × 8–9 μm; pedicel 2.5–5 μm as long as broad.

The material coincides in perithecial shape and size, micromorphology (peridium, hairs, asci, ascospores and paraphyses) with the description given by Lundqvist (1972). The author (op. cit.) established that *Strattonia carbonaria* is a purely terricolous species, perhaps restricted to burnt soil, and is probably

overlooked and more common than appears from the records. *Strattonia carbonaria* is first recorded from Argentina.

Collections. ARGENTINA, Río Negro, Nahuel Huapi Nat. Park, Cerro Catedral, path "Los Eslovenos", to Refugio Frey, leg. L. Lorenzo, 1-VI-2000. Site 1. On burnt soil and plant debris incubated in moist chamber at the laboratory, BCRU 4175.

Habitat: This species appeared on forest burnt soil in a moist chamber at the laboratory after one month of incubation.

Illustrations: Phillips & Plowright 1897, pl. 25:3; Boudier 1878, pl. 4:8, as *Sphaeria sepulta*; Mouton 1897, pl. A: 2; 1900, pl. 2: 1, as *Bombardia bracyura*; Chenantais 1919, pl. 1:15; Cain 1934, fig.42; Lundqvist 1972 figs. 62:a,b,e-j, pl. 53: a-c; Dennis 1981, fig.12 E; Ellis & Ellis 1988, fig.170.

Jugulospora rotula (Cooke) Lundq. Symb. Bot. Upsal. 20: 260. 1972.
≡*Sphaeria rotula* Cooke, Handbook of British fungi 2: 868. 1871.

Measures of our collections are given here:

Perithecia 293–420 × 220–280 μm; asci 150–180 × 14–15 μm; ascospores upper cell 14–20 × 14–16 μm; pedicel 2.5–3.2 μm, isodiametric.

The material coresponds in perithecial shape and size, micromorphology (peridium, hairs, asci, ascospores and paraphyses) with the description given by Lundqvist (1972), except in the ascospores size. Our specimens deviate however from the original description by larger subglobose spores. This species seems to be strictly totally carbonicolous.

Collections. Argentina, Prov. Río Negro, San Carlos de Bariloche, Cerro Catedral, picada Los Eslovenos al refugio Frey, on burnt soil and plant debris incubated in moist chamber, 3-VII-2000, Lorenzo, BCRU 4178; Dpto. Pilcaniyeu, Ruta Provincial N ° 23, Estación Perito Moreno, on burnt soil incubated in moist chamber, 22-VI-2000, Lorenzo, BCRU 4176.

Illustrations: Mouton 1897, pl. A: 3. Lundqvist 1967, figs. 26–28, 32, 33. Lundqvist 1972, fig. 59, pl.49; Dennis 1981, fig.12 D, Ellis & Ellis 1988, fig. 169.

Habitat. On burnt soil.

This species appeared on forest burnt soil (site 1) in a moist chamber at the laboratory after two months of incubation, and on steppe burnt soil (site 3) after one month and a half of incubation.

This brief contribution is dedicated to Dr. Mirko Svrček, a distinguished scholar dedicated for many years to study Czechoslovakian discomyecetes, by colleagues in a distant part of the world.

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The occurrence of the rare Ciboria aestivalis in Europe

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Galán R. and Palmer J. T. (2001): The occurrence of the rare Ciboria aestivalis in Europe – Czech Mycol. 52: 277–289

The authors report the finding in Southern Spain of an apparently rare fungus: *Ciboria aestivalis* (Pollock) Whetzel (*Sclerotiniaceae*) growing on mummified quinces (*Cydonia oblonga* Miller). Originally described from apples (*Malus* sp.) in the United States, the species has also been reported on other pomaceous and stone fruits in Australia. A recent report from France is based on a misidentification, whilst a British reference to "imported fruit" refers to mummified quinces brought from Australia. The inoculation of various fresh fruits produced mummies which developed apothecia, also on blackened pips from a mummified apple, whilst stromata formed in P. D. A. cultures. The apothecia are described in detail and illustrated, including the type. Its generic placement in the *Sclerotiniaceae* is discussed.

Key words: *Ciboria*, Sclerotiniaceae, mummification of fruits, Spain

Galán R. a Palmer J. T. (2001): Výskyt vzácného druhu Ciboria aestivalis v Evropě. – Czech Mycol. 52: 277–289

Je referováno o nálezu v jižním Španělsku, zřejmě vzácné houby *Ciboria aestivalis* (Pollock) Whetzel (Sclerotiniaceae) rostoucí na mumifikovaných malvicích kdoule (*Cydonia oblonga* Miller). Původně byl druh popsán z plodů jabloně ve Spojených Státech a později byl tento druh hlášen též z jiných jádrovin a peckovin z Austrálie. Inokulace různých čerstvých plodů vytvořila mumifikované plody, které produkovaly apotecia (také na zčernalých jablkách), zatímco stromata se vytvářela v kultuře na bramboro-dextrózovém agaru. Jsou detailně popisována a vyobrazena apotecia včetně typu. Je diskutováno rodové zařazení v rámci čeledi Sclerotiniaceae.

MATERIAL AND METHODS

Measurements of living cells (*) were made in tap water, with dead cells (†) in tap water, Melzer's reagent (MLZ), KOH 2%, and Aqueous cresyl blue (CRB) c. 0.5. The light microscopes used, both equipped with phase contrast, were a Nikon Labophot-2 (R. G.) and an Olympus BHT, fitted with a drawing attachment (J.T.P.), with magnifications up to 1250× The photomicrographs were made with a Nikon microscope, Labophot-2, equipped with phase contrast and having an incorporated system of automatic photography. Culture methods, using Potato Dextrose Agar (P.D.A.) are in accordance with Galán & al. (1996), whilst apothecial colours follow Kornerup & Wanscher (1967).

Specimens have been deposited in AH (the herbarium of Alcalá University, Spain) and J.T.P. (personal herbarium of the second author) with duplicates in CUP (Cornell University, Ithaca, New York, U. S. A.), and A. M. S. S. (herbarium of the "Asociación Micológica de las Sierras Subbéticas", Priego de Córdoba, Spain). The holotype is preserved in BPI (Herbarium of the U. S. National Fungus Collections, Beltsville Agricultural Research Center, U. S. A.).

Abbreviations: * = living state, † = dead state

INTRODUCTION

This apparently rare species was collected on old, blackened quinces at Priego de Córdoba, Zagrilla in Córdoba province, Spain, 10. XII. 1995 (A. M. S. S. 956) by J. Gómez and B. Moreno-Arroyo (Gómez & al., 1999) with specimens sent by Mr. Gómez to R. G. for identification (AH 7108 and J.T.P. 4890).

Three mummified fruits from the same locality were later sent to J.T.P., who placed them in damp chambers, i.e. closed plastic boxes. A single apothecium (with one half in JTP 4895 and the other half in AH 7085) developed on one fruit on 19. VIII. 96, and from which cultures were obtained on P.D.A. from a mass-spore discharge, which subsequently formed immersed stromata but no apothecia developed in either this or subcultures. Single apothecia subsequently developed on the same mummy and were harvested on 27-IX. and 11-IX-1997.

Various fresh fruits, apples [*Malus domestica* Borkh. cv. "Sunset'"] and Japonica [*Chaenomeles speciosa* (Sweet) Nakai], both from J.T.P.'s garden, and quinces [*Cydonia oblonga* Miller] from Bad Mergentheim, Baden-Württemburg, Germany, were inoculated in October, 1996, with culture material and placed in damp chambers, some of which eventually completely mummified. Apothecia subsequently developed on the mummified pomes of all three fruits and were harvested as they matured.

HISTORY

Found on mummified apples at Ann Arbor and Palmyra, Michigan, U. S. A., from 26^{th} June to 9^{th} August, 1909, and described as *Sclerotinia aestivalis* by Pollock (1909), the species appears to have been later collected on apples in a neglected greenhouse at College Park, Maryland, U. S. A., in November, 1911, by Demaree (1912), who reported it as a *Sclerotinia* sp. He thought it could be the perfect state of *Monilia "uredoformis"* (sic) = *M. urediniformis* Ellis et Everhart (1893), when it "would be referred to *Sclerotinia* as *Sclerotinia uredoformis*". The type, therefore, would have been a *Monilinia,* an anamorph, which is not acceptable for a telemorphic name, but as Demareee very clearly

used the subjunctive, the name was therefore provisional and has no nomenclatural status. A further collection was reported from Maryland in Norton et al. (1923). The fungus was found in 1921 on apples near Sydney, New South Wales, Australia, by Harrison (1922), and later (Harrison 1928 and 1935) also on apricots, quinces and, subsequently, on peaches, pears and plums, from December to March, who, on the advice of H. H. Whetzel, proposed a new combination in *Ciboria*. Seaver (1961) gave a similar description to Pollock's with the distribution as "Michigan and Maryland?; also in Australia on various fruits". Cannon & al. (1985) stated "on imported fruit" for the British Isles but enquiries with Dr. Cannon ascertained that it was based on an earlier report of the species under its synonym, recorded in Ramsbottom & Balfour-Browne's (1951) list of UK discomycetes, which reports "*Sclerotinia aestivalis* Pollack (sic), grown by F. Harrison on quince brought to this country from Australia, May 1931 in Herb. BM", which herbarium was subsequently transferred to K. Harrison (1935) mentions bringing mummified quinces from Australia, which were moistened to produce apothecia for a British Mycological Association (sic) meeting in November, 1930 etc. Spooner (1987) studied two of Harrison's collections on quinces and provided a detailed redescription. Batra (1991) under "Imperfectly known *Monilinia,* Related Parasites and Excluded taxa" discussed Demaree's findings and repeated Pollock's diagnosis, with the comment "After examining the type (BPI), I am unable to ascribe it to the Sclerotiniaceae (sic)". The collection on a "discarded peach nut" in the Forêt de St. Sever, Normandy, France, on 26th September 1994, mentioned in Shorten (1995) is an error as examination of the alleged "peach nut" by J.T.P. found it to be a typically wrinkled mummified cotyledon of a *Quercus* sp. bearing apothecia of *Ciboria batschiana* (Zopf) Buchw. (CRO 176 and J.T.P. 4980). Enquiries have ascertained that there are no collections of *Ciboria aestivalis* in IMI and only Harrison material from Australia in CUP and K.

Description

Ciboria aestivalis (Pollock) Whetzel in Harrison, Mycologia 27: 317 (1935)

Basionym: *Sclerotinia aestivalis* Pollock, Rept. Mich. Acad. Sci. 11: 53 (1909)

Apothecia clustered with short stipes in nature but single to sparse, with stipes of varying length, on mummified pome fruits (*Chaenomeles speciosa, Malus domestica* and *Cydonia oblonga*) inoculated with culture media and mummified in closed plastic boxes, also on blackened pips from within a mummified pome of *Malus domestica*. Disc slightly cupulate, becoming plane to shallowly or more deeply cupulate, sometimes convex, with varying reddish shades tending to darken with age, 2–4 mm diam in the Spanish collection (AH 7108), 0.7–4.5 mm diam on

Table 1. Disc, flank and stipe colours, all fresh apothecia except for AH 7108 (Spanish collection), which was revived, per Kornerup & Wanscher (1967)

Herbarium collection	K. & W. Key colour name – DISC	K. & W. Key colour name – FLANK	K. & W. Key colour name – STIPE
AH 7108	7A4 Pastel red	7A2 Reddish or pinkish white	7A2 Reddish or pinkish white
J.T.P. 4890	7A5 Pastel red	7A2 Reddish or pinkish white	7A2 Reddish or pinkish white
J.T.P. 4890	7B8 Reddish orange	8A2 Reddish or pinkish white	8A2 Reddish or pinkish white
J.T.P. 4895	8B6 Greyish red	8A2 Reddish or pinkish white	8B6 Greyish red
J.T.P. 4945	7A3 pale red	5A2 Orange white	9B4 Greyish red (up)/7E5 Brown (low)
J.T.P. 4946	6B4 Light orange	6B4 Light orange	6B4 Light orange
J.T.P. 4947	7B3 Greyish red	7B3 Greyish red	7B3 Greyish red
J.T.P. 4950	6A2 Orange white	7C3 Brownish orange	7C3 Brownish orange
J.T.P. 4950	6A3 Pale orange	6A3 Pale orange	6A3 Pale orange
J.T.P. 4950	6B2 Orange grey	6A2 Orange white	6A2 Orange white

Table 2. Comparison of published measurements for asci and ascospores, showing minimum, average and maximum, with those found by authors in tap water.

Publication/ Herbarium collection	**ASCI**	**SPORES**
Pollock (1909)	51.0–85.0 × 6.0–8.5 μm	6.4–11.9 × 2.0–3.4 μm
Demaree (1912)	44.0–64.0 × 4.0–6.0 μm	6.0–8.0 × 2.0–3.0 μm
Harrison (1935)	56.6–81.7 × 4.8–7.7 μm	6.0–8.57–10.0 × 2.0–2.97–3.5 μm
Spooner (1987)	60.0–82.5 × 6.5–7.5 μm†	7.5–8.3–10.0 × 2.5–2.7–3.0 μm†
BPI 573925 Holotype	64.0–70.0 × 4.8–5.6 μm†	4.0–7.0–8.8 × 1.7–2.3–3.2 μm†
AH 7108 / J.T.P. 4890	76.0 –90.0 × 5.0–6.5 μm*	5.6–7.9–11.2 × 2.2–2.6–3.2 μm*
J.T.P. 4895	68.0–77.0–86.0 × 8.0–8.1–9.0 μm*	8.0–8.9–11.2 × 2.4–2.8–3.6 μm*
J.T.P. 4945	72.0–82.0–92.0 × 6.0–6.8–8.0 μm*	7.8–9.6–12.0 × 2.3–2.8–4.0 μm*
J.T.P. 4946	61.0–77.0–92.0 × 5.0–6.8–8.0 μm*	7.7–8.6–10.4 × 1.8–2.5–3.3 μm*
J.T.P. 4947	72.0–77.0–86.0 × 6.0–6.1–7.0 μm*	7.8–9.4–10.8 × 2.0–2.4–2.6 μm*
J.T.P. 4950	69.0–77.0–90.0 × 5.0–7.0–7.2 μm*	7.4–9.5–10.4 × 1.9–2.8–3.3 μm*

inoculated fruit, 0.5–1.3 mm diam in the holotype (after reviving apothecia, see Fig. 1). Colour variation shown in Table 1.

Receptacle tapering downwards into stipe, similar to or concolorous with disc and stipe (see Table 1), minutely downy at surface due to protruding excipular, catenulate cells. Stipe equal width or slightly tapering downwards, sometimes waved, often concolorous with disc or receptacle, sometimes darkening to almost black in Spanish collection, otherwise 1.2–7(-11) × 0.1–0.8 mm. Colour variation show in table 1. Ectal excipulum very sharply delimited but poorly developed (ca. 3–5 cell layers, 20–40 μm thick) of *textura globulosa- subangularis* comprising hyaline to feebly pigmented cells 7–16 μm †) diam, moderately thin-walled,

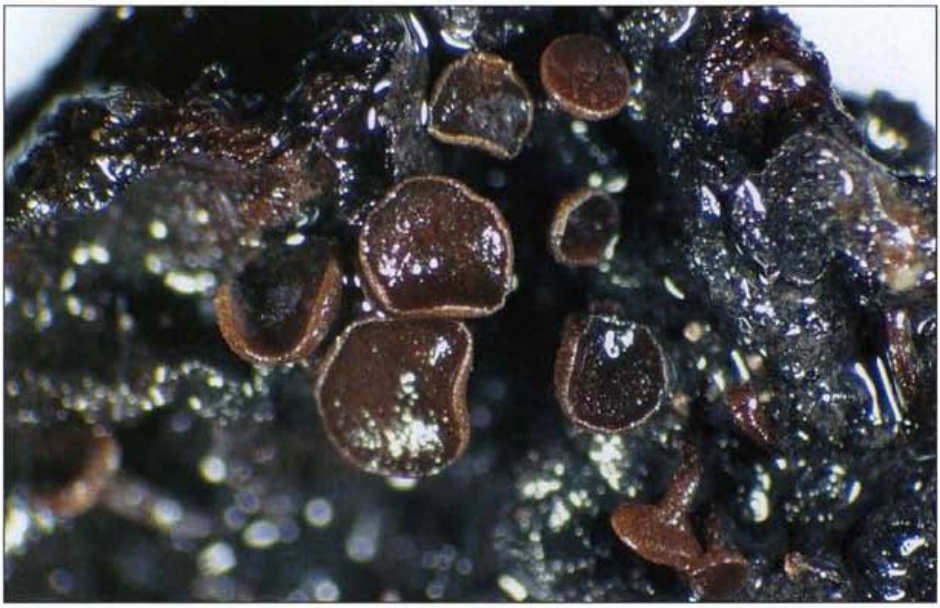


Fig. 1. *"Sclerotinia" aestivalis*: Revived apothecia from the type (BPI 573925)

Fig. 2. *Ciboria aestivalis*: Fresh apothecia emerging from an inoculated, mummified apple of *Malus domestica* (AH 7119)

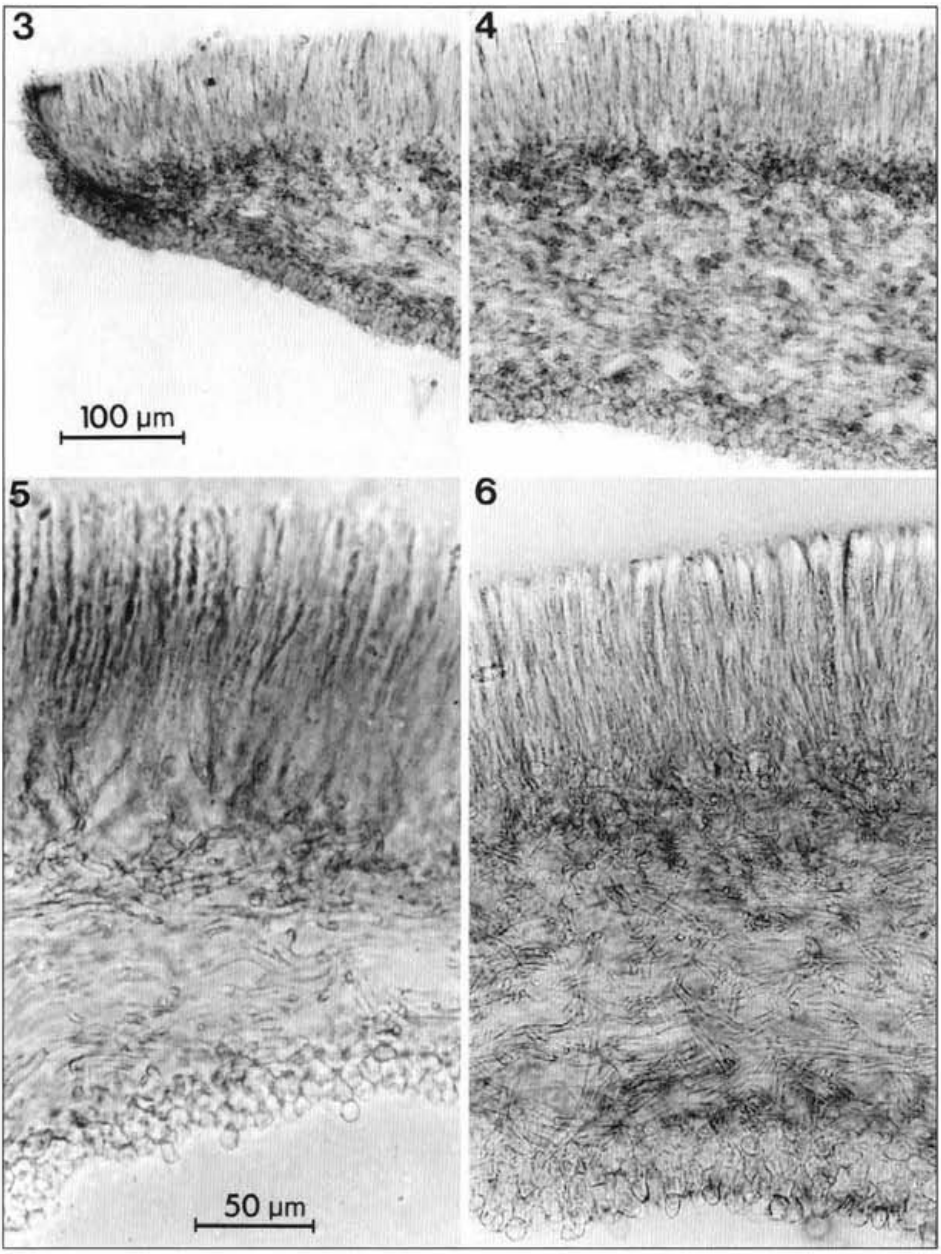
strongly adherent, sometimes protruding as "catenulate hairs" on flank and stipe or as "clavate hairs" at the margin. Medullary excipulum well developed, consisting of hyaline to weakly pigmented loose hyphae (3–6 μm †) forming a *textura intricata*. Subhymenium poorly developed and indistinguishable from the medular area, apart from the brownish colour and highly intricate texture. Asci narrowly to sometimes broadly cylindrical, tapering at base to form a slender stalk, emerging from croziers, 8-spored, uniseriate to occasionally biseriate towards apex (dead state), which round to truncate, with plug slightly J+ (feebly blue) in Melzer's reagent, 68–92 × 5–9 μm (see Table 2). Spores hyaline, narrowly to broadly elliptical, regularly unicellular, very occasionally one-celled, frequently flattened on one side and showing a very characteristic form (i.e. asymmetrical), often with two small terminal apical guttules, less frequently one-guttulate, (5.6-)7.7–11.2(-12) × 1.9–3.3(-4) μm (see Table 2). Paraphyses straight, filiform, obtuse, sparsely septate, simple or branched below, ca. 1.5–2.5 μm diam (†), equalling the asci in length.

Habitat on pomaceous and stone fruits, which it completely mummifies, structure not investigated, with a dark brown stroma developing in P. D. A. cultures, submerging to about 2 mm and comprising irregularly shaped isodiametric (*textura angularis*), hyaline cells with the upper having a thin, black rind, and the surface whitish pruinose in older cultures. No conidia, sclerotia or similar structures were seen in the cultures.

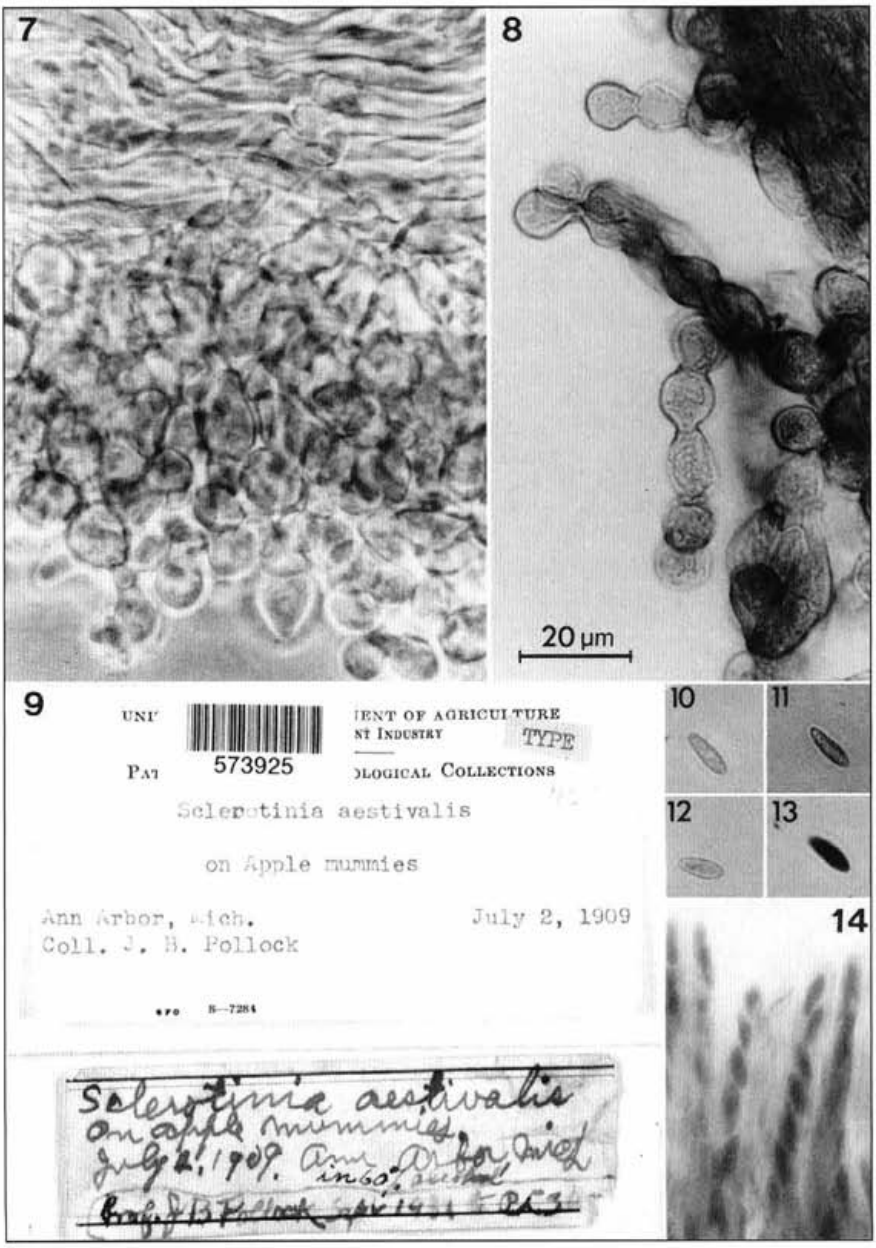
MATERIAL EXAMINED

Herb. J.T.P. 4890, Dupl. ex AH 7108 and A. M. S. S. 956: Apothecia on mummified fruit of *Cydonia oblonga* in a quince plantation, Zagrilla, near Priego de Córdoba, Córdoba province, SPAIN. Leg. J, Gómez & B. Moreno-Arroyo, 10-XII-1995, det. J.T.P,; Herb. J.T.P. 4895 Mummified quinces *(Cydonia oblonga)* in a quince plantation, Zagrilla near Priego de Córdoba, Córdoba, SPAIN. Leg. J, Gómez and placed by J.T.P. in plastic boxes on receipt, 18-IV-1997(Reference n° 96006/1A of J.T.P.). A single apothecium developed in natural culture on one mummy and was harvested on 19-VIII-1996, with further single apothecia harvested on 27-IX-1997 and 11-X-1997 (Dupl. ex AH 7290, including half of the first apothecium in AH 7085).

The following fruits all appeared to be in good condition with no sign of any *Monilia* infection, either prior to inoculation or subsequently. Several pomes of each fruit were inoculated with media from the J.T.P. 4895 culture on P.D.A. and, whilst some fruits deteriorated, others gradually mummified with no sign of conidia, and subsequently developed apothecia, which were harvested by J.T.P. as they matured.



Figs. 3–6. *Ciboria aestivalis*: Vertical sections of apothecia near the margin (Fig. 3) and on flanks (Figs. 4, 5 & 6). Scale bars are valid as follows: Fig. 3 for Fig. 4, Fig. 5 for Fig. 6. (Media: H_2O for Figs. 3 & 4 from AH 7119; Hoyer's medium in phase contrast for Fig. 5 from AH 7108; KOH for Fig. 6 from AH 7119)



Figs. 7–14. *Ciboria aestivalis*: 7. Details of the ectal excipulum and outer layer of the medullary excipulum in phase contrast (AH 7119); 8. Catenulate cells emerging from flanks and stipe after squash (AH 7119); 9. Label on "*Sclerotinia aestivalis*" type sheet, together with the hand-written annotation of J. B. Pollock; 10–13. Free-lying spores (Figs. 10 & 11 from AH 7119, Figs. 12 & 13 from AH 7108); 14. A group of asci. (AH 7108). Scale bar of Fig. 8 is also valid for the remaining figures. (Media: MLZ for Fig. 7; Lugol for Figs. 8 & 11; KOH for Fig. 10; CR blue for Figs. 12–14).

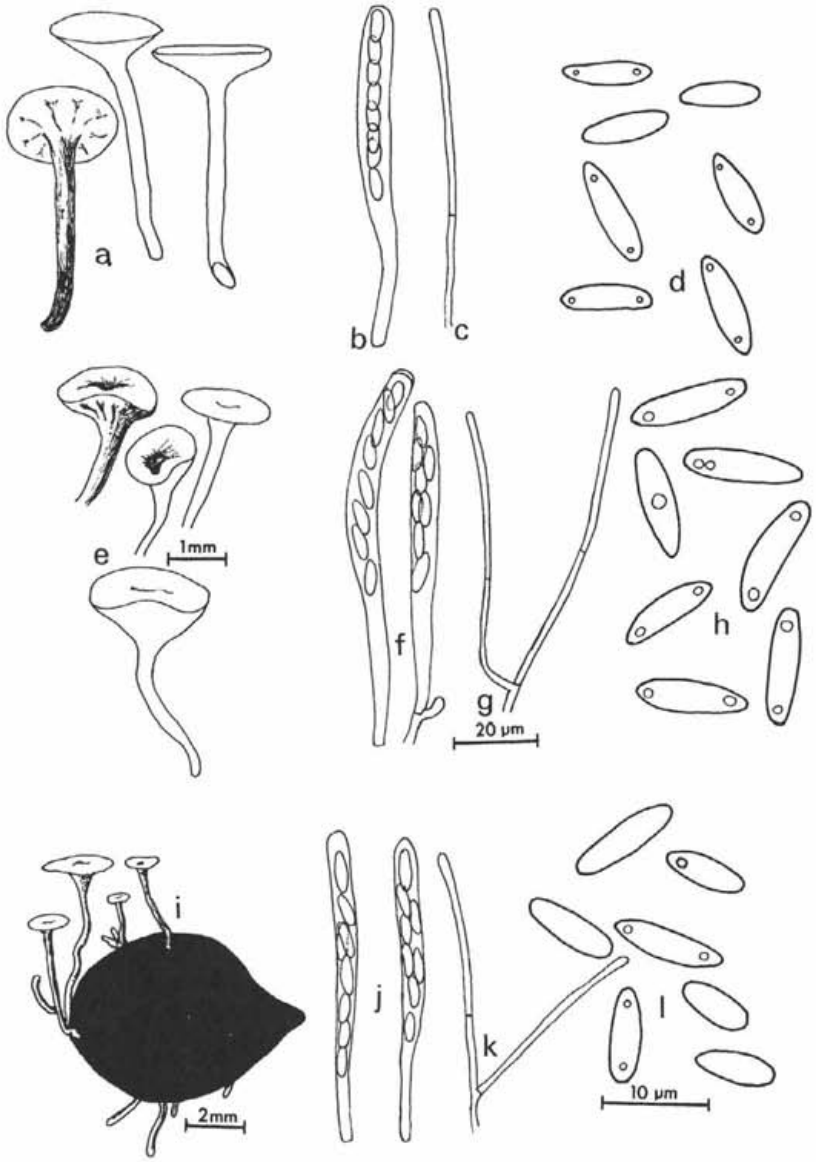


Fig. 15. *Ciboria aestivalis:* Apothecia which developed on mummified fruits inoculated in England. J. T. P. 4895 on *Cydonia oblonga*: a. Apothecia; b. An ascus; c. A paraphysis; d. Loose spores.
J. T. P. 4950 on *Chaenomeles speciosa*: e. Apothecia; f. Two asci; g. A branched paraphysis; h. Loose spores. J. T. P. 4947 on *Malus domestica*: i. Apothecia and developing stipes on blackened pip; j. Two asci; k. A branched paraphysis; l. Loose spores. Scale bar for Fig. 15e also for Fig. 15a; 15g also for Figs. 15b, 15c, 15f, 15j & 15k; and Fig. 15l also for figs. 15d and 15h. (All apothecia were drawn in fresh condition with microscopical observations made in tap water).

Herb. J.T.P. 4945: Apple of *Malus domestica* cv. "Sunset", garden of 25 Beech Road, Sutton Weaver Cheshire, ENGLAND (Ref. 96022) inoculated on 25-X-1996. Apothecia developed on 29-VI-1997 and harvested on 21-VII, 6, 17 and 24-VIII and 12-V-1998 (Dupl. in AH 7119 and CUP 64943); Herb. J.T.P. 4946: Quince *(Cydonia oblonga)*, garden of H. Klöpfer, Nellenburgstrasse 11, Bad Mergentheim, Baden-Württemberg, GERMANY (Ref. 96021) inoculated on 6-X-l996. Apothecia developed on 6-VIII-1997 and harvested on 6 and 24-VIII-1997 (Dupl. in AH 7289); Herb. J.T.P. 4947: Apple of *Malus domestica* cv. "Sunset", garden of 25 Beech Road, Sutton Weaver Cheshire, ENGLAND (Ref. 96022) inoculated on 25-X-1996. Apothecia developed on blackened seeds from sectioned mummy and harvested on 1-II and 14-III-1998 (Dupl. in AH 7288); Herb. J.T.P. 4950: Japonicas (*Chaenomeles speciosa*), garden of 25 Beech Road, Sutton Weaver Cheshire, ENGLAND (Ref. 96024) inoculated on 26-X-1996. Apothecia developed on 12-III-1998 and harvested on 12 and 13-V-98 (Dupl. in AH 7291 and CUP 64944).

REMARKS

Described as "light reddish brown" by Pollock (1909), the apothecia were given as "cinnamon-brown to gray" by Demaree (1912). Harrison (1935) reported the typical colour as "flesh pink, darkening appreciably to reddish-brown, and later to brown when drying and turning mealy with age", with the range "from pale fresh pink to cornelian red, with the majority falling within the colour range between flesh colour and carrot red" in Ridgway (1912), which reasonably agree with our findings (Table 1).

It is noteworthy that cells from the Ectal excipulum show a few refractive walls which, together with their strong compaction, suggest that some could be gelatinized and therefore have a high resistance to separation by strong squashes, a feature rarely reported in this genus. In fact, although individual cells are mainly globose and maintain that form whilst alive and are observed in water mounts, occasionally some appear to be subangular, which could be explained by partial loss of turgescence, although maintaining their high adherence and "adopting" such an "unexpected" form.

Whilst the asci and spores of the Spanish collection and apothecia on inoculated fruits were in general agreement with the published description, Harrison (1935) stated in his discussion of the ascospores "They have no conspicuous oil spots or vacuoles". Neither Pollock (1909) nor Demaree (1912) mentioned them and Spooner (1987) described them as "eguttulate" in the Harrison collections which he examined. None were seen in the holotype. Concerning the nature of such observed polar guttules, and following Baral (1992), their presence in living water mounts and optically vanishing in dead or lethal mounts (such as KOH 2%) reveals

that they could be "refractive vacuolar bodies" instead of lipid bodies, that are not dissolved in living or dead cells.

DISCUSSION

Whilst Harrison (1935) considered *Ciboria aestivalis* to be a possible parasite on fruits mummified by *Monilinia fructicola,* none of the pomes inoculated by J.T.P., and on which apothecia developed after mummification, showed any evidence of a *Monilia* infection.

In view of the statement in Batra (1991) that, after examining the type, he was unable to ascribe it to the Sclerotiniaceae and our findings that the fungus mummified pome fruits, J.T.P. wrote to the late Dr. Batra, who replied "As I recall, there were a few apothecia devoid of any stromatic mass attached to them".

We therefore decided to apply for the type collection in the Pathological and Mycological Collections of the United States Department of Agriculture in BPI. The herbarium sheet, with the typed label "*Sclerotinia aestivalis* Pollock. On *Pyrus malus*" affixed to the base, bore two packets. The first packet, labelled 573925 with "'722" in pencil and a "TYPE" label, stated "*Sclerotinia aestivalis* on apple mummies, Ann Arbor, Mich. July 2, 1909 Coll, J. B. Pollock" and contained a hand-written slip "*Sclerotinia aestivalis* on apple mummies, July 2, 1909. Ann Arbor Mich. in 60% alcohol. Prof. J. B. Pollock, Sept. 1931 PC345[?]" (Fig. 9) with the preserved material comprising hard black fragments.

The second packet, labelled 573926, also with "722" in pencil, bore a typed label stating "*Sclerotinia aestivalis* Pollock from apple mummy N. S. Wales, 1921 Coll. T. H. Harrison" and contained a hand written slip "*Sclerotinia aestivalis* from apple mummy, N. S. Wales, T. H. Harrison, Chrome acetic 54 °C wax" with the collection comprising 3 stalked apothecia vertically embedded in wax. This was obviously part of an Australian collection received from T. H. Harrison, but, because of the method of preservation, we decided not to examine.

The "hard black fragments" were found on moistening to comprise small, very much wrinkled pieces of mummified fruit, with one ca 1 cm diam fragment bearing a cluster of six apothecia, which were photographed after they had revived (Fig. 1). Two half apothecia were removed and studied with slides bearing microtome sections, dried in aqueous gum arabic or mounted in Hoyer's medium, attached to the type sheet. Although the apothecial structure was identical with our European specimens, the general appearance of the hymenial elements, which had most of their cells more or less collapsed, did not allow their measurement or precise description, apart from some asci and spores.

Our findings of the development of stromata in culture and the mummification of fruits does indeed confirm that *Ciboria aestivalis* belongs in the *Sclerotiniaceae*, where it should certainly be maintained in *Ciboria* on the basis of the ectal

excipular *textura globulosa* and the absence of any sclerotial structure. The development of apothecia on apple pips has not previously been reported for this species.

ACKNOWLEDGEMENTS

The authors wish to express their grateful thanks to Mr. J. Gómez (Córdoba, Spain) for part of the Spanish collection and sending mummified fruits, Dr. A. Y. Rossman (BPI) for loan of the holotype, the late Dr. L. R. Batra (latterly of Big Boulder Field Station, Saranac Lake, U.S.A.) for details of his findings with the type, Dr. J. C. David (IMI), Miss Susan Gruff (CUP) and Dr. B. M. Spooner (K) for information that there were no or only Harrison Australian collections of *Ciboria aestivalis* in their herbaria, Professor R. P. Korf (Ithaca, U.S.A.) for nomenclatural advice and help with literature and Dr. P. F. Cannon (IMI) for elucidating the *Ciboria aestivalis* entry in Cannon & al. (1985). R. G. thanks the Education and Science Ministry of Spain for financial assistance from the Research Project PB95–0129-C03–02: "Flora Micológica Ibérica III".

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Taxonomic notes on Dematioscypha and Amicodisca

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Raitviir A. (2001): Taxonomic notes on *Dematioscypha* and *Amicodisca* – Czech Mycol. 52: 289–294

The history and taxonomy of the genera *Dematioscypha* Svrček and *Amicodisca* Svrček is discussed. Two new species, *Dematioscypha galanii* Raitv. and *Amicodisca svrcekii* Raitv. et Huhtinen, are described. The new combination, *Dematioscypha dematiicola* (Berk. et Broome) Svrček var. *fuscostipitata* (Graddon) Raitv., is proposed.

Key words: Hyaloscyphaceae, *Dematioscypha, Amicodisca*, new species, taxonomy.

Raitviir A. (2001): Taxonomické poznámky k rodům Dematioscypha a Amicodisca. – Czech Mycol. 52: 289–294

Je diskutována historie a taxonomie rodů *Dematioscypha* Svrček a *Amicodisca* Svrček. Jsou popisovány dva nové druhy *Dematioscypha galanii* Raitv. a *Amicodisca svrcekii* Raitv. et Huhtinen a je navržena nová kombinace *Dematioscypha dematiicola* (Berk. et Broome) Svrček var. *fuscostipitata* (Graddon) Raitv.

INTRODUCTION

Among the numerous taxa described by Dr. Mirko Svrček there are two small genera within the Hyaloscyphaceae proposed originally as monotypic ones, *Dematioscypha* (Svrček, 1977) and *Amicodisca* (Svrček, 1987). In the present paper the author discusses the taxonomy of these genera and adds a new species and a new variety to *Dematioscypha* and a new species to *Amicodisca*.

MATERIALS AND METHODS

The air-dried specimens from the herbarium of Institute of Zoology and Botany, Tartu (TAA) were mounted in a 3% aqueous solution of KOH and studied under a Nikon Labophot-2 microscope equipped with a drawing tube at magnification 1250×. Melzer's reagent (MLZ) was used to study cyto- and histochemical reactions.

RESULTS AND DISCUSSION

Dematioscypha Svrček

The genus *Dematioscypha* was erected by Svrček (1977) for a single species, *Peziza dematiicola* Berk. et Broome, which since Nannfeldt (1936) had usually

been placed into the genus *Hyaloscypha* Boud. (Dennis, 1949, Hughes, 1953), with the exception of Raitviir (1970), who excluded it from *Hyaloscypha*, but made no proposals concerning its taxonomic position.

Huhtinen (1987) has widened the concept of the genus and transferred *Urceolella richonis* Boud. and *Hyaloscypha olivacea* Velen. to it, reducing the latter to a variety of *Dematioscypha richonis* (Boud.) Huhtinen. Recently the current author has studied two interesting collections which provide additions to the taxonomy of the genus.

Revising the isotype specimens of species described by W. D. Graddon deposited in TAA I discovered that *Betulina fuscostipitata* Graddon represents in fact a *Dematioscypha*. The Graddon's species is very close to the typical *D. dematiicola* differing in MLZ+ ascal pore, in being more or less distinctly stipitate and in its foliicolous habit. No *Haplographium* anamorph is present, but the value of this character is questionable as the typical *D. dematiicola* is on some occasions found without its *Haplographium* anamorph which may develop not simultaneously with, but earlier than the teleomorph (Raitviir, 1991). The length of the stipe is variable within the same population as the apothecia from the isotype specimen examined by the author appeared to be considerably shorter than the one by Graddon (l.c.). The author's conclusion is that *Betulina fuscostipitata* represents a variety of *Dematioscypha dematiicola* and the following new combination is proposed.

Dematioscypha dematiicola var. ***fuscostipitata*** (Graddon) Raitv., comb. nov.

Basionymum: *Betulina fuscostipitata* Graddon, Trans. Brit. Mycol. Soc. 63: 477, 1974.

Apothecia superficial, scattered or gregarious, shortly stipitate. Disc 0.1–0.2 mm in diameter, greyish-white. Receptacle cup-shaped to saucer-shaped, dark greyish to almost black with black stipe when dry, covered, particularly at the margin, with short whitish hairs. Ectal excipulum composed of a textura prismatica, cells with olivaceous brown irregularly thickened walls, 7–14 × 4–6 μm. Hairs narrowly conical, straight, aseptate to 3-septate, with thin hyaline walls, smooth, sometimes with solid apices, 30–50 × 3–4 μm, apically less than 1 μm. Asci arising from croziers, cylindric-clavate, 8-spored, apical pore MLZ+, 30–40 × 4–6 μm. Spores ellipsoid, hyaline, 0–1-septate, sometimes with two small polar guttules, 5–7 × 1–1.5 μm. Paraphyses cylindrical, not exceeding the asci, 0.8–1.5 μm wide.

Ill.: Trans. Brit. Mycol. Soc. 63: 478.

Specimen studied: On fallen leaves of *Betula* sp., Coleshill, Warwks., England, Oct. 1972, coll. M. C. Clark, W. D. G. 2245 (isotype in TAA).

On one of the collecting trips during my stay at University of Alcalá de Henares (Spain) I collected a small dark-coloured hyaloscyphaceous fungus on a fallen

decorticated pine stick which represents a new species of *Dematioscypha*. It is described now and named in honour of the Spanish discomycetologist Dr. Ricardo Galán.

Dematioscypha galanii Raitv., species nova

Apothecia superficialia, subsessilia vel breviter stipitata, 0.1–0.2 mm in diametro, pallide grisea, sicca brunnea, extus longe pilosa. Pili difformes. Pili typi primi cylindraceo-conici, multiseptati, tenuiter tunicati, 60–90 × 3–4 μm, apicibus 1.6 μm, granulis brunneis incrustati. Pili typi secundi cylindracei non angustati, multiseptati, tenuiter tunicati, 35–60 × 4–5 μm, granulis brunneis incrustati. Asci uncinati, cylindraceo-clavati, octospori, 50–60 × 5–7 μm, poro iodo coerulescente. Sporae ellipsoideae vel cylindraceo-ellipsoideae ad usque suballantoideae, 2–4-guttulatae, 10–15 × 2–3 μm. Paraphyses cylindraceae, ascos non superantes, 0.8–1.5 μm. latae.

Dematioscyphae richonis (Boud.) Huhtinen var. *olivaceae* (Velen.) Huhtinen similis, ascis et sporis magnis differt.

Holotypus: In ramo decorticato Pini sp., Hayedo de Tejera Negra, Cantalojas, Guadalajara, Hispania, 07. 03. 1994, A. Raitviir legit (TAA-137743).

Apothecia superficial, scattered, subsessile to very shortly stipitate. Disc 0.1–0.2 mm in diameter, pale greyish when fresh. Receptacle cup-shaped, medium brown with a whitish margin when fresh, almost globosely closed, dark brown with a whitish marginal fringe when dry, covered with long brownish to yellowish-brown hairs. Ectal excipulum composed of a textura prismatica, brownish due to irregularly placed granules of a dark brown substance in intercellular spaces, cells with hyaline irregularly thickened walls, 8–12 × 3.5–5 μm. Hairs of two types. Hairs of the first type narrowly tapering-cylindrical, straight, multiseptate, usually with 4–6 septa, with thin hyaline walls, smooth, bearing numerous massive dark brown to blackish brown resinous exudates, 60–90 × 3–4 μm, tapering apically to 1.6 μm. Hairs of the second type cylindrical, not tapering, with 3–5 septa, with thin hyaline walls encrusted in the same way as tapering hairs, 35–60 × 4–5 μm. Asci arising from croziers, cylindric-clavate, 8-spored, apical pore MLZ+, 50–60 × 5–7 μm. Spores ellipsoid to cylindric-ellipsoid, often inequilateral to suballantoid, hyaline, aseptate, containing 2 to 4 small to medium-sized (up to 0.8 μm in diam.) lipid guttules, 10–15 × 2–3 μm. Paraphyses cylindrical, not exceeding the asci, 0.8–1.5 μm wide (Fig. 1).

Specimen examined: On a fallen decorticated stick of *Pinus* sp., Hayedo de Tejera Negra, Cantalojas, Guadalajara, Spain, 07.03.1994., A. Raitviir (Holotype in TAA-137743).

The species bears a general resemblance to *Dematioscypha richonis* (Boud.) Huhtinen var. *olivacea* (Velen.) Huhtinen, but differs from it in several important

features. The ectal excipulum is similar in both species, but in *D. galanii* the pigment is located in intercellular substance, not in cell wall thickenings as in *D. richonis* var. *olivacea*. The presence of two types of hairs is a unique feature of this species. The tapering hairs are very similar to those of *D. richonis* var. *olivacea* but the shorter wide cylindrical hairs cannot be found in the other species of *Dematioscypha*. Further it differs from *D. richonis* var. *olivacea* in having larger asci arising from croziers and showing amyloid pores, and larger, distinctly guttulate spores, in growing on coniferous wood and not being accompanied by the dematiaceous mould *Haplographium* sp.

A key to the known species and varieties of *Dematioscypha* is given below. For detailed descriptions and illustrations of species not treated here the excellent paper of Huhtinen (1987) is recommended.

Key to the species and varieties of Dematioscypha

1. Hairs conical with acute tips, without conspicuous encrustation
   2. Ascus pore MLZ-, on decaying wood *D. dematiicola* var. *dematiicola*
   2'. Ascus pore MLZ+, on fallen leaves *D. dematiicola* var. *fuscostipitata*
1'. Hairs narrowly cylindrical-tapering with rounded tips, bearing conspicuous dark-coloured encrusting granules
   3. Asci arising from croziers
      4. Spores 5–8(-10) × 1.5–2(-3) μm *D. richonis* var. *richonis*
      4'. Spores 10–15 × 2–3 μm. *D. galanii*
   3'. Asci arising from simple septa *D. richonis* var. *olivacea*

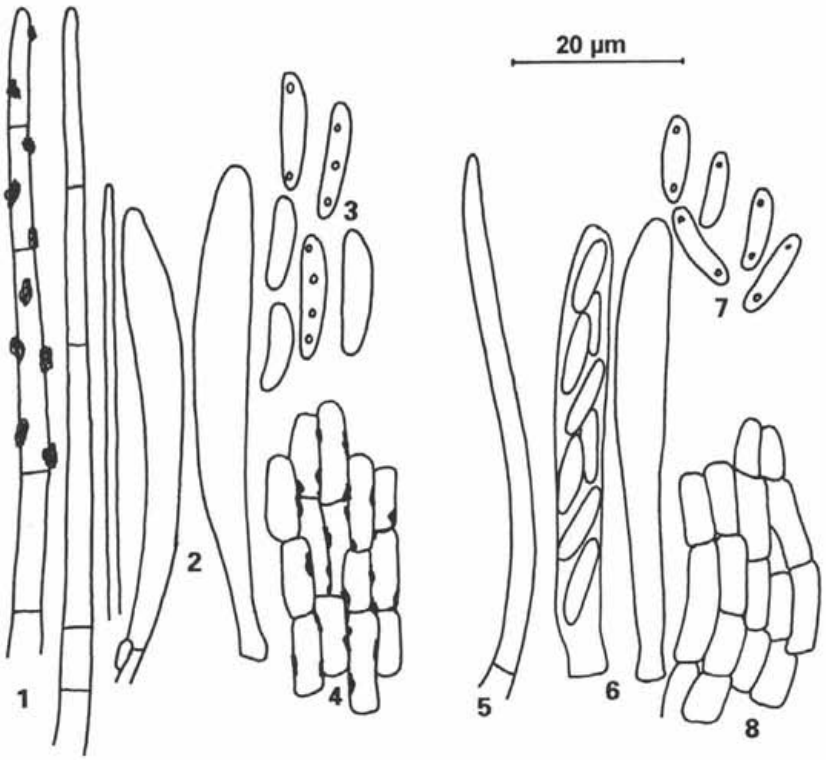
Amicodisca Svrček

Svrček (1987) has erected another originally monotypic genus, *Amicodisca*, for *Dasyscypha brdensis* Velen. Later Haines (1989) added the North American species *A. viridicoma* (Peck) Haines and Huhtinen (1994) has shown that the correct name for the type species is *A. virella* (P. Karst.) Huhtinen.

On excursions of the XIII Nordic Mycological Congress held in Mekrijärvi, Ilomantsi, North Karelia, Finland at the end of August, 1996 two very abundant collections of *Amicodisca* were made. One of them was typical *A. virella,* but another, macroscopically identical, had, for a surprise, totally different and considerably smaller spores. This fungus is described now as a new species of *Amicodisca* and named in honour of Dr. Mirko Svrček.

Amicodisca svrcekii Raitv. et Huhtinen, species nova

Apothecia superficialia, late sessilia, 0.3–1 mm diametro, hymenio griseolo, extus olivaceo-viridia, dense viridipilosa. Pili cylindraceo-conici, aseptati, tenuiter



Figs. 1–8. *Dematioscypha galanii* (holotype). 1. Two hairs. 2. Two asci and a paraphyse. 3. Ascospores. 4. A fragment of ectal excipulum. *Amicodisca svrcekii* (holotype). 5. A hair. 6. Two asci. 7. Ascospores. 8. A fragment of ectal excipulum. Bar = 20 µm

tunicati, subhyalini, obscure pallide citrini vel pallide olivacei, 40–80 × 2.5–4 µm, apicibus 1–1.6 µm diametro. Asci non uncinati, cylindraceo-clavati, octospori, 50–60 × 5–6 µm, poro iodo coerulescente. Sporae ellipsoideae vel suballantoideae, aseptatae, biguttulatae, 8–11 × 1.8–2.5 µm. Paraphyses cylindraceae, ascos non superantes, 0.8 µm latae.

In ligno putrido humido crescit.

Amicodiscae virellae (P. Karst.) Huhtinen similis, sporis minoribus differt.

Holotypus: In ligno putrido humido, Palokangas, Ilomantsi, Karjala borealis., Finland, 28.08.1996, T. Lassøe legit, TL-4250 in TAA conservatur.

Apothecia superficial, scattered to gregarious, broadly sessile. Disc 0.3–1 mm, greyish when fresh and dry. Receptacle cup-shaped to saucer-shaped, externally olivaceous-green when fresh, blackish-brown when dry, densely covered with

yellowish-green hairs. Ectal excipulum of a textura prismatica to textura angularis, cells thin-walled, hyaline to olivaceous, 6–14 × 3–6 μm. Hairs cylindric-conical, aseptate, straight, hyaline, dull lemon yellow to pale olivaceous, thin-walled, smooth, bearing numerous loosely attached small, olivaceous-greenish granules dissolving in KOH and yielding a lemon-yellow hue, 40–80 × 2.5–4 μm, tapering to 1–1.5 μm. Asci arising from simple septa, cylindric-clavate, 8-spored, 50–60 × 5–6 μm, wide apical pore faintly MLZ +. Spores ellipsoid to suballantoid, aseptate, containing 2 polar lipid guttules, 8–11 × 1.8–2.5 μm. Paraphyses cylindrical, not exceeding the asci, 0.8 μm wide.

On very wet decaying hardwood.

Specimen examined: on the underside of wet, riverside driftwood, Palokangas, Ilomantsi, Karjala borealis., Finland, 28. 08.1996, coll. T. Lassøe (Holotype TL-4250 in TAA, isotypes C, TUR).

This species is externally undistinguishable from *Amicodisca virella* (P. Karst.) Huhtinen but microscopically clearly different in the narrow asci and small spores.

ACKNOWLEDGMENTS

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CZECH MYCOL. 52 (4), 2001

Some notes on the remarkable variability of Ascobolus scatigenus (Discomycetes, Pezizales)

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Antonín V. and Moravec J. (2001): Some notes on the remarkable variability of Ascobolus scatigenus (Discomycetes, Pezizales). – Czech Mycol. 52: 295–298

The significant variability of the habitus of apothecia of *Ascobolus scatigenus* (Berk.) Brumm. from various localities is mentioned. The variability of their size, shape and colour is emphasized by the fast changing of their coloration in the course of ascospore discharge. Ascospore ornamentation was observed by SEM and the microphotographs as well as a photograph of the apothecia accompany the paper. Yet unpublished localities of *A. scatigenus* are given.

Key words: Discomycetes, Pezizales, *Ascobolus scatigenus*, distribution, taxonomy, variability.

Antonín V. a Moravec J. (2001): Poznámky k pozoruhodné variabilitě druhu Ascobolus scatigenus (Discomycetes, Pezizales). – Czech Mycol. 52: 295–298

Je uvedena pozoruhodná variabilita tvaru a zbarvení plodnic *Ascobolus scatigenus* (Berk.) Brumm. sbíraných na různých lokalitách. Tato variabilita je umocněna schopností okamžité změny zbarvení hymenia při uvolňování výtrusů. Ornamentika výtrusů byla pozorována rovněž ve skenovacím elektronovém mikroskopu a tyto fotografie, stejně jako barevné vyobrazení, článek doplňují. Jsou rovněž zveřejněny nové a doposud nepublikované lokality.

Ascobolus scatigenus (Berk.) Brumm. 1967 is the type species of the section *Gymnoascobolus* Brumm. 1967 which accommodates species having eugymnohymenial apothecia with an active marginal outgrowth and possessing a well-developed excipulum with a differentiated hypothecium, medullary and ectal excipulum.

The fungus was well described and illustrated by Brummelen (1967). Nevertheless, although Brummelen stressed the conspicuous shape of the apothecia, he stated that "although much named, the species itself is not variable" (Brummelen 1967, p. 163). However, we have found *A. scatigenus* to be one of the most variable species of the genus and really a chameleon among fungi. Because of the variability, especially the very different size, shape and colour of the apothecia, the fungus was described by Berkeley himself under six different names, and the variability resulted into 13 synonyms (Brummelen 1967). Recently, Wang (1999)

has tentatively considered *Aleurina nigrodisca* Sawada 1931 ("with large yellow apothecia") also to be a synonym of *Ascobolus scatigenus*.

The large conspicuous "pezizoid" apothecia of A. scatigenus are very variable in size, shape and colour. Regarding the size, apothecia may measure only 5 mm in diameter, whilst those collected in another place may reach 40 mm (specimen from Sumatra mentioned below). Also the shape and colour of the apothecia may be very different depending on their habitat, environment and stage of development.

The apothecia are subglobose, cup-shaped to discoid and concave to flat, externally smooth to wrinkled, pruinose to granular, with white to dark-brown, entire to flexuous or variously undulate to involute margin, with a smooth to variously undulate yellow-green to dirty-brown or dark reddish hymenium.

A certain apothecial variability itself is not rare also in other discomycetes, but regarding A. scatigenus, it is exceptional in the fact that very often the apothecia from a particular locality and a certain substrate differ conspicuously from those collected on another locality or different substrate. Obviously, the apothecia are not variable merely due to their stage of development, but also the substrate and environment are important for their habitus.

The apothecial variability is emphasized by the yet unpublished fast changing of colour of the apothecia in the course of ascospore discharge after touching. The amazing chameleon-like changing of colour of a great number of apothecia collected and observed by the former author in Boukombe (Benin, West Africa, coll. Antonín B97.103) is worth describing.

A description of the remarkable collection from Benin:

Apothecium 5–20 mm broad, broadly attached to the substrate, discoid, flat, mostly with slightly convex centre, margin elevated and involute when single, almost cupulate when in dense groups. Hymenium smooth, glabrous, dark black-purplish-brown (up to 9F8, Kornerup et Wanscher 1978) when untouched, very quickly changing colour radially up to olivaceous yellow to olivaceous brownish (4C-D6) after touching. Excipulum whitish, (woolly) tomentose. Margin very finely tomentose, involute to inflected.

Apothecia of the collection from Sumatra mentioned below resembled rather a *Peziza* sp. than an *Ascobolus*, measuring up to 40 mm in diameter.

The microfeatures of the collections reported below are not very variable and correspond well with the description in Brummelen (1967). The ascospores of A. scatigenus when observed under a light microscope are ellipsoid, 20.5–27.5 (-28) × 11–14 μm, smooth, mostly without or with only one thin irregular stria, rarely with two or more fine striae which only very rarely form an irregular reticulum (see also Brummelen 1967). Under the scanning electron microscope the ascospore perisporium appears to be shallowly wrinkled to verrucose and the

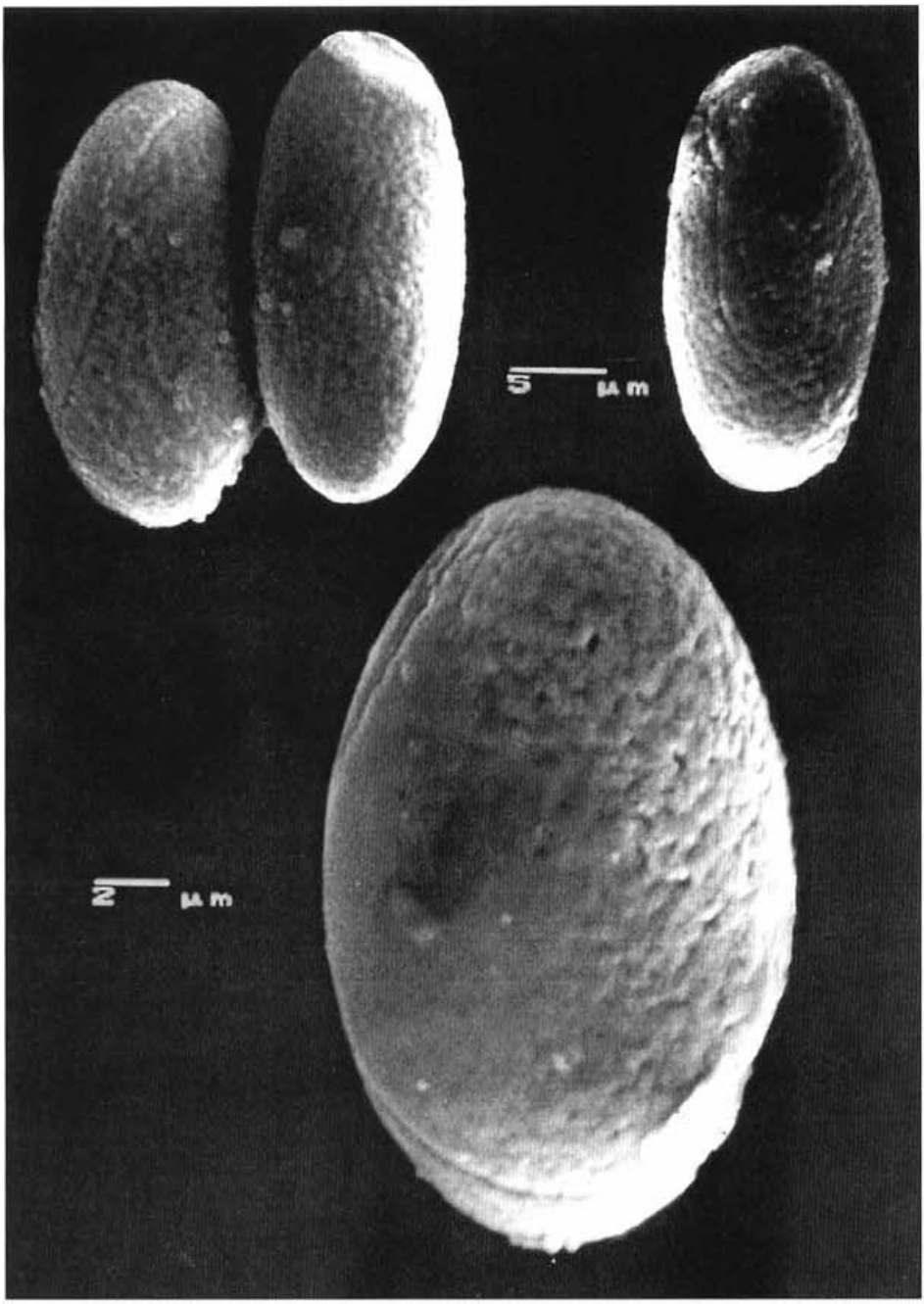

Fig. 1. SEM of ascospores of *Ascobolus scatigenus* (West Africa: Benin, Boukombe, 25 Aug. 1997)

Ascobolus scatigenus (Berk.) Brumm., West Africa: Benin, Boukombe, 25 Aug. 1997.
Photo V. Antonín

occasional striae are really very fine and simple (Fig. 1). A SEM photomicrographs of the ascospores of this species has already been published by Wang (1999) but show nearly smooth ascospores. The asci of the material examined are of the same variable size as stated by Brummelen (1967) and conspicuously diverse regarding their stage of maturity – obviously, they mature very irregularly.

Ascobolus scatigenus is not a rare species. It occurs in tropical and subtropical regions of both hemispheres occurring mostly in coprophilous but rarely also lignicolous habitats. Detailed localities were given by Brummelen (1967) who examined a great number of collections. The distribution of the species in Taiwan has recently been given by Wang (1999).

The following localities represent not yet published ones, and include the first records for West Africa and also for Sumatra (although already known from Indonesia as it has been collected in Java).

1. West Africa: Benin, Atacora prov., Boukombe, NE of the town, on bare soil mixed with excrements, 25 Aug. 1997 leg. V. Antonín B97.103, A. De Kesel, A. De Groote and J. Rammeloo (BR, BRNM).
2. Indonesia: West Sumatra, Bukittinggi, Ngarai Sianok Canyon, 700 m. on cow (buffalo) dung mixed with sand in a partly dried river bed, 7. V. 1991 leg. Jiří Moravec (herb. J. Moravec, CUP).
3. Madagascar: Fianartsoa prefecture, vicinity of the village of Ranomafana, on cow (zebu) dung in a secondary forest, 29. I. 1995 leg. Jiří Moravec (herb. J. Moravec).

The synonyms of *A. scatigenus* were thoroughly given by Brummelen (1967). Ascospore germination and gymnohymenial development of its apothecia was described by Dodge (1920) and Lohwag (1927, 1941).

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CZECH MYCOL. 52 (4), 2001

Das Problem Pholiotina sulcatipes – P. aberrans

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Hausknecht A. (2001): The problem of Pholiotina sulcatipes – P. aberrans. – Czech Mycol. 52: 299–306

After revising the type collections of *Agaricus sulcatipes, Conocybe aberrans* and *Galera rimosa* (besides a great number of other European collections), the three taxa are considered to represent one species, viz. *Pholiotina sulcatipes* (Peck) Bon. A compiled description and microscopical drawings are given.

Key words: Agaricales, Bolbitiaceae, *Pholiotina, Pholiotina sulcatipes, P. aberrans, P. rimosa*. – Mykoflora of Europe, North America.

Hausknecht A. (2001): Das Problem Pholiotina sulcatipes – P. aberrans. – Czech Mycol. 52: 299–306

Nach Revision der Typuskollektionen von *Agaricus sulcatipes, Conocybe aberrans* und *Galera rimosa* (neben einer großen Anzahl anderer Kollektionen aus Europa), werden die drei Taxa als eine einzige Art, *Pholiotina sulcatipes* (Peck) Bon, erkannt. Eine kompilierte Beschreibung und Mikrozeichnungen der Art werden gegeben.

Hausknecht A. (2001): Problém druhů Pholiotina sucatipes a P. aberrans. – Czech Mycol. 52: 299–306

Po revisi typových položek druhů *Agaricus sulcatipes* Peck, *Conocybe aberrans* Kühner a *Galera rimosa* Velen. (vedle velkého počtu dalších evropských sběrů) jsou tyto 3 taxony považovány za jediný druh *Pholiotina sulcatipes* (Peck) Bon. Je uveden souhrný popis a nákresy mikroskopických struktur.

In der europäischen Literatur ist die Frage, ob es in Europa zwei Arten gibt, nämlich *Pholiotina sulcatipes* (Peck) Bon und *P. aberrans* (Kühn.) Singer, umstritten. Watling (1982, 1992) erkennt zwei getrennte Arten an, ebenso Bon (1992) und Meusers (1996) in ihren Schlüsseln der Gattung *Pholiotina*. Für Enderle (1997: 22) ist *Pholiotina sulcatipes* ein fragliches Taxon; Singer (1986) führt nur *Pholiotina aberrans* an, war aber zuletzt der Meinung (pers. Mitt.), daß *P. sulcatipes* konspezifisch sei – seine diesbezügliche Untersuchung kam nicht mehr zur Veröffentlichung. In dieselbe Richtung tendieren auch die Bemerkungen von Krisai-Greilhuber & al. (1997: 176) und des Autors dieser Arbeit (Hausknecht 1999: 61).

Es war daher notwendig, nach Singer (ined.) und Watling (1992) den Typus von *Agaricus sulcatipes* Peck nochmals zu studieren und mit jenem von *Conocybe aberrans* (Kühner) Kühner zu vergleichen, was nunmehr, seitdem Kühners Herbarium nach Genf (G) transferiert worden ist, problemlos möglich ist. Die Ergebnisse dieses Vergleiches sind in Tabelle 1 zusammengefaßt.

Tabelle 1. Vergleich der mikroskopischen Eigenschaften der Typusbelege von *Pholiotina sulcatipes* und *P. aberrans*:

	Agaricus sulcatipes	**Conocybe aberrans**
Sporengröße	6,8–9,1 × 4,2–5,4 µm	7,9–10,3 × 4,6–5,6 µm
Sporen (Mittelwert)	8,0 × 4,8 µm	9,1 × 5,2 µm
Sporenform	ellipsoidisch, dünnwandig	ellipsoidisch, dünnwandig
Keimporus	deutlich, ca. 1 µm breit	deutlich, ca. 1 µm breit
Basidien	13–24 × 8–12 µm	17–24 × 8–10 µm
Schnallen	vorhanden	vorhanden
Cheilozystiden	25–40 × 6,5–9,5 µm	37–55 × 8–12,5 µm
Kaulozystiden	bis 45 × 10 µm	nicht beobachtet
Huthautelemente	20–55 × 11–21 µm	27–48 × 12–25 µm
Pileozystiden	bis 72 × 18 µm	bis 62 × 11 µm

Die Daten meiner mikroskopischen Untersuchung des Typus von *Pholiotina sulcatipes* stimmen mit den von Watling (1992) ermittelten im wesentlichen überein.

Die Form der Sporen, ihre Wandstärke und Farbe in KOH sowie die Größe des Keimporus weichen nicht voneinander ab. Die Maße sind beim nordamerikanischen Typus etwas kleiner, im Mittel. um ca 1 µm in der Länge und kaum 0,5 µm in der Breite. Einige Kollektionen aus Mitteleuropa, u. a. jene von Kühner vom 31. 7. 1936 aus Savoyen und einige Funde aus Niederösterreich, ebenso die beiden Finnischen Kollektionen von J. Vauras, haben ebenso kleine Sporen, und es gibt bis zum Typus von *Conocybe aberrans* hin viele Werte dazwischen. Ein einziger Fund (Vorarlberg, Valduna, 3. 9. 1995) hat auch teilweise 2-sporige Basidien und deshalb eine mittlere Sporengröße von 9,7 × 5,4 µm.

Die Cheilozystiden sind beim Typus von *Conocybe aberrans* durchschnittlich länger und breiter als bei *Agaricus sulcatipes*, die Form stimmt aber überein. Es scheint, daß viele Kollektionen aus höheren montanen bis montan-subalpinen Höhenstufen kleinere Cheilozystiden aufweisen, so auch meine beiden Salzburger und Kühners Aufsammlungen vom 31. 7. 1936 und 2. 8. 1936 aus Savoyen, aber auch die Funde aus Finnland. Auch hier läßt sich, wenn man alle untersuchten Belege einbezieht, kein Hiatus zwischen Aufsammlungen mit kleinen und großen Cheilozystiden finden, im Gegenteil, bei manchen erreichen die Cheilozystiden bis 75 × 12,5 µm, gehen also über jene des Typusmaterials von *Conocybe aberrans* weit hinaus.

Beide Taxa weisen an der Basis der Basidien und in der Trama Schnallen auf, was der Interpretation Bons (1992: 77) widerspricht, der in der Sektion *Piliferae* (Kühn.) Singer nur *Pholiotina aberrans* schnallentragende Hyphen zugesteht. Mir ist bisher noch keine graminicole Aufsammlung mit den Mikrodaten von

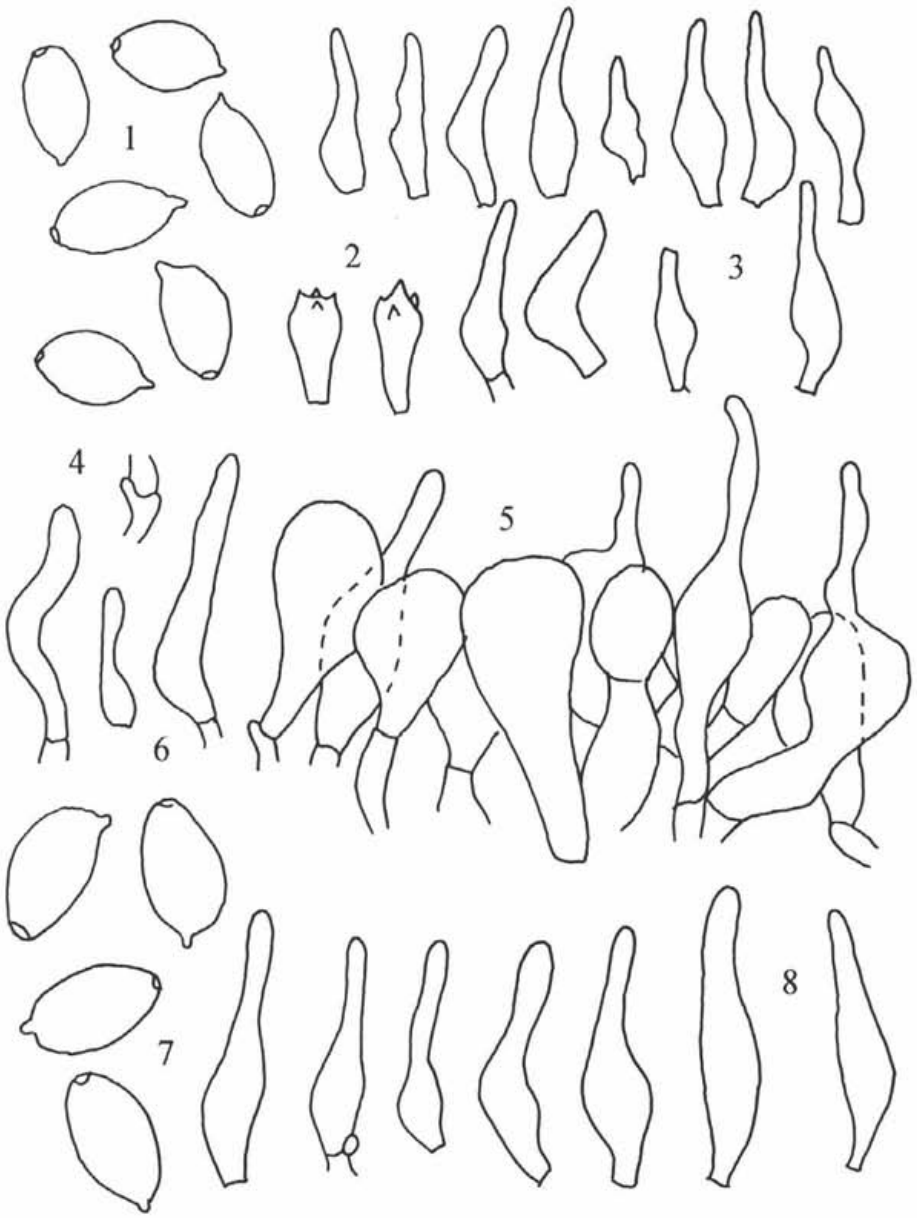

Abb. 1–8 *Pholiotina sulcatipes* (1–6 *Agaricus sulcatipes*, Holotypus; 7, 8 *Conocybe aberrans*, Holotypus). 1, 7 Sporen, × 2000; 2 Basidien, × 800; 3, 8 Cheilozystiden, × 800; 5 Schnalle in der Trama, × 800; 5 Huthaut mit Pileozystiden, × 800; 6 Kaulozystiden, × 800.

P. sulcatipes begegnet, die schnallenlose Hyphen hat; wenn es eine solche gibt, müßte sie einen neuen Namen bekommen.

Alle weiteren mikroskopischen Eigenschaften der beiden untersuchten Typuskollektionen stimmen ± überein.

Die Diagnosen von *Agaricus sulcatipes* und *Conocybe aberrans* weichen in einigen Punkten voneinander ab. Während Kühners Art in das unten gegebene Gesamtkonzept von *Pholiotina sulcatipes* gut integrierbar ist, paßt *A. sulcatipes* in einigen Eigenschaften (pileus chestnut-colored, stipe rather tenacious, striate-sulcate, often tinged with blue or green at the base) nicht. Der Sonderstandort läßt vielleicht die größeren Fruchtkörper und die festeren, dickeren, gestreiften Stiele erklären, aber die Blau- oder Grünverfärbung an der Stielbasis konnte bei von mir gesammeltem und sonst in der Literatur zitiertem Material von *Pholiotina sulcatipes* nie beobachtet werden. Auch wenn Peck (1884: 132) weiter unten etwas einschränkt "...at the base, where it generally assumes a greenish-blue color if handled when moist", handelt es sich um einen deutlichen Unterschied, der allerdings von Kühner (1935) und Watling (1982, 1992) nicht als so ausschlaggebend angesehen wurde, um nicht zumindes Synonymie zu vermuten (Kühner 1935) oder Kollektionen ohne Blauverfärbung der Stielbasis als *Conocybe sulcatipes* zu bestimmen (Watling 1982, 1992). Die mikroskopischen Eigenschaften der Typen, die sicherlich als wichtiger einzustufen sind als eine ziemlich magere Diagnose von *Agaricus sulcatipes*, passen jedenfalls so überzeugend zueinander, daß ich von der Konspezifität mit Kühners Taxon überzeugt bin. Sollten aus Nordamerika neuere Aufsammlungen der Art mit einer blaugrün verfärbenden Stielbasis bekannt werden, würde ich alle übrigen, nicht verfärbenden Kollektionen – bestenfalls als Varietät – bei *P. sulcatipes* belassen.

Die erst kürzlich von *Galera* umkombinierte *Pholiotina rimosa* (Velen.) Hauskn. et Svrček (Hausknecht 1999) ist in makro- und mikroskopischer Hinsicht identisch mit Kühners *Conocybe aberrans* und muß, wie aus den dort gegebenen Ausführungen hervorgeht, nunmehr ebenfalls als Synonym von *P. sulcatipes* angesehen werden.

Ich gebe nachstehend eine kompilierte Dokumentation aller von mir untersuchten Kollektionen:

Pholiotina sulcatipes (Peck) Bon 1991, Doc. Mycol. 21/83: 39

Basionym: *Agaricus sulcatipes* Peck 1884, Ann. Rep. New York State Mus. Nat. Hist. 35: 132

Synomyme: *Pholiotina aberrans* (Kühner) Singer 1950, Acta Inst. Bot. Komarov Acad. Sci. USSR, Ser.2, 6: 436

Conocybe aberrans (Kühner) Kühner 1935, Le Genre Galera: 126.
Galera aberrans Kühner 1926, Le Botaniste, Ser. 17 (1–6): 168.
Pholiotina rimosa (Velen) Hausknecht et Svrček 1999, Czech Mycol. 51: 61.
Galera rimosa Velen., Novitates mycologicae 1940: 130.

Farbige Abbildungen: Enderle (1985: opp. P. 16, als *Pholiotina aberrans*), Moser & Jülich (1985-: III/4), Cetto (1989: 2228), Enderle (1997: 20, als *Pholiotina aberrans*).

Ausgewählte Beschreibungen: Kühner (1935: 126, als *Conocybe aberrans*), Svrček (1961: 201, als *Conocybe aberrans*, und 1983: 220, als *Conocybe sulcatipes*), Watling (1982: 86), Enderle (1985: 22, als *Pholiotina aberrans*, und 1997: 20, als *Pholiotina aberrans*), Horak (1986: 104, als *Conocybe aberrans*).

Merkmale:

Hut: 4–13 mm breit, bis 10 mm hoch, meist glockig-konvex, seltener halbkugelig oder flach konvex, jung zum Teil höher als breit und alt selten aufschirmend; jung und frisch in der Mitte braun, siena, lederbraun (6D7, 6DE7), hellbraun, kaneelbraun (6D6), vereinzelt auch mehr orangebraun, zum Rand hin oft abgesetzt heller, über siena, topasgelb (5C5), rotblond (4–5C4) bis fast hell braunorange (5C4); ältere Hüte oft einheitlicher gelbbraun bis hell orangebraun gefärbt, trocken grauorange bis hell orangegrau (5B4 mit Graustich); hygrophan, meist fast bis zur Mitte gerieft. Oberfläche auffallend stark behaart, Hutrand ohne Velumspuren.

Lamellen: schmal angewachsen, dicht, schmal, hell milchkaffeebraun, blaß grauorange (5B4 + Braunstich), alt höchstens hell rostfarben, mit etwas hellerer, fein gezähnelter Schneide.

Stiel: 25–60 mm lang, 0,7–1,5 mm dick, zylindrisch, Basis oft verdickt bis leicht (nicht gerandet) knollig, jung einheitlich weißlich, hyalinweiß, älter höchstens creme, Basis mehr gelbstichig, aber nur minimal dunkler; in ganzer Länge behaart-bereift.

Fleisch: hyalinweiß, im Stiel blaß holzfarben bis hell creme, wenig fest, ohne besonderen Geruch und Geschmack.

Sporen: (6,8-)7,2–10,3(-11,1) × (3,6-)4,2–5,2(-5,6) μm, im Mittel 8,0–9,1(-9,7) × × 4,2–5,2 (-5,4) μm, Q = 1,6–2,1, ellipsoidisch, glatt, dünnwandig, mit 0,7–1,0 μm breitem Porus, nicht lentiform oder bohnenförmig; in KOH hellgelb, gelb bis hell gelbbräunlich mit einfacher, ganz selten minimal doppelt unterstrichener Wand.

Basidien: 4-sporig (bei einer Kollektion mit 2-sporigen untermischt), 13–24 × × 8–12 μm, mit Schnallen.

Schnallen: überall im Fruchtkörper zu finden.

Cheilozystiden: (30-)35–75 × (5,5-)7–12,5 μm, spindelig bis zylindrisch-bauchig, dünnwandig.

Stielbekleidung: mit massenhaft Kaulozystiden ähnlich den Cheilozystiden, aber größer (bis 102 × 16 μm).

Huthaut: hymeniform aus rundlich-gestielten Elementen (26–55 × 9–25 μm) zusammengesetzt, dazwischen überaus reichlich Pileozystiden (stellenweise bis 1/3 der Huthautelemente ausmachend), ähnlich den Cheilozystiden geformt und teilweise gelblich pigmentiert, aber größer (bis 95 × 16 μm).

Habitat und Verbreitung: *Pholiotina sulcatipes* hat eine Vorliebe für feuchte, moos- und krautreiche Nadelwälder; sie kommt aber auch in der reinen Nadelstreu (einmal auf vergrabenen, stark modrigen Holzstückchen), an feuchteren Stellen in Laubwäldern, auf grasigen Lichtungen und auf Brandstellen vor. Der Typus aus Nordamerika (Peck 1884) wurde auf im Wald abgelagerter Buchweizen-Kleie gefunden. Favre (1955) und Horak (1986) melden sie zwischen *Salix*-Teppichen über Kalk in der alpinen Zone. *Pholiotina sulcatipes* ist aus West-, Mittel- und Nordeuropa sowie aus Nordamerika bekannt; Singer (1950) fand die Art im asiatischen Rußland (Altai-Gebirge, nahe Kurai). Eine Kollektion von einem verrottenden Holzstrunk im brasilianischen Regenwald (Watling 1992) kommt dem hier gegebenen Konzept von *P. sulcatipes* ziemlich nahe, hat aber breitere, variablere, oft utriforme Cheilozystiden und würde möglicherweise Varietätsrang verdienen. Aus anderen Kontinenten ist *P. sulcatipes* bisher nicht bekannt geworden.

Untersuchte Kollektionen: Österreich: Niederösterreich, Gmünd, Schrems, Eugenia (MTB 7156/3), im Nadelwald, 8. 7. 1984, leg. L. Sandmann (Herb. Sandmann); – Heidenreichstein, Seyfrieds, Winkelauer Teich (MTB 7156/4), in der Krautschicht (*Urtica, Impatiens*) im Nadel-Hochwald, 7. 10. 1987, leg. A. Hausknecht (Herb. Hausknecht = H S1712); – Weitersfeld, Merkersdorf, Nationalpark Thayatal (MTB 7161/3), an feuchter Stelle bei Buche und Hainbuche, 20. 7. 1984, leg. A. Hausknecht (WU 3457); – Gmünd, Gebhartsteich Süd (MTB 7256/2), auf Kahlschlag in der Nadelstreu (Fichten), 4. 10. 1981, leg. L. Sandmann (WU 1888); – Horn, St. Leonhard, Horner Wald (MTB 7359/3), im Mischwald, 12. 8. 1984, leg. A. Hausknecht (H S1190); – 17. 8. 1986, leg. A. Hausknecht (H S1455); – Horn, Breiteneich (MTB 7360/1), im Mischwald, 13. 9. 1984, leg. A. Hausknecht (H S1208); – Eggenburg, Missingdorf (MTB 7360/2), auf Lichtung im Nadelwald, 11. 8. 1980, leg. A. Hausknecht (H S265); – 9. 8. 1987, leg. A. Hausknecht (H S1668); – Maissau, Grünhof (MTB 7460/2), bei Fichte, Föhre, Lärche, 30. 9. 1979, leg. A. Hausknecht (H S38); – Langenlois, Dienbachtal, Seewiese (MTB 7460/3), auf bemoostem, stark modrigem Holz im Nadelwald, 31. 8. 1981, leg. A. Hausknecht (H S572); – Hollabrunn, Kiblitz, Guglwald (MTB 7461/4), im Moos bei Laubbäumen, 13. 6. 1982, leg. A. Hausknecht (H S765); – St. Pölten, Wald, Probstwald (MTB 7860/3), in der Fichten-Nadelstreu, 31. 5. 1984, leg. W. Klofac (H S1145); – Wr. Neustadt, Schleinz, Rosalia (MTB 8263/4), in Moospolster im Mischwald, 2. 9. 1981,

leg. A. Hausknecht & R. Schütz (WU 8482, abgebildet in Cetto 1989: 2228). Salzburg, Neukirchen/Großvenediger, Habachtal (MTB 8740/3), im Moos im Nadelwald, 9. 7. 1996, leg. A. Hausknecht (H S2770); – Zell/See, Badgastein, Kötschachtal (MTB 8845/3), 1. 7. 1996, leg. A. Hausknecht (H S2767). Vorarlberg, Rankweil, Valduna (MTB 8723/2), am Wegrand im Nadelwald, 3. 9. 1995, leg. A. Hausknecht & al. (H S2661).

Deutschland: Bayern, Roth, Hofberg (MTB 6833), in dichter Nadelstreu unter Fichten, 11. 9. 1993, leg. A. Hausknecht, G. Wölfel & F. Reinwald (WU 12323, abgebildet in Moser & Jülich 1985-: III/4, unten).

Finnland: Etelä-Häme, Somero, Häntäla, Mischwald mit Fichte und Erle, 19. 8. 1994, leg. J. Vauras (TURA). Uusima, Askola, Vahijärvi, Leveäsuo, im grasigen Wald bei Fichte und Birke, 2. 8. 1997, leg. J. Vauras (TURA).

Frankreich: Savoie, Praz de Saint-Bon, Nr. 7–95, auf Brandstelle unter Lärche, ?1. 8.?, leg. R. Kühner (G, Holotypus von *Conocybe aberrans*); – Tarentaise, Peisey Moulins, unter Lärchen (Nadelstreu), 31. 7. 1936, leg. R. Kühner (G, als *Conocybe aberrans*); – unter *Larix* und *Picea*, 2. 8. 1936, leg. R. Kühner (G, als *Conocybe aberrans*); Doubs, Le Russey, in Fichtenpflanzung, 18. 8. 1938, leg. R. Kühner (G, als *Conocybe aberrans*).

Schweden: Upland, Upsala, 7. 9. 1882, leg. H. von Post (S, als *Galera siliginea* var. *silvaticum*); – Upsala, Kungsparken, 15. 8. 1903, leg. H. von Post (S, als *Galera siliginea*).

Tschechien: Böhmen, Mnichovice, Jidlásky, in gramine collis, Sept. 1934, leg. J. Velenovský (PRM, Holotypus von *Galera rimosa*).

USA: New York State, East Berne, auf einem Haufen Buchweizen-Kleie im Wald, Aug. 1883, leg. C. H. Peck (NYS, Holotypus von *Agaricus sulcatipes*).

Die nächstverwandte Art in der Sektion *Piliferae* ist *Pholiotina mairei* (Kühn. et Watling) Enderle. Sie kann durch zartere, kurzstieligere Fruchtkörper, etwas kleinere Sporen und vor allem kleinere Cheilo-, Kaulo- und Pileozystiden mit dünnem, langem Hals unterschieden werden. Schwieriger ist die Abgrenzung von (z. B. durch Witterungseinflüsse) velumlosen Formen von *Pholiotina velata* (Velen.) Hauskn. et Svrček oder *Pholiotina dentatomarginata* (Watling) Enderle. Erstere hat nahezu ebenso große, aber etwas dunkler gefärbte Sporen, kürzere Cheilozystiden und vor allem eine Huthaut, in der Pileozystiden selten sind oder fehlen. Die Sporen von *P. dentatomarginata* sind größer, im Mittel meist über 10 μm, dickwandiger und dunkler in KOH, die Zystiden meist kürzer und variabler geformt, und in der Huthaut sind Pileozystiden abwesend oder zumindest selten.

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Hymenochaete cruenta and H. sphaericola, two sibling species of Hymenochaetales (Hymenomycetes, Basidiomycota)

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Parmasto, E. (2001): Hymenochaete cruenta and H. sphaericola, two sibling species of Hymenochaetales (Hymenomycetes, Basidiomycota) – Czech Mycol. 52: 307–315

Hymenochaete cruenta (syn.: *H. mougeotii*) has been considered a widely spread species in Eurasia and Australasia inhabiting both coniferous and angiospermic trees or bushes. A similar species, *H. murashkinskyi* was described by A. Pilát from Southern Siberia and later found also in the Russian Far East and China on *Rhododendron* spp. Study of herbarium specimens demonstrated that there are two closely related species with partly overlapping areas of distribution: *H. cruenta* on *Abies* (and other conifers?) in Eurasia, and *H. sphaericola* (syn.: *H. murashkinskyi*) on *Rhododendron, Quercus* and some other angiospermic trees in East, South-East and South Asia and Australasia.

Key words: Hymenomycetes, *Hymenochaete cruenta, Hymenochaete sphaericola,* taxonomy, distribution.

Parmasto E. (2001): Hymenochaete cruenta a H. sphaericola, dva sesterské druhy řádu Hymenochaetales (Hymenomycetes, Basidiomycota). – Czech Mycol. 52: 307–315

Hymenochaete cruenta (syn. *H. mougeotii*) byla považována za široce rozšířený druh v Eurasii a Australasii rostoucí na jehličnanech i na stromech a keřích krytosemenných rostlin. Podobný druh *H. murashkinskyi* byl popsán Pilátem z jižní Sibiře a později nalezen také na ruském Dálném východě a v Číně na různých druzích rodu *Rhododendron*. Studium herbářových dokladů ukázalo, že zde existují dva blízce příbuzné druhy jejichž rozšíření se zčásti překrývá — *H. cruenta* na *Abies* (a na dalších jehličnanech?) v Eurasii a *H. sphaericola* (syn. *H. murashkinskyi*) na *Rhododendron*, *Quercus* a některých dalších krytosemenných stromech ve východní, jihovýchodní a jižní Asii a v Australasii.

INTRODUCTION

In the genus *Hymenochaete* a small group of species is characterized by basidiomata with a striking, bright or violaceous red hymenium. The name *H. cruenta* (syn.: *H. mougeotii*) has been used for such fungi found in Eurasia on *Abies* spp., in Asia and Australasia on *Quercus* spp., *Rhododendron* spp. and some other angiospermic trees. *H. sphaericola,* described by Lloyd from New Zealand in 1925 and not found later was synonymized with this species by Léger (1998). In 1934, A. Pilát described *H. murashkinskyi,* a species with similar basidiomata from South Siberia where it was growing on *Rhododendron*. Parmasto (1985) asserted that South Asian specimens called *H. cruenta* may belong to *H. murashkinskyi.*

Léger (1998) in his world monograph of the genus *Hymenochaete* distinguished both species but referred South Asian and Australasian specimens to *H. cruenta*.

Based on numerous herbarium specimens, the aim of this study is to clear up the taxonomy, nomenclature and distribution of the sibling species of the *Hymenochaete cruenta* group.

MATERIALS AND METHODS

The herbarium specimens were examined microscopically as hand sections or as squash mounts in 2% KOH solution at magnifications × 700 and × 1000. Measurements of spores were made with the aid of a Sony CCD Video Camera attached to the microscope and analysed by Global Lab Image (Data Translation Inc.) software; 25 randomly taken spores were measured in each specimen. Colour notations were made in accordance with Munsell's Book of Color (1942; abbreviated: *M*) and Kornerup & Wanscher's (1978; abbreviated: K & W) Handbook of Colour. Herbarium acronyms are after Holmgren, Holmgren & Barnett (1990). Distribution map of species was compiled using the program MapPad Vers. 2.1.

KEY TO SPECIES

1. Hymenium with a violet or purple tint; setal hyphae (embedded setae) rare, but present; mean width of spores 2–2.5 μm, mean length/width quotient Q = 2.9–4; setal layer not stratose; on *Abies* (or other conifers) .....*H. cruenta*

— Hymenium without a violet tint; setal hyphae absent; mean width of spores 2.6–4 μm, mean length/width quotient Q = 1.8–2.7; setal layer sometimes multistratose; on *Rhododendron, Quercus* or other angiospermic trees .....*H. sphaericola*

Hymenochaete cruenta (Pers.: Fr.) Donk, Persoonia 1 (1): 51 (1959). — *Thelephora cruenta* Pers.: Fr., Syn. fung. 575 (1801); Fr., Syst. mycol. 1: 444 (1821) non Alb. & Schwein. (1805) = *Cytidia salicina* (Fr.) Burt. — *Thelephora mougeotii* Fr., Elench. fung. 1: 188 (1828). — *Hymenochaete mougeotii* (Fr.: Fr.) Cooke, Grevillea 8: 147 (1880).

Basidiomata effused, 200–500 μm thick, up to 3 cm in diam, then confluent and up to 10 cm long, coriaceous, adnate, sometimes with slightly elevated (upper) margin 1–4 mm long, pileal surface with some concentric zones, tobacco brown; hymenium smooth or slightly tuberculate, indistinctly concentrically zonate, dark vinaceous, dark coral to light blood colour (*M:* 5–7.5 R 3–4/6–8; K & W: 10 D 6–7, 11 D 6 or 10 RP 4/6), sometimes with a thin greyish coating (then *M:* 5 R 5/6); margin of the effused part 1–5 mm broad, thin, fibrillose, then abrupt and concolorous with the hymenium or with a darker zone.

Tomentum up to 100 μm thick or present as abhymenial hairs; cortex 20–35 μm thick, of densely agglutinated brown hyphae; context composed of loosely or compactly arranged hyphae; setal layer absent or weakly developed, rarely 2-stratose.

Hyphal system subdimitic; generative hyphae yellowish, thin-walled, ramose, septate, yellowish, 2.5–3.5 μm in diam; skeletoids thick-walled, brown, 2.5–4 μm in diam; setal hyphae usually present but not frequent, (4-)5–8 μm in diam. Setae numerous, subulate to fusoid, (40-)45–80(-95) × 6–10(-12) μm, emerging up to 65(-80) μm, usually without a hyphal sheath, in old hymenia sometimes with a granulose encrustation on tip. Dendrohyphidia not numerous, yellow or brownish, 20–55 μm long, 2–4 μm in diam, forked or with 3–4 branches, 2–4.5 μm in diam, brown(ish), tips sometimes hyaline and 1–2 μm in diam. Basidia subutriform (slightly constricted in upper part), thin-walled, hyaline, 20–30 × 4–5 μm, with 4 thin sterigmata 4–5 μm long; spores cylindric, slightly curved, (5.5-)7.2–8.5(-8.8) × 1.5–2.8 μm; mean length/width quotient $Q = 2.0–2.5$.

Substrata. On bark of dead or fallen trunks and branches of *Abies alba, A. bornmuelleriana, A. holophylla, A. mayriana, A. nephrolepis, A. nordmanniana, A. sachalinensis, A. sibirica;* in South America found on an angiospermic tree; dubious data on occurrence on *Picea abies* and *P. sibirica.*

Distribution. Europe: Austria, Czech Republic, France, Germany, Italy, Poland, Romania, Russia – Komi, Perm, Tatarstan regions; Slovakia, Switzerland, Ukraine, United Kingdom; Asia-Temperate: Turkey, Russian Caucasus – Krasnodar Terr., Causasian Nature Reserve; Georgia; Siberia – Tyumen, Ekaterinburg, Krasnoyarsk, Irkutsk Terr., Altai, West and East Saiany Mts.; Russian Far East – Jewish, Khabarovsk, Primorsk and Sakhalin Terr. (incl. Kunashir Is.); China; Southern South America: Argentina (Tierra del Fuego).

Isotype (?) studied. *Thelephora cruenta* (K, Herb. Hookerianum 1867).

Other specimens studied. 190 specimens from the herbaria BAFC (1), BPI (45), K (43), NY (14), TAA (85), H (2). Seven specimens from southernmost localities studied by me are collected on unidentified coniferous trees in regions where *Abies* spp. occur: SOUTH-EAST CHINA: Guangdong, Hainan[do], Tiang-an [= Dingan?], 18 Nov and 23 Dec 1934 S. Q. Deng 6668 and 7916 (BPI 278251, 278255, 278883, 278252, 278249); Yunnan, Anhwei, Chiu-hua-shan, 18 Sep 1933 S. Q. Deng 529 (BPI 278250, 278254, 278892), *ibid.,* 18 Nov 1934 S. Q. Deng 6668 (BPI 278885), *ibid.,* 23 Dec 1933 S. Q. Deng 7916 (BPI 278249, 278252), Kushan [= Xueshan?], Foochow, 14 Aug 1933 S. Q. Deng 2205 (BPI 278248, 278886), Yen-tsin, 5 Apr 1934 Y. Tsiang 914 (BPI 278260). In South America found on an angiospermic tree: ARGENTINA: Tierra del Fuego, Puerto Haberton, coll. Wright & Del Busto 1 Feb 1973, det. D. J. Job (BAFC 29230).

Remark. Closely related to *H. sphaericola;* the differences are described below. Basidiomata usually have a violet tint; when basidia and spores are present, the

hymenium is slightly pruinose and greyish. Most of the specimens seen are without basidia and as a result are much more vividly coloured.

Hymenochaete sphaericola Lloyd, Mycol. Notes 7 (9) (no. 74): 1338, f. 3101 (1925). — *H. murashkinskyi* Pilát, Hedwigia 71: 322, f. 1–3 (1934). — *H. mougeotii* (Fr.) Cooke f. *murashkinskyi* (Pilát) Litsch. in Handel-Mazzetti (ed.), Symbolae Sinicae. Bot. 43 (1937). — *H. mougeotii* (Fr.: Fr.) Cooke *sensu* G. H. Cunningham, Balfour-Browne et al.

Basidiomata effused, 100–400 μm thick, up to 3 cm in diam, then confluent, soft coriaceous, detachable from the substrate, usually with slightly elevated (upper) pileus-like margin; pileus (when present) up to 5 mm long, surface indistinctly zonate, dark sienna or umber (*M:* 5 YR 5/7; K & *W:* 7 D 7). Hymenium smooth, dark livid red, dark red, blood colour or umber bay (*M:* 5 R — 2.5 YR 4/4–6–8, when old sometimes 5 R — 5 YR 4/8–10; K & *W:* 6–8 E 6–7), when fertile (with spores) light chestnut, chestnut brown or dark brick (*M:* 7.5 R 3/4 to 2.5 YR 5/4, sometimes 5 R 4.5–6; K & *W:* 6–8 E 6), without a violet tint.

Tomentum present but thin; cortex 15–25 μm thick, composed of brown agglutinated hyphae; context well developed, hyphae loosely more or less parallel interwined; setal layer usually with 2–4, rarely up to 10 distinct or indistinct strata; when one-layered, then the setal layer is thickening and up to 200 μm thick

Hyphal system subdimitic, setal hyphae absent; generative hyphae yellowish, thin-walled, ramose, with septa, 2–4 μm in diam; skeletoids brown(ish), with thickened walls, 2–4 μm in diam. Setae usually not numerous, conical-fusoid, (50-)60–100(-120) × (7-)8–13(-15) μm, embedded, some emerging 20–50 μm above the hymenium, mostly covered with a thin hyphal sheath, in old hymenia sometimes with a granulose encrustation at the tip. Dendrohyphidia yellow or brownish, usually not numerous, 32–40 μm long, 2–4 μm in diam, with thickened walls, with (2-)3–6(-8) branches. Basidia subutriform (slightly constricted in upper part), thin-walled, hyaline, 20–32 × 5–8 μm, with 4 thin sterigmata 3–4 μm long. Spores cylindric, one side slightly curved, 6–8.2(-9) × (2.5-)2.7–4.2 μm; mean length/width quotient $Q = 1.8–2.7$.

Substrata. On fallen trunks and branches of *Quercus* spp. and *Rhododendron* spp., but also several other angiospermic trees.

Distribution. Russian Far East and South Siberia (Saiany and Altai Mts.), China, Japan, India, Nepal, Australia, New Zealand.

Types studied. *H. sphaericola:* New Zealand, on an old *Sphaeria* sp. (= *Hypoxylon*?), J. Mitchell (holotype: BPI 329986, Lloyd Herb. 32642; isotype: K). *H. murashkinskyi:* Russia, Montes Saiany, alt. 600 m, on *Rhododendron dahuricum,* 25 Jul 1927 K. E. Murashkinsky (holotype: PRM 686919; isotype: K).

Other specimens studied. AUSTRALIA: New South Wales, NW of Coopernook, 30 Mar 1983 R. Coveny 25 (BPI); Queensland, Eungella Nat. Park, 12

Nov 1985 G. Thor 5065 (TAA); Tasmania, G. Massee (NY). CHINA: G. Massee (NY); Guangdong, Sikang, Kiulunghsien, Hunba Forest, on *Rhododendron,* 5 Dec 1939 S. C. Teng 3345 (BPI 278875); Hainan, Ting-an, 18 Dec 1934 and 23 Dec 1934 S. Q. Teng 6668, 7916 (BPI 278251, 278249, 278252); Yunnan, Delavay (BPI, ex Herb. N. Patouillard); Nguluki, on *Rhododendron,* Sep-Oct 1916 Handel-Mazzetti 12952 (NY); Youngning, on *Rhododendron,* 2 Apr 1940 S. C. Teng 3512 (BPI 278277; NY); Likiang, on Quercus, 15 May 1940 S. C. Teng 3511 (BPI 278884); Xinjiang, Chensi Centralis, Seu toei chan, 14 Sep 1916 E. Licent 213 (PRM 501007). INDIA: Himachal Pradesh, Chamba, Sara, on *Quercus incana,* 27 Aug 1966 S. S. Rattan 5185, 5186, 5188 (BPI 349168, 349170, 349169; TENN); Simla, Kufri, on *Pyrus baccata,* 26 Sep 1967 S. S. Rattan 5307 (BPI 299847; TENN); Dalhousie, Dainkund, on *Betula utilis,* 15 Apr 1971 S. S. Rattan 5497 (BPI 349395; TENN); Mahasu, Narkanda, on *Quercus incana,* 15 Aug 1971 S. S. Rattan 5598 (BPI 349393; TENN); E of Manali, Nagar, on *Rhododendron* sp. and *Prunus padus,* 22 Jun 1972 P. Uotila 18091 and 18023 (H); Jammu and Kashmir, Chandanwari, Pahelgam, on *Pyrus baccata,* 3 Sep 1967 S. S. Rattan 5275 (BPI 349171); Uttar Pradesh, Martoli, on *Betula,* 6 May 1908 W. Koelz 20277 (BPI 278259); Garhwal (NY); Gobindham, on *Rhododendron,* 15 Sep 1968 S. S. Rattan 5441–5443 (BPI 349164–349166); Mussoorie, on *Quercus,* 7 Sep 1968 S. S. Rattan (BPI 349167); Sikkim, between Dzongri and Thangshing, on living *Rhododendron* sp., 5 May 1997 M. Gregory (K 51866). JAPAN: Sendai, on *Quercus glandulifera,* 24 Sep 1919 A. Yasuda (BPI 278275, 278276); Sendai, on *Hamamelis japonica,* A. Yasuda (BPI 278270). NEPAL: Gosainkund, Chandanwari, 29 Aug 1969 S. S. Rattan 5463 (BPI 278261); Gandaki Prov., Kuldi, Anapurna trek, 2400 m, on *Rhododendron,* 1979–11–07 L. Ryvarden (O; K 19336). NEW ZEALAND: Auckland, on *Pittosporum eugenioides,* 8 Sep 1956 P. J. Brook (BPI 278274); Waitarua, on *Dysoxylum spectabile,* Nov 1948 J. M. Dingley 7156 (BPI 278269); Dunedin, H. K. Dalrympe (BPI 329937, Lloyd Herb. 32631); Wellington, Weraroa, 21 Aug and 31 Aug 1919 G. H. Cunningham 541 and 548 (BPI 278246, 278253). RUSSIA: Altai Mts., Altai Nature Reserve, Yailyu, on *Rhododendron dahuricum,* 14 Aug 1959 E. Parmasto (TAA7357); Khabarovsk Terr., Sofijsk, on *R. dahuricum,* 7 Aug 1982 E. Parmasto (TAA 104673); Primorsk Terr., Kavalerovo, on *R. mucronulatum,* 5 Oct 1977 E. Parmasto (TAA 101833); Sikhote-Alin Biosphere Reserve, Vodorazdelnaya, on *R. sichotense,* 29 Sep 1979 A. Kollom; 30 Sep 1979 E. Parmasto (TAA 127103, 102754); Kabanij, on *R. sichotense,* 19 Sep 1990 E. Parmasto (TAA 151233, 151276); Blagodatnoye, on *R. dahuricum,* 25 Sep 1990 (TAA 151453).

Remarks. Closely related to *H. cruenta;* it may be distinguished thanks to its vivid red colour without a violet or purple tint, absence of setal hyphae, better developed dendrohyphidia with several branches, and substrate (angiospermic trees and bushes). Spores of *H. cruenta* are more slender (specimens mean $Q > 2.6$)

Table 1. Mean spore length L, width W and spore length/width coefficient Q in *Hymenochaete sphaericola* and *H. cruenta*

L	W	Q	
Hymenochaete sphaericola			
7.08	3.99	1.78	China, Yunnan (BPI 278260)
6.88	3.46	1.99	Nepal (BPI 278261)
8.81	3.19	2.76	**type** of *H. murashkinskyi:* Russia, S. Siberia (PRM 686919); spores few, damaged and deformed
6.55	3.07	2.13	**type** *of H. sphaericola:* New Zealand (BPI 329986)
7.83	3.03	2.58	India, Uttar Pradesh (BPI 349165)
6.40	3.01	2.13	Australia, New South Wales (NSW 25)
6.76	2.97	2.28	Australia, Queensland (TAA, Thor 5056)
7.71	2.91	2.65	India, Jammu & Kashmir (BPI 349171)
6.52	2.85	2.29	New Zealand (BPI 78269)
6.66	2.90	2.30	India, Himachal Pradesh (TENN 39444)
6.61	2.66	2.48	Russian Far East (TAA 127103)
Hymenochaete cruenta			
7.20	2.53	2.86	Russian Far East (TAA 104960)
8.28	2.43	3.14	Russia, S. Siberia (TAA 103546)
7.86	2.35	3.37	Russian Far East (TAA 104657)
8.41	2.35	3.63	Russian Far East (TAA 104674)
7.67	2.33	3.29	Russia, Perm Prov. (TAA 104202)
7.83	2.33	3.35	Russia, Altai Mts. (TAA 7930)
8.11	2.33	3.48	Russian Far East (TAA 125340)
7.50	2.32	3.23	Poland (Domański 3785)
7.19	2.31	3.11	Argentina, Tierra del Fuego (BAFC 29230)
7.95	2.29	3.50	Russian Far East (TAA 125340)
7.73	2.28	3.38	Germany (TAA 150810)
7.04	2.26	3.11	Russia, Sakhalin Prov. (TAA 93188)
7.60	2.08	3.65	Russia, Komi Auton. Rep. (TAA 6019)
7.56	2.02	3.74	France (BPI 278265)
7.38	2.00	3.72	Russia, Sakhalin Prov. (TAA 102523)
7.69	1.99	3.89	Russia, Perm Prov. (TAA 104202)

and more narrow (specimens mean is less than 2.6 μm); however, the only fertile specimen collected in the region where both species have been found (Russian Far East), has spores of marginal size and form (cf. Table 1). Setal layer is distinctly stratified in the specimens of *H. sphaericola* growing in the boreal zone, but with few usually indistinct strata or not stratified when growing in southern (partly subtropic) regions. Bright coloured specimens are, as a rule, sterile or with only a few spores. I tried to find sporulating specimens in Russian Far East forests in

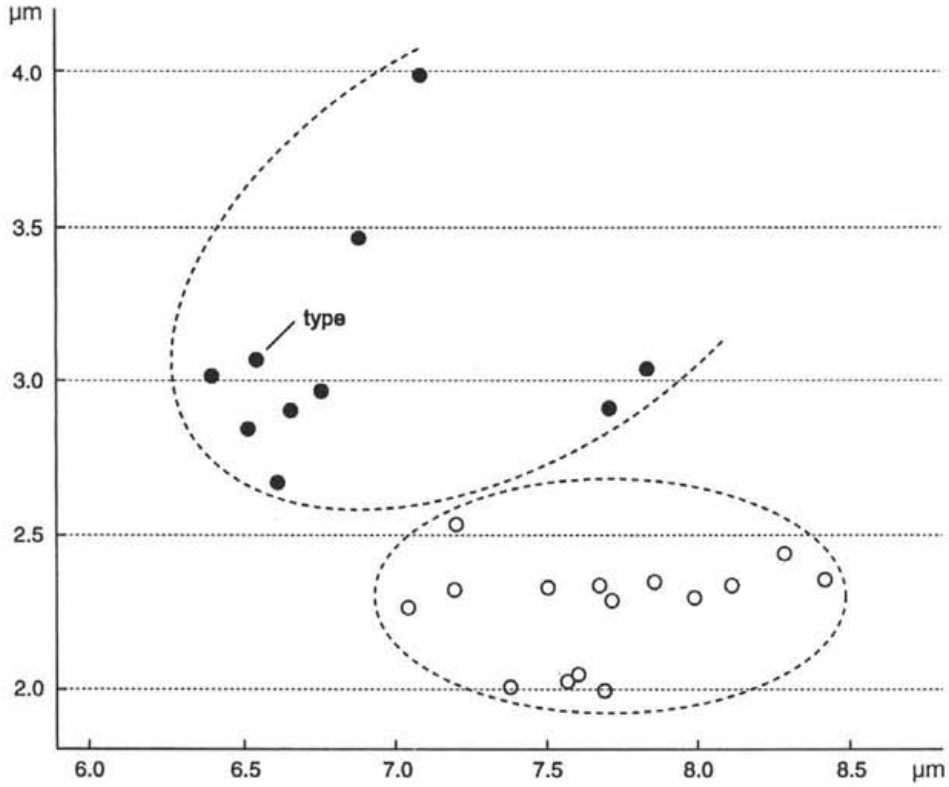

Fig. 1. Mean spore size of *Hymenochaete cruenta* (○) and *H. sphaericola* (●).

late spring, summer and autumn, but in vain. It is possible, that in those regions the sporulation period is the same as in corticioid *Corticium (Laeticorticium)* species, i e, very early spring just after melting of the snow.

DISCUSSION

H. cruenta and *H. sphaericola* are a 'classical' example of sibling species: the morphological differences are small, but the characters are not overlapping. Mean spore size and form are without intermediates when statistical study is used, but are very close (Table 1 and Fig. 1). However, this character can rarely been used since most of the (herbarium) specimens are sterile, or with a few damaged and deformed spores (as is the case with the type of *H. murashkinskyi*). One of the seemingly good distinguishing characters, the stratification of basidiomata (setal layers) in *H. sphaericola,* seems to be a variable adaptation and is only

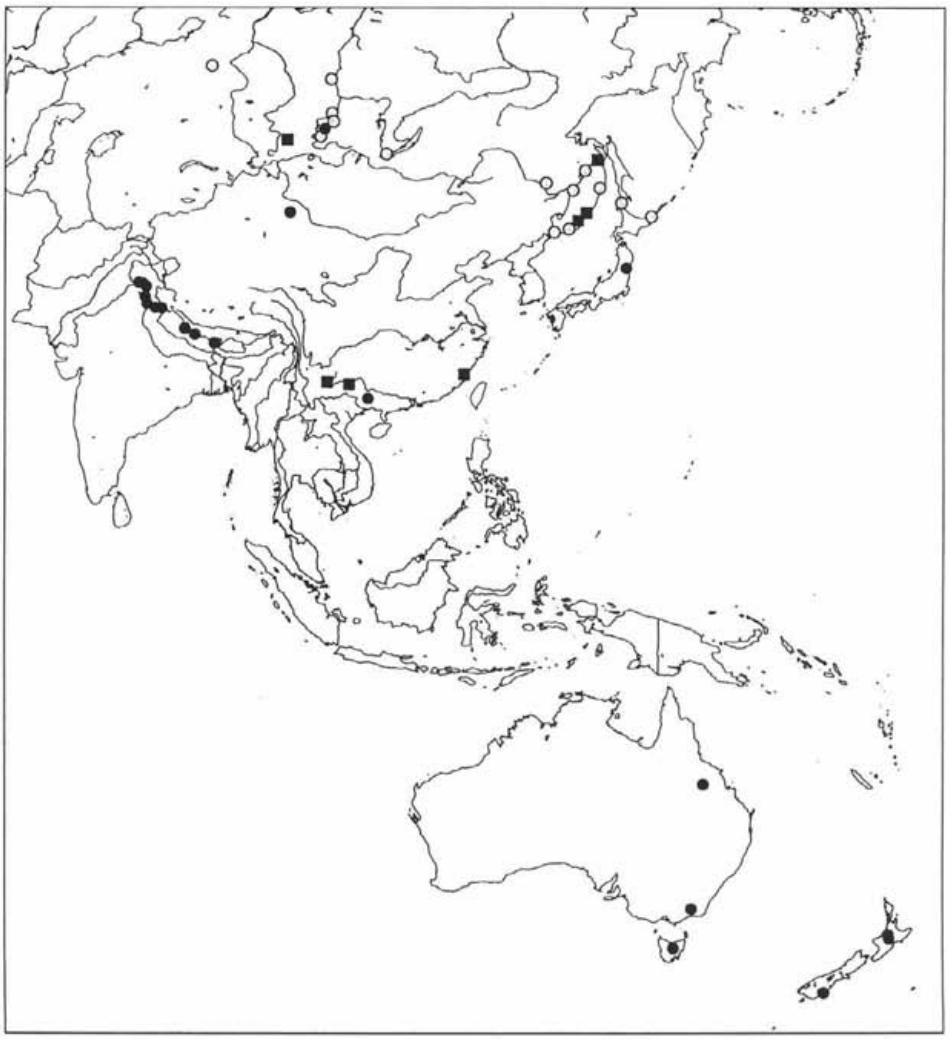

Fig. 2. Localities of *Hymenochaete cruenta* (○), *H. sphaericola* (●) and both species (■) in Asia and Australasia.

well expressed in northern regions of distribution and in mountainous areas. Setal hyphae are rare in *H. cruenta*, and their absence in a herbarium specimen is not a sure character to be used for distinguishing the species.

Both species have different areas of distribution, but are not distinctly allopatric: areas are partly overlapping in Middle Asia (Saiany and Altai Mts.) and East Asia (Russian Far East, China; cf. Fig. 2). *H. cruenta* grows especially on

Abies; the host spectrum of *H. sphaericola* is broader, but *Rhododendron* and *Quercus* are the main hosts among other angiospermic trees. In South-East China, several specimens have been found on conifers which are difficult to classify: they are all without spores and without a stratified setal layer. They have been placed under *H. cruenta* in this paper, but their true identity may be discovered only after fertile specimens are found or molecular markers used.

H. cruenta has also been found once in South America (Tierra del Fuego). According to spore size and form, presence of setal hyphae and colour of basidiomata, this is a 'typical' specimen of this species. Here it may be a Gondwanan relict of the formerly widespread species.

Leaving aside the possible presence of "intermediate" specimens, the species pair studied is a good example of sibling species differentiated in phylogenesis due to two co-ordinated processes: geographical disjunction and host specialization.

ACKNOWLEDGEMENTS

Financial support from the Estonian Science Foundation (grant no. 2145) and from the Royal Society, London is gratefully acknowledged. I am grateful to the USA National Fungus Herbarium, the New York Botanical Garden and the Royal Botanic Gardens, Kew for the possibility to work in these herbaria in 1998, 1999 and 2000. Thanks are also due to the Directors and Curators of the herbaria DD, H, O, PAN and TENN, to late Prof. S. Domański, and to Dr. D. J. Job for loans or exchange of specimens. I am thankful to Dr. P. Roberts who kindly revised the English.

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Book Review

T. R. HANLIN

Illustrated genera of Ascomycetes. Volume II.

APS Press, St. Paul, Minnesota, 1998, 258 pages.
ISBN 0–89054–198–1.
Spiral-bound price USD 35.00.

The first volume of this book, published in 1990 by the same author, has been very successful, having three printings up to this time. The second volume presents another hundred genera in the same lay-out. A very broad spectrum of ascomycetous fungi is presented, including yeasts, plant parasitic fungi (*Protomyces, Taphrina, Cystotheca, Cryptomycina, Coccodiella* etc.), insect parasitic or insect associated genera (*Ascosphaera, Coccidiascus, Herpomyces* or *Peyritschiella*), soil and coprophilous fungi, common saprothrophs on plant material and two examples of lichenised fungi (*Cladonia* and *Usnea*). The items are arranged completely artificially, based on Saccardo's system of spore types and resulting type of ascoma. A dichotomous key is provided for the identification of genera of this volume, without considering the genera presented in the previous volume.

The core of the book consists of generic descriptions and corresponding illustrations. Descriptions are followed by the names of associated anamorphs, habitat, representative species, comments on distinguishing related genera and selected references. The illustration of each genus is based on a drawing of a representative (not the type) teleomorph species. Anamorphs are not illustrated. The drawings are stylised and simplified to a certain measure, but depict clearly the essence of the fungus. Habitus on the host, ascoma, asci, ascospores and other diagnostic features are drawn by C. G. Hahn and some genera are completed with microphotographs.

The book is intended to teach students how to identify Ascomycetes. The dichotomous key comprises 109 steps, composed of short and clearly formulated distinctive characters. In the introduction some useful information about effective use of the key is given. Not only for beginners, but for all users from practice, some further information on the genera treated would be appreciated, such as systematic position on order level, number of species, distribution and illustration of the anamorph. It may be uneasy to search these details out in special literature. For five genera the illustrated species is not specified; in the case of common fungi such as *Diatrypella* or *Emericellopsis* such a solution seems to be undesirable.

Summing-up: the spiral-bound book (together with the first volume and Keys volume) will be a very useful aid to anyone who is interested in this extensive group of fungi. It can be recommended to students of applied mycology and phytopathology, but it may also stimulate interest of a wide range of biologists, who have the courage to get familiar with this striking group of organisms.

Karel Prášil

CZECH MYCOL. 52 (4), 2001

Notes on two rare Lactarius species

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Moser, M. and Kirchmair M. (2001): Notes on some Lactarius species.– Czech Mycol. 52: 317–322

The nordic species *Lactarius hysginoides* is reported for the first time from Austria. A description is given of the rare *Lactarius fascinans* based on topotypic material and a neotype is proposed.

Key words: Austria, *Lactarius hysginoides, L. fascinans*

Moser M. a Kirchmaier M. (2001): Poznámky ke dvěma druhům rodu Lactarius. – Czech Mycol. 52: 317–322

Severský druh *Lactarius hysginoides* je uváděn poprvé z Rakouska. Je uveden popis vzácného druhu *Lactarius fascinans* založený na materálu z lokality typu a je navržen neotypus.

Lactarius hysginoides Korhonen et Ulvinen found in Austria

Fig. 1 above, fig. 2 a, fig. 3 a-c
Illustr.: Korhonen, 1984, p. 140 below, Heilmann-Clausen et al. 1999 p. 67

During a spring foray with students M. Kirchmair found a group of Lactarii, which were unknown to us, although we have collected in this area since many years. The examination led to the conclusion that it corresponds well with *Lactarius hysginoides* Korhonen et Ulvinen. This is remarquable, as this fungus is hitherto known only from Scandinavian countries.

Pileus 35–85 mm diam., centre depressed, at first margin involute, later straight or somewhat lobed, surface rather mat, pruinose to slightly rugose (lens!) hardly or only slightly viscid, gray-brown with slight reddish tinge, between milk-cocoa and milk-coffee brown, Sayal Brown (R), toward the disc paler, but much paler than Snuff Brown (R), in some specimens with traces of an indistict, slightly darker zonation. – Lamellae cream coloured to ochraceous, close to subdistant, slightly decurrent, medium broad, with lamellulae. – Stipe 25–45 × 10–20 mm, compact but later becoming hollow, pale grayish-brown to buff with paler and darker areas

(but not guttulate) – Context whitish to pale buff, pale pinkish buff. Milk watery white, not changing colour on drying. Odour not distinctive, taste mild, after some time slightly acrid and finally bitterish.

Microscopic characters: Spores 6.2–7–8 × 5.5–6.5 μm, av = 6.8 ± 0.4 × 6.1 ± ± 0.26 μm, Q = 1.1–1-125, av 1.17 ± 0.05, vol = 99–169 μm^3, av = 132.5 ± ± 17 μm^3, with reticulation and isolated warts. Basidia 4-spored, clavate, 35–45 × 8–10 μm, cheilomacrocystidia 45–80 × 6–9 μm, fusoid, lanceolate. bottleshaped, apex often encrusted, pleuromacrocystidia 45–70 × 6–8 μm, pseudocystidia 70–90(-100) × 5–7 μm. Pileipellis more an ixocutis than an ixotrichoderm, corresponding well to the figure given by Korhonen & Ulvinen (1984)

Habitat: Meadow margin near *Picea*. Coll. IB 2000/0013, between Poduler-pond and Dürenberger moss. Grebenzen, near Mariahof, distr. Murau, Styria, Austria, 17 Jun 2000 leg. M. Kirchmair.

Comments: This species has certainly been overlooked before in Austria and may have been misidentified as *L. trivialis* or any other species. But *L. trivialis* differs by more uniform colours, and very acrid taste. *L. hysginus* is more redbrown, has an aromatic odour (cossus odour) and the taste is immediately very acrid. *L. pyrogalus* grows with *Corylus*, the gills are very distant and deep ochraceous from the beginning and the taste is very acrid, the colours of the pileus more gray-brown or olivaceous gray.

The interpretation of ***Lactarius fascinans*** (Fr.: Fr.) Fr.

Epicrisis: 336, 1838.
Fig. 1 below, fig. 2b, fig. 3 d-f
Illustr. Moser-Jülich, IV *Lactarius* 21 below., Basso (1999) p. 169.

The concept of this species was often debated. In recent time Korhonen (1984) synonymized *L. fascinans* ss. Moser with *L. utilis* Weinm. Moser (1994) reported on a collection from the type locality at Femsjö. Heilman-Clausen et al. (1999) did not know the species but doubted a synonymie with *L. utilis*. Basso (1999). follows our concept based on our Femsjö material and two collections from Italy. As this taxon is still badly known to most mycologists we think it useful, to give a detailed description of the Femsjö material.

The species was first observed in 1979 during an excursion in company with D. Lamoure and A. Wood. When we came out from the forest near Yaberg, we found on a mossy meadow margin a fairy ring of about 40 fruit-bodies of

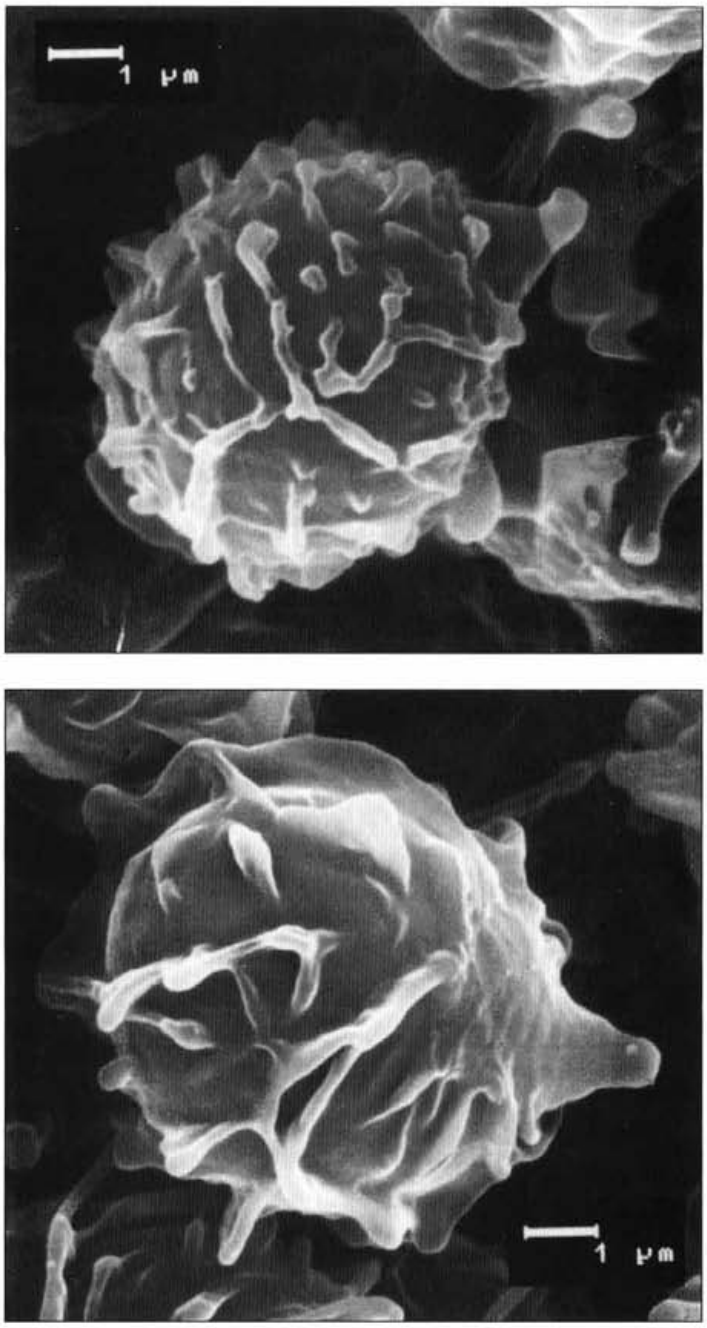

Fig. 1. Basidiospores in SEM of: *Lactarius hysginoides* (above). b. *Lactarius fascinans* - (below).

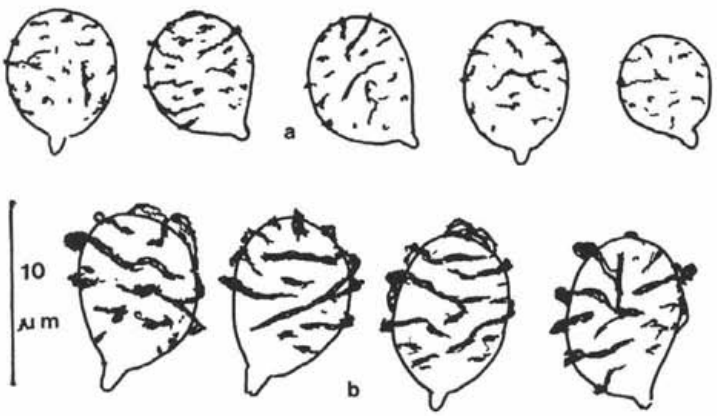

Fig. 2. Basidiospores of: a. *Lactarius hysginoides*. b. *Lactarius fascinans*.

a *Lactarius* which was unknown to us. Coming back from the excursion the senior author studied immediately Fries' Monographia Hymenomycetum Sueciae and came to the conclusion, that this fungus must represent *L. fascinans*. It was surprising, that Fries mentioned two localities, where he had collected this species Stubbebo and Yaberg, the latter beeing the place where we had found our record. This place was ploughed in 1980 and used as field for few years. Only two fruit-bodies were observed there in 1980. The following years I could not find it again, however, I may have missed the correct time. But 1998 I visited the place again, and the mycelium seemingly had recovered. Fruit bodies were observed again. Even this observations during a period of twenty years point to a longevity of the mycelium. So it may also have survived in the area since the time of Fries.

Pileus 5–8-(10) cm diam, irregularely convex, later centre depressed, margin convex or later upbent and mostly more or less undulate, in moist condition viscid to slightly glutinous, at first with grayish buff to beige buff colours, generally the centre beige, Caill 69L. 67L, the margin 70L, the very centre sometimes pale brownish 65L , 57M (slightly paler), often also with whitish areas, with age starting from centre becoming bown, Expo 57N, Ochraceous Tawny (R), or Mikado Brown (R), margin and spots covered by leaves remaining buff. Pinkish Buff (R) to Pale Pinkish Buff (R) Small margin involute, very pale, relatively thin-fleschy, surface often slightly wrinkled-tuberculate, under lens innate-fibrillose-reticulate. – Lamellae at first pale beige, argillaceous, Pale Pinkish Buff (R), Pinkish Buff (R) or Pinkish Cinnamon (R), Caill 70K, later darker and more dingy, Caill 59M, with age also becoming somewhat brownish, somewhat paler than 57N, somewhat decurrent at the stipe, some forked, close, L = 80–100, l = 0–1–3, relatively

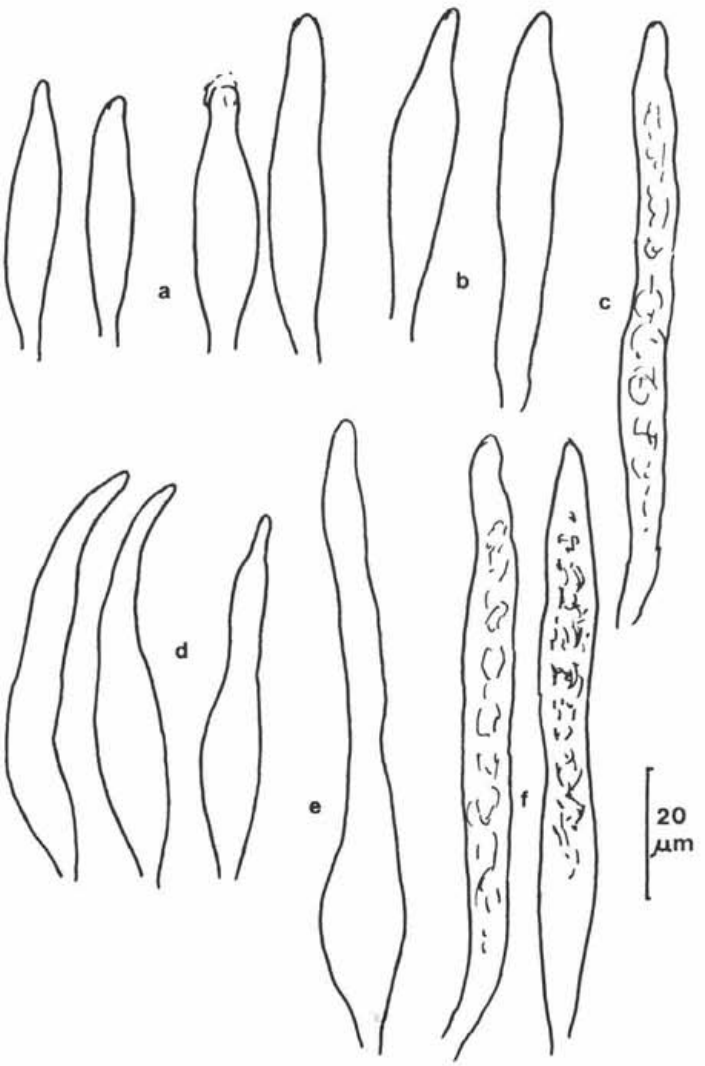

Fig. 3. a–c: *Lactarius hysginoides*: a. Cheilomacrocystidia. b. Pleuromacrocystidia. c. Pseudocystidium. – d–f: *Lactarius fascinans*: d. Cheilomacrocystidia. e. Pleuromacrocystidia. f. Pseudocystidia

narrow, 3–6(7) mm wide, (corresponding to 1–2× pileus context), 13–15/cm at margin, edges entire. – Stipe 3–7.5 cm long, 8–30 mm thick, cylindric to irregularely torulose, concolorous to the gills, pale beige, Pale Pinkish Buff (R), Caill 71K to 70K, sometimes becoming brownish near apex or base or with some brown spots,. Caill or paler than 57N, hollow toward the base, in upper half stuffed. – Context

argillaceous, beige pale. Caill 71K or paler, becoming slightly brownish when cut, in spots also darker brown. Latex white, not changing colour when drying. – Odour not distinctive. Taste mild at first, after longer time acrid, sometimes very acrid.

Chemical reactions: Latex with KOH orange, context with NAOH yellow-brown, on pilepellis brown. Phenol wine-red after 5 minutes or more, Guaiac negativ (after 5 or more minutes greenish)

Microscopic characters: Spores subglobose, 6.7–8.8 × 5.3–7.1 μm, av 7. ± 0.5 × 6.4 ± 0.4 μm, Q = 1.1–1.3, av 1.2 ± 0.05, vol. 104–230 μm^3, av = 162 ± ± 29 μm^3, ornamentaion of strong ridges up to 1.5 μm high, often more or less concentric, but also some forked or reticulate, some warts in between. Basidia clavate to slightly ventricose, 35–40 × 8–9 μm, 4-spored. Cheilomacrocystidia lanceolate, sometimes somewhat strangulate, 45–65 × 6–8 μm, pleuromacrocystidia similar, more slender, 70–80 × 7–8 μm, pseudocystidia 60–100(-110) × 5–8 μm, slender. Gill trama with sphaerocysts, 7–23 μm diam, hyphae 4–8.5 μm. Pileipellis an ixotrichoderm.

Ecology. The species seems to be associated with *Fagus,* often on margins of meadows. At the collecting site in Femsjö also *Quercus, Betula, Populus* and *Picea* were nearby. Fries mentioned also Stubbebo as collecting area. This is a place with beech and it is even one of the five beech areas listed by Fries from the Femsjö region. Our collection from Upper Austria (84/258) too was growing on a meadow margin under *Fagus sylvatica.* Basso (1999) cites two collections from Italy, both collected on meadow margins with *Fagus.*

Collections examined: IB 79/466 (neotype, selected here) Femsjö, Yaberg, 4 Sept 1979, leg. M. Moser, IB 80/401, same locality 22 Sept 1980, leg. M. Moser, 1998/201, same locality, 19 Sept 1998, leg. M. Moser.– 1984/258, Grünfleck, Mühldorf near Scharnstein, Upper Austria, 2 Okt 1984, leg. M. Moser

Comments: This species was often confused with *L. trivialis* or *L. utilis.* There are, however, clear differences. One is the habitat. The species seems to be associated with *Fagus.* At Yaberg the fungus was growing near beech, although there was also *Quercus*, *Populus* and *Picea* in the vicinity. Fries describes the habitat in Systema (1821) as "in pratis muscosis subnemoribus" in Monographia (1863) "in pratis muscosis nemorosis". In the area of Femsjö such habitats are pastures or groves with isolated birches, beeches, poplars and some shrubs but certainly not conifer forests. Fries mentioned two localities: Yaberg and Stubbebo. The latter was at Fries time and is still an area with beech. The only Austrian record was growing on a meadow margin with beech and the two records listed by Basso from Italy are also medows with beech. Already this excludes an occurence further north of the northern limit of the beech area, i.e. in southern Småland. Another

distinctive character is the spore ornamentation with strongly developed, often concentric ridges. This and the other characters place the species in the vicinity of *L. pallidus*. Fries compares the habitus of the species with *L. trivialis* and emphasizes the unchanging, white latex, the tardive acrid, later very acrid taste. The colour he calls: "E fusco testaceo" (Epicrisis), "testaceo-fuscus, expallens, in ambitu dilutior" (Monographia). The spore ornamentation distinguishes the species easily from *L. utilis*, also the pale colours in marginal and occasionally also more central areas. A number of specimens from our collections resembled somewhat *L. fascinans* sensu Neuhoff. It is however impossible to decide what Neuhoff had in hands as he gives no microscopic characters and his material has been lost during the war. Very likely he had *L. utilis* or older stages of *L. trivialis*. All our collections from before 1979 determined with the help of the work of Neuhoff turned out to be either *utilis* or old *trivialis*. *L. pallidus* is a very common fungus associated with *Fagus* and has more uniform pinkish-brown or pinkish buff colours, pale cream to pinkish buff gills, a white latex which becomes pale pinkish buff on drying. *L. musteus* has also some similarity, but grows mostly under pine among *Calluna* and often with *Cladonia*.

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CZECH MYCOL. 52 (4), 2001

Venturia glacialis, an overlooked species

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Holm, K. and Holm, L. (2001): Venturia glacialis, an overlooked species. – Czech Mycol. 52: 323–327

Venturia glacialis Lar. Vasilyeva, so far known by the type collection only, on *Betula nana* ssp. *exilis*, from the Magadan district in NE Siberia, is reported on *Betula nana* ssp. *nana* in Scandinavia. It is very similar to *V. subcutanea* on leaves of *Salix reticulata*. A *Venturia* sp. on leaves of *Salix herbacea* and *S. polaris* has hitherto been classified as *V. subcutanea* but is slightly different and seems morphologically indistinguishable from *V. glacialis*.

Key words: Taxonomy, *Venturia, Betula nana, Salix reticulata, S. herbacea, S. polaris*

Holm K. a Holm L. (2001): Venturia glacialis, přehlížený druh. – Czech Mycol. 52: 323–327

Venturia glacialis Lar. Vasilyeva, druh až dosud známý z typové lokality na *Betula nana* ssp. *exilis*, z Magadanské oblasti v severovýchodní Sibiři je hlášena z *Betula nana* ssp. *nana* ve Skandinávii. Je velmi podobná druhu *V. subcutanea* známého z listů *Salix reticulata*. *Venturia* sp. na listech *Salix herbacea* a *S. polaris* dosud klasifikovaná jako *V. subcutanea* je nepatrně odlišná a zdá se morfologicky nerozeznatelná od *V. glacialis*.

INTRODUCTION

Betula nana L., the dwarf birch, is a low shrub rarely more than a metre high, in arctic and alpine areas often carpet-like with decumbent branches. It has a boreal circumpolar distribution and is in many places very frequent. In NE Asia and in North America it is represented by the ssp. *exilis* (Sukatsch.) Hultén (= *B. exilis* Sukatsch.).

Since many years we have been interested in the mycoflora of this plant which is an important constituent of Northern Swedish vegetation. As may be expected it is on the whole infested by the same fungi as are other *Betulae*, e.g. *B. pendula* and *B. pubescens*. There are differences, though, thus, to the best of our knowledge, *Gnomoniella nana* Rehm is only found on *B. nana*.

Venturia ditricha versus *V. glacialis*

A common pyrenomycete on decaying leaves of *Betula*, also *B. nana*, is *Venturia ditricha* (Fr.) Karst. For years we have noticed another *Venturia*, too, on nana-leaves, differing from *V. ditricha* in a number of characters and also by its northern distribution. For a long time we could not identify it and

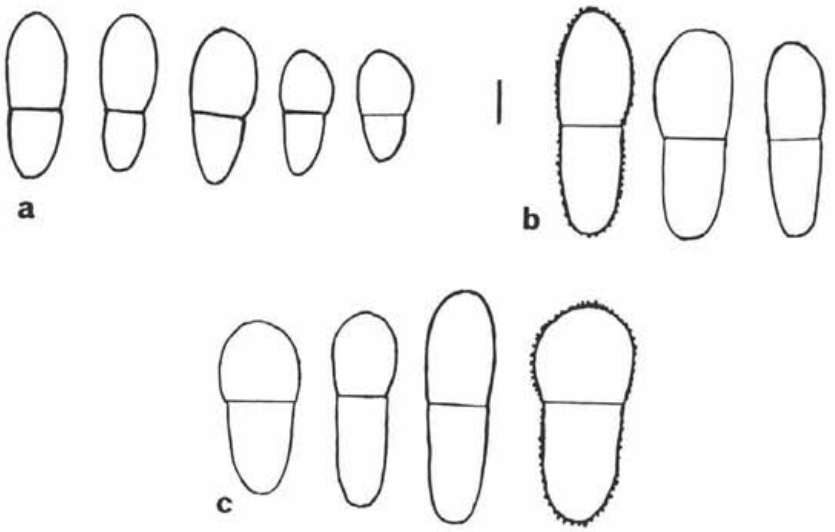

Fig. 1a-c. Outline drawings of *Venturia* spores. Bar = 5 μm. – a. *V. ditricha*. – b. *V. glacialis*. – c. *V. subcutanea*.

a Svalbard collection was published by us as "probably *V. subcutanea*, anyway not *V. ditricha*" (Holm and Holm 1994: 74).

A renewed study of the fungus and of the gold mine Index of Fungi has led us to *V. glacialis* Lar. Vasilyeva (1987: 96). Thanks to the great courtesy of Dr. Vasilyeva we have had the opportunity to examine the type material: Siberia: Magadan, basin of R. Bolshoy Anuy, dead leaves of *Betula nana* ssp. *exilis*, 8 July 1980, L. Vasilyeva (VLA). It confirms our supposition that *V. glacialis* is conspecific with the problematic Scandinavian fungus. In the description Vasilyeva (l.c.) emphasized that her new species is clearly distinct from *V. ditricha* by much larger spores, 19.6–26 × 6–8 μm. We agree, adding that the spores in *glacialis* can be still larger, up to 29 × 10.5 μm. Moreover, the spores in the type material are distinctly verrucose, while smooth is most Nordic samples, exceptions are two very northern collections, Norway, Finnmark, Porsanger (Holm and Holm 2166a); Svalbard, Endalen (5194).

The taxonomic significance of spore wall ornamentation may not be very great in *Venturia*, as indicated by data presented by Barr (1968), she reported smooth as well as verrucose spores in a few species, i.a. *V. chlorospora*, "wall at times minutely roughened in age" (Barr 1968: 813).

Venturia ditricha and *V. glacialis* can be found intermixed in the same leaf but they are hardly ever difficult to distinguish. Good guidance is given by the setae:

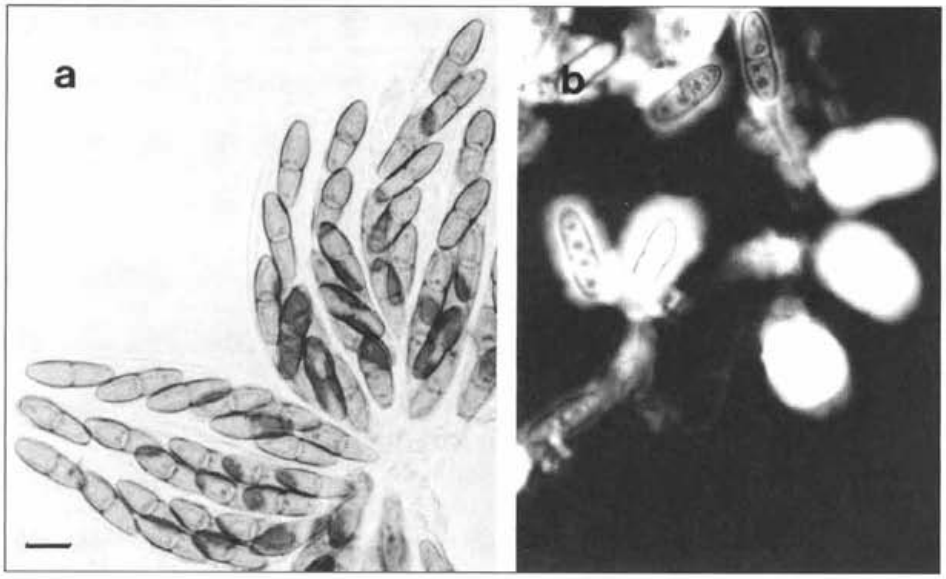

Fig. 2a-b. Spores of *V. glacialis*. Bar = 10μm. – a. Holm and Holm no. 4124a. – b. Holm and Holm no. 6166. Indian ink.

in *V. ditricha* they seem to be always present while reduced or none in *V. glacialis*. The spores, too are dissimilar, to a varying extent. The size alone will generally admit of a safe determination, although the upper limit of the *ditricha* spores will touch upon the lower limit of *glacialis*. Spore form is often rather variable in *Venturia*, even within one and the same ascocarp. A characteristic trait of the *ditricha* spores is the often distinctly submedian position of the septum what we have not seen in *glacialis*. The colour is also different: ripe spores of *ditricha* are olivaceous while *glacialis* spores have a yellowbrown tone. A noteworthy and apparently constant trait of the latter is the presence of a mucous sheath, Fig. 2b. (Certainly, we have not seen it in the type, but that would hardly to be expected in 20 years old material). A survey of these characteristics is given in Table 1. The two species are probably not very related, on the other hand *V. glacialis* obviously is very close to *V. subcutanea*, a taxon whose delimitation has turned out to be unexpectedly delicate.

Venturia glacialis and *V. subcutanea*

V. subcutanea was described by Dearness (1917) from Alaska. *Salix reticulata* is the type host, one collection was reported on *S. arctica*. Earlier this fungus had been identified as *V. chlorospora*, e.g. by Lind (who, moreover continued to do so

Table 1. Survey of some diagnostic characters

	V. ditricha	*V. glacialis*	*V. subcutanea*
Setae	generally present and well developed	absent or ± reduced	generally present and well developed
Spore size	13–17(-18) × 6–7 μm	(18-)19 – 26(-29) × 6–10.5 μm	19–25 × 7–11 μm
Septum	often submedian	median	often supramedian
Spore wall	smooth (always?)	sometimes verrucose	often verrucose
Spore colour	olive green	olive brown	olive brown
Mucous sheath	absent	present	present

also in his subsequent publications). Nüesch (1960) reported it from Switzerland, on *Salix reticulata*, and further on *S. herbacea, S. retusa*, and *S. serpyllifolia*. Nograsek (1990) found it to be common in Swedish Lapland, and Holm and Holm (1994) recorded it as common in Svalbard on *S. reticulata* and *S. polaris*. *V. subcutanea* was to be recognised on the large, often verrucose spores. Nograsek pointed out the presence of a mucous sheath (1990: 227).

We have now subjected "*V. sucutanea*" to a renewed study arriving at the conclusion that, in Scandinavia at least, the taxon is heterogeneous: the typical form on *Salix reticulata* deviates from the form on *S. herbacea* and *S. polaris* by some rather subtle differences. And, moreover, the latter form seems morphologically indistinguishable from *V. glacialis*! The existence of different *Venturiae* in leaves of *S. reticulata* and of *S. herbacea* (and *polaris*) respectively, is, in fact, not surprising. These two substrates are quite dissimilar, each having its particular ascomycete flora with hardly any species in common.

The morphological differences between *V. subcutanea* s.str. and *V. glacialis* are minute, as already emphasised, but they appear to be reliable. They are summarised in Table 1. At least in Scandinavia the setae give good guidance for discriminating between them. In *V. sucutanea* they are always well developed, while in *V. glacialis* absent or ± reduced. [In North America this may not always be true: according to Dearness (1917) and Barr (1968) setae are often absent in *V. subcutanea*, what, however, is not indicated by Corlett and Egger (1992)]. The spores of *subcutanea* and *glacialis* are much like but, it seems, a dependable character can be found in the position of the septum: in *subcutanea* it is, not always but often, distinctly supramedian what hardly ever (never?) is the case in *glacialis*. Cp. Fig. 1b and 1c.

SUMMARY

Venturia glacialis is probably rather common on *Betula nana* in the alpine and subalpine areas of Scandinavia: we have found it in 13 samples (all UPS), 9 from Sweden and 4 from Norway, including Svalbard. It can (exceptionally?) infest *B. pubescens*, too, as proven by a sample from Sweden, Torne Lappmark, Abisko area, Holm und Holm 4144a. Outside Scandinavia it is so far know only from Magadan in NE Asia but surely it is coextensive with *Betula nana* in arctic Russia, probably in arctic North America as well.

The *Venturia* on *Salix herbacea* and *S. polaris* is apparently common. It seems indistinguishable from *V. glacialis* and is preliminary referred to this species. Molecular methods may permit a definite decision.

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Book Review

T. R. HANLIN

Combined Keys to Illustrated Genera of Ascomycetes Volumes 1 & 2.

APS Press, St. Paul, Minnesota, 1998, 113 pages.
ISBN 0–8905 4–199-X.
Soft-back price USD 20.00.

Illustrated Genera of Ascomycetes Volumes 1 & 2 contains two separate keys. For more simple operating with both volumes together a combined key to the 200 described genera is given in this slender but very useful booklet. The artificial key is based on teleomorph characters only. In the first step all genera are divided into four artificial groups (amerosporae, didymosporae, phragmosporae and dictyosporae) according to ascospores characters. The following dichotomous keys to the genera operate with clearly and concisely formulated characters. The keys appear to work well. Certain basic knowledge and some practical experience are expected, of course.

The booklet further contains some valuable chapters: synoptic lists of genera characters, general glossary of terms and diagrams explaining spore terminology and tissue types. Another important part presents corrections and additions to the first volume (1990). Additional taxonomical information, nomenclatorical changes and more recent references for the earlier descriptions are provided here.

Using this key, students should remember that only 200 genera are treated, out of about 3300 ascomycetous genera now accepted. Moreover, many genera treated include a great number of species which may display features not seen on illustrated representatives. Regardless of this, the whole project, covering three volumes of basic and significant information on ascomycetes diversity, offers a valuable identification guide for practical use and a welcome teaching aid for those interested in this group of fungi.

Karel Prášil

CZECH MYCOL. 52 (4), 2001

An Unusal Inocybe sp. from West Africa

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Watling R. (2001): An unusal Inocybe sp. from Wrest Africa. – Czech Mycol. 52: 329–334

A new species of *Inocybe* assigned to subgenus *Mallocybe* is described from the Cameroon, West Africa. It is characterised by the richly coloured basidiomes with orange-yellow plumes of scales on the pileus and the scurfy, frilled fulvous stipe.

Key words: Cameroon, West Africa, *Inocybe aureoplumosa*

Watling R. (2001): Neobvyklá vláknice Inocybe sp. ze západní Afriky. – Czech Mycol. 52: 329–334

Je popsán nový druh vláknice z podrodu *Mallocybe*, nalezený v Kamerunu, západní Afrika. Druh je charakteristický pestře zbarvenými plodnicemi s oranžově žlutými šupinkami na klobouku a žíhaným žlutohnědým třeněm.

INTRODUCTION

The Korup Forest Reserve near Mundemba, West Cameroon is characterised by ectomycorrhizal legumes belonging the subfamilies Caesalpinoideae and Amherstieae of the Leguminosae and supports a rich mycota of Russulaceae, Boletaceae, Amanitaceae and Cantharellaceae. It is rather surprising therefore that when collecting in these forests few representatives of brown-spored agaric genera of which many form sheathing mycorrhizas are found, despite the fact that occur extensively in northerly latitudes. Indeed the Cortinariaceae for instance is conspicuous by its rarity in the lowland rain forests of West Cameroon. Typical members of the genus *Inocybe* have been found associated with caesalpinoid legumes but are represented by only single collections and inlcude 1) a species from disturbed area forest margin, (Ekunda Kunda 11.iv.90, Watl. 24171); 2) a member of the subgenus *Inocibium* sect. *Lactiferae* (24.1.89, Watl. 21841); and 3) two goniosporate species assignable to subgenus *Inocybe* (*Clypeus*) sect. *Cortinatae*, one collection associated with *Microberlinia bisulcata* (23.iii.91, Watl. 2419); and a second member of the subgenus found growing in a pot with a seedling *Tetraberlinia moreliana* (*Caesalpinoideae*) in the World Wildlife tree nursery at Mundemba (Watl. 21842) only a few kilometres from the edge of the forest. However, there was one exception to these observations and that was the occurrence of a unique taxon which occurred in many areas of the forest and

which was found during all the collecting trips ranging from 1984 until 1991, when collecting in West Africa by the present author ceased. It was frequently collected in great quantity and in many populations over several years. For completeness to these records can be added the occurrence of a single collection of *Leucoinocybe* basidiomes in the same forest community.

The rarity of members of the genus *Inocybe* in Cameroon is parallel to that in East Africa (Pegler 1977) where only *I. lanuginella* Schroet. is recorded, very probably an introduction, and four other European species based on records by Eichelbaum. In Central Africa (Zambia), although present in the mycota of the native *Brachystegia* dominated woodland (miombo) *Inocybe* is again low in number of species, viz. less than five taxa from my own experience in 1992. In Sri Lanka there is a similar paucity of members of the genus (Pegler, 1986) and in Malaysia, although several species are known, they are rarely collected (Turnbull, 1997). These mycotas when compared with for instance that of Britain which has at least 86 taxa, can only be considered depauperate in *Inocybe*.

In West Africa other collectors have also experienced a dirth of *Inocybe* spp. and Hennings (1901) only described one from the material that had been sent to him by Zenker, ie, *Inocybe flavofusca* P. Henn. This species has been previously placed in the genus *Lepiota* (Beeli, 1932) and variously assigned to the genera *Verrucospora* (Horak 1967) and *Horakia* (Oberwinkler 1976). This taxa has been the centre of much discussion and has been tentatively placed in the family Agaricaceae (Singer ut Tribe Cystodermateae, 1986; Pegler, 1977 ut *Verrucospora vulgaris* Pegler), although Oberwinkler (1976) argues for a placement in the Thelephorales because of the morphology of the spores despite them being quite pale in colour. Reijnders (2000) does not support this suggestion based on his developmental studies. It was the spore shape which no doubt led Hennings (1901) to place the fungus in the first instance in *Inocybe*. Kuyper (1986) uses the name *Horakia flavofusca* for the fungus.

The subject of this paper which occurs so commonly in the Korup Forest Reserve, however, has no such spores and joins some features of typical members of *Inocybe* with some characters expressed in the genus *Flammulaster*. When monographing *Flammulaster* Watling (1967) was struck by the similarity of some members with certain members of *Inocybe* subgenus *Inosperma*, although the former were always smaller and more delicate. This puzzled the author as the relationship of the former genus according to Singer (1951 et subseq.) laid with *Tubaria* and therefore the Crepidotaceae. One group particularly stands out in *Flammulaster* with the present material, viz. the *Flammulaster* limulata consortium with rather bulkier basidiomes than generally found in the genus. Vellinga (1986) has compared *Flammulaster* with several other genera including the *Pholiota tuberculosa* group (referrable to *Pleuroflammula* fide Horak), *Pholiota lucifera* (Lasch) Quél. and *Simocybe*. However, it was Kuyper (1986) who first drew attention to the points of resemblance between *Flammulaster* and

some smooth-spored species of *Inocybe* lacking pleurocystidia. This latter group coincides with Kuyper's new subgenus *Mallocybe* members of which in addition to lacking pleurocystida possess necropigmented basidia, comparatively short stipe and lanato-squamulose pileus which becomes fuscous with application of aqueous solutions of ammonia. The rather outstanding development of the cheilocystidia draws direct comparison to the cells on the gill-margin in the Korup material. The cheilocystidia of the *I. terrigena* group within subgenus *Mallocybe* is an important deviant from the central *Inocybe* spp. and the cheilocystida, although strongly pigmented in *Inocybe fuscomarginata* parallel the analagous structures in the Korup agaric. This is also emphasised in several of the recently described species of *Inocybe* from New Zealand and New Guinea where similarities with *Flammulaster* (Horak 1978) are expressed in many characters. It may even be possible that *Mallocybe* deserves an autonomous generic position.

Singer and Machol (1972) conceived *Flammulaster* as part of the Strophariaceae, whilst its link with *Tubaria* suggested in earlier work (Singer, 1951 et subseq.), was with *Crepidotus (Crepidotaceae)* has been recently supported by recent molecular studies. However, a greater morphological link appears to be between *Flammulaster* and some groups within *Inocybe*, something at the moment not supported by the molecular results based on the few species so far analysed (Moncalvo, pers. comm.).

Taking all the characters into account there is no doubt that the Korup fungus should be placed in *Inocybe*, although the author agrees it sits at the moment rather uneasy therein. However, until the rainforests of Africa are mycologically explored in detail full range of characters expressed by West African species of *Inocybe* cannot be determined. At present we are so ignorant of the composition of the mycotas of these parts of the world, which may in the long run hold the key to many unanswered questions but time is running out as the forests are being logged at a horrifically dramatic rate.

TAXONOMY

Inocybe aureoplumosa Watling sp. nov. Fig. 1 A–G.

Pileus 14–55 (-80) mm, e convexo plano concavus obtuse interdum late umbonatus, ferrugineus vel aureo-fulvus fibrillosus squamulosus aurantio-brunneus fibrillis ± concentricis erectis ad extremam partem radialiter rugulosus. Lamellae liberae anguste adnatae e argillaceo-ligneo coloratae vel argillaceo-ochraceae subconfertae. Stipes 31–90 × 5–10 mm, ad basim incrassatam sordide ferrugineus ad apicem albo-punctulatus et transverse squamoso diffractus. Caro pilei bubalina stipitis ochraceotincta pallide brunnescens.

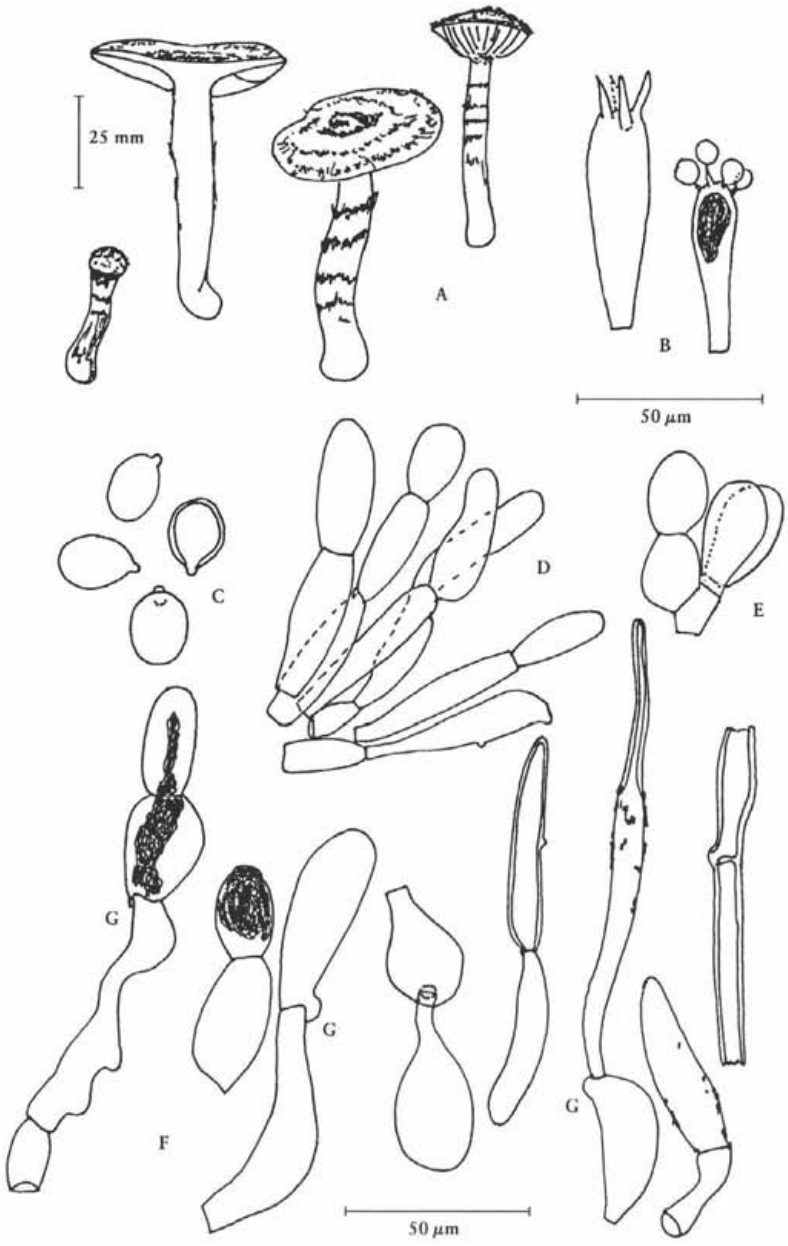

Fig. 1 *Inocybe aureoplumosa* Watling (Holotypus in E.) A. Habit sketch of young and mature basidiomes with longitudinal section. B. Basdia, one with golden colloidal and cessation of basidiospore development. C. Basidiospores. D. Cells from gill-edge. E. Cluster of cheilocystidia. F. Various elements from the suprapellis with some cells connected by prominent clamp-connections (G).

Sporae (6.1–) 6.5–7.7 (–8.3) × (5.2–)5.5–6.4 (–6.7) μm, laeves ellipsoideae. Basidia tetrasporigera, cellulae aciei lamellarum nullae. Hyphae cuticulae pilei filamentosae vel ellipsoideae. Cellulae hypharum veli ellipsoideo-cylindricae vel vesiculosae ad septa strangulatae interdum ramosae fibulatae hyphis angustioribus subcylindricis mixtae.

Holotypus – Korup Rain forest Reserve, Mundemba, Cameroon, West Africa, 22 ii 91. Watling Herb. 23132 in E.

Pileus 14–55 (–80) mm., broadly convex then plano-concave with a small, flat, central umbo and upturned margin, rich tawny orange becoming rust brown with reddish ochre, darker at centre, distinctly punctate-squamulose from fibrils joined at apex which form distinct ± tufts seated on background of more regularly smaller brown fibrils radially fibrillose outwards; margin fluted and ridged and puckered. Gills free, clay– to cigar-brown when young becoming tinged hazel or even hazel throughout with age, mottled with conspicuous paler floccules at gill-edge. Stipe 31–90 × 5–10 mm, slender with poorly developed marginate bulb, concolorous with gills, roughened with girdles of rich tawny orange scales resembling a *Leccinum* sp., upper girdle forming a poor ring-like zone, punctate and less fibrillose scurfy towards paler apex (Fig. 1 A). Flesh tough, whitish or honey-coloued in pileus, tinged dirty ochraceous downwards in stipe, becoming faintly brunnescent downwards on exposure to air or even slightly pinkish brown at the stipe-apex.

Basidia 4-spored (Fig. 1 B). Basidiospores (6.1-) 6.5–7.7 (-8.3) × (5.2-) 5.5–6.1 (-6.7) μm, smooth, slightly thick-walled, brownish, distinctly but faintly darkening in aqueous ammoniacal solutions, lacking germ-pore, neither amyloid nor dextrinoid although slightly darkening, not cyanophilic (Fig. 1 C). Gill margin covered in chains of ornamented, swollen, vesiculose, ellipsoid, tawny coloured cells, intermixed with filamentous cells so resembling the veil of *Coprinus micaceus* or *Cystoderma* sp.; cells at pileus-margin intimately connecting with those in stipe ring-zone when young (Fig. 1 D). Cheilocystidia 35–40 × 10–15 μm vesiculose, inflated, yellowish to orange-brown, intermixed with clusters of more elongate, even lageniform cystidia < 289 μm (Fig. 1 E); pleurocystidia absent. Pileipellis of long chains of smooth, thin-walled, hyaline to pale honey-coloured cells giving rise to rounder or elongate ellipsoid cells with yellowish tawny or orange-brown walls (43–73 × 6.5 (-8.7 μm) or 39 × 16 μm) arranged in chains with end-cells torpedo-shaped; subpellis of more spherocyte-like elements 21–22 μm broad (Fig. 1 F). Clamp-connections present (Fig. 1 G). Hymenophoral trama regular.

Material examined

All from Korup Rainforest Reserve, Mundemba, West Cameroon and deposited in E: Alexander 8 (1984); Alexander 12 (1984); Alexander 3 (1988); on desig-

nated track P at P15, 26.iii.91, Watl. 23133; on trail to research area, Alexander 1 – Watl. 26727: on east bank of River Ndian, coll. J. Rother, 19.vi.1989, Watl. 26726; on trail to research area before North/South line, 22.iii.91, Watl. 23132.

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INSTRUCTIONS TO AUTHORS

Preparation of manuscripts. Manuscripts are to be submitted in English, German or French. The text of the manuscript should be written on one side of white paper (A4, 210 × 297 mm) with broad margins (maximum 30 lines per page). Each manuscript must include *an abstract* (in English) not exceeding 100 words and a maximum of five key words. The paper will be followed by an abstract in Czech (or Slovak). The journal is responsible, however, for the translation of abstracts into Czech for foreign authors. Please send *two copies* of the typescript. The authors are asked to submit diskettes with *the accepted manuscripts* prepared on personal computers. The files should be in ASCII format, graphs in Excel. Both HD and DD/3.5″ and 5.25″ diskettes are acceptable.

Illustrations and tables. All tables, black and white photographs and figures (in black indian ink on a separate sheet) combined with the legends should be self-explanatory. Legends to the figures must be typed on a separate sheet. Colour photographs can be accepted but the authors will be responsible for the costs. All drawings or a photographs of microstructures should be provided with a scale. All illustration should be submitted as *the original drawing and one clear* copy. Output from computer graphics programmes produced on plotters or laser printers is quite acceptable. The dimension of any figure should not exceed 180 × 260 mm in size. References to illustrative matter in the text should normally in parentheses, e.g. ... spore sizes (Table 1) and ... as shown in Fig. 2 ... Figs. 1–5 ... Map 1 ...

Nomenclature. Latin names should conform to the International code of botanical nomenclature. New taxa must be substantiated by a Latin diagnosis including a reference to the public herbarium where the type specimen is deposited. The authors are asked to use only the acronyms listed in the Index Herbariorum.

References. References are to be listed in alphabetical order according to the surnames of the first authors. The bibliography should be written as follows:

Moravec J. (1984): Two new species of Coprobia and taxonomic remarks on the genera Cheilymenia and Coprobia (Discomycetes, Pezizales). – Čes. Mykol. 38: 146–155. (*journal article*)

Ryvarden L. (1978): The Polyporaceae of North Europe, Vol. 2. Inonotus-Tyromyces. – 507 p. Oslo. (*book*)

Tommerup I. C., Kuek C. and Malajczuk N. (1987): Ectomycorrhizal inoculum production and utilization in Australia. – In: Sylvia D. M., Hung L. L., and Graham J. H. (eds.), Proceedings of the 7th North American Conference on Mycorrhizae, p. 93–295, Gainesville.

The references *in text* should be Moravec (1984), or (Moravec 1984); or Kühner & Romagnesi (1974); When there are three or more authors use the form Tommerup et al. (1987).

Manuscript evaluation. All manuscripts will be reviewed by two reviewers, and the authors informed about their acceptance, rejection or necessary revisions within two months. If a manuscript is returned for revision, the authors should submit a revised version within three months.

Authors should preferably have their English language texts approved by a native – English speaker.

Proof corrections. Proofs of the paper will be sent to authors together with the original manuscript. If not returned within three weeks, the proof correction will be carried out by the editor. The principal author will receive 30 reprints free of charge.

Correspondence. All correspondence concerning the journal should be sent to the following address: Czech Mycology / Česká mykologie, National Museum, Department of Mycology, Václavské náměstí 68, 115 79 Praha 1, Czech Republic. Phone: 02/24497259 or 24964284 http://www.natur.cuni.cz/cvsm/

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