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Taxonomic revision of the genus Cheilymenia – 8. The section Micropilosae.

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Moravec J. (2003): Taxonomic revision of the genus Cheilymenia – 8. The section Micropilosae. – Czech Mycol. 54: 135–143

The monotypical section *Micropilosae* J. Moravec (1990), originally proposed in the infrageneric arrangement published in Moravec (1990), with the type species *Cheilymenia stercoraria* (Velen.) J. Moravec (= *C. micropila* Svrček et J. Moravec), is introduced in detail. Illustrations such as line drawings, a photograph of apothecia, microphotographs of the apothecial anatomy and SEM photomicrographs of ascospores accompany the paper.

Key words: *Cheilymenia*, section *Micropilosae*, *Cheilymenia stercoraria*, taxonomic revision, Discomycetes, Pezizales, Pyronemataceae.

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Je představena monotypická sekce *Micropilosae* J. Moravec (1990) původně navržená autorem v jeho vnitrodruhovém uspořádání rodu (Moravec 1990) a její typový druh *Cheilymenia stercoraria* (Velen.) J. Moravec (= *C. micropila* Svrček et J. Moravec). Článek je doplněn kresbami mikroznaků, fotografií apothecií, mikrofotografiemi jejich anatomie a SEM mikrofotografiemi askospor.

INTRODUCTION

Nine sections of the genus *Cheilymenia* were established in the infrageneric arrangement originally proposed in Moravec (1990). After further examinations, the classification was modified to seven sections (at present). The status of the section *Insigniae* J. Moravec was lowered and treated in Moravec (1993) as series *Insigniae* (= *Insignes* in Moravec 2003) of the typical section *Cheilymenia*. The section *Raripilosae* J. Moravec was lately (Moravec 2003) reassessed as series *Raripilosae* and series *Glabrae* of the section *Paracheilymeniae* J. Moravec.

One of the seven sections of the genus *Cheilymenia* Boud. within the modified infrageneric arrangement, the monotypical section *Micropilosae*, is introduced here.

MATERIAL AND METHODS

Material from various herbaria was examined with the usual methods. The holotype of *C. stercoraria* was examined on rehydrated apothecia. The holotype

(PRM) of the synonymous *C. micropila* was examined partly on fresh material, partly on rehydrated apothecia. The ascospore size measured in vivo was in the range of those examined on the rehydrated material. Dried apothecia were rehydrated in distilled water for studying and measuring of ascospores. Any aggressive liquids, such as alcohol or lactophenol, were strictly avoided in the rehydration, staining, as well as in the treatment of ascospores for the SEM photomicrographs. As premature ascospores are usually more swollen, only mature ascospores were measured. Extremely large ascospores, which occasionally matured together with aborted ones and are consequently present in a reduced number in one ascus were considered abnormal. Their size is given in brackets here. The ascospores were stained with cotton blue C4B ("Geigy s. 123" of an old supply) which stains directly without heating the slides, in order to avoid destruction of the loosening outermost perisporial membrane, as emphasised in my papers (lately in Moravec 1998). The samples for the SEM photomicrographs were taken from pieces of dried hymenium directly coated with gold.

For microscopic examination of the anatomy, median sections through an apothecium were mostly treated with 1 % KOH and washed in distilled water before staining with C4B in lactic acid or trypan blue.

Acronyms:

CUP	Department of Plant Pathology, Cornell University, Ithaca, New York, U.S.A.;
K(M)	The Herbarium (Mycological) of the Royal Botanic Gardens, Kew, England, Great Britain;
PRM	Mycological Department of the National Museum, Prague, Czech Republic;
BRA	Department of Botany, Museum of Natural History, Bratislava, Slovakia;
BRNM	Botanical Department of the Moravian Museum, Brno, Czech Republic;
J. Mor.	Private herbarium (Discomycetes) of Jiří Moravec, Adamov, Czech Republic.

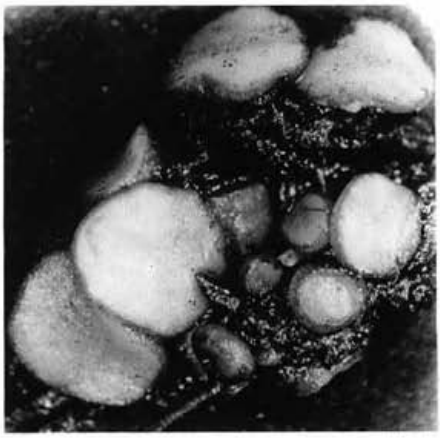
RESULTS

Genus **Cheilymenia** Boud., Bull. Soc. Mycol. France. 1: 105, 1885.

Sect. **Micropilosae** J. Moravec, Mycotaxon 28: 475, 1990.

only one, type species:

Cheilymenia stercoraria (Velen.) J. Moravec, Mycotaxon 28: 475, 1990.



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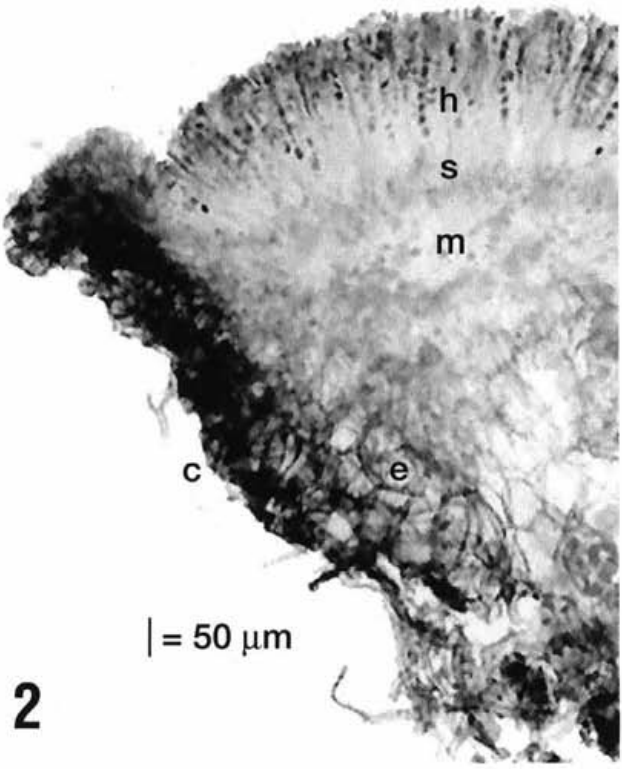

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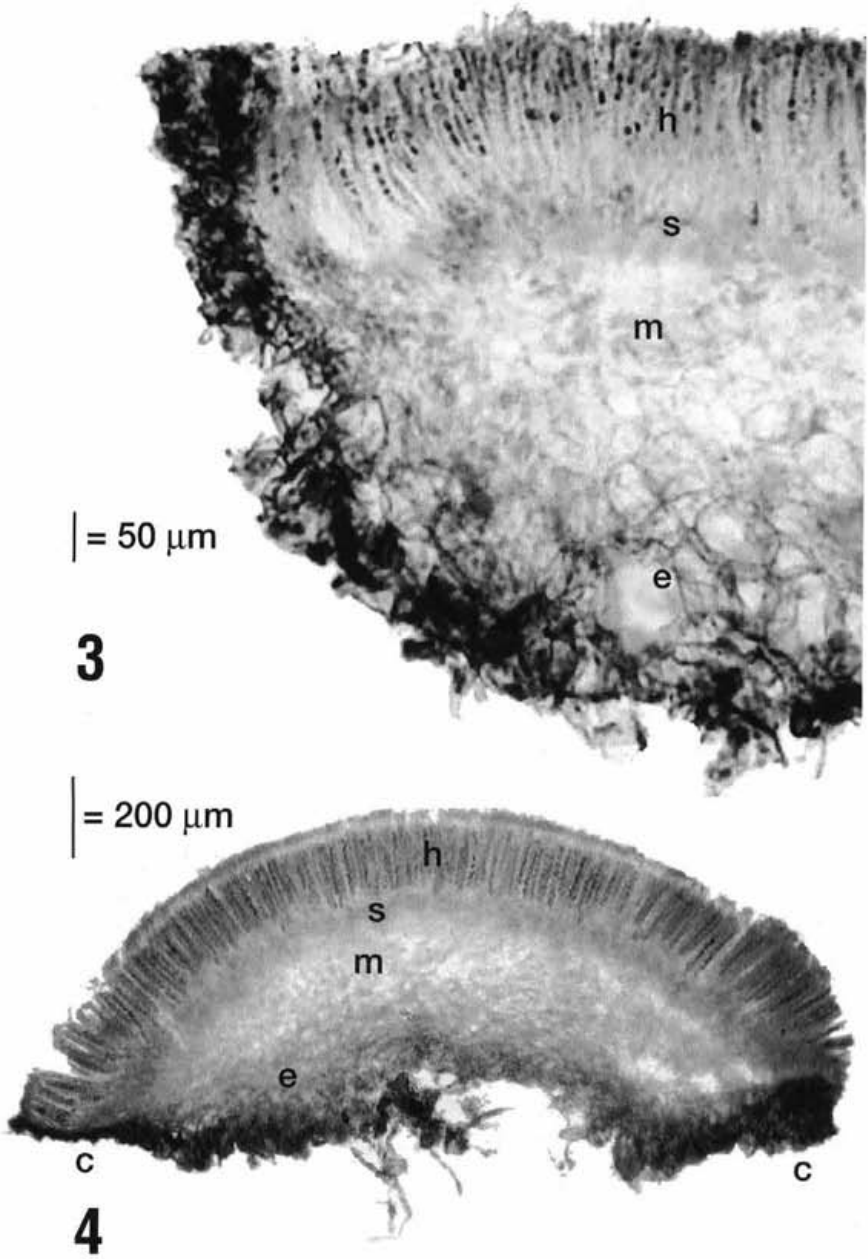
Figs. 1–2. *Cheilymenia stercoraria.* 1. Apothecia (from holotype of *Cheilymenia micropila* Svrček et J. Moravec – PRM 628980). 2. Part of medial section through an apothecium (from isotype of *C. micropila* Svrček et J. Moravec – J. Mor.). Layers – h: hymenium, s: hypothecium (subhymenium), m: medulla, e: ectal excipulum, c: cortex (outermost layer of the ectal excipulum).



Figs. 3–4. *Cheilymenia stercoraria.* 3. Marginal portion of medial section through an apothecium (from isotype of *C. micropila* Svrček et J. Moravec – J. Mor.). 4. medial section through small but mature apothecium; h (from holotype of *Humaria stercoraria* Velen. – PRM 147881). Layers – h: hymenium, s: hypothecium (subhymenium), m: medulla, e: inner layer of ectal excipulum, c: cortex (corticoid outermost layer of the ectal excipulum).

The monotypical section *Micropilosae* was proposed (Moravec 1990) for *Cheilymenia stercoraria* (Velen.) J. Moravec. Simultaneously, my re-examination of the type of *Cheilymenia micropila* Svrček et J. Moravec disclosed that it is identical with *C. stercoraria*.

C. stercoraria is a remarkable species characterised by its comparatively large, discoid to expanded flat apothecia with a bright scarlet-red hymenium and hairless external surface. The apothecial surface is hairless, only hyaline hyphae are present near the base of the apothecia, and modified brown cells resembling hair germs protrude on the distinctly cortical, comparatively thin ectal excipular zone of the apothecium. In the synopsis of the infrageneric arrangement (Moravec 1990), I originally placed the section *Micropilosae* near sect. *Paracheilymeniae*. However, although the apothecia of *C. stercoraria* are nearly hairless and the medullary excipulum composed of textura globulosa to angularis (with indistinct hyphal elements), their flatly expanded shape and brightly scarlet-red hymenium rather resemble species of the section *Pseudoscutelliniae* J. Moravec (1990). Nevertheless, the well-distinguished section *Pseudoscutelliniae* accommodates species with apothecia bearing long, rooting apothecial hairs and a well-delimited medullary layer composed of a textura subintricata to intricata.

The hairless apothecia of *C. stercoraria*, possessing a brown cortical ectal excipular layer, and subglobose ascospores with a minutely warted perisporium, justify the separate classification in the monotypical section *Micropilosae*, as originally proposed in Moravec (1990).

Cheilymenia stercoraria (Velen.) J. Moravec (Figs. 1–13).

≡ *Humaria stercoraria* Velenovský, Mon. Discom. Boh. 1: 330, 2: Tab. 24, fig. 22, 1934.
≡ *Coprobia stercoraria* (Velen.) Svrček, Čes. Mykol. 31(2): 69, 1977.
≡ *Cheilymenia stercoraria* (Velen.) J. Moravec, Mycotaxon 28: 475, 1990.
= *Cheilymenia micropila* Svrček et J. Moravec in Moravec, Čes. Mykol. 22 (1): 37, 1968 pro parte.

Apothecia scattered to densely gregarious, (2.5–)3.5–10.0 mm diam., broadly sessile, at first shallowly saucer-shaped, lenticular, becoming flattened with slightly raised margin to even pulvinate; hymenium dilute-red to conspicuously scarlet ["apothecia igneo coccinea" according to Velenovský (1934)], outer surface paler, dilute-red, large marginal area darkened, irregularly brown-dotted, appearing hairless. Hymenium about 180–220 μm thick with paraphyses conspicuously overlapping asci. Hypothecium about 40–70 μm thick, consisting of small cells 4–12 μm diam. of indefinite shape, indistinctly delimited from the medullary layer. Medulla about 100–180 μm thick, consisting of small irregular globose

and angular cells 15–40 μm diam, vesicular-joint, occasionally forming hyphoid chains (textura globulosa to angularis with hyphal elements). Ectal excipulum about 180–260 μm thick (in marginal zone much thinner, only 50–180 μm thick), at the base composed of a textura globulosa to angularis of very large subglobose to subangular cells 40–160 μm diam.; towards the margin the cells are much smaller (30–60 μm diam.), mixed with brown aborted cells of indefinite shape, forming a cortex with indistinctly protruding outermost cells, which are occasionally elongated into a constricted apex and thus resemble germs of hairs, or occasionally more distinctly protrude as subhyaline or brown, very short clavate hyphae. Hyphae commonly occur at the apothecial base, they are subhyaline and 10–18 μm thick. Asci 160–180(–210) × 15–18(–22) μm, cylindrical, with rounded apex, gradually constricted towards base, eight-spored. Ascospores uniseriate, 14.2–18.0(–19.0) × 11.2–13.5 μm, broadly ellipsoid but commonly also globose-ellipsoid (mostly 16.5 × 12.0 μm) occasionally conspicuously subglobose (14.25 × 12 μm), hyaline; mature ascospores possess a yellow refractive colour; loosening perisporium irregularly covered with cyanophilic irregular warts 0.2–1.5 μm diam. which are occasionally connected. Paraphyses conspicuously overlapping asci, filiform, 2.5–3.7 μm thick, straight, sparsely septate, apices clavate-dilated 4.2–10.2(–12) μm, filled with orange-red guttules.

Habitat. On debris and soil mixed with human excrement, also on cow dung, in forests, known only from Bohemia, Czech Republic.

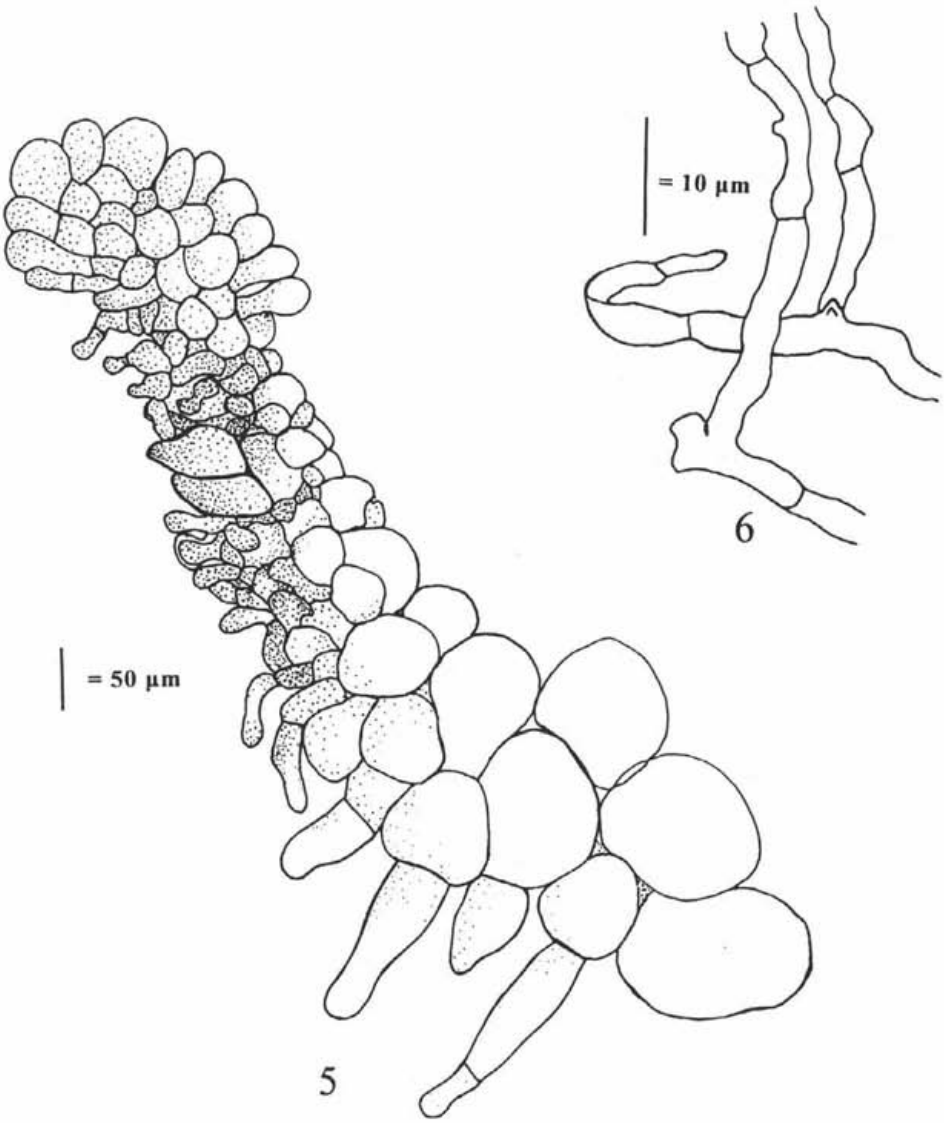
Material examined

1. Holotype (PRM 147881) of *Humaria stercoraria* Velen.: Bohemia centr., Mnichovice, in merda humana in silva humida, 30. VIII. 1922 leg. J. Velenovský, originally under the unpublished herbarium name *Barlaea stercoraria* Velen., the holotype is labelled and its state and substrate are described by Svrček (1989).

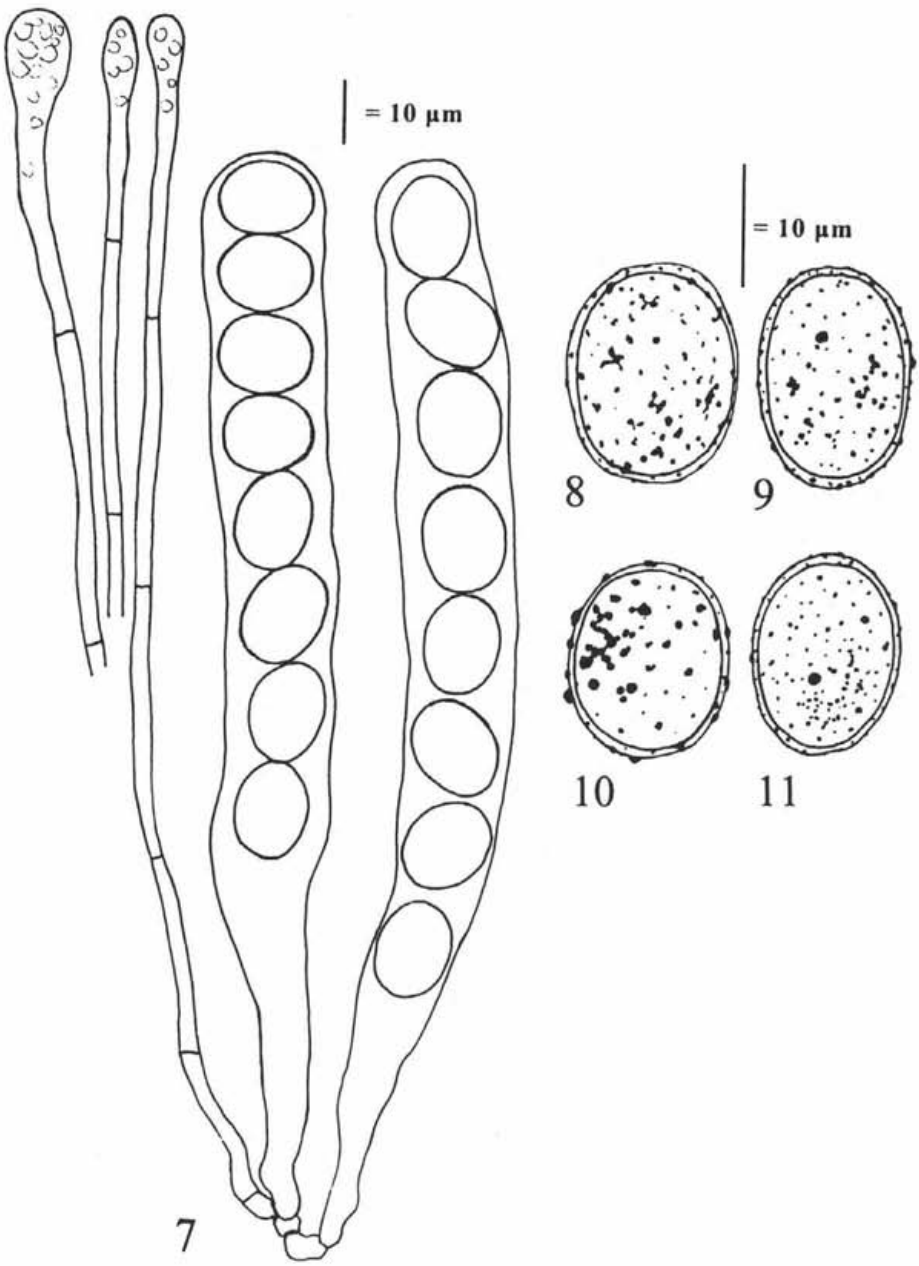
2. Holotype (PRM 628980) of *Cheilymenia micropila* Svrček et J. Moravec: Bohemia: Branžež prope Kněžmost, district. Mladá Boleslav, in fimo vaccino, 15. V. 1966 leg. J. Moravec. Isotypes deposited in CUP, BRA, BRNM, K(M) and J. Mor.

Remarks

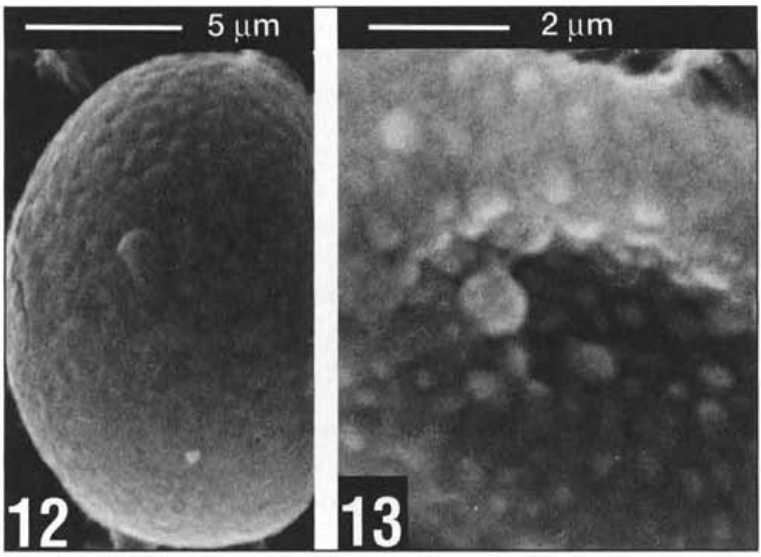
Cheilymenia stercoraria is a very peculiar species, especially for its hairless, conspicuously flat to pulvinate, scarlet coloured apothecia possessing a brown-pigmented cortical layer of the ectal excipulum. Velenovský (1934) described this conspicuous and very rare discomycete as a species of the genus *Humaria*, and accurately illustrated the outstanding shape of the apothecia and ascospores. Svrček (1979) mentioned a smaller ascospore size (13.5–15.5 × 10.0–11.0 μm) than that stated in my description above. My measurements well agree with those



Figs. 5–6. *Cheilymenia stercoraria.* Section of the marginal portion of the cortical layer of the ectal excipulum (from holotype of *Humaria stercoraria* Velen. – PRM 147881). 6. Hyphae at apothecial base.



Figs. 7–11. *Cheilymenia stercoraria*. 7. Asci and paraphyses (from holotype of *Humaria stercoraria* Velen. – PRM 147881); 8–11. Ascospores, oil immersion, stained with C4B in lactic acid (8–10 from holotype of *Humaria stercoraria* Velen. – PRM 147881; 10–11 from isotype of *C. micropila* Svrček et J. Moravec – J. Mor.).



Figs. 12–13. SEM photomicrographs of ascospores. 12. Ascospore; 13. Detail of the ornamentation (from holotype of *Humaria stercoraria* Velen. – PRM 147881).

given by Velenovský (1934) who stated the ascospore length in *Humaria stercoraria* 17–19 µm. The substrate, originally mentioned as human excrement, is in fact a conglomerate. I agree with Svrček (1979), who described the substrate as plant debris, consisting of small roots, mosses, stones, grass, small coniferous twigs and leaves, mixed with soil and covered with Cyanophyta and algae – but in my opinion the stercoraceous character of the substrate is obvious.

The species was insufficiently known as only the type collection existed. Consequently, we additionally described the fungus under the superfluous synonym *Cheilymenia micropila* Svrček et J. Moravec in Moravec (1968). The description of *C. micropila* was based on two separate collections and is therefore misleading. My later examination (Moravec 1990) of the paratype collection (Bohemia, Třeboň, "Dubový rybník", ad terram stercoratam, 23. V. 1964 leg. J. Kubička and M. Svrček – PRM) mentioned in the protologue of *C. micropila* disclosed that it is not this species but in fact *Cheilymenia rubra* (Cooke ex W. Phillips) Boud. The previous misidentification of the collection from Třeboň was mainly caused by the fact that apothecia of the holotype of *C. micropila* grew tightly aggregated together with copious apothecia of *C. rubra* on their common substrate. Consequently, important diagnostic features in the description of *C. micropila* in Moravec (1968) were confused. Thus the hairs, described and illustrated for *C. micropila*, in fact belong to *C. rubra*. The dried apothecia of each of the two species growing densely aggregated and connected on the common substrate of the holotype of *C. micropila*

are difficult to distinguish. Those of *C. stercoraria* are recognisable on the basis of their flat shape, but microscopic examination is necessary. The apothecia of *C. rubra* are microscopically well distinguishable as they possess rigid thick-walled hairs and a different anatomy (medulla consists of a textura intricata), and its ascospores are conspicuously narrower (Moravec 1989).

The hairless apothecia lead Svrček (1977) to transfer *Humaria stercoraria* into the genus *Coprobia* Boud. (= *Cheilymenia* sect. *Coprobiae* (Boud.) J. Moravec 1990). However, species of the section *Coprobia* (correct name of the previously used "*Coprobiae*") possess fundamentally different characters, especially the ascospore perisporium being distinctly longitudinally striate. The striation consists of longitudinal low ribs and was demonstrated also by SEM photomicrographs (Moravec 1987, 1990). Moreover, unlike species of the section *Coprobia*, which possess hyaline cells with sparse hyaline hyphal outgrowths, the ectal excipular layer in *Cheilymenia stercoraria* forms comparatively thin and compact brown cortex with cells changed into brown hair germs.

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