

V. ANTONÍN & M. E. NOORDELOOS

A monograph of the genera *HEMIMYCENA*, *DELICATULA*,
FAYODIA, *GAMUNDIA*, *MYXOMPHALIA*, *RESINOMYCENA*,
RICKENELLA, and *XEROMPHALINA*
(Tribus *MYCENAE* sensu Singer, *MYCENA* excluded)
in Europe



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VLADIMÍR ANTONÍN & MACHIEL E. NOORDELOOS

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1. INTRODUCTION

The present work is the result of a long lasting cooperation, which resulted among other things in the publication of a European monograph of the marasmioid and collybioid fungi (ANTONÍN & NOORDELOOS 1993, 1997). After finishing these two volumes, it was decided to tackle another group of small agarics, traditionally placed in tribus *Myceneae* by SINGER (1986). The genus *Mycena*, already being treated in the excellent work of MAAS GEESTERANUS (1992), was excluded from the project for obvious reasons. The remaining part of tribus *Myceneae* including the notoriously difficult genus *Hemimycena*, still appeared in need of a modern treatment.

Like in the monographs of the marasmioid and collybioid fungi, our main objectives are to present an identification tool based, as much as possible, on our own observations. Furthermore, the literature and nomenclature should be sorted out to present an up to date state of knowledge, which can be used for further research in this group of agarics.

During the process of working on this monograph, the results of phylogenetic studies with help of molecular data became available (MONCALVO et al. 2002). These offers a wealth of speculations and theories as to the origin of certain groups of agarics, and give new clues and evidence as to their ancestry and relationships. The Tricholomataceae, including the tribus *Myceneae* in the traditional sense of morphologists like SINGER (1986) and KÜHNER (1980) now appear to be heterogeneous and polyphyletic and consequently an assemblage of unrelated groups, some with affinities to other *Tricholomataceae*, others with affinities outside the agarics as a whole (REDHEAD et al. 2002). The genera of tribus *Myceneae* end up in different clades: *Hemimycena* seems to be a monophyletic group, well separated from *Mycena*. *Fayodia*, *Myxomphalina* and *Gamundia* form another well-supported clade, and are therefore closely related. *Xeromphalina* clusters together with *Heimiomyces* in a distant clade, and *Rickenella* and its allies appear to be unrelated to all Euagarics, and are more related to the Hymenochaetales. One must take into account, however, that these studies are based on restricted sampling.

As the paper of MONCALVO et al. (2002) must be considered a first step towards a phylogenetic classification of Agarics, some of the conclusions are still premature, and await further studies on more taxa and more genes.

For these reasons we decided to stick to our original concept of the tribus *Myceneae*, and present here a series of independent monographic treatments with keys and descriptions to facilitate identification. A more natural classification, also based on phylogeny reconstruction, cannot be given at this moment.

TRIBUS MYCENEAE

Key to the genera

- 1 Lamellae reduced, vein-like, not reaching the margin of the pileus, sometimes almost lacking; fruitbodies white **2**
- 1* Lamellae normally developed, reaching the margin of the pileus; fruitbodies white or coloured **4**
- 2 Spores not amyloid *Hemimycena*
- 2* Spores amyloid **3**
- 3 Veil present in young fruitbodies; cheilocystidia absent *Delicatula*
- 3* Veil absent; cheilocystidia present *Mycena*
- 4 Spores ornamented, or with a two-layered wall with amyloid perispore and non-amyloid echinulate or verruculose epispore **5**
- 4* Spores smooth, thin- or slightly thick-walled, but without ornamentation **6**
- 5 Spores with a two-layered wall: a non-amyloid epispore with distinct echinulae or verruculae and a smooth amyloid perispore *Fayodia*
- 5* Spores minutely echinulate to verruculose *Gamundia*
- 6 Spores inamyloid; trama never dextrinoid **7**
- 6* Spores amyloid or if inamyloid, then trama dextrinoid **8**
- 7 Fruitbodies white or at most with pale grey, ochre brown colored pileus; pileipellis diverticulate or with setiform hairs or coralloid pileocystidia *Hemimycena*
- 7* Fruitbodies with lively color; pileipellis not diverticulate, with thin-walled, clavate to fusiform pileocystidia *Rickenella*
- 8 Spores amyloid, slightly thick-walled; pileipellis and stipitipellis an ixocutis *Myxomphalina*
- 8* Spores amyloid or inamyloid, thin-walled; pileipellis and stipitipellis otherwise **9**
- 9 Habit omphalinoid and pileipellis with well-differentiated, often slightly thick-walled, coralloid and/or branched pileocystidia (circumcystidia); with yellow basal tomentum *Xeromphalina*
- 9* Habit different or circumcystidia lacking **10**
- 10 Pilei- and stipitipellis with oleocystidia *Resinomycena*
- 10* Pilei- and stipitipellis without oleocystidia *Mycena*

2. MATERIAL, METHODS AND PRESENTATION

The descriptions and illustrations of the species are based on material collected by the authors in many parts of Western, Northern, Central and Eastern Europe, supplemented with data obtained from herbarium specimens. Specimens from the following herbaria were obtained (in alphabetical order according to countries; abbreviations according to HRADÍLEK et al. 1992; HOLMGREN & KEUKEN 1974): Austria (IN, W, WU, herb. Hausknecht), Belgium (BR), Canada (DAOM), Croatia (CNF), Czech Republic (BRNM, BRNOP (Nature Protection Agency, Brno), BRNU, CB, HK, OL, OLM, PRC, PRM, Denmark (C), Finland (H, OULU), France (LILLE, MPU, PC, herb. Bon, Courtecuise, Moreau), Germany (herb. Hahn, Münzmay), Italy (CAG, TRENTO, SIENA, herb. Lonati), The Netherlands (L, WBS, herb. Benjaminsen), Norway (O); Russia (LE), Slovak Republic (BRA), Spain (AH, BC), Sweden (S, UPS); Switzerland (BERN, G, ZT); United Kingdom (E, K), USA (BPI, F, FH, MICH, NY, NYS).

The descriptions are entirely based on the authors' own observations, unless otherwise indicated. Reference to data obtained from literature is made in the commentaries following the descriptions, and sometimes also in the paragraphs on ecology and distribution.

All type specimens of European taxa have been studied, if available, and where possible taxa without type specimens have been lecto- or neotypified. In cases where only iconotypes are available, an attempt has been made to designate a representative collection, which is deposited in one of the official herbaria.

Microscopical studies are usually based on dried material using light microscopes Olympus BX50, Zeiss, and Leitz with a magnifications up to 1500 \times . Observations were made on mounts in the following reagentia: Congo-red, 10 % Ammonia, 10 % KOH, Cresyl-blue in water, and anilin-blue. In the paragraphs collections examined, the countries are listed in alphabetical order.

The following abbreviations have been used: E = quotient of length and width of the spores, and Q = the mean value of E in all collections studied. L = number of entire lamellae, l = number of lamellulae between each pair of entire lamellae. In the illustrations CH stands for cheilocystidia, PL for pleurocystidia, HC for hymenial cystidia; PP for pileipellis, PC for pileocystidia, SP for stipitipellis, CA for caulocystidia.

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4. Taxonomic part

4.1. *HEMIMYCENA* Singer

Hemimycena Singer, Rev. Mycol. 3: 194, 196. 1938, nom. cons.

Helotium Tode, Fungi Mecklenb. Sel. 1: 22. 1790, nom. rej.

Type species: *Agaricus lacteus* Pers. (= *Hemimycena lactea* (Pers.: Fr.) Singer)

Selected literature: Elborne et al., Nordic Macromycetes 2: 124-126. 1992; Emmet, Mycologist 7(4): 180. 1993; Gröger, Boletus 18(3): 85-101. 1994; Kühner, Le Genre *Mycena*. Encycl. mycol. 10. 1938; Kühner & Valia, Trav. Lab. Jaysinia 4: 25-71. 1972; Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 66-101. 1985; Redhead, Can. J. Bot. 60: 1998-2013. 1982; Romagnesi, Bull. Soc. Mycol. Fr. 108: 1-15. 1992; Watling & Turnbull, Brit. Fung. Fl. 8: 116-130. 1998.

Basidiocarps mycenoid or omphalioid; pileus usually white, rarely with pale yellow, ochre or grey tinges; membranaceous or thin-fleshed, delicate, putrescent; translucently striate or not, glabrous, pubescent or finely hairy (lens); lamellae well-developed and reaching the margin of pileus or reduced, vein-like, not all reaching the margin of the pileus, frequently forked and/or anastomosing, rarely completely lacking, almost free, adnate or decurrent, arcuate, triangular, segmentiform or ventricose, white; stipe central or eccentric, filiform, white, glabrous or more frequently definitely covered with cystidia, giving it a downy or hairy appearance, particularly under lens; context very thin; smell and taste often indistinct, sometimes nitrous or farinaceous.

Spores thin-walled, smooth, inamyloid; basidia 2- or 4-spored; lamella edge usually with abundant cheilocystidia, rarely fertile; cheilocystidia and pleurocystidia often present; pileipellis a cutis of cylindrical hyphae, smooth or diverticulate, frequently with differentiated terminal elements, forming a trichoderm-like structure; clamp-connections usually present, rarely absent.

Chemical reactions: Spores inamyloid, not dextrinoid; no part of basidiocarp amyloid, or dextrinoid, except for *H. persimilis* and *H. nitriolens*, in which a faint dextrinoid reaction of the context is observed.

Ecology: usually saprotrophic on debris and raw humus: dead leaves, needles, sticks, bark, rotten wood etc. of coniferous and deciduous trees, herbaceous plants; more rarely apparently parasitic or necrotrophic, e.g. on *Symphytum* and *Cirsium*.

Distribution: widespread, probably worldwide.

Notes: As indicated in the introduction of this book, the genus *Hemimycena* as presented here, may well be a rather artificial assemblage of species, sharing the common character of being small to minute, white or whitish, resembling a small *Mycena*, *Omphalia*, or *Collybia*, with thin-walled, inamyloid spores, and often well differentiated covering layers of pileus and stipe, and hymenial cystidia. Polyphyly may not be excluded, although MONCALVO et al. (2002) suggest that at least the core of the genus is monophyletic. But only few species have been studied molecularly, and considering the difficulties in acquiring sufficient material of many taxa, it is not likely that a critical phylogenetic study of the group concerned will be performed in the near future. Therefore it was decided to stick to a rather pragmatic, morphological concept of the genus.

Hemimycena and *Delicatula* were a long time included in the large genus *Mycena* (e.g. KÜHNER 1938), or put together under the generic name *Delicatula* (e.g. CEJP 1938; KÜHNER & ROMAGNESI 1953). Since the classical monographs of KÜHNER (l.c.) and CEJP (l.c.) no modern monographic

study has been undertaken, although several species appeared in local floras, such as KÜHNER & ROMAGNESI (1953) for France, ELBORNE, LÆSSØE & ØSTMØE in HANSEN & KNUDSEN (1992) for the Nordic countries, MEUSERS & MEUSERS (1985) and GRÖGER (1994) for Germany and surrounding countries, and WATLING & TURNBULL (1998) for the British Isles. The best key so far is that of ROMAGNESI (1992), who put together all he knows about the genus supplemented with literature data in a rather good working key.

KÜHNER & VALLA (1972) published an interesting study of *Hemimycena* found in the subalpine and alpine region of the Haute Savoie in France. Several new species were described with elaborate descriptions and, for some of them, excellent line drawings.

However, due to the fact that most *Hemimycena* species are very small, and easily overlooked, growing on habitats where not many mycologist foray, such as swamps, and dense herbaceous vegetation along rivulets and moors, many species are rarely collected and described in detail. Little is known therefore on their variability, ecology and distribution.

As will be clear from the present study, several new taxa still can be discovered, and this partly explains why it is not always easy to identify a species of *Hemimycena*. Much time and skill is needed to study *Hemimycena*, as rather large set of microscopical data is needed before one can start the identification.

As a consequence the present study contains several examples of species that still are incompletely known as to their variability. The authors used a rather pragmatic species concept, based on that of KUYPER (1988). In some cases closely related species differ in the absence or presence of clamp-connections, connected with the occurrence of 2 resp. 4-spored basidia. We are not sure whether these must be considered as true species of that the 2-spored, clamp-less taxa just represent apogamic specimens. In some cases taxa are maintained on species level, although there is an indication that infraspecific variability warrants distinction on varietal level. But, due to scarcity of material, it was decided to await more material and information.

The authors have tried to study as many collections available from various European official and private herbaria. Unfortunately the collections made by Valla are lost (Lamoure and Moreau, pers. inf.), so the type and additional collections of species described in Kühner & Valla could not be studied. The same applies to most of the species described by KÜHNER (1938). Fortunately the descriptions give a wealth on information, and in many cases there are also additional line drawings of microscopical structures, so we could get a good impression of the concepts of those species. Of course we also tried to designate lecto- and neotypes, but not in all cases suitable material has been available. So further studies in this complicated but to our opinion attractive genus are necessary. We also hope to stimulate other mycologists to give a close look at these tiny white or whitish mushrooms. For suggestions and additional information we will be very grateful.

SMITH (1947) placed the species belonging to the genus *Hemimycena* into the subsect. *Albidae* of the genus *Mycena*. The very similar *Mycena flavoalba* belongs to the subsect. *Euadonidae*, which differs only in having yellow, pink or red or in some other bright colour coloured carpophores.

KÜHNER (1980) made a detailed conspectus of subgenus *Paramycena* and similar groups. He stressed that, if the concept of *Hemimycena* by SINGER (1962 and later) is accepted, it will be very difficult to establish limits between this genus and e. g. *Mycena flavoalba*. EMMET (1993) discussed some features of some *Mycena* "look-alikes". He has also mentioned that the differences between *Hemimycena* and *Mycena* s. str. are very small and, especially together with sections *Adonidae* and *Hiemales*, have to be subject of further research.

REDHEAD (1982) argued that the generic name *Helotium* Tode should no be applied to the Ascomycetes, but refers to an earlier synonym of *Hemimycena* and discussed the identity of *Helotium*

hirsutum and *H. glabrum*. He accordingly transferred most of the known *Hemimycena* species to *Helotium*. GULDEN et al. (1984) proposed the conservation of the genus *Hemimycena* and to reject the generic name *Helotium*. In the Report of the Committee for fungi and lichens (Taxon 37: 461. 1988) the latter proposal has been accepted and the generic name *Helotium* is considered to be a *nomen ambiguum*.

REDHEAD (1987) placed *Helotium* in his sense (= *Hemimycena*) in the family Xerulaceae Jülich 1981 on the base of the presence of a sarcodimitic tissues.

CORNER (1960) placed *Mycena* sect. *Aciculae* in the genus *Trogia* Fr. because of the sarcodimitic trama structure. Moreover, he also made two new combinations, *Trogia gypsea* (= *Hemimycena cucullata*) and *T. lactea* (= *Hemimycena lactea*). Later (CORNER 1991), he described many new *Trogia* species, especially from Southeast Asia including several species that now would be placed by the present authors in *Hemimycena*.

Synopsis of the European species

Sect. *Hemimycena*

1. *Hemimycena lactea* (Pers.: Fr.) Singer
 - a. var. *lactea*
 - b. var. *tetraspora* (Kühner & Valla) Courtec.
 - ba. f. *tetraspora*
 - bb. f. *minor* (Kühner) Courtec.
2. *Hemimycena cucullata* (Pers.: Fr.) Singer
3. *Hemimycena gypsella* (Kühner) Elborne & Læssøe
4. *Hemimycena pseudolactea* (Kühner) Singer
5. *Hemimycena cephalotricha* (Joss. ex Redhead) Singer
6. *Hemimycena rickenii* (A.H. Sm.) Singer
7. *Hemimycena conidiogena* P.-A. Moreau & al.

Sect. *Pseudocamarophyllus* Antonín & Noordel.

8. *Hemimycena mairei* (E.J. Gilbert) Singer
9. *Hemimycena sordida* Antonín & Noordel.
10. *Hemimycena juncicola* Antonín & Noordel.
11. *Hemimycena ochrogaleata* (J. Favre) M.M. Moser
 - a. var. *ochrogaleata*
 - b. var. *paucicystidiata* ad int.

Sect. *Hirsutae* (Kühner) Antonín & Noordel.

12. *Hemimycena mauretanicus* (Maire) Singer
 - a. var. *mauretanicus*
 - b. var. *cystidiata* Antonín & Noordel.
 - c. var. *microcephala* Kühner
 - d. var. *megasporea* Kühner
 - e. var. *apogama* Kühner
13. *Hemimycena crispula* (Quél.) Singer
 - a. var. *crispula*
 - b. var. *tetraspora* Antonín & Noordel.
14. *Hemimycena pseudocrispula* (Kühner) Singer

15. *Hemimycena crispuloides* Antonín & Noordel.
16. *Hemimycena subtilis* (Velen.) Antonín
17. *Hemimycena angustispora* (P.D. Orton) Singer
18. *Hemimycena tatrensis* ad int.
19. *Hemimycena tortuosa* (P.D. Orton) Redhead

Sect. *Omphaliariae* (Kühner) Antonín & Noordel.

20. *Hemimycena candida* (Bres.) Singer
21. *Hemimycena delectabilis* (Peck) Singer
 - a. var. *delectabilis*
 - b. var. *bispora* (Kühner) Antonín
 - c. var. *paucicystidiata* Gulden & Jensen
22. *Hemimycena subglobispora* Aronsen
23. *Hemimycena substellata* (Kühner) Antonín & Noordel.
24. *Hemimycena cryptomeriae* Antonín & Noordel.
25. *Hemimycena ignobilis* Joss. ex Bon
26. *Hemimycena crispata* (Kühner) Singer
27. *Hemimycena epichloe* (Kühner) Singer
28. *Hemimycena gracilis* (Quél.) Singer
29. *Hemimycena pseudogracilis* (Kühner & Maire) Singer
30. *Hemimycena pithyophila* (Malençon ex Redhead) Antonín & Noordel.
31. *Hemimycena persimilis* (Malençon ex Redhead) Antonín & Noordel.
32. *Hemimycena pseudocrispata* (Valla) Maas Geest.
33. *Hemimycena pseudogibba* (Valla) Antonín & Noordel.
34. *Hemimycena subimmaculata* (Murrill) Elborne & Læssøe
35. *Hemimycena nitriolens* (Valla) Antonín & Noordel.

Keys to the European species

Fig. 1

- 1 Habit reminiscent a white *Mycena* species with more or less conical to conico-convex pileus, with well developed, crowded to moderately distant lamellae, that are ascending, emarginate, rarely adnate or somewhat decurrent; surface of pileus with fusoid to (sub)capitate cystidia; stipe never with long hairs (sect. *Hemimycena*) **Key one**
- 1* Habit different; lamellae less numerous, adnate to deeply decurrent, well developed, or reduced to vein-like structures, not reaching the margin of the pileus, in few cases completely lacking 2
- 2 Stipe with well-differentiated, long and narrow cystidia, which are often attenuated towards the apex (awl-shaped or flabelliform), sometimes ending in a small, abrupt capitulum, sometimes slightly to distinctly thick-walled (setiform) **Key two**
- 2* Stipe without such cystidia, but very often with well-differentiated caulocystidia 3
- 3 Spores (sub-)globose to broadly ellipsoid, pip-shaped or subamygdaliform, $Q < 2$ **Key three**
- 3* Spores oblong to cylindrical or bacilliform, $Q > 2$ **Key four**



Fig. 1: Characters of *Hemimycena*. **a-f:** habit-types. **a:** mycenoid with ascending lamellae; **b:** collybioid, *Camarophyllus*-type; **c:** omphalioid with well-developed lamellae; **d-e:** omphalioid with reduced, vein-like lamellae; **f:** omphalioid without lamellae. **g-i:** spore types. **g:** (sub-)globose; **h:** limoniform; **i:** elongate; **j:** diverticulate hypha; **k:** setiform cystidium; **l:** capitate cystidium; **m:** capitate cystidium with spirally twisted stalk; **n:** awl-shaped cystidium; **o:** utriform cystidium with mucose cap

Key one

- 1 Spores subglobose **3. *H. rickenii*** (p. xx)
- 1* Spores different **2**
- 2 Lamellae very crowded, L = 29–40, l = 2–7, pileipellis a trichoderm of subcylindrical to fusiform pileocystidia **2. *H. cucullata*** (p. xx)
- 2* Lamellae fewer in number; pileocystidia rounded subcapitate to capitate **3**
- 3 Clamp-connections absent **3. *H. gypsella*** (p. xx)
- 3* Clamp-connections present **4**
- 4 Basidiomata yellowish cream; pileipellis without or with very poorly developed diverticulae; with production of blastoconidia on the surface of pileus and stipe; so far only known from Mediterranean *Cistus*-vegetation **5. *H. conidiogena*** (p. xx)
- 4* Basidiomata purely white, or at most with slight yellowish tinge at centre of pileus; hyphae of pileipellis usually distinctly diverticulate; no formation of blastoconidia on the surface of pileus and stipe; in other habitats **5**
- 5 Spores 9.0–13 (15) × 3.0–4.0 (5.0) µm (2-spored, **var. *lactea***) or (7.5) 9.0–11 (12) × 3.0–5.0 µm (4-spored, **var. *tetraspora***); pleurocystidia absent, or sparsely present only close to the lamella edge; stipe with basal hairs **1. *H. lactea*** (p. xx)
(if carpophores very small, basidia only up to 18 × 3.0–5.0 µm, and cheilocystidia only 10–15 × 3.5–4.5 µm, than **var. *tetraspora* f. *minor***)
- 5* Spores 6.0–8.0 × 2.5–3.5 µm; pleurocystidia abundant, 30–60 µm long; cheilocystidia rare or absent; stipe without basal hairs **4. *H. pseudolactea*** (p. xx)

Key two

- 1 Basidia 2-spored; clampless **2**
- 1* Basidia 4-spored, clamped or not or 2-spored and clamped, or mixed 2–4 spored basidia present than together with 4-spored ones **and** with the neck of cystidia spirally twisted) **4**
- 2 Pileocystidia absent; spores 9.0–13 × 4.2–6.5 (7.2) µm **15. *H. crispuloides*** (p. xx)
- 2* Pileocystidia present; spores larger, 11–16 (19) × 3.5–5.0 µm **3**
- 3 Pileocystidia setiform, very long (up to 100 × 20–30 µm); lamellae strongly reduced to absent; caulocystidia setiform **16. *H. subtilis*** (p. xx)
- 3* Pileocystidia thin-walled, subfusiform, sublageniform, cylindrical; lamellae present in form of a few vein-like structures, not reaching the margin of the pileus; caulocystidia digitate, subclavate, lageniform, awl-shaped, often with mucous cap **18. *H. tatrensis*** (p. xx)
- 4 On dying fronds of *Symphytum officinale* **20. *H. candida*** (p. xx)
- 4* On different substrate **5**
- 5 Pileocystidia absent, or with only few, scattered, short (–30 µm) pileocystidia **6**
- 5* Pileus with conspicuous pileocystidia, which can be awl-shaped, setiform or with capitate apex **8**
- 6 Caulocystidia flabelliform, ending in a long, threadlike, 1–2 µm wide appendage, thin-walled **23. *H. substellata*** (p. xx)
- 6* Caulocystidia not flabelliform, but awl-shaped or setiform **7**
- 7 Pileus 8–12 mm broad, not purely white, but with grey tinge; lamellae crowded, up to 20 entire lamellae reaching the margin of the pileus; caulocystidia slightly setiform; spores 5.5–7.0 × 1.5–4.0 µm; broadly ellipsoid **24. *H. cryptomeriae*** (p. xx)

- 7* Pileus 2–10 mm, purely white; lamellae reduced, not reaching the margin of the pileus; caulocystidia distinctly setiform; spores $8.0\text{--}11.5 \times (3.5) 4.0\text{--}5.5 \mu\text{m}$; ellipsoid to oblong **14. *H. pseudocrispula*** (p. xx)
- 8 Pileocystidia distinctly capitate, sometimes with neck of cystidia spirally twisted **9**
- 8* Pileocystidia not capitate, sometimes subcapitate, but never with spirally twisted neck . . . **13**
- 9 Pileo- and caulocystidia with a long neck, distinctly and abruptly capitate **10**
- 9* Pileo- and caulocystidia with a rather short neck, capitate or not; cheilocystidia absent; lamellae strongly reduced, never reaching the margin of the pileus, practically absent ***H. nebulophilum*** (not found in Europe till now; p. xx)
- 10 Lamellae well-developed, reaching the margin of the pileus **11**
- 10* Lamellae reduced, vein-like, not reaching the margin of the pileus, or absent **12**
- 11 Spores $6.5\text{--}9.0 \times 4.0\text{--}5.5 (6.0) \mu\text{m}$, limoniform or broadly amygdaliform; neck of cystidia not spirally twisted **5. *H. cephalotricha*** (p. xx)
- 11* Spores $(8.5) 9.0\text{--}11 \times 2.5\text{--}4.5 \mu\text{m}$, narrowly fusiform or cylindrical; neck of cystidia spirally twisted **19. *H. tortuosa*** (p. xx)
- 12 Cheilocystidia absent **12c. *H. mauretana* var. *microcephala*** (p. xx)
- 12* Cheilocystidia abundant, lageniform **12b. *H. mauretana* var. *cystidiata*** (p. xx)
- 13 Lamellae well developed, usually reaching the margin of the pileus **14**
- 13* Lamellae reduced, vein-like, never reaching the margin of the pileus **15**
- 14 Caulocystidia $15\text{--}65 \times 2.5\text{--}7.0 \mu\text{m}$, cylindrical, clavate, sublageniform or awl-shaped, often branched or irregular (especially at base), slightly thick-walled, sometimes with a mucronate cap; spores (9) $10\text{--}14.5 (15) \mu\text{m}$ long **34. *H. subimmaculata*** (p. xx)
- 14* Caulocystidia setiform, (16) $25\text{--}78 \times 3.5\text{--}8.0 (10.0) \mu\text{m}$, awl-shaped, usually gradually tapering towards an acute, rarely obtuse apex, often irregularly shaped, with hyaline, slightly thickened wall; spores (7.5) $8\text{--}11.5 (12) \mu\text{m}$ long **17. *H. angustispora*** (p. xx)
- 15 Cheilocystidia present **12b. *H. mauretana* var. *cystidiata*** (p. xx)
- 15* Cheilocystidia absent **16**
- 16 Spores $4.0\text{--}5.5 \mu\text{m}$ broad, ellipsoid, subamygdaliform; pileo- and caulocystidia setoid to at least slightly thick-walled **17**
- 16* Spores $3.0\text{--}3.5 (4.0) \mu\text{m}$ broad, cylindrical to bacilliform; pileo- and caulocystidia never setoid or maximally slightly thick-walled **12a. *H. mauretana* var. *mauretana*** (p. xx)
- 17 Basidia 2-spored **13a. *H. crispula* var. *crispula*** (p. xx)
- 17* Basidia 4-spored **13b. *H. crispula* var. *tetraspora*** (p. xx)

Key three

- 1 Spores limoniform or amygdaliform and cystidia on pileus, stipe and lamellae (sub)capitate **5. *H. cephalotricha*** (p. xx)
- 1* Spores different or, if limoniform, then cystidia never (sub)capitate **2**
- 2 Carpophores reminiscent a small species of *Camarophyllus* with distant, thickened, triangular lamellae; pileus often not purely white, but pale grey, brown or yellow tinges **3**
- 2* Carpophores different, purely white **7**
- 3 Clamp-connections absent; basidia 2-spored; spores $7.5\text{--}9.0 \times 5.0\text{--}6.0 \mu\text{m}$, amygdaliform or oblong; cheilocystidia lageniform to tibiiform **10. *H. juncicola*** (p. xx)
- 3* Clamp-connections present; basidia 4-spored; spores slightly narrower (up to $5 \mu\text{m}$); cheilocystidia clavate to fusoid, rarely subcylindrical **4**

- 4 Pileus uniformly greyish white or ochre-yellow to ochre-brown; stipe macroscopically more or less glabrous or pubescent; spores (5.5) 7.0–11 × (3.0) 3.5–6.0 μm; cheilocystidia sparse or absent **5**
- 4* Pileus often with conspicuously darker grey-brown central spot; stipe pruinose; spores (5.5) 6.0–8.5 × 3.0–4.5 μm, ellipsoid to oblong; cheilocystidia commonly present, clavate with slender stipe or somewhat irregular, coralloid **9. *H. sordida*** (p. xx)
- 5 Pileus ochre-yellow to ochre-brown; associated with *Cirsium spinosissimum* in alpine and Arctic habitats **6**
- 5* Pileus with grey tinges or with grey-brown centre; in grasslands on clay or on calcareous soil **8. *H. mairei*** (p. xx)
- 6 Basidia 4-spored; pleurocystidia present and abundant **11a. *H. ochrogaleata* var. *ochrogaleata*** (p. xx)
- 6* Basidia 2-spored; pleurocystidia absent or rare, scattered **11b. *H. ochrogaleata* var. *paucicystidiata*** (p. xx)
- 7 Spores small and narrow, 5.0–7.5 × 2.5–4.0 μm **8**
- 7* Spores larger and/or broader (× 4.5–6.5 μm) **9**
- 8 Basidiocarps small, purely white (pileus 1.5–5.0 mm; stipe up to 25 mm long; 5–13 lamellae) caulocystidia with rather broad, inflated basal part and long, filiform, sometimes forked neck; cheilocystidia absent **23. *H. substellata*** (p. xx)
- 8* Basidiocarps larger, pileus tinged grey (pileus 8–13 mm, stipe 15–45 mm long, up to 20 lamellae); caulocystidia flexuous-subcylindrical; cheilocystidia present . **24. *H. cryptomeriae*** (p. xx)
- 9 Spores 6.0–7.5 (8.0) × 5.0–6.5 μm, globose to subglobose; lamellae few, reduced, vein-like, not (always) reaching the margin of the pileus **22. *H. subglobispora*** (p. xx)
- 9* Spores larger, subglobose to ellipsoid; lamellae well-developed, L = 15–30 **10**
- 10 Smell none; pileipellis a cutis with sparse diverticulae bearing numerous subcylindrical pileocystidia, 30–60 × 3.0–7.0 μm; cheilocystidia broadly clavate to sphaeropedunculate **7. *H. rickenii*** (p. xx)
- 10* Smell nitrous; pileipellis a cutis of diverticulate hyphae without pileocystidia; cheilocystidia lageniform or fusiform, rarely subcapitate **11**
- 11 Basidia 4-spored, clamped **12**
- 11* Basidia 2-spored, clampless **21b. *H. delectabilis* f. *bispora*** (p. xx)
- 12 Pleurocystidia absent **21a. *H. delectabilis* var. *delectabilis*** (p. xx)
- 12* Pleurocystidia present **21c. *H. delectabilis* var. *paucicystidiata*** (p. xx)

Key four

- 1 Pileipellis a cutis of smooth or weakly diverticulate hyphae; stipe glabrous; pileo-, caulo- and hymenial cystidia absent **25. *H. ignobilis*** (p. xx)
- 1* Pileipellis a cutis of diverticulate hyphae; stipe pubescent to distinctly hairy, rarely glabrous but at least either pileo- or caulo- or hymenial cystidia present **2**
- 2 Lamellae reduced, often vein-like and not reaching the margin of the pileus **3**
- 2* Lamellae well developed, usually reaching the margin of the pileus **7**
- 3 Stipitipellis of smooth hyphae **4**
- 3* Stipitipellis of diverticulate hyphae **6**

- 4 Stipe base without radiating hairs; cheilocystidia present, irregular, coralloid *H. crispata* ss. **Senn-Irlet** (see notes in 26, *H. crispata*)
- 4* Stipe base with radiating hairs; cheilocystidia absent **5**
- 5 Spores 7.5–9.5 (10.0) × 3.0–4.0 μm; caulocystidia few, 19–22 × 4.5–6.0 μm, simple, cylindrical- flexuous **29. H. pseudogracilis** (p. xx)
- 5* Spores 8.0–12 × 2.5–4.5 μm; caulocystidia single or in clusters, 10–40 × 2.0–6.0 μm, subcylindrical, often flexuous **27. H. epichloe** (p. xx)
- 6 Clamp-connections present; spores 7.0–10.0 × 3.0–4.0 μm; smell nitrous **35. H. nitriolens** (p. xx)
- 6* Clamp-connections absent; spores 10–12 × 3.0–4.0 μm; smell none **33. H. pseudogibba** (p. xxx)
- 7 Carpophores omphalinoid or mycenoid, never purely white, but tinged yellow, ochre, grey or greyish brown, reminiscent a species of *Camarophyllus* **8**
- 7* Carpophores different, if omphalinoid, then purely white **10**
- 8 Pileus ochre-yellow to ochre-brown; associated with *Cirsium spinosissimum* in alpine and Arctic habitats **9**
- 8* Pileus with grey tinges or with grey-brown centre; in grasslands on clay or on calcareous soil **8. H. mairei** (p. xx)
- 9 Basidia 4-spored; pleurocystidia present and abundant **11a. H. ochrogaleata var. ochrogaleata** (p. xx)
- 9* Basidia 2-spored; pleurocystidia absent or rare, scattered **11b. H. ochrogaleata var. paucicystidiata** (p. xx)
- 10 Basidia exclusively 2-spored, clampless **11**
- 10* Basidia 4-spored (rarely mixed with 2-spored), clamped, rarely clampless **12**
- 11 Spores 8.0–9.5 (11) × 2.5–3.5 μm; pileocystidia absent **32. H. pseudocrispata** (p. xx)
- 11* Spores 10.5–12 (13) × 4.0–5.2 μm; pileocystidia abundant, 20–35 × 5.0–10.0 μm, adpressed to erect, clavate, subfusoid, subcylindrical, irregular to coralloid, often with projections **30. H. pithyophila** (p. xx)
- 12 Spores 5.0–7.5 × 2.7–4.0 μm (compare *H. substellata* and *H. cryptomeriae*, key 4)
- 12* Spores larger **13**
- 13 On decaying corms of *Symphytum officinale* and cultivated *Symphytum* spp ; lamellae L = 17–22; spores 8.0–10.5 (11) × (3.1) 4.0–5.0 μm; basidia 24–27 × 6.0–9.0 (10.0) μm; cheilocystidia (19) 24–31 × 3.0–10 μm, awl-form to (sub)lageniform; pileocystidia present; stipitipellis hyphae smooth **20. H. candida** (p. xx)
- 13 Habitat and basidiocarps different **14**
- 14 Spores very narrow, Q = about 3–4 **15**
- 14* Spores broader, Q < 3 **16**
- 15 Pileocystidia rather broad, clavate-diverticulate, 25–40 × 6.0–12 μm **31. H. persimilis** (p. xx)
- 15* Pileocystidia slender, (sub)lageniform to subutriform, 10–19 × 2.0–4.0 μm **28. H. gracilis** (p. xx)
- 16 True pileocystidia absent **26. H. crispata** (p. xx)
- 16* Pileocystidia present **17**
- 17 Stipe with thin-walled, attenuate caulocystidia with a mucronate cap around apex; basidia clamped **34. H. subimmaculata** (p. xx)
- 17* Stipe with simple, subcylindrical caulocystidia . . **30. H. pithyophila, 4-spored form** (p. xx)

HEMIMYCENA* Section *HEMIMYCENA**Type-species:** *Hemimycena lactea* (Pers.: Fr.) Singer

Lamellae well-developed, crowded, arcuate to segmentiform, rarely ventricose, ascending to almost free, rarely adnate, never distinctly decurrent; pileipellis made up of diverticulate hyphae with numerous fusiform to clavate, often capitate pileocystidia which give it the appearance of a trichoderm or almost a hymeniderm.

1. *Hemimycena lactea* (Pers.: Fr.) Singer**Pl. 1, Fig. 2**

Agaricus lacteus Pers., Synopsis: 394. 1801; *Agaricus lacteus* Pers.: Fr. Syst. Mycol. 1:152. 1821; *Mycena lactea* (Pers.: Fr.) P. Kumm., Führer Pilzk.: 110. 1871; *Hemimycena lactea* (Pers.: Fr.) Singer, Ann. mycol. 41: 121. 1943; *Marasmiellus lacteus* (Pers.: Fr.) Ito, Mycol. Fl. Japan 2: 185. 1959; *Trogia lactea* (Pers.: Fr.) Corner, Cantharell. Fungi: 221. 1966. – *Mycena lactella* P.D. Orton, Trans. Brit. Mycol. Soc. 43: 306. 1960; *Hemimycena lactella* (P.D. Orton) Watling, Edinb. J. Bot. 55(1): 157. 1998; *Hemimycena lactea* (Pers.: Fr.) Singer var. *lactea* f. *lactella* (P.D. Orton) Courtec., Doc. mycol. 16(62): 26. 1986. – *Agaricus delicatellus* Peck, Annual Rep. N. Y. State Mus. 30: 39. 1878; *Collybia delicatella* (Peck) Sacc., Syll. fung. 5: 224. 1887; *Gymnopus delicatellus* (Peck) Murrill, North Amer. Fl. 9: 354. 1916; *Mycena delicatella* (Peck) A.H. Sm., North Amer. Species Mycena: 161. 1947; *Marasmiellus delicatellus* (Peck) Singer, Lilloa 22(1949): 298. 1951; *Hemimycena delicatella* (Peck) Singer, Agar. Mod. Taxon., 2 Ed.: 369. 1962; *Helotium delicatellum* (Peck) Redhead, Can. J. Bot. 60: 2004. 1982. – *Mycena crystallina* Peck, Annual Rep. N. Y. State Mus. 41: 63. 1888; *Prunulus crystallinus* (Peck) Murrill, North Amer. Fl. 9: 322. 1916.

Misapplied name: *Mycena lactea* (Pers.: Fr.) P. Kumm., Führer Pilzk.: 110. 1871 s. Bres., Kühner, Pearson, non Ricken 1915; non *Helotium lacteum* (Cooke & Phill.) Masee, nec *H. lacteum* Cooke, nec *H. lacteum* Ellis & Everh.

1a. *Hemimycena lactea* (Pers.: Fr.) Singer var. *lactea*

Type specimen: not preserved. Neotype: United Kingdom, Lancashire, Freshfield, 13 Nov. 1958 leg. P. D. Orton 1634 [K(M) 78940, holotype of *Mycena lactella*].

Selected icones: J. Lange, Fl. agar. dan.: 53C. 1936 (as var. *pythia*); Courtecuisse, Mushrooms Britain and Europe: 112. 1999; Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 104. 1985; Michael, Hennig & Kreisel, Handb. Pilzfr., 2. Ed., 3: pl. 121. 1977 (probably 2- and 4-spored variety together); Moser & Jülich, Farbatl. Basidiomyc., Hemimycena 1. 1992.

Selected literature: Cejp, Sp. Přírod. Fak. Karlovy Univ. 98: 124-125. 1930 (as *Mycena lactea*); Courtecuisse, Mushrooms Britain and Europe: 667. 1999; Elborne & al., Nordic Macromycetes 2: 125. 1992; Gröger, Boletus 18(3): 97. 1994 (as *H. delicatella*); Kühner, Genre Mycena: 628-629. 1938 (as *Mycena lactea* forme bisporique); Kühner & Valla, Trav. Lab. Jaysinia 4: 27-29. 1972 (as *Mycena lactea* var. *lactea*). 1972; Malençon & Bertault, Trav. Inst. Sci. Cherif. Fac. Sci. Rabat 33 (Champ. sup. Maroc 2): 270-272. 1975 (as *Mycena lactea* forme bisporique); Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 87-88. 1985; Orton, Trans. Brit. Mycol. Soc. 43: 306-307. 1960 (as *Mycena lactella*); Romagnesi, Bull. Soc. mycol. Fr. 108: 4. 1992 (as *Mycena lactea*); Watling & Turnbull, Brit. Fung. Fl. 8: 128 (as *H. lactea*) and 128-129 (as *H. lactella*). 1998.

Description: Pileus 3–14 mm broad, conical, campanulate or hemispherical, with or without distinct, small umbo, with involute to inflexed margin when young, expanding to irregularly plano-convex or flattened, often with slight central depression, with straight to reflexed, sometimes undulating margin when old, hygrophanous, opaque slightly translucently striate up to centre when moist, sometimes finely radially striate to rugulose, with finely crenulate, often slightly grooved or uneven margin; white at first, later on often with very pale yellowish tinge at centre when old, very finely tomentose



Pl. 1: *Hemimycena lactea*, photo J. PETERSEN

or pruinose (lens!), often appearing almost glabrous to the naked eye. **Lamellae** moderately distant to crowded, $L = 11\text{--}20$ (23), $l = 1\text{--}3$, well developed, reaching the pileus margin, ascending, broadly adnate or emarginate with slightly decurrent tooth, sometimes slightly undulate, sometimes dorsally intervenose, white, sometimes with yellow reflex, with concolorous, finely pubescent edge. **Stipe** (5) $10\text{--}35 \times 0.3\text{--}1.5$ mm, cylindrical, straight or curved, slightly broadened above, cylindrical or slightly broadened at base, white, hyaline-translucent, entirely white pubescent, with white basal rhizoids. **Context** concolorous. **Smell and taste** indistinct to slightly fruity.

Spores $9.0\text{--}13$ (15) $\times 3.0\text{--}4.0$ (5.0) μm , $E = 2.5\text{--}3.8$, $Q = 2.8\text{--}3.1$, narrowly (sub)fusoid, ellipsoid-fusoid, sublacrymiform, thin-walled, smooth. **Basidia** $19\text{--}25 \times 5.0\text{--}8.0$ μm , 2-spored, clavate to subutriform. **Basidioles** $12\text{--}28 \times 3.0\text{--}8.5$ μm , cylindrical, clavate. **Hymenial cystidia** present on lamellar edge and alongside it, $21\text{--}28$ (33) $\times 5.5\text{--}7.0$ μm , lageniform to tibiiform, fusiform to subutriform, usually with slightly to distinctly delimited apical capitulum, thin to slightly thick-walled. **Trama hyphae** made up of cylindrical to fusoid elements, \pm thin-walled, up to 15 μm wide. **Pileipellis** a cutis, made up of \pm thin-walled, cylindrical, 2.5–8.0 μm wide, diverticulate hyphae; diverticulae up to 7.0×2.5 μm , \pm digitate, obtuse, often bearing irregular cystidioid elements $12.5\text{--}25 \times 2.0\text{--}4.0$ μm , ending in a small capitulum. **Stipitipellis** a cutis, of parallel, cylindrical, slightly thick-walled, up to 6 μm wide, diverticulate hyphae; diverticulae digitate, obtuse, often irregular, up to 10×1.5 μm . **Caulocystidia** $12\text{--}32$ (46) \times (2.0) $3.0\text{--}4.0$ μm , lageniform, cylindrical, (sub) clavate, simple, often irregular, branched or coralloid, slightly thick-walled. **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Carpophores single or in groups; on decaying wood remnants and on needles and debris of conifers (*Abies alba*, *Cupressus*, *Juniperus communis*, *J. phoenicea*, *Picea abies*, *Pinus pinaster*, *P. halepensis*, *P. laricio*, *P. mugo*, *P. sylvestris*, *Pinus* sp., *Thuja occidentalis*). In coniferous forests as well as in mixed forests with conifers.

Distribution: Widely distributed in Europe, known from Belgium, Britain (WATLING & TURNBULL 1998), Czech Republic, Denmark, Finland (ELBORNE et al. 1992), France (KÜHNER 1938; KÜHNER & VALLA 1972), Germany (BRESINSKY & STANGL 1974; KREISEL 1987), Italy, Norway (ELBORNE et al. 1992), Slovakia, Spain (incl. Mallorca, e.g. HONRUBIA & LLIMONA 1983; ROCABRUNA et al. 1994; PÉREZ & VIDAL 1994; ZEA & ORTEGA 1991), Sweden, Switzerland (BREITENBACH & KRÄNZLIN 1991); it seems to be rather common especially in southern Europe. Outside of Europe, it has been collected in the U.S.A. (SMITH 1947) and Morocco (MALENÇON & BERTAULT 1975) till now.

Phenology: September to December (January).

Collections examined: **BELGIUM:** prov. Brabant, Brussel, Boitsfort, Forêt de Soignes, 16 Dec. 1985 (BR 2275-44). – Brussel, Boitsfort, Parc du Glaverbel, 1 Nov. 1987 leg. G. M. Fodor (BR 1469-14). – ditto, 18 Dec. 1988 leg. G. M. Fodor (BR 4734-78). – Chaussée de la Hulpe, Glaverbel, 2 Dec. 1990 leg. G. M. Fodor (BR 7235-57). – prov. Antwerpen, Edegem, 16 Nov. 1991 leg. H. De Meulder 6542 (BR 15384-58). – Herselt, Langdonken, 25 Nov. 1995 leg. H. De Meulder 10907 (BR 37798-65). – prov. Namur, Nismes, 2 Oct. 1993 leg. H. De Meulder 9405 (BR 22294-81). – Ethe, 26 Sept. 1985 leg. P.B. Jansen 85.237 (L). – Dourbes, 3 Oct. 1984 leg. P.B. Jansen 84-231 (L). – Rochefort, Bois de Resteigne, 7 Oct. 1977 and 5 Oct. 1978 leg. P.B. Jansen (L). – **CROATIA:** Žumberak Mts., Smerovišće, 25 Oct. 1970 leg. M. Torčić (CNF 6/15). – prov. Luxembourg, St. Hubert, 4 Oct. 1977, E.J.M. Arnolds 3902 (L). – **CZECH REPUBLIC:** Strašice, 22 Aug. 1925 leg. K. Kavina (PRM 713483). – Svojanov near Polička, 21 June 1949 leg. J. Kubička (PRM 839596). – Boubová near Karlův Týn, 28 Sept. 1948 leg. J. Kubička (PRM 839579). – Kokořínsko, Kokořínský důl, 9 Oct. 1996 leg. V. Antonín 96.208 (BRNM). – Švařec, 28 Oct. 1998 leg. Z. Bieberová (BRNOP). – Křtiny, Arboretum, 27 Oct. 1982 leg. A. Vágner (BRNM). – **DENMARK:** Jylland, Højkol between Salten and Ry Station, 7 Oct. 1966 leg. J.J. Barkman 8316 (L). – Frederikshavn, 10 Oct. 1972 leg. J. J. Barkman 9585 (L). – **FRANCE:** dept. Ain, Colliord near Nantes, 19 Aug. 1957 leg. H.S.C. Huijsman (L). – dept. Doubs, Pougres, Perche, 21 July 1956 leg. H.S.C. Huijsman (L). – Forêt de Compiègne (Oise), 22 Oct. 1953 leg. H. Romagnesi 53.371 (PC, herb. Romagnesi). – ditto, Mont St. Pierre, 27 Oct. 1957 leg. H. Romagnesi 57.306 (PC, herb. Romagnesi). – Sens (Yonne), Oct. 1940 leg. H. Romagnesi (PC, herb. Romagnesi). – Caen (Calvados), Jardin des Plantes, 23 Nov. 1941 leg. Meslin (PC, herb. Romagnesi). – **GERMANY:** Rheinland-Pfalz, Eifel, Gerolstein, Freiendorf, 20 Sept. 1980 leg. P.D. Jansen (L); Nordrhein-Westfalen, Zonser Heide, 22 Nov. 1987, T. Münzmay 132-87 (Herb. Münzmay); ditto, Chorbusch, 1 Nov. 1987, T. Münzmay 114-87 (Herb. Münzmay); Kölner Bucht, Dormagen, 26 Nov. 1999, T. Münzmay 60.99 (Herb. Münzmay). – **ITALY:** Tuscany, San Lorenzo a Merse, 2 Dec. 1998 leg. V. Antonín 98.222 (BRNM). – Tuscany, Castellina in Chianti, Cupresseta di S. Agnese, 29 Nov. 1998 leg. V. Antonín 98.206 (BRNM). – Tuscany, Grosseto prov., Capalbio, Lago di Burano, 5 Dec. 1988 leg. C. Barluzzi and C. Perini (SIENA 2332). – ditto, 29 Nov. 1989 leg. C. Barluzzi and C. Perini (SIENA 2333). – ditto, 11 Nov. 1989 leg. C. Barluzzi and C. Perini (SIENA 2334). – ditto, 24 Jan. 1990 leg. C. Barluzzi and C. Perini (SIENA 2335). – ditto, 15 Jan. 1988 leg. C. Barluzzi and C. Perini (SIENA 2330). – Ravenna distr., Lido di Dante, 9 Nov. 2000 leg. V. Antonín 00.236 (BRNM). – **THE NETHERLANDS:** prov. Friesland, Terschelling, 24 Oct. 1981 leg. J. Schreurs (L). – prov. Gelderland, Winterswijk, Willinks Weust, 22 Oct. 1979 leg. B. de Vries (L). – ditto, 3 Oct. 1983 leg. J. Schreurs (L). – prov. Flevoland, Harderbos, 16 Oct. 1986 leg. G. van Zanen (L). – Roggebotzand, 7 Nov. 1987 leg. E.C. Vellinga 1270 (L). – N.O. Polder, Kuinderbos, 9 Oct. 1976 leg. P.B. Jansen 76-159 (L). – Het Spijk, 1 Nov. 1980 leg. J. Schreurs (L). – Kuinderbos, 16 Sept. 1979 leg. W. Gams (L). – Revebos, 1 June 1985 leg. G.J.M.G. Tjallingii-Beukers (L). – prov. Noord Holland, Schoorl, 17 Nov. 1990 leg. A.G. Becker 90-24 (L). – Overveen, Elswout, 29 Oct. 1964 and 3 Nov. 1964 leg. E. Kits van Waveren (L). – Santpoort, Duin en Kruidberg, 3 Nov. 1962 leg. E. Kits van Waveren (L). – Vogelenzang, A W Duinen, 16 Nov. 1961 leg. E. Kits van Waveren (L). – prov. Zuid Holland, Wassenaar, Meyendel, 30 Oct. 1951 leg. M.A. Donk (L). – Wassenaar, Wassnaarse slag, 18 Oct. 1978, C. Bas 7445 (L). – Noordwijk, 19 Dec. 1954 leg. C. Bas 742 (L). – prov. Noord Brabant, Eindhoven, de Wielewaal, 10 Oct. 1965 leg. E. Kits van Waveren (L). – prov. Zeeland, Terneuzen, Braakman, 20 July 1980 leg. A. de Meyer 155 (L). – Schouwen, Haamstede, 23 Oct. 1982 leg. C. Bas 8039 (L). – prov. Limburg, Wijlre, 11 Oct. 1968 leg. P.B. Jansen 68-139 (L). – **SWEDEN:** Västergötland, Göteborg, Botanic garden, 21 Sept. 1938 leg. T. Nathorst-Windahl 1258, in: Lundell & Nannfeldt, Fungi exsiccati suecici, No. 706 (PRM 713351). – Upland, G:la Upsala parish, Tunaberg, 22 Oct. 1934 leg. D. Lihnell and S. Lundell, in: Lundell & Nannfeldt, Fungi exsiccati suecici, No. 120 (PRM 713352). – Dalsland, Tisselskog parish, Dackelhögen/ Änäsebacken, 14 Sept. 1990 leg. T. Læssøe 3122 [K(M)15491]. – **SWITZERLAND:** Willisau, 17 Sept. 1984 leg. P.B. Jansen 84-342 (L). – Kanton Neuchâtel, Pré

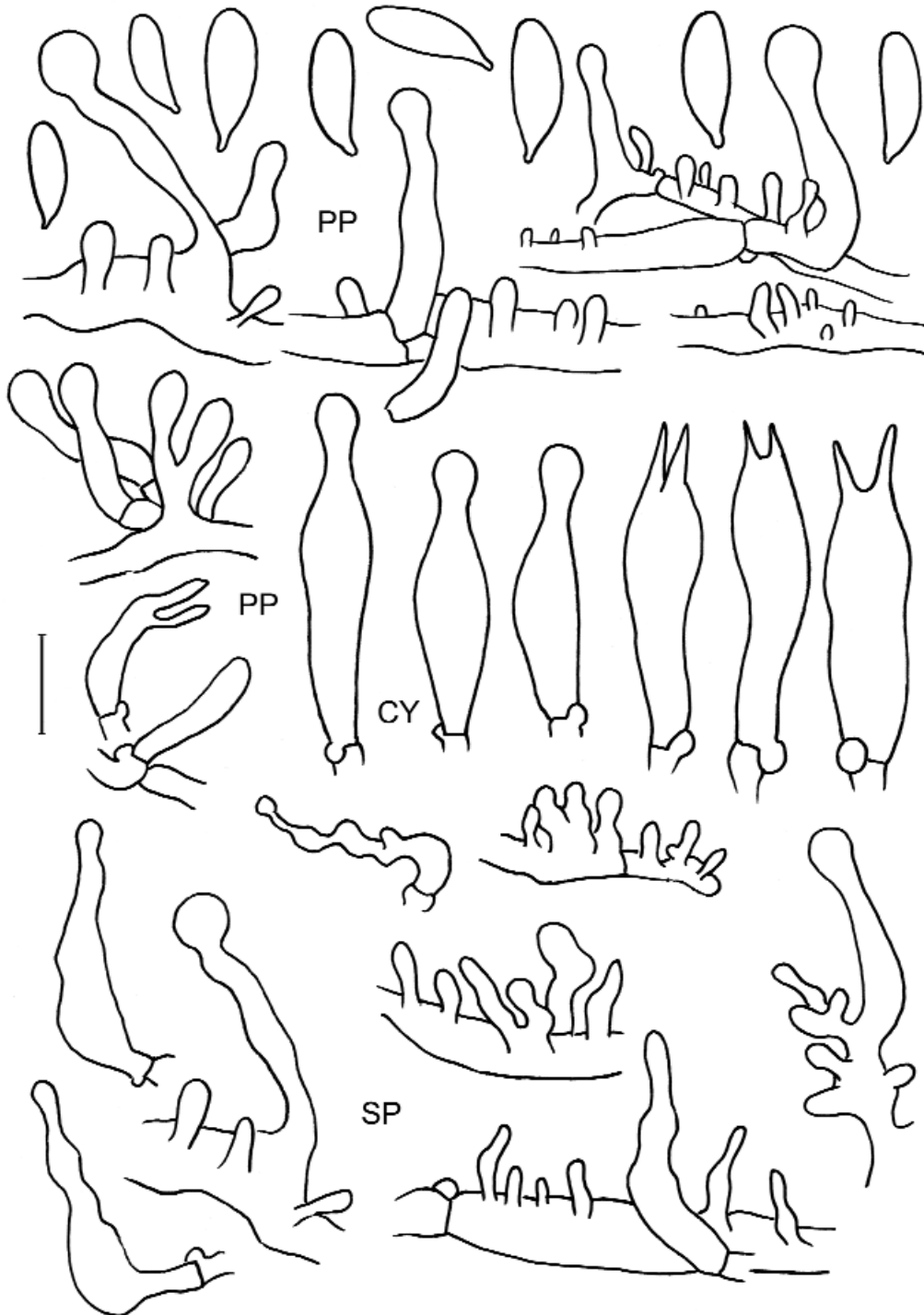


Fig. 2: *Hemimycena lactea*

de l'Arene, 17 & 21 Oct. 1965 leg. H.S.C. Huijsman (L). – **UNITED KINGDOM: ENGLAND:** Kent: Bedgebury Pinetum, 30 Oct. 1960 leg. D.A. Reid (L). – Lancashire, Freshfield, 13 Nov. 1958 leg. P. D. Orton 1634 [K(M) 78940, holotype of *Mycena lactella*]. – Surrey, Mickleham, The Scrubs, on needle debris of *Picea*, 22 Oct 1997 leg. N. W. Legon [K(M) 56638, as *H. lactella*]. – Somerset, 2-3 miles SW of Crewkerne, Wayford Wood, 23 Oct. 1977 leg. J. Keylock [K(M) 78938, as *H. lactella*]. – **U.S.A.:** North Greenbush, leg. C. H. Peck (NYS, holotype of *Agaricus delectabilis*). – Catskill Mts., Sept. 1887 leg. C. H. Peck (NYS, holotype of *Mycena crystallina*).

Notes: *Hemimycena lactea* var. *lactea* is characterised in having well-developed, ascending, broadly adnate-emarginate lamellae with decurrent tooth reaching the pileus margin, rhizoids at the base of the stipe base, rather large narrowly (sub)fusoid, ellipsoid-fusoid, sublacrymiform spores, rather small, 2-spored basidia, (sub)fusoid, subutriform, mostly capitate hymenial cystidia, a pileipellis and stipitipellis made up of diverticulate hyphae, presence of lageniform, cylindrical, (sub)clavate, often irregular, branched or coralloid caulocystidia, and the presence of clamp-connections.

The descriptions by KÜHNER (1938) and MALENÇON & BERTAULT (1975) agree well with our observations, except for the narrow basidia (4.5–5 µm). The latter authors give two descriptions, the second one differing from the typical *H. lactea* by having smaller spores (8–10 × 3–3.6 µm). WATLING & TURNBULL (1998) included both the 2- and 4-spored variety in one description, and mentioned the absence of pleurocystidia, as did ELBORNE et al. (1992) and BREITENBACH & KRÄNZLIN (1991).

KÜHNER & VALLA (1972) and ROMAGNESI (1992) describe much smaller carpophores (pileus 4–8 mm broad, stipe 6–15 × 0.5–1 mm) with acrid taste, having also smaller cystidia (17–25 × 4.5–5.5 µm); they did not record pleurocystidia, but noted that the cheilocystidia extended also on the sides of the lamellar not far from the edge. SMITH (1947), however, mentioned the presence of very abundant pleurocystidia and also described the presence of conspicuous resinaceous deposits over the head of pleuro- and cheilocystidia; which we did not observe in our collections. It might be possible that another taxon has been involved. CEJP (1930) described smaller spores (7–10 × 3–4 µm), larger cystidia (30–40 × 9–10 µm) and narrower basidia (20–25 × 4–5 µm).

According to KÜHNER & VALLA (1972) in their remarks on var. *tetraspora*, the descriptions by FRIES (1857) and BRESADOLA (1928) may represent a mixed interpretation of *H. lactea* and *H. pseudo-lactea* (size of spores and cystidia).

SMITH (1947) rejected the use of the epithet *lactea* because of some discrepancies in the descriptions by FRIES (1857, see above) and used the name *Mycena delicatella*, of which a good type collection was available. However, in this matter, we follow MAAS GEESTERANUS (1980b) and use the epithet *lactea*.

ORTON (1960) described a new species *Mycena lactella* that was supposed to be an analogous bispored taxon to *Mycena lactea* f. *minor* described by Kühner. COURTECUISSÉ (1986) followed this opinion. However, our type revision showed that this is not the case (discussion to f. *minor* see below). All microscopical features of the type of *Mycena lactella* fit very well with the typical *H. lactea* var. *lactea*. The small size of carpophores also fit well in the variability of that species. Therefore, we consider it a small form of *H. lactea* without any taxonomical value.

1ba. *Hemimycena lactea* (Pers.: Fr.) Singer var. *tetraspora* (Kühner & Valla) Courtec. f. *tetraspora*

Mycena lactea (Pers.: Fr.) P. Kumm. var. *tetraspora* Kühner & Valla, Trav. Lab. Jaysinia 4: 67. 1972; *Hemimycena lactea* (Pers.: Fr.) Singer var. *tetraspora* (Kühner & Valla) Courtec., Doc. mycol. 16(62): 24. 1986.

Type specimen: not existent. Type locality: France, Loire, Les Echarmeaux, 1 Oct. 1965, G. Valla 65-3.

Selected icones: Breitenbach & Kränzlin, Pilze Schweiz 3: pl. 217. 1991; Bresadola, Iconogr. mycol. 5: pl. 224³. 1928 (as *Mycena lactea*).

Selected literature: Breitenbach & Kränzlin, Pilze Schweiz 3: 194-195. 1991; Kühner, Genre Mycena: 626-627. 1938 (as *Mycena lactea* forme tétrasporique); Kühner & Valla, Trav. Lab. Jaysinia 4: 29-31, fig. 3. 1972; Malençon & Bertault, Trav. Inst. Sci. Cherif. Fac. Sci. Rabat 33 (Champ. sup. Maroc 2): 272-273. 1975 (as *Mycena lactea* forme tetrasporique); Romagnesi, Bull. Soc. mycol. Fr. 108: 4. 1992 (as *Mycena lactea* var. *tetraspora*).

Description: **Pileus** 2–9 mm broad, broadly conical, convex-conical to parabolic when young, broadly conical to almost applanate when old, with a low broad, obtuse central papilla, inflexed to slightly involute at margin, hygrophanous, almost entirely slightly translucently striate when moist, white, finely pruinose, almost smooth when dry. **Lamellae** distant, L = 16–20, l = (0) 1–2 (3), emarginate and adnexed by tooth, ± horizontal to slightly ventricose, sometimes slightly intervenose in old specimens, white, with concolorous, finely pubescent edge. **Stipe** (5) 8–20 (35) × 0.5–1 mm, cylindrical, slightly broadened at apex and at base, pubescent, with up to 3 mm long basal rhizoids, (translucently) white. **Context** white, with farinaceous **smell** (sometimes without any smell) and mild farinaceous **taste**.

Spores (7.5) 8.5–11.0 (12.0) × 3.0–5.0 μm, E = 1.9–2.8 (3.2), Q = 2.2–2.7, subfusoid, subellipsoid, sublacrymoid, thin-walled, smooth. **Basidia** 22–31 × 7.5–9.0 μm, 4-spored, (usually mixed with scattered 2-spored), clavate. **Basidioles** 13–27 × 3.0–7.0 μm, cylindrical to clavate. **Hymenial cystidia** present on lamellar edge and along it, (11) 14–30 (35) × (3.5) 4.5–6.0 μm, lageniform to subfusoid, often rostrate and capitate, often irregular, sometimes branched. **Hyphae of trama** ± thin-walled, up to 15 μm wide. **Pileipellis** a cutis, made up of ± thin-walled, cylindrical, 2.5–8.0 μm wide, densely diverticulate hyphae; diverticulae up to 7.0 × 2.5 μm, erect, ± digitate, often (sub)capitate, obtuse, often larger and irregular, appearing as pileocystidia, 10.0–25 (30) × 2.0–4.0 μm, cylindrical, capitate, often irregularly shaped. The total impression almost being that of the trichoderm. **Stipitipellis** a cutis, of parallel, cylindrical, slightly thick-walled, up to 5 μm wide hyphae. Caulocystidia 10–25 (45) × (1.5) 3.0–5.0 μm, cylindrical, sublageniform, often irregular to branched or subcoralloid, often rostrate and (sub)capitate, slightly thick-walled. **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Carpophores single, on decaying twigs, leaves and needles of conifers (*Juniperus oxycedrus*, *Picea*, *Pinus halepensis*, *P. nigra*, *P. sylvestris*) and rarely plants (*Cistus salvifolius*), once collected on *Fagus* leaves (Italy, WU17885).

Distribution: Widely distributed in Europe, known from Austria, the Czech Republic, France (KÜHNER 1938, KÜHNER & VALLA 1972), Italy, Slovakia, Switzerland (KÜHNER 1938). Outside of Europe, it is described from Morocco (MALENÇON & BERTAULT 1975).

Phenology: September to December.

Collections examined: **AUSTRIA:** Niederösterreich, Groß-Siegharts, Blumau/Wild, 22 Sept. 1990 leg. A. Hausknecht (WU 8894). – Niederösterreich, Marchegg, Schönfeld, 3 Nov. 1992 leg. K. Mader et al. (WU 11237). – Niederösterreich, Marchegg, Sandberge, 3 Nov. 1992 leg. I. Krisai-Greilhuber (WU 19353). – Niederösterreich, Bad Fischau, Kürassier, 16 Oct. 1983 leg. A. Hausknecht (WU 2889). – **CZECH REPUBLIC:** Karlštejn, 2 Nov. 1944 leg. V. Vacek (PRM 713480). – ditto, Oct. 1957 leg. M. Svrček (PRM 619543). – Koda neas Srbsko, 4 Nov. 1944 leg. M. V. Svrček 203/44 (PRM 713481). – Roblín, 10 Dec. 1944 leg. Landkammer (PRM 713477). – Radotín, 5 Nov. 1950 leg. V. Vacek (PRM 713479). – Vitochov, 3 June 1941 leg. F. Šmarda (BRNM 326999). – Jamolice, Hraniční potok-valley, 7 Oct. 1993 leg. V. Antonín 93.308 (BRNM 576725). – Hrubšice, Nad řekami, 22 Nov. 1994 leg. V. Antonín 94.311 and Z. Bieberová (BRNM 599242). – **ITALY:** Tuscany, Casciano di Murlo, 1 Dec. 1998 leg. V. Antonín 98.213 and 214 (BRNM). – Tuscany, Bagno di Petriolo, 2 Dec. 1998 leg. V. Antonín 98.224 (BRNM). – Foggia, Foresta Umbra, 15 Nov. 1997 leg. A. Hausknecht (WU 17885). – **SLOVAKIA:** Vysoké Tatry Mts., Važec, 16 Sept. 1995 leg. V. Antonín 95.171 (BRNM). – Velká Fatra Mts., Lubochňa, alluvium of the Lubochňanka river, 30 Aug. 2002 leg. V. Antonín 02.109 (BRNM).

Notes: *Hemimycena lactea* var. *tetraspora* differs from var. *lactea* in having slightly smaller spores, and 4-spored, less frequently 2-spored, slightly larger basidia. From our studies it became apparent, that purely 4-spored specimens did not exist and always some 2-spored basidia were found.

The original description (KÜHNER & VALLA 1972) gives a larger size of the pileus (6–17 mm broad), absence of smell, presence of an acrid taste, slightly smaller spores [(6)7–10 × 3–4 µm], only 4-spored, smaller basidia [20–24 (36) × 5–6 µm], and the presence of rare and very long (e.g. 100 × 3 µm) pileocystidioid elements. KÜHNER (1938) in his monograph described narrower basidia (× 5.5–6.0 µm) and smaller spores [7–10 × (2) 2.5–3 (3.7) µm]. MALENÇON & BERTAULT (1975) mentioned smaller basidia (22–26 × 5.5–6.5 µm) and smaller spores 6.8–7.5 × 3.2–3.8 µm; which size fit more with *H. pseudolactea*. However, the sizes of cystidia (as well as of similar and only scattered pleurocystidia) agree with var. *H. lactea* var. *tetraspora*.

A collection from a locality near Važec, Slovakia, was identical with *H. lactea* in all features, except for the slightly narrower spores [8.5–11 × 2.3–3.3 µm, E = 2.9–3.8, Q = 3.4].

1bb. *Hemimycena lactea* (Pers.: Fr.) Singer var. *tetraspora* (Kühner & Valla) Courtec. f. *minor* (Kühner) Courtec.

Mycena lactea (Pers.: Fr.) P. Kumm. f. *minor* Kühner, Genre *Mycena*: 687. 1938; *Hemimycena lactea* (Pers.: Fr.) Singer var. *tetraspora* (Kühner & Valla) Courtec. f. *minor* (Kühner) Courtec., Doc. mycol. 16(62): 24. 1986.

Type specimen: not preserved. Type-locality: France, Charente-Inférieure, Royan, La Grande Côte.

Selected literature: Courtecuisse, Doc. mycol. 16(62): 24–25. 1986; Kühner, Genre *Mycena*: 629–631. 1938; Kühner & Romagnesi, Fl. Anal. Champ. Supér.: 119. 1953.

Description: KÜHNER (1938) described f. *minor* as growing on needles of *Pinus maritima*. It differs from var. *tetraspora* in having smaller pileus, more distant lamellae (L = 12–14), shorter stipe (6–12 × 0.3–0.6 mm), smaller spores (6.7–8.7 × 1.7–3.0 µm), smaller basidia (17–18 × 4–4.5 µm), and smaller cystidia (10–15 × 3.5–4.5 µm). COURTECUISSÉ (1986) mentioned 8.3–10 × 2.4–3.3 µm large spores and very small basidia (up to 16 × 3–5 µm). Comparing the above-mentioned features, the difference in both taxa is especially based on the size of basidia and cheilocystidia.

Ecology: Carpophores gregarious or single, on decaying needles and detrit of pines (*Pinus halepensis*, *Pinus* sp.).

Distribution: So far only found in France and Switzerland (KÜHNER 1938, COURTECUISSÉ 1986) till now.

Phenology: September to November.

Notes: This form should differ from the typical forma *tetraspora* by having distinctly smaller basidia and cheilocystidia. Moreover, it has constantly smaller carpophores; their size, however, fits into variability of var. *tetraspora* f. *tetraspora*.



Pl. 2: *Hemimycena cucullata*, normal form, photo K.F. REINWALD

2. *Hemimycena cucullata* (Pers.: Fr.) Singer

Pl. 2 & 3, Fig. 3

Agaricus cucullatus Pers., Syn. meth. fung.: 372. 1801; *Agaricus cucullatus* Pers.: Fr., Syst. mycol. 1: 158 and 143 (as *Mycena galericulata*, white form). 1821; *Helotium cucullatum* (Pers.: Fr.) Redhead, Can. J. Bot. 60: 2004. 1982; *Mycena cucullata* (Pers.: Fr.) Bon, Doc. mycol. 3(9): 30. 1973; *Hemimycena cucullata* (Pers.: Fr.) Singer, Persoonia 2: 20. 1961. – *Agaricus gypseus* Fr., Epicrisis: 104. 1838 s. Kühner, Genre Mycena: 623. 1938; *Mycena gypsea* (Fr.) Quél., Mém. Soc. émul. Montbéliard 2(5): 342. 1873; *Mycena gypsea* (Fr.) Ricken, Blätterpilze: 434. 1915 (a superfluous combination); *Trogia gypsea* (Fr.) Corner, Monogr. Cantharel. Fungi: 213. 1966; *Marasmiellus gypsea* (Fr.) Singer, Lilloa 22(1949): 298. 1951; *Hemimycena gypsea* (Fr.) Singer, Ann. mycol. 41: 121. 1943.

Misapplied name: *Mycena gypsea* Fr. forma, s. J. Lange, Fl. agar. dan. 2: 41, pl. 53B. 1936 (= *Mycena olida*).

Type specimen: Germany, leg. H. Persoon (Holotype, L 910.256-1755).

Selected icones: Breitenbach & Kränzlin, Pilze Schweiz 3: pl. 216. 1991; Gerhardt, BLV Pilzfürer: 196. 1997; Gröger, Boletus 13(3): pl. 2. 1994.

Selected literature: Bon, Doc. mycol. 3 (9): 30-31. 1973; Breitenbach & Kränzlin, Pilze Schweiz 3: 192. 1991; Elborne & al., Nordic Macromycetes 2: 126. 1992; Enderle, Ulmer Pilzflora 4: 72-74. 1996; Gröger, Boletus 13(2): 59-61. 1989; Gröger, Boletus 18(3): 97. 1994; Kühner, Genre Mycena: 623-625. 1938 (as *M. gypsea*); Kühner & Valla, Trav. Lab. Jaysinia 4: 32-33. 1972 (as *M. gypsea*); Maas Geesteranus, Proc. Kon. Ned. Akad. Wetensch. Ser. C 83(2): 171. 1980; Meusers & Meusers, Mitt. Arbeitsgem. Pilz. Niederrhein 3: 86-87. 1985; Romagnesi, Bull. Soc. mycol. Fr. 108: 2-3. 1992 (as *Mycena cucullata*); Watling & Turnbull, Brit. Fungus Fl. 8: 127-128. 1998.

Description: **Pileus** 5–20 (30) mm broad, hemispherical to conical-hemispherical when young, soon convex-conical to campanulate, sometimes truncate, applanate and undulate when old, mostly with conical, obtuse, rather distinct umbo at centre, inflexed to straight then up to uplifted when old at mar-



Pl. 3: *Hemimycena cucullata*, aberrant colour form, photo G. ROBICH

gin, hygrophanous, slightly translucently striate at margin, slightly tomentose (lens), white, with yellowish tinge (3A2) at centre when old. **Lamellae** crowded, L = 29–50 (70), l = 2–3, broadly adnate to emarginate and shortly decurrent with a tooth, narrow, white, with concolorous, slightly pubescent edge. **Stipe** 15–45 (60) × 0.5–1.5 (2) mm, cylindrical, slightly broadened at apex, slightly clavate at base, entirely finely tomentose-pubescent, with distinct rhizoids at base, white. **Context** thin, white, with slightly farinaceous or fungoid **smell** and mild, after a short mastication slightly bitter **taste**.

Spores (10) 10.5–13.5 × 3.7–5.0 (5.5) μm , E = 2.2–3.1, Q = 2.4–2.7, fusoid to sublacrymiform, thin-walled, hyaline. **Basidia** 23–34 × 7.0–9.2 μm , 4-spored, clavate. **Basidioles** 12–33 × 3.0–9.0 μm , clavate to cylindrical. **Cheilocystidia** (17) 20–29 × (4.5) 5.0–8.0 μm , fusoid, lageniform, clavate, sometimes subcapitate, thin-walled. **Pleurocystidia** absent, sometimes rarely present (especially near edge), then similar to cheilocystidia. **Hyphae** of cylindrical, fusoid to ellipsoid cells, thin- to rarely slightly thick-walled, up to 20 μm wide. **Pileipellis** a trichoderm, made up of (13) 18–43 × 3.0–9.2 (14) μm , cylindrical, clavate, lageniform or fusoid, \pm thin-walled cells; subpileipellis made up of short, inflated, rather strongly swollen elements, 15–45 × 6.0–18 μm . **Stipitipellis** a cutis of cylindrical, parallel, slightly thick-walled, smooth, up to 5.5 μm wide hyphae. **Caulocystidia** (apex) (11) 15–35 × 4.2–6.2 (7.0) μm , lageniform, fusoid, awl-shaped, subcylindrical, rostrate, often irregular, rarely subcapitate, obtuse, thin- to slightly thick-walled. **Clamp-connections** present.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, single or in groups, on decayed stems, branches and stumps of broad-leaved (*Alnus*, *Betula*, *Carpinus*, *Fagus*, *Fraxinus*, *Populus*, *Quercus*, *Sorbus torminalis*, *Ulmus*) and rarely coniferous (*Picea*, *Pinus*) trees; sometimes also on plant remnants (at bases of *Juncus effusus*), apparently on soil (e.g. LOHMEYER et al. 1993) and among mosses; found on both calcareous and silicate soils, sand, vulcanite.

Distribution: Widely distributed in Europe and rather common in some regions.

Phenology: June to October (November).

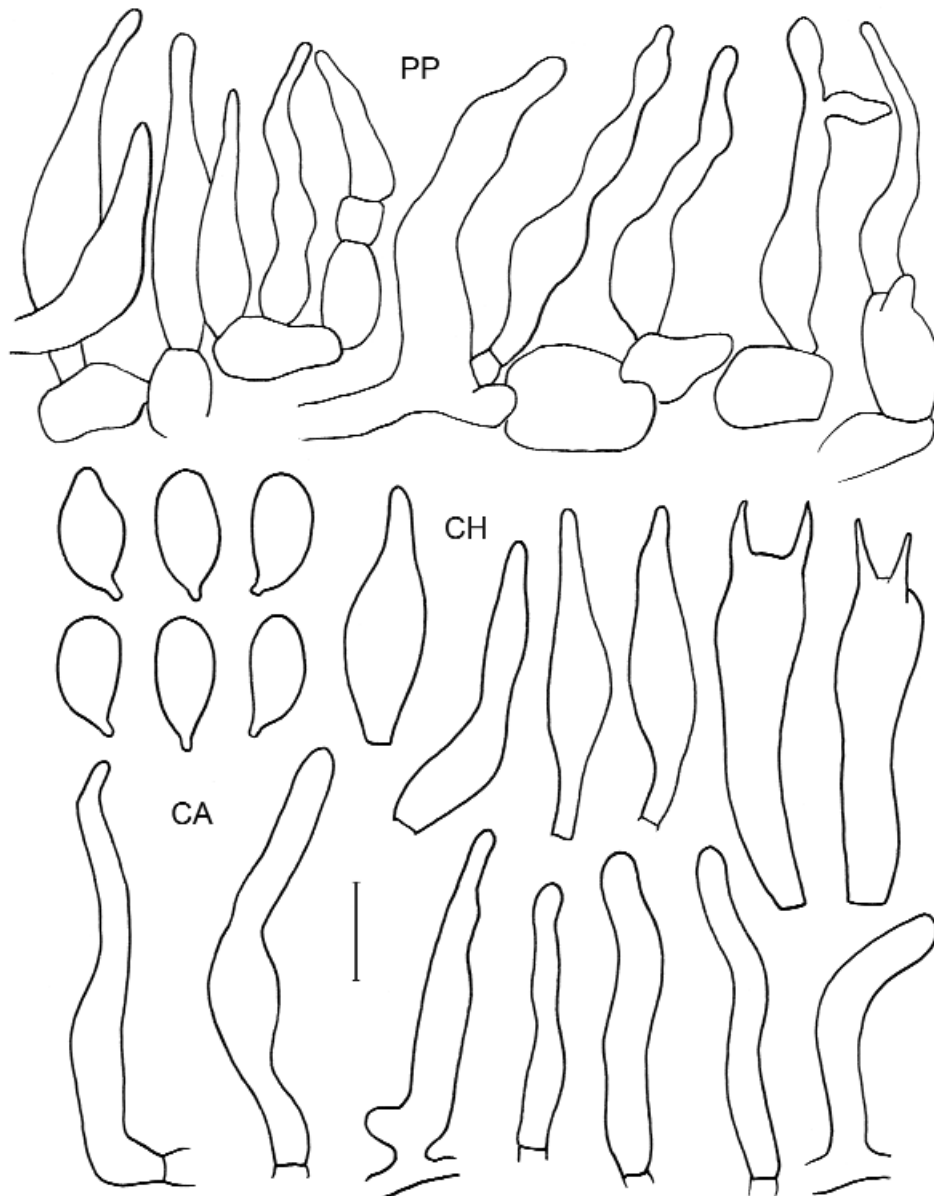


Fig. 3: *Hemimycena cucullata*

Collections examined: **AUSTRIA:** Wien, Lobau, 9 June 1989 leg. G. Kovacs (WU 7563). – ditto, Panozza-Lacke, 6 Sept. 1980 leg. A. Hausknecht (WU 0373). – Niederösterreich, Altenburg, Kamptal, 4 July 1987 leg. A. Hausknecht (WU 6188). – Niederösterreich, Hainfeld, Michelbach, 27 July 1997 leg. W. Klofac (WU 17425). – Niederösterreich, Wiener Neustadt, Schleinz, Rosalia, 2 Sept. 1981 leg. R. Schütz (WU 1405). – Oberösterreich, Grünburg/Stayr, Obergrünburg, 5 Oct. 1990 leg. K. Halm (WU 9261). – Oberösterreich, Vöcklabruck, Straß i. A., 6 Sept. 1999 leg. G. Kovacs et al. (WU 19601). – Burgenland, Oberwart, Eisenberg, Badersdorf, 16 Oct. 1991 leg. W. Klofac and A. Hausknecht (WU 10185). – Steiermark, Graz, Bot. Garten, greenhouse, 26 March 1999 leg. H. Pidlich-Aigner (WU 19473). – Vorarlberg, Rankweil, Valduna, 3 Sept. 1995 leg. A. Hausknecht (WU 14319). – **BELGIUM:** prov. Brabant, Bruxelles, Jette, Laer-

beekbos, 19 July 1997 leg. J. Lachapelle (BR 75295-23). – prov. Brabant, Berg, 8 Aug. 1987 leg. H. De Meulder 220 (BR 44-44). – Meise, National Botanic Garden, 4 Sept. 1996 leg. O. Van de Kerckhove 443 (BR 58913-34). – Brussel, Boitsfort, Drève du Caporal, 28 Sept. 1984 leg. G. M. Fodor (BR 124204-44). – La Hulpe, Château Solvay, 20 Sept. 1987 leg. G. M. Fodor (BR 124203-43). – Woluwé St. Lambert, Val d'Or, 31 July 1993 leg. P. Heinemann 8478 (BR 19979-94). – prov. Namur, Lisogne, Fonds de Leffè, Bris des Bruyères, 7 Aug. 1997 leg. J. Lachapelle (BR 75310-38). – Nismes, 8 Oct. 1994 leg. H. Ruysseveldt (BR 47676-49). – Nismes, 2 Oct. 1993 leg. H. De Meulder 9384 (BR 22272-59). – Biron, 17 Sept. 1994 leg. H. De Meulder 10032 (BR 28828-19). – ditto, 3 Oct. 1995 leg. H. De Meulder 10785 (BR 37673-37). – Resteigne, 6 June 1992 leg. H. De Meulder 8165 (BR). – ditto, 8 Sept. 1975 leg. P.B. Jansen 75-145 (L). – ditto, 8 Sept. 1975 leg. C. Bas 6611a (L). – Dourbes, 5 Oct. 1984 leg. L. Jalink 1092 (L). – Han sur Lesse, Belvedere, 1 Oct. 1978 leg. G. Tjaljingii (L). – ditto, 9 Sept. 1975 leg. P. van Winden (L). – Belvaux, 11 Sept. 1975 leg. P.B. Jansen 75-203 (L). – Val de Vaux, 10 Sept. 1975 leg. P.B. Jansen 75-143 (L). – **BULGARIA:** Arkutino, Ropotamo nature reserve, 9 June 1977 leg. J. Kuthan (BRA 273). – ditto, 12 June 1974 leg. J. Kuthan Bg74-75 (BRA 273). – **CZECH REPUBLIC:** BOHEMIA: Srbsko near Karlštejn, 9 Aug. 1944 leg. J. Herink (PRM 713307). – Karlštejn, 28 Sept. 1968 leg. J. Kubička (PRM 839593). – Karlův Týn, 10 June 1949 leg. I. Charvát (PRM 839582). – Bukovina, part Loučka, Chochołka forest, 27 Aug. 1948 leg. J. Herink (PRM 609263). – Hladná near Horažďovice, Pučánka nature reserve, 7 Oct. 1976 leg. J. Kubička (PRM 822264). – Roblín, 22 Sept. 1950 leg. J. Kubička (PRM 840345). – Kokořínsko, Dolní Vidim, Střezivojický důl, 15 July 1998 leg. V. Antonín 98.15 (BRNM). – Česká Skalice, Dubno nature reserve, 6 Sept. 1999 leg. A. Holub (HK). – Trnov, 20 July 1998 leg. J. Slaviček (HK). – Lužany, 26 July 1998 leg. M. Dobešová (HK). – Štramberk, Kotouč, 19 Oct. 1952 leg. K. Kříž (BRNM). – MORAVIA: Štramberk, Šipka nature reserve, 16 July 1998 leg. I. Nováková (herb. V. Balner). – Ostrava, Hrabůvka, 28 July 1965 leg. J. Veselský (PRM 841523). – ditto, 9 July 1966 leg. J. Veselský (PRM 841522 and BRA 244). – Lipník n. Bečvou, Škrabalka, 2000 leg. M. Vašutová (OLP). – Vratíkov, 29 July 1999 leg. A. Vágner (BRNM). – Mohelno, Mohelenská hadcová step nature reserve, 22 Oct. 1998 leg. Z. Bieberová (BRNOP). – Švařec, 12 July 1997 leg. Z. Bieberová (BRNOP). – Kuřim, Zlobice, 27 July 1953 leg. F. Šmarda (BRNM). – Brno-Líšeň, Hádecká planina nature reserve, 13 Sept. 1989 leg. V. Antonín 89.86 (BRNM). – ditto, 18 June 2001 leg. D. Dvořák (BRNM). – Mokrý, 10 Aug. 2000 leg. A. Vágner (BRNM). – Dolní Věstonice, Děvičky, 20 June 1954 leg. F. Šmarda (BRNM). – ditto, 19 Aug. 1955 leg. F. Šmarda (BRNM). – Lednice, castle park, 21 Aug. 2002 leg. V. Antonín 02.66 and H. Deckerová (BRNM). – Lanžhot, Cahnov nature reserve, 27 July 1993 leg. V. Antonín 93.97 (BRNM). – ditto, 4 Oct. 1988 leg. V. Antonín 88.133 (BRNM). – Lanžhot, Ranšpurk nature reserve, 14 Sept. 1994 leg. V. Antonín 94.106 (BRNM). – ditto, 5 Oct. 1988 leg. V. Antonín 88.158 (BRNM). – Vrbovice near Velká n. Vel., 9 July 1953 leg. K. Kříž (BRNM). – Podyjí, Čížov, Klaperův potok valley, 20 Sept. 1995 leg. V. Antonín 95.203 (BRNM). – **FRANCE:** Dept. Nord, Pas de Calais, Bois de Boulogne, 14 Oct. 1973 leg. M.E. Noordeloos (L). – Dept. Ain, Boissy St Léon, 8 Oct. 1934 leg. R. Kühner (L). – Région Parisienne, Bois de Vincennes, 1 June 1930 leg. R. Kühner (L). – Alsache, Colmar, 27 Sept. 1988 leg. E.C. Vellinga 1435 (L). – Versur-Launette (Oise), 30 Aug. 1958 leg. H. Romagnesi 58.229 (PC, herb. Romagnesi). – Coye-la-Forêt, 21 Aug. 1960 leg. H. Romagnesi 60.103 (PC, herb. Romagnesi). – Yerres, 8 Sept. 1935 leg. H. Romagnesi (PC, herb. Romagnesi). – **GERMANY:** Germany, leg. H. Persoon (Holotype, L 910.256-1755). – Nordrhein-Westfalen: Eifel, Sötenick, 19 Oct. 1991, T. Münzmay 88.91 (Herb. Münzmay); Baden-Württemberg, Schwarzwald, Schönberg, 22 Oct. 1992, T. Münzmay 92.10.92-1 (Herb. Münzmay); Teutoburgerwald, Externsteine, 7 Oct. 1976 leg. P. van Winden (L). – Rheinland-Pfalz, Eifel, Gerolstein, 23 Sept. 1980 leg. P.B. Jansen 80-277 (L). – Bayern, Altmühltal, 27 Sept. 1995 leg. M.E. Noordeloos 95210 (L). – Leipheim, 7 Sept. 1987 leg. E.C. Vellinga 1172 (L). – Hohenaltheim, 4 Sept. 1987 leg. E.C. Vellinga 1149 (L). – Coburg, Hautenberg, 23 Oct. 1981 leg. H. Engel (L). – **ITALY:** Siena prov., Le Badesse, Monteriggioni, Podere Casalino, 16 Nov. 1993 leg. A. Laganà, E. Salerni, C. Barluzzi and C. Perini (SIENA 2321). – Livorno prov., Colognole, La Sorgente, 28 Sept. 1995 leg. A. Laganà and E. Salerni (SIENA 2328). – Siena prov., Monticiano, Podere la Gonna, 27 Sept. 1994 leg. A. Laganà, E. Salerni, C. Barluzzi and C. Perini (SIENA 2325). – Siena prov., Monteriggioni, S. Colombia, 16 Nov. 1993 leg. A. Laganà, E. Salerni, C. Barluzzi and C. Perini (SIENA 2324). – Siena prov., S. Leonardo al Lago, Montalbuccio, La Piramide, 16 Nov. 1993 leg. A. Laganà, E. Salerni, C. Barluzzi and C. Perini (SIENA 2316). – Grosseto prov., Scarlino, Poggio Carpineta, 2 Oct. 1996 leg. ? (SIENA 2314). – Siena prov., Fungai, Monteriggioni, Monte Morio, 11 Nov. 1992 leg. A. Laganà, E. Salerni, C. Barluzzi and C. Perini (SIENA 2315). – Ravenna distr., Pineta di San Vitale, Fossatone, 5 Nov. 2000 leg. V. Antonín 00.195 and M. Enderle (BRNM). – ditto, Bardello, 10 Nov. 2000 leg. V. Antonín 00.254 (BRNM), ditto, M.E. Noordeloos 20258 (L). – Ravenna distr., Classe, Pineta di Classe, 7 Nov. 2000 leg. V. Antonín 00.219 (BRNM). – Ravenna, Lido di Dante, 13 Nov. 1997 leg. A. Hausknecht (WU 17864); 13 Nov. 1997, M.E. Noordeloos 97187 (L). – **THE NETHERLANDS:** prov. Drenthe, Dwingeloo, Lheebroekerzand, Reigersplas, 27 Oct. 1964, J.J. Barkman 7960 (L). – Ruinen, Kraloo, 3 Nov. 1964, J.J. Barkman 7969 (L). – prov. Overijssel, Rijssen, Brekelerveld, 26 July 1974, J.J. Barkman 9763 (L). – Wijhe, Windesheim, 30 June 1987 leg. G. & H. Piepenbroek 1600 (L). – prov. Gelderland, Nijmegen, Ooy, 19 Aug. 1939 leg. A.C.S. Schweers 3557 (L). – Neerijnen, Kasteelpark, 10 Aug. 1985 leg. C. Bas 8376 (L). – Winterswijk, 22 Oct. 1979, J.J. Barkman 3872 (L). – prov. Noord Holland, Amsterdamse Waterleiding duinen, Oranjekom, 16 Aug. 1987 leg. E.C. Vellinga 1137 (L). – Zandvoort, 1 Nov. 1996 leg. E.C. Vellinga 2060 (L). – Castricum, 30 Oct. 1976 leg. E. Kits van Waveren (L). – Santpoort, Duin en Kruidberg, 6 Aug. 1966 leg. E. Kits van Waveren (L). – 's-Gravenland, 20 Oct. 1958 leg. J. Daams (L). – prov. Zuid Holland, Leiderdorp, 23 Oct. 1973 leg.

Ding Hou 871 (L). – Oostvoorne, Rockanje, 29 Oct. 1961 leg. O.F. Uffélie (L). – prov. Zeeland, Oostburg, Nieuwvliet Bad, 1 Nov. 1982 leg. A. de Meyer 667 (L). – Prov. Limburg, Vaals, St Pietersberg, 26 Sept. 1951 leg. R.A. Maas Geesteranus 7981 (L). – Wijlre, 31 Aug. 1977 leg. R.A. Maas Geesteranus 15530, 15531 (L). – Gronsveld, Savelsbos, 31 Aug. 1977 leg. P. Kelderman (L). – ditto, 8 Nov. 1992, P.J. Keizer 92078 (L). – **SLOVAKIA**: Liptovský Hrádok, Borová Sihof, 17 Sept. 1988 leg. J. Moravec, Antonín 88.120 (BRNM). – ditto, 22 Aug. 1986 leg. J. Kuthan (BRA 335). – Liptovský Hrádok, Kameničné, 11 Sept. 1988 leg. V. Antonín (BRNM). – Trenčanské Teplice, 18 Sept. 1972 leg. J. Kuthan (BRA 155). – Bratislava, garden of the Botanical Institute of the Slovak Academy of Sciences, 6 Oct. 2000 leg. V. Antonín 00.159 (BRNM). – Chotín, Chotinské pisky nature reserve, 19 June 1984 leg. J. Kuthan (BRA 335). – **SWEDEN**: Lappland, Abiskotjakka, 25 July 1969 leg. W. Gams (L). – Östergötland, Rogslösa, 2 Sept. 1951 leg. G. Haglund & R. Rydberg (L). – Öland: Borghamn, 9 Sept. 1951 leg. G. Haglund (S). – **SWITZERLAND**: Kanton Bern, Campelen, 19 Sept. 1993 leg. T. Læssøe 3447 [K(M)24415]. – Brienz, 15 Oct. 1980 leg. E. Schild (L). – Ins, Schwarzgraben, 9 Sept. 1988 leg. E.C. Vellinga 1357 (L). – Kanton Zug, Zugersee, 27 Sept. 1979 leg. R.A. Maas Geesteranus 2167 (L). – Kanton Neuchâtel, near Bole, 20 Sept. 1965, 1 Oct. 1968 leg. H.S.C. Huijsman (L). – Kanton Luzern, Schiltwald, 29 Sept. 1980 leg. R.A. Maas Geesteranus 15646 (L). – **UKRAINE**: Trebushany, Mentshul Mt., between Kuzy and Bredecel rivers, Aug. 1934 leg. A. Pilát (PRM 23707).

Notes: *Hemimycena cucullata* is easily recognisable by the relatively large carpophores, well-developed, crowded, broadly adnate to emarginate, never decurrent lamellae, rather large [(10) 10.5–13.5 × 3.7–5.0 (5.5) µm], fusoid to sublacrymiform spores, small [(17) 20–29 × (4.5) 5.0–8.0 µm], fusoid, lageniform, clavate, sometimes subcapitate cheilocystidia, and cylindrical, clavate, lageniform or fusoid and ± trichodermally arranged elements of the pileipellis.

Occasionally the pileus and stipe may have a yellowish to ochre tinge, as is shown in a collection of G. Robich (Italy, Sabaudia, Lungonare, 1 Dec. 2001; plate 3).

SINGER (1961) revised the type specimen in the herbarium L (National Herbarium of the Netherlands at Leiden) that is in a good condition. He stated that it is identical with *Mycena gypsea* sensu KÜHNER (1938) and that the name *H. cucullata* is the correct name for it. MAAS GEESTERANUS (1980a) also discussed the problem of *Mycena cucullata* versus *M. gypsea*. He demonstrated that the lectotype of *Agaricus cucullatus* in the Persoon herbarium (L) possesses caulocystidia, contrary to the observations of SINGER (l.c.), similar to those of collections named by Kühner as *Mycena gypsea*, and some recent collections of the same taxon from Sweden. This made perfectly clear that *Mycena gypsea* sensu Kühner is the same as *Agaricus gypseus* Fries, which must be considered a later synonym of *Agaricus cucullatus* Pers, which therefore is the correct name for the species. *Mycena gypsea* s. KÜHNER & VALLA (1972) is, however, described as having a totally naked stipe, a character which is stressed in the description, so there cannot be any doubt that this must have been the case. This indicates that it very likely represents another taxon, especially because the spore sizes are also smaller (9.2–10.5 × 3.5–4.5 µm) than we found in our material. KÜHNER (1938), ELBORNE et al. (1992), MEUSERS & MEUSERS (1985) and WATLING & TURNBULL (1998) also give smaller spores (8.5–11.5 × 3.2–4.5 µm) and the absence of pleurocystidia for *Hemimycena cucullata*. ROMAGNESI (1992) included it as such in his key to *Hemimycena*. Unfortunately no material has been traced so far fitting these descriptions, and since original material of Valla is lacking, so the existence of a taxon fitting *Mycena gypsea* s. KÜHNER & VALLA 1972 with smaller spores and a naked stipe remains unclear for the time being. GRÖGER (1989) who gave a detailed description of *Hemimycena cucullata* mentioned the presence of a slightly spermiatic smell.

WATLING & TURNBULL (1998) also included *Mycena nivea* Quélet among the synonyms of *Hemimycena cucullata*. However, the original description (QUÉLET 1873) differs by having distant lamellae and differently shaped spores ("pruniforme"). Therefore, we exclude it from the list of synonyms of *H. cucullata*.

SMITH (1947) described from the U.S.A a species as *Mycena gypsea* that has a rooting stipe, growing on decayed wood, without any indistinct taste and smell, and with small spores [8–10 (11)



Pl. 4: *Hemimycena gypsella*, photo T. LAESSÖE

× 4–5 µm], large cheilocystidia and pleurocystidia (28–42 × 5–8 µm), and very long pileocystidia (28–60 × 5–8 µm). A revision of the collections of A.H. Smith [Michigan, Chelsea, 11 June 1940, Smith 15061 (MICH 41361) and Michigan, Ann Arbor, 12 Aug. 1942, Smith 18659 (MICH 41268)] showed, that they represent a macroscopically similar fungus which distinctly differs microscopically in having both 2- and 4-spored basidia (2-spored ones are dominating), spores 10.0–13 × (4.0) 5.0–6.0 (7.0) µm large spores, large lanceolate or fusoid cheilo- and pleurocystidia, 22–40 × 4.0–8.0 µm, and a pileipellis with pileocystidia similar to hymenial cystidia. It clearly represents a species different from the current concept of *Hemimycena cucullata*.

3. *Hemimycena gypsella* (Kühner) Elborne & Laessøe

Pl. 4, Fig. 4

Mycena gypsella Kühner, Trav. Lab. La Jaysinia, Samoëns 4: 67. 1972; *Helotium gypsellum* (Kühner) Redhead, Can. J. Bot. 60: 2005. 1982; *Hemimycena gypsella* (Kühner) Elborne & Laessøe in Hansen & Knudsen, Nord. J. Bot. 11: 478. 1991.

Type-specimen: France, Haute Savoie, Samoëns, Préalpes de Faucigny, 9 Sept. 1951, Kühner 51-164b (G, holotype).

Selected literature: Elborne, Laessøe & Östmo, Nordic Macromycetes : 126. 1992; Gröger, Boletus 18(3): 97. 1994; Kühner in Kühner & Valla, Trav. Lab. La Jaysinia, Samoëns 4: 33-34. 1972; Romagnesi, Bull. Soc. mycol. Fr. 108: 3. 1992 (as *Mycena gypsella*).

Description: **Pileus** 2–5 mm, convex then expanding, blunt, white, slightly translucently striate, subtly pruinose or pruinose-micaceous, but not hairy (lens). **Lamellae** moderately close, L = 10–12, l = 1, broadly adnate, arcuate, not decurrent, often forked and irregular, sometimes withdrawing from

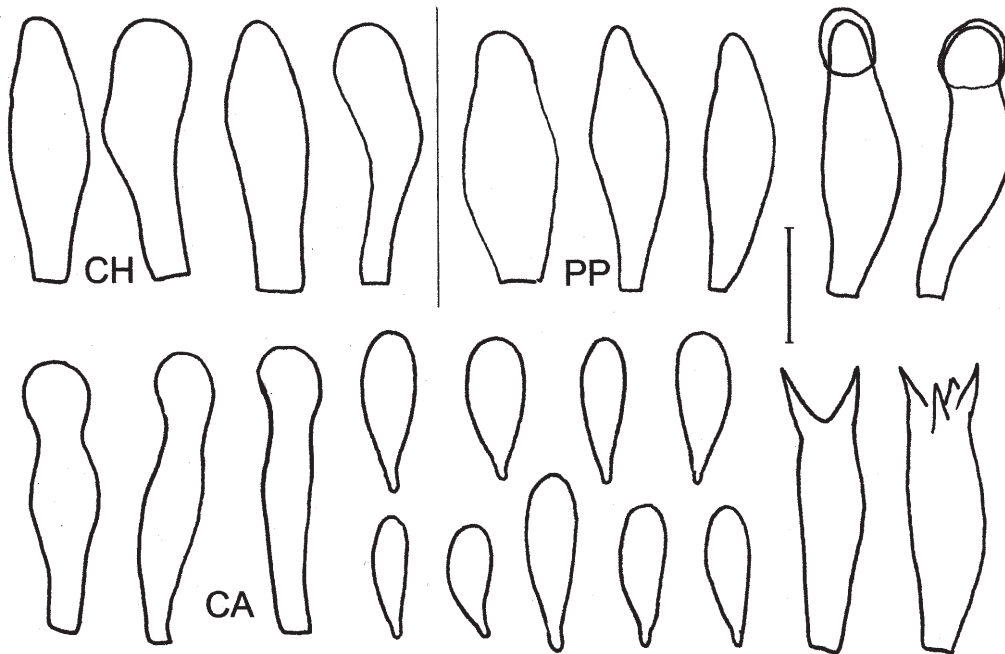


Fig. 4: *Hemimycena gypsella*

stipe in star-shape, white, with flocculose, lamella edge, which often exudes small drops. **Stipe** 4–8 × 0.2–0.5 mm, often slightly eccentric, white, densely pruinose not hairy (lens), with naked base, but sometimes with rhizoids. **Smell** none.

Spores 8.5–11.5 (13) × 2.5–4.0 (4.5) μm, E = 2.0–4.9, Q = 3.0, oblong-fusiform with long attenuated end, thin-walled. **Basidia** 14–23 × 4.0–7.5 μm, 2-, 3- and 4-spored. **Lamella edge** sterile. **Cheilocystidia** 20–28 × 3.0–6.0 × 5.5–8.0 μm, utriform with broad, (sub-)capitate neck. **Pileipellis** hymeniform, made up of lageniform to utriform terminal elements, 20–30 × 3.0–6.5 × 5.0–8.5 μm similar to cheilocystidia. **Stipitipellis** a cutis of narrow, 2.0–4.5 μm wide, smooth or somewhat diverticulate hyphae. **Caulocystidia** abundant, 15–24 × 2.0–4.0 × 3.5–7.5 μm, cylindrical-flexuous, capitate. **Clamp-connections** not observed.

Chemical reaction: no part of basidiocarp amyloid or dextrinoid.

Ecology: Saprotrophic on the base of the rachis of *Dryopteris filix-mas* in (sub)alpine habitats.

Distribution: Very rare, recorded from France and Denmark.

Phenology: August to September.

Collections examined: FRANCE: Haute Savoie: Samoëns, La Gorge des Tines, 9 Sept. 11951, R. Kühner 51-164b (Holotype, G 2708/9).

Notes: As was stated by Kühner in his original description, *Hemimycena gypsella* is close to *H. lactea*, from which it differs particularly by the absence of clamp-connections and the very small basidiocarps. The holotype has been studied. It consists of only one, fragmented fruitbody. The microscopical

characters fit well with the original diagnosis, except for the slightly larger variation in spore-size observed.

KÜHNER (1972) suggested that *H. lactella* P.D. Orton is similar, but also made the remark that this species also could fit into the variability of *H. lactea*. We have been able to demonstrate that this is true (see notes with *H. lactea*).

In a comparison with literature, Kühner (in KÜHNER & VALLA 1972) and ROMAGNESI (1992) described smaller spores ($8-10 \times 2.5-3.2 \mu\text{m}$) in his original description. ELBORNE, LÆSSØE & ØSTMØE (1992) also mentioned smaller spores ($8-10 \times 2.5-3 \mu\text{m}$), and cylindrical, flexuous cystidia with clavate to subcapitate apex.

4. *Hemimycena pseudolactea* (Kühner) Singer

Pl. 5, Fig. 5

Mycena pseudolactea Kühner, Genre Mycena: 632. 1938; *Helotium pseudolacteum* (Kühner) Redhead, Can. J. Bot. 60: 2005. 1982; *Hemimycena pseudolactea* (Kühner) Singer, Annls Mycol. 41: 121. 1943.

Type specimen: not existent. Type locality: France: Haute Savoie: near Saint Bon et Peisey.

Selected icones: Breitenbach & Kränzlin, Pilze Schweiz 3: pl. 221. 1991; Cetto, Funghi Vero 4: pl. 1447. 1984; Moser & Jülich, Farbatl. Basidiomyc. Hemimycena 1. 1985.

Selected literature: Breitenbach & Kränzlin, Pilze Schweiz 3: 196. 1991; Elborne, Laessøe & Østmoe, Nordic Macromycetes : 124-125. 1992; Gröger, Boletus 18(3): 93. 1994; Kühner, Genre Mycena: 632-635. 1938; Kühner & Valla, Trav. Lab. Jaysinia : 26-27, fig. 3. 1972; Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 88-89. 1985; Romagnesi, Bull. Soc. mycol. Fr. 108: 3. 1992 (as *Mycena pseudolactea*); A.H. Smith, Mycena: 159-161. 1947.

Description: Pileus 5–25 mm, campanulate or conical, with or without conical papilla, with inflexed then deflexed margin, expanding, often with rather irregular undulating with age, not distinctly hygrophanous, not or indistinctly translucently striate, often furrowed on back of lamellae, white, center sometimes with ochre touch, dull, very finely pruinose (lens). **Lamellae** moderately distant to fairly crowded, $L = 13-25$, $l = 1-5$, very narrowly adnate, linear-arcuate, narrow, up to 1.5 mm broad, white, with concolorous, entire or pruinose edge. **Stipe** 15–50 \times 1–2 mm, cylindrical, equal, hyaline, white, entirely pruinose-hairy, elastic, with manifest rhizoids at base. **Smell** pleasant, weak. **Taste** mild.

Spores $6.0-8.0 \times 2.5-3.5 \mu\text{m}$, $E = 2.6-2.0$, $Q = 2.4$, ellipsoid-oblong, somewhat pip-shaped. **Basidia** $12-23 \times 5-7 \mu\text{m}$, 4-, rarely a few 2-spored. **Lamella edge** sterile. **Cheilocystidia** and pleurocystidia abundant, $25-65 \times 6-12 \mu\text{m}$, clavate to utriform with subcapitate, up to 12 μm wide apex, often with refringent, slightly thickened, colourless wall, especially in broadest part; frequently also with hyaline slime cap. **Hymenophoral trama** made up of 4–12 μm wide hyphae. **Pileipellis** a cutis of narrow, cylindrical, 2–4 μm wide hyphae with numerous short diverticulae; diverticulae digitate, obtuse, up to $10.0 \times 2.0 \mu\text{m}$. **Pileocystidia** abundant, $16-28 \times 3.5-7.0 \mu\text{m}$, irregularly flexuous with capitate apex and slightly thickened walls. **Stipitipellis** a cutis of cylindrical, up to 5 μm wide hyphae, almost smooth or with diverticulae, with abundant caulocystidia similar to pileocystidia. **Clamp-connections** abundant.

Chemical reaction: no part of basidiocarp amyloid or dextrinoid.

Ecology: Saprotrophic, in small groups on litter and decayed wood (needles, small sticks and branches, rotten wood) of coniferous and deciduous trees in damp places in forest.

Distribution: Widespread in Europe, but apparently rare, probably with a montane to subalpine distribution, but also recorded from lowland areas (Netherlands).



Pl. 5:
Hemimycena pseudolactea,
 photo M. MEUSERS

Phenology: August to November.

Collections examined: **AUSTRIA:** Steiermark, Bad Mitterndorf, Wörschachwald, 13 Sept. 1997 leg. H. Forstinger (WU 17617). – **CANADA:** Ontario, Lake Simcoe, Gormidius Bay, 31 Aug. 1936 leg. A. H. Smith 4323 (MICH 41359). – ditto, 1 Sept. 1936 leg. R. F. Cain, A. H. Smith 4407 (MICH 41360). – **FRANCE:** dept. Ain, Martignat, Lac Génin, 19 Aug. and 30 Sept. 1957 leg. H.S.C. Huijsman (L). – **THE NETHERLANDS,** prov. Drenthe, Beilen, de Schurenberg, 18 Oct. 1974, H.S.C. Huijsman 74.79 (L). – prov. Flevoland, Voorsterbos, 11 Nov. 1993, E. Arnolds 6414 (L). – **SWITZERLAND:** Kanton Luzern, Schüpfheim, 28 July 1955, H.S.C. Huijsman (L). – **USA:** Idaho, Valley Co., Mc Call, Boulder Lake Trail, under spruce in boggy tail, 28 July 1941 leg. A. H. Smith 15750 (MICH 32225). – ditto, wet tail under conifers, 31 July 1941 leg. A. H. Smith 15855 (MICH 32226).

Notes: *Hemimycena pseudolactea* differs from *H. lactea* by the abundant pleurocystidia and somewhat smaller spores. In addition the basidiocarps are often somewhat larger. *Hemimycena cephalotricha* has smaller and more rounded spores.

KÜHNER (1938) and ROMAGNESI (1992) mentioned var. *macrospora* Martin with larger spores [12–14 (16) × 7–8 (10) μm], which was also seen by Favre (in Kühner, Genre Mycena: 634–635. 1938). We failed to find references to such a taxon.

KÜHNER (1938) described smaller basidia (18–19 × 4.7–5.5 μm), smaller hymenial cystidia (33–50 × 7–12 μm), and slightly narrower spores (6–8.2 × 2–3.2 μm) in his original description. In comparison with other literature, MEUSERS & MEUSERS (1985) mentioned the same microcharacters as given in the original description, KÜHNER & VALLA (1972) smaller spores (6–7 × 3–3.5 μm), BREITENBACH & KRÄNZLIN (1991) smaller spores (5.3–6.5 × 2.8–3.5 μm), smaller hymenial cystidia (25–45 × 7–11 μm), and had not mentioned the presence of pileo- and caulocystidia. BRESINSKY & STANGL (1974) gave a slightly different spore size (6–7 × 3–4 μm), and described the cheilocystidia as cylindrical (“haarförmig”).

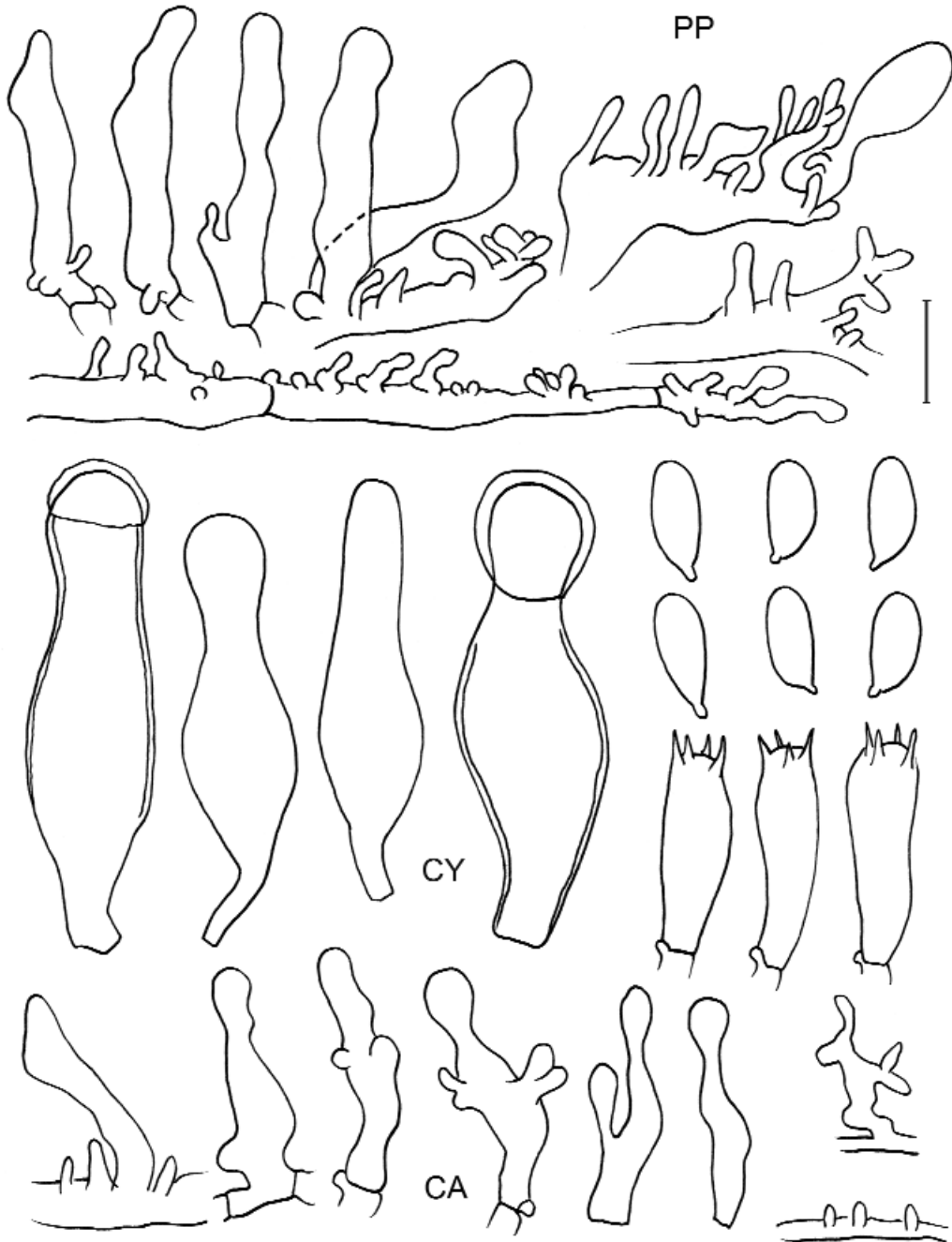


Fig. 5: *Hemimycena pseudolactea*



Pl. 6:
Hemimycena cephalotricha,
 photo T. LAESSÖE

5. *Hemimycena cephalotricha* (Joss. ex Redhead) Singer

Pl. 6, Fig. 6

Omphalia cephalotricha Joss., Ann. Soc. Lin. Lyon 80: 85. 1937 (nom. inval., Art. 36.1); *Mycena cephalotricha* (Joss.) Kühner, Genre Mycena: 635. 1938 (nom. inval., Art 33 and 36); *Delicatula cephalotricha* (Joss.) Cejp, Atlas Hub Evrop. 4b. Delicatula: 138. 1938 (nom. inval., Art 33 and 36); *Trogia cephalotricha* (Joss.) Dörfelt; *Helotium cephalotrichum* Joss. ex Redhead, Can. J. Bot. 60: 2004. 1982; *Hemimycena cephalotricha* (Joss. ex Redhead) Singer, Agar. Mod. Taxon.: 397. 1986.

Type specimen: Jossierand (1937): 86, fig. 4 [iconotype; proposed by Redhead (1982), erroneously as page 36]. – France, Rhône, La Tour-de-Salvagny, 1. X. 1936 (epitype, G, Jossierand XVII/42, designed here).

Selected icones: Lonati, Boll. Assoc. micol. ecol. Romana 33: 38. 1994; Martin, Bull. trimest. Soc. mycol. Fr. 109: Atl. pl. 278. 1993.

Selected literature: Jacobsson et al., Jordstjärnan 12(2): 39-40. 1991; Cejp, Atlas Hub Evrop. 4b. Delicatula: 138-139. 1938 (as *Delicatula cephalotricha*); Elborne & al., Nordic Macromycetes 2: 126. 1992; Gröger, Boletus 18(3): 94. 1994; Jossierand, Ann. Soc. Lin. Lyon 80: 85-87. 1937 (as *Omphalia cephalotricha*); Kühner, Genre Mycena: 635-638, fig. 227. 1938 (as *Mycena cephalotricha*); Lonati, Boll. Assoc. micol. ecol. Romana 33: 37. 1994; Malençon & Bertault, Trav. Inst. Sci. Cherif. Fac. Sci. Rabat 33 (Champ. sup. Maroc 2): 325-326. 1975 (as *Delicatula cephalotricha*); Martin, Bull. trimest. Soc. mycol. Fr. 109: Atl. pl. 278. 1993; Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 84. 1985; Redhead, Can. J. Bot. 60: 2004. 1982 (as *Helotium cephalotricha*); Romagnesi, Bull. Soc. mycol. Fr. 108: 8. 1992 (as *Mycena cephalotricha*); Siquier & Lillo, Bol. Soc. micol. Madrid 21: 105. 1996; Watling & Turnbull, Brit. Fungus Fl. 8: 126-127. 1998; Zea & Ortega, Bol. Soc. micol. Madrid 15: 444. 1991.

Description: **Pileus** 1–7 mm broad, almost hemispherical when young, then convex to conical-convex, almost applanate to slightly depressed at centre when old, inflexed to slightly involute at margin, hygrophanous, white, often with slight cream tinge; slightly radially rugulose to almost smooth, slightly tomentose to tomentose-pubescent under lens. **Lamellae** distant, L = 8–10, l = 0–1 (2), well developed, reaching the pileus margin, broadly adnate to shortly decurrent, rather thick, white, with white, pubescent edge. **Stipe** 2–10 × 0.5–0.7 mm, central, cylindrical, sometimes slightly broadened at apex, not broadened at base, sometimes curved, hyaline, white, entirely finely pubescent-hairy, with distinct basal mycelium (mycelium also covering substrate around stipe base). **Context** thin, white. **Smell** and **taste** indistinct.

Spores 6.5–9.2 × 4.0–5.4 (5.8) µm, E = 1.4–2.0, Q = 1.5–1.8, broadly limoniform to amygdaliform, thin-walled. **Basidia** 21.5–23 × 6.9–8.5 µm, 4-spored, clavate to subcylindrical. **Basidioles** 10.0–24.5 × 3.0–8.5 µm, clavate to (sub)cylindrical. **Cheilocystidia** 27–38.5 (53) × 4.0–6.9 µm, cylindrical-flexuous with (sub)capitate apex to more or less tibiiform with 3.5–6.0 µm wide capitulum, thin-, rarely with slightly thickened wall. **Hymenophoral trama** made up of thin-walled, cylindrical, fusiform or ellipsoid elements, up to 15 µm wide. **Pileipellis** a cutis of radially arranged, ± thin-, or slightly thick-walled, smooth or diverticulate, up to 7.5 µm wide hyphae; projections up to 15 × 1.5 µm, digitate, often irregular or branched, obtuse. **Pileocystidia** numerous, 23–45 × (2.3) 3.1–5.5 µm, cylindrical to (sub)lageniform, with capitate, 3.8–8.5 µm wide apex, often irregularly flexuous, ± thin- to slightly thick-walled, sometimes with digitate projections in basal part. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, up to 7.5 µm wide hyphae. **Caulocystidia** 21–32 × 2.3–5.0 µm, ± cylindrical to (sub)lageniform, often moniliform, and capitate with 3.1–7.0 (8.0) µm wide capitulum, sometimes with digitate projections in basal part, or ± cylindrical, irregular, flexuous to coralloid, slightly thick-walled. **Clamp-connections** present.

Chemical reactions: Neither spores nor all tissues amyloid or dextrinoid.

Ecology: Saprotrophic, on strongly decayed wood of *Quercus* (*Q. ilex*, *Q. suber* and *Q. robur*), rarely of *Fagus*, once found on *Juniperus phoenicea*(?), but substrate not always clearly specified; on acid and calcareous soil, probably with a preference to thermophilous oak forests.

Distribution: widespread in Europe and North Africa but never common.

Phenology: June to October (November in Mallorca).

Collections examined: **CZECH REPUBLIC:** Mělník, Úpor forest, 9 Sept. 1966 leg. Z. Pouzar and V. Jechová (PRM 624175). – Lanžhot, "Cahnov" nature reserve, 29 June 1995 leg. V. Antonín 95.92 (BRNM). – ditto, 22 Sept. 1995 leg. V. Antonín 95.235 (BRNM). – **FRANCE:** Rhône, La Tour-de-Salvagny, 1 Oct. 1936 leg. M. Jossierand (G, Jossierand XVII/42, lectotype). – Coye-la-Forêt (Oise), 1 Aug. 1951 leg. H. Romagnesi 51.247 (PC, herb. Romagnesi). – Forêt de Saigue (Oise), 12 Sept. 1958 leg. H. Romagnesi 58.376 (PC, herb. Romagnesi). – Roudou (Manche), 17 Aug. 1978 leg. H. Romagnesi 78.95bis (PC, herb. Romagnesi). – **ITALY:** Siena prov., S. Leonardo al Lago, Montalbuccio, La Piramide, 25 Oct. 1993 leg. A. Laganà, E. Salerni, C. Barluzzi and C. Perini (SIENA 2317). – Siena prov., Le Badesse, Monteriggioni, Podere Casalino, 19 Oct. 1992 leg. A. Laganà, E. Salerni, C. Barluzzi and C. Perini (SIENA 2320). – Grosseto prov., Capalbio, Lago di Burano, 24 Oct. 1990 leg. C. Barluzzi and C. Perini (SIENA 2338). – **SPAIN:** Mallorca, Massanella, 10 Nov. 1992 leg. A. Henrici [K(M) 21302].

Notes: *Hemimycena cephalotricha* is easily to recognise because of its hemispherical, then convex to conical-convex and at the end almost applanate, never distinctly umbilicate pileus, well-developed lamellae, fusoid to sublimoniform spores and capitate cheilo-, pileo- and caulocystidia.

The description by LONATI (1994) and MALEÑÇON & BERTAULT (1975) agree well with our observations. JOSSEMAND (1937) described smaller cheilocystidia (24–28 × 4–5 µm), KÜHNER (1938),

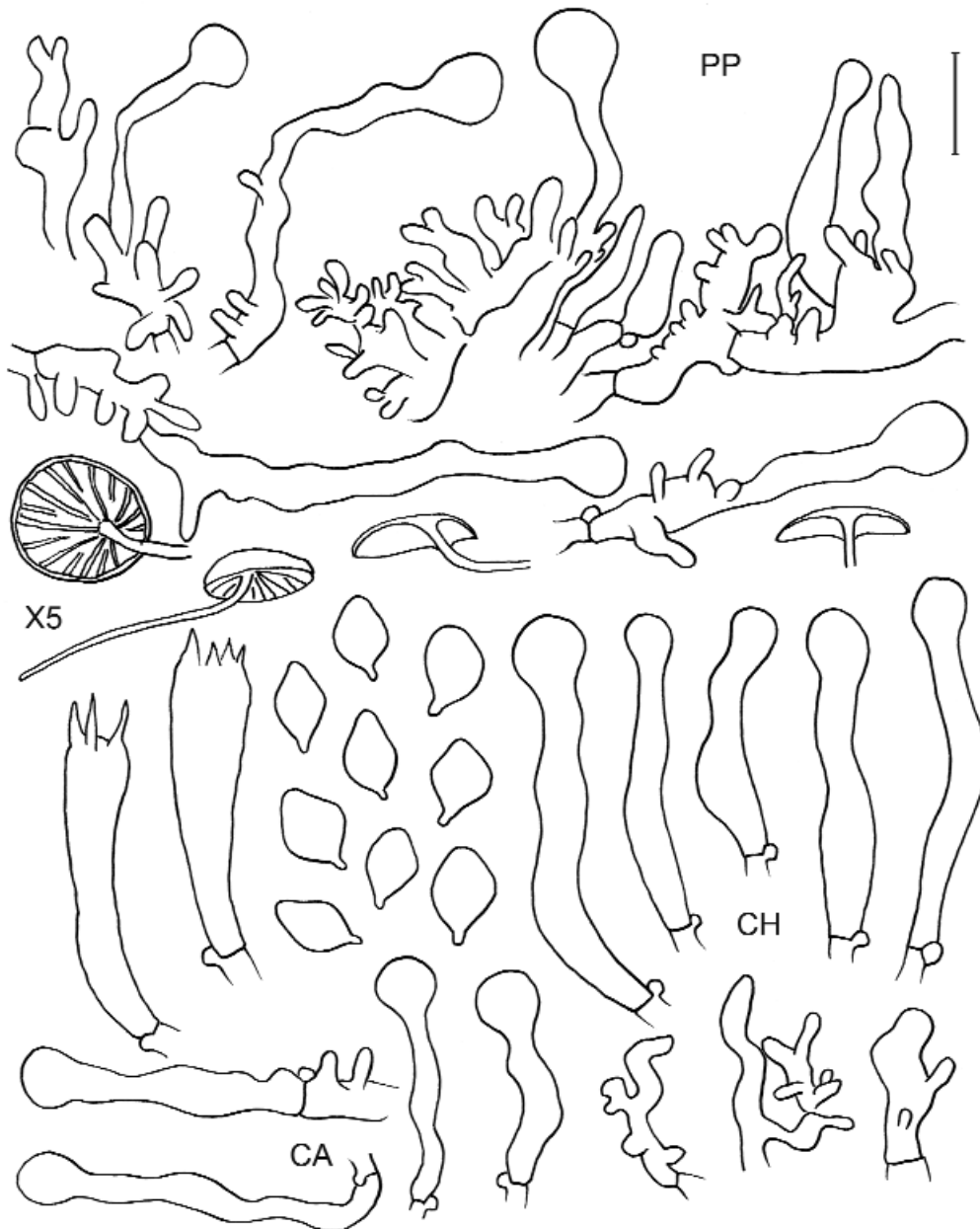


Fig. 6: *Hemimycena cephalotricha*

ROMAGNESI (1992) and MEUSERS & MEUSERS (1985) smaller and only narrowly cylindrical cheilocystidia ($14\text{--}19 \times 2\text{--}4 \mu\text{m}$) and smaller pileocystidia ($24\text{--}26 \times 2\text{--}3 \mu\text{m}$), WATLING & TURNBULL (1998) smaller cheilocystidia ($14\text{--}19 \times 2\text{--}4 \mu\text{m}$) and pileocystidia ($20\text{--}26 \times 2\text{--}3 \mu\text{m}$). Also GRÖGER (1994) described very narrow cylindrical cystidia. These differences may be due to a different method of measuring cystidia, or measuring only the upper part of the cheilocystidia (compare KÜHNER 1938:

p. 637, fig. 227). We never observed, however, the small droplets on pileus margin and stipe surface described and photographed by MARTIN (1993).

CEJP (1938) included and newly combined this species to the genus *Delicatula* with a question mark and discussed its relations to *Delicatula integrella*, *Collybia muscigena* and *Mycena clavulifera*.

6. *Hemimycena rickenii* (A.H. Sm.) Singer

Fig. 7

Mycena rickenii A.H. Sm., N. Amer. Species of Mycena: 158. 1947; *Helotium rickenii* (A.H. Sm.) Redhead, Can. J. Bot. 60: 2005. 1982; *Hemimycena rickenii* (A.H. Sm.) Singer, Sydowia 15(1961): 60. 1962.

Misapplied name: *Mycena lactea* ss. Ricken 1915, non (Pers.: Fr.) P. Kumm.

Type specimen: U.S.A., Michigan, Huron Mts., near Ives Lake, 16. IX. 1933 leg. A.H. Smith 33-996 (MICH, holotype).

Selected literature: Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 75. 1985; A.H. Smith, N. Amer. Species of Mycena: 158-159. 1947.

Description [Macroscopical description based on A.H. SMITH (1947)]: **Pileus** 5–8 (15) mm broad, obtusely conical, becoming expanded umbonate, purely white, translucently striate at margin, soon opaque, pruinose at first, soon glabrous. **Lamellae** crowded, adnate, narrow but becoming slightly ventricose, well developed, reaching the margin of the pileus, white, with entire concolorous edge. **Stipe** 10–30 × 1.5–2 mm, cylindrical, hollow, pliant-cartilaginous, densely pruinose, somewhat glabrescent in age, white, with strigose base. **Context** thin, fragile, white, with indistinct **smell** and **taste**.

Spores (6.0) 7.0–8.0 (9.0) × 4.5–5.7 μm, E = 1.3–1.7, Q = 1.5, subglobose to broadly ellipsoid, hyaline, thin-walled. **Basidia** 21–28 × 7.0–9.0 μm, 2-spored, clavate. **Basidioles** 11–25 × 3.0–9.0 μm, cylindrical to clavate. **Hymenial cystidia** 28–55 × 11–20 μm, versiform, clavate, subfusoid, subutriform, thin-walled, hyaline. **Context** made up of cylindrical to subinflated, thin-to slightly thick-walled, up to 12 μm wide hyphae. **Pileipellis** a cutis made up of radially arranged, cylindrical, mostly slightly thick-walled, smooth or less frequently diverticulate, slightly gelatinised, up to 5 μm wide hyphae. **Pileocystidioid elements** (terminal elements) 32–66 × 5.0–9.0 μm, adpressed to erect, cylindrical to clavate, thin- to slightly thick-walled. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, smooth, up to 6.0 μm wide hyphae. **Caulocystidia** (terminal cells) 35–85 × 5.0–10.0 μm, forming groups, adpressed to erect, cylindrical, clavate, subfusoid, thin-walled. **Clamp-connections** absent in all tissues.

Chemical reactions: Neither spores nor all tissues amyloid or dextrinoid.

Ecology: Saprophytic; scattered on needles of *Picea* and *Abies*.

Distribution: Europe and North America.

Phenology: May to November.

Collections examined: U.S.A.: Michigan, Huron Mts., near Ives Lake, 16. IX. 1933 leg. A. H. Smith 33-996 (MICH, holotype).

Notes: *Hemimycena rickenii* is characterised in having an initially pruinose, glabrescent pileus, crowded lamellae, densely pruinose, somewhat glabrescent stipe with strigose base, rather small subglobose to broadly ellipsoid spores, 2-spored basidia, broad, often clavate hymenial cystidia, pileipellis hyphae which are smooth or with dispersed excrescence's with long pileocystidioid elements, without clamp-connections.

RICKEN (1915) described *Mycena lactea* as a species with a milky conico-campanulate, white, striate, glabrescent pileus, crowded, white, ascending lamellae, and a hyaline, white, glabrous stipe.

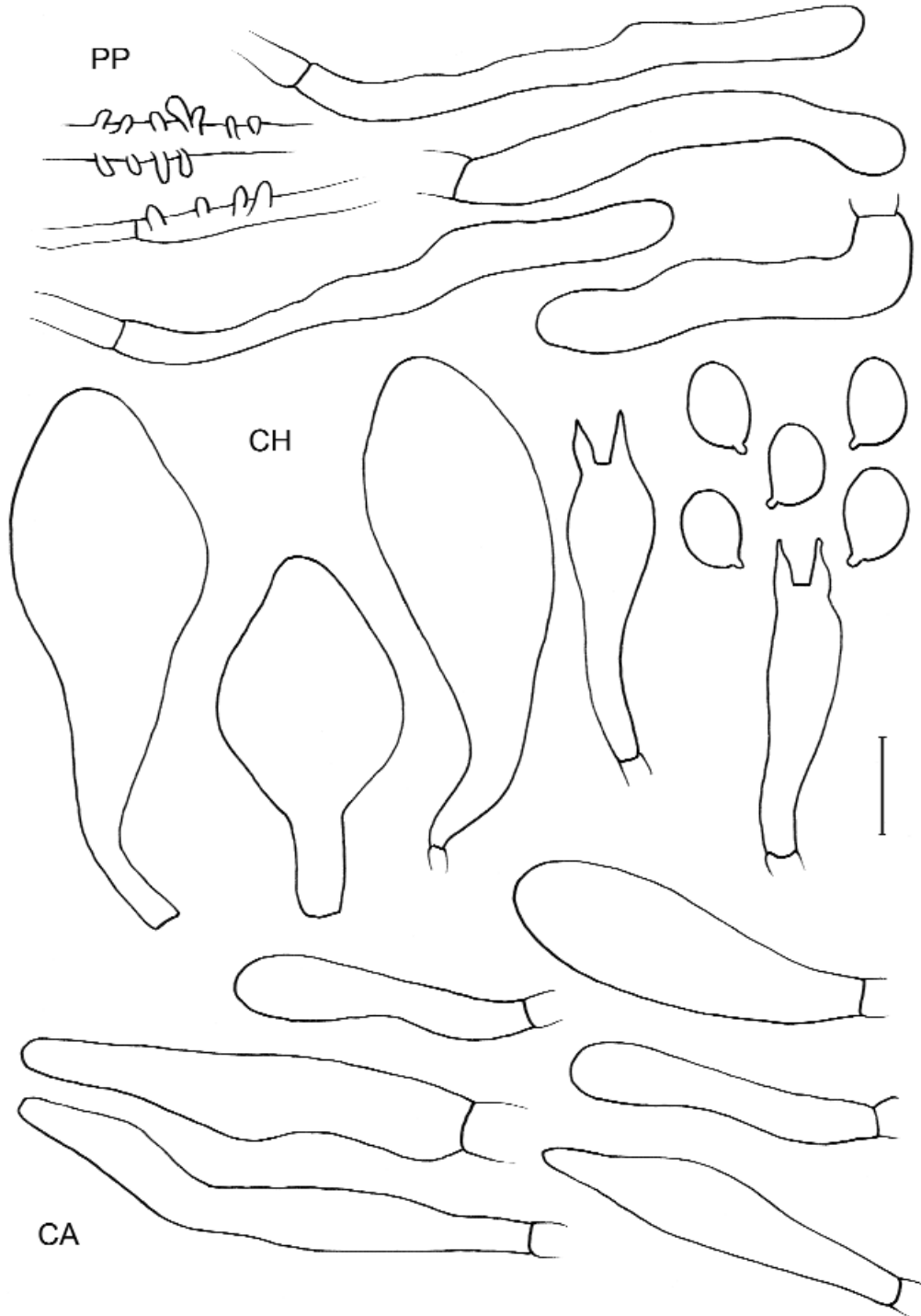


Fig. 7: *Hemimycena rickenii*

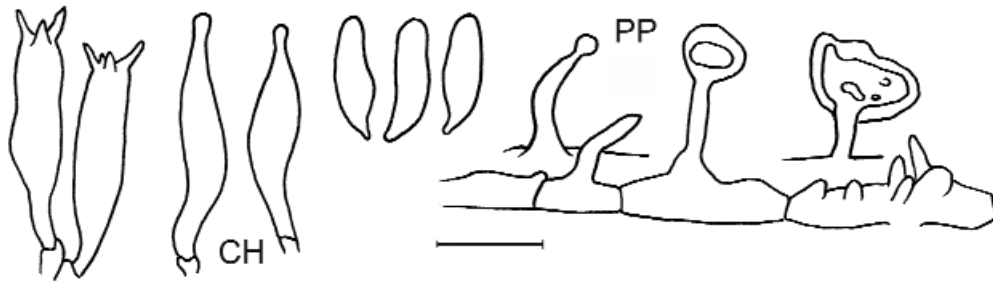


Fig. 8: *Hemimycena conidiogena*

The spores were given as being roundish, $5\text{--}6 \times 5 \mu\text{m}$, and cheilocystidia cylindrical to fusiform. This clearly does not fit with the current concept of *Hemimycena lactea* (see also MAAS GEESTERANUS 1980b). A.H. SMITH (1947) thought that he found a *Hemimycena* species fitting with Ricken's concept, and described it accordingly as a new species, *H. rickenii*. Although it never can be proved that Ricken described the same species, we have included it in our monograph with a description of the type. No European material could be located. Ricken recorded it from coniferous forest growing on needles. KREISEL (1947) listed it, referring to the habitat as being broad-leaved forest with *Quercus*. This could not be checked.

7. *Hemimycena conidiogena* P.-A. Moreau, M.A. Pérez-de-Gregorio, J. Llisotosella & X. Llimona Fig. 8

Hemimycena conidiogena P.-A. Moreau, M.A. Pérez-de-Gregorio, J. Llisotosella & X. Llimona in Mycotaxon (in press).

Description: Pileus 5–15 mm, conical to conico-convex, then expanding, finally flattened, hygrophanous, translucently striate, purely white, then tinged yellow or ochre, at centre, smooth. Lamellae adnate, distant, thickish, white then with faint yellow or ochre tinges. Stipe 15–25 \times 1–2 mm, cylindrical, white, hyaline, finely pruinose all over.

Spores (9.0) 10–12.5 (13) \times 3.5–4.5 (5.0) μm , fusiform, often in tetrads. **Basidia** 4-spored. **Cheilocystidia** 18–30 \times 5.5–7.0 μm , scattered among basidia, tibiiform with distinct, rounded capitulum. **Pleurocystidia** absent. **Pileipellis** a cutis of repent hyphae with scattered to more or less abundant digitate diverticulate, which form rounded blastoconidia. **Stipitipellis** similar. **Clamp-connections** present.

Ecology: in Mediterranean *Cistus* vegetation.

Distribution: So far only known from the region of Barcelona (Spain), where it occurs commonly and widespread.

Notes: *Hemimycena conidiogena* is a highly remarkable species, which produced blastoconidia on the surface of pileus and stipe. Furthermore it has a distinct yellow tinge in the cap when mature, which is unusual for a *Hemimycena* species, and reminds of *Mycena flavoalba* in sect. *Adonidae*. Except for this colour, *H. conidiogena* fits well into sect. *Hemimycena* with similar species such as *H. lactea* and *H. cucullata*.



Pl. 7: *Hemimycena mairei*, photo J. PEERSEN

***Hemimycena* Sect. *Pseudocamarophyllus* Antonín & Noordel. sect. nov.**

Habitus omphalinoideus lamellis satis distantibus subcrassis Camarophylli (*Hygrophoraceae*) species parvi interdum reminiscens, sed manifeste illius generis speciebus in pileipellis hyphis diverticulatis differt. Holotypus: *Hemimycena mairei* (J.-E. Gilbert) Singer.

Habit omphalinoid with rather distant, thickish lamellae, reminiscent sometimes of a small species of *Camarophyllus* (*Hygrophoraceae*), but clearly differing from members of that genus by its relatively short basidia and diverticulate pileipellis hyphae.

Type species: *Hemimycena mairei* (J.-E. Gilbert) Singer

8. *Hemimycena mairei* (J.-E. Gilbert) Singer

Pl. 7, Fig. 9

Omphalia mairei J.-E. Gilbert, Bull. Soc. Mycol. Fr. 42: 63. 1926; *Mycena mairei* (J.-E. Gilbert) Kühner, Genre Mycena: 661. 1938; *Hemimycena mairei* (J.-E. Gilbert) Singer, Anns Mycol. 42: 53. 1943; *Marasmiellus mairei* (J.-E. Gilbert) Singer, Lilloa 22: 298. "1949". 1951; *Delicatula mairei* (J.-E. Gilbert) Kühner & Romagn., Fl. anal. Champ. supér.: 119. 1953; *Helotium mairei* (J.-E. Gilbert) Redhead, Can. J. Bot.

60: 2005. 1982. – *Hemimycena mairei* var. *microspora* Bon, Doc. Mycol. 17(67): 6. 1987 – *Hygrocybe griseopallida* Arnolds, Persoonia 12: 476. 1985. – *Camarophyllus nebularis* Cléménçon, Beih. Z. Mykol. 4: 55. 1982 (invalid); *Cuphophyllus nebularis* (Cléménçon) Bon, Doc. mycol. 14(56): 10. 1984 (invalid).

Type specimen: not preserved. Neotype (design. here): The Netherlands: prov. Noord-Holland, Amsterdam, Amsterdamse bos, 6 Nov. 1971 leg. E. Kits van Waveren (L, holotype of *Hygrocybe griseopallida* Arnolds).

Selected icones: Bon, Mushr. Toadst.: 187. 1987; Hausknecht, Bol. Gruppo micol. Bres. 27(3-4): 73. 1994; Martin, Bull. Soc. mycol. Fr. 109, Atl. 279. 1993.

Selected literature: Arnolds, Persoonia 12: 476. 1985 (as *Hygrocybe griseopallida*); Gilbert, Bull. Soc. Mycol. Fr. 42(1925): 63-66. 1926 (as *Omphalia mairei*); Gröger, Boletus 18(3): 94. 1994; Kühner, Genre Mycena: 661-663, fig. 237. 1938; Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 91-92. 1985; Romagnesi, Bull. Soc. mycol. Fr. 108: 12-13. 1992 (as *Mycena mairei*); Watling & Turnbull, Brit. Fung. Fl. 8: 128. 1998.

Description: **Pileus** 5–20 mm, campanulate or hemispherical, then convex, finally applanate with depressed centre, with deflexed then straight margin, not or only slightly hygrophanous, not or indistinctly translucently striate, pale grey or ivory-grey, almost white, with slightly sulcate margin, dull, glabrous. **Lamellae** distant, L = 12–22, l = 1–3, decurrent, arcuate, thickish, sometimes furcate and intervenose, white to pale grey with paler edge. **Stipe** 10–25 × 1.5–3 mm, cylindrical, equal or attenuated towards base, white, dry, glabrous. **Context** thin, white. **Smell** and **taste** indistinct.

Spores (5.5) 7.0–9.5 (10) × (3.0) 3.5–5.0 μm, E = 1.7–2.4, Q = 2.0, ventricose-fusiform, ellipsoid-fusoid, thin-walled, hyaline. **Basidia** 21–28 × 6.0–8.0 μm, 4-spored, clavate. **Basidioles** 12–27 × 3.0–7.5 μm, cylindrical to clavate. **Lamella edge** fertile. **Cheilocystidia** (marginal cells) scattered, inconspicuous, sometimes almost absent, mixed with basidia, 18–33 × 6.0–10.0 μm, clavate, fusoid, rarely subcylindrical, thin- to slightly thick-walled. **Pleurocystidia** absent. **Hymenophoral trama** made up of thin- to slightly thick-walled, hyaline, up to 22 μm wide hyphae, composed of cylindrical, ellipsoid to fusoid elements. **Pileipellis** a thin cutis, made up of cylindrical, ± radially arranged, 1.5–10.0 μm wide hyphae, with (sub)hyaline to pale greyish walls in KOH, with cylindrical or narrowly clavate, obtuse, up to 25 × 2.0–5.0 μm large diverticulae. **Pileocystidia** absent. **Subpileipellis** of broadly fusoid, ellipsoid, up to 20 μm wide cells. **Stipitipellis** a cutis, of parallel, cylindrical, slightly thick-walled, up to 6 μm wide hyphae, smooth or with scattered projections. **Caulocystidia** at apex 12–43 × 3.0–7.0 μm, appressed to erect, cylindrical to clavate, thin- to slightly thick-walled, hyaline, sometimes in form of lateral projections; at base 30–54 × 5.0–9.0 (15) μm, cylindrical, fusoid, sublageniform, slightly but distinctly thick-walled. **Clamp-connections** present.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, among mosses and grass in poorly manured grasslands and lawns, particularly on heavy, clayey soil; KREISEL (1987) mentioned its presence only on calcareous soils. GRÖGER (1997) found it directly on dead grass stem parts. BRUNNER & HORAK (1988) collected it on soils with pH 7.0-7.15 and stated that the minimal temperature for fructification is between –0.3 to –1.7 °C.

Distribution: Widespread all over Europe.

Phenology: (May-)August to November.

Collections examined: AUSTRIA: Wien Lobau, 30 Oct. 1982 leg. A. Hausknecht (WU 2380). – ditto, 15 Oct. 1982 leg. A. Hausknecht (WU 2560). – ditto, 30 Sept. 1981 leg. A. Hausknecht (WU 1886). – ditto, 16 June 1984 leg. A. Hausknecht (WU 3335). – ditto, 8 Oct. 2001, M.E. Noordeloos 01129, 01130 (L). – Niederösterreich, Maissau, Sonndorferstrasse, 24 May 1987 leg. A. Hausknecht (WU 5983). – ditto, 13 Sept. 1985 leg. A. Hausknecht (WU 5088). – Burgen-

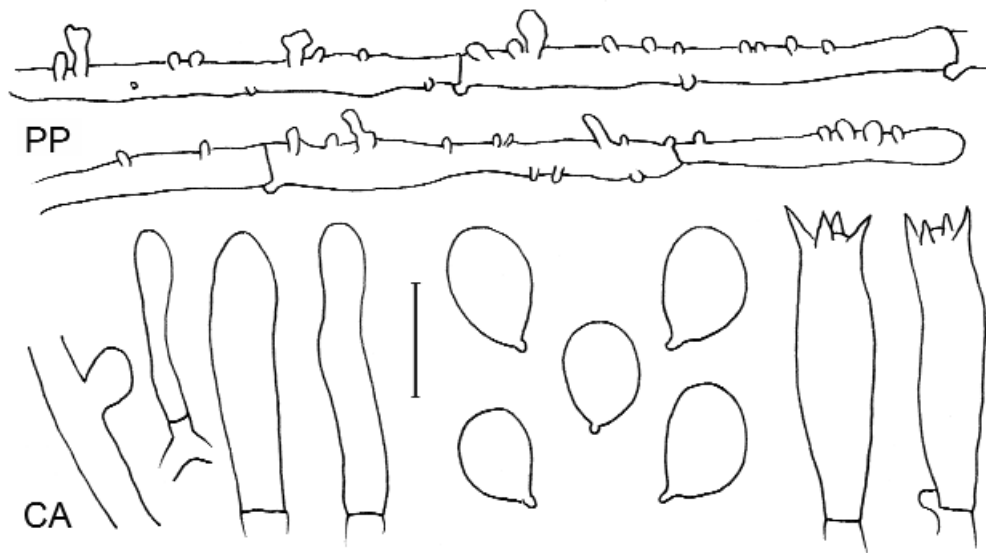


Fig. 9: *Hemimycena mairei*

land, Eisenstadt, Trausdorf, 10 Oct. 1992 leg. I. Petz (WU 11436). – **BELGIUM**: Brabant prov., Bruxelles, Ixelles, 26 Oct. 1989 leg. G. M. Fodor (BR 4732-76). – Antwerpen prov., Deurne, Rivierenhof, 10 May 1959 leg. L. Imler (BR 40984-50). – **CZECH REPUBLIC**: Moravia, Žarošice, 19 Aug. 1946 leg. V. Vacek (PRM). – **FRANCE**: Coye-la-Forêt (Oise), 14 Sept. 1950 leg. H. Romagnesi 50.294 (PC, herb. Romagnesi). – **GERMANY**: Rheinland-Westfalen, Merlsheim, 6 Oct. 1976 leg. C. Bas 7065 (L); Saarland: Beaumarais, 3 Nov. 1991, T. Münzmay 91.91 (Herb. Münzmay). – **THE NETHERLANDS**: prov. Flevoland, Roggebootszand, 28 Aug. 1977 leg. Th. W. Kuyper 864 (L). – prov. Noord-Holland, Amsterdam, Amsterdamse bos, 6 Nov. 1971 leg. E. Kits van Waveren (L, holotype of *Hygrocybe griseopallida* Arnolds). – ditto, 13 Aug. 1977 leg. E. Kits van Waveren (L). – Vogelenzang, Amsterdams Waterleiding duinen, Grootte Zwarte Veld, 7 Nov. 1989 leg. A. G. Becker 89-87 (L). – prov. Zuid Holland, Alphen aan den Rijn, 18 Aug. 1985 leg. C. Uljé 5929 (L). – prov. Zeeland, Sluis, 10 Oct. 1982 leg. A. de Meyer 634 (L). – prov. Limburg, Meersen, 13 Sept. 1980 leg. P. J. Keizer & A. Oosterbaan (L). – **SWITZERLAND**: Kanton Neuchatel, Bole, 29 Oct. 1965 and 1 Oct. 1968 leg. H. S. C. Huijsman (L); Kanton Bern, Muri, 20 Oct. 1987, B. Senn-Irlet 87/267 (BERN).

Notes: *Hemimycena mairei* is well characterised by the greyish tinges in the pileus and lamellae, and distant, rather thick lamellae, which remind of a species of *Camarophyllus*. The lack of well-differentiated cheilocystidia clearly separates it from the related species *H. sordida* and *H. juncicola*.

BON (1987) described *Hemimycena mairei* var. *microspora* with spores $7(8) \times 4-4.5(5) \mu\text{m}$, which seems, however, to fit well in the variation we observed in the typical *H. mairei*.

The *Camarophyllus*-like habit of *Hemimycena mairei* misled both CLÉMENÇON (1982) and ARNOLDS (1985) in describing it as a new species in that genus.

Although GILBERT (1926) in the original description did not mention the occurrence of cystidia, our microscopical description agrees well with one by GRÖGER (1994), KÜHNER (1938), MEUSERS & MEUSERS (1985) and ROMAGNESI (1992) in describing the presence of (inconspicuous) cheilo- and caulocystidia. WATLING & TURNBULL (1998) did not mention the presence of caulocystidia, and JOSERAND (1937) did not observe cheilocystidia.



Pl. 8: *Hemimycena sordida*, photo C. BAS

9. *Hemimycena sordida* Noordel. & Antonín spec. nov

Pl. 8 & 9, Fig. 10

Latin diagnosis: Pileus 5–20 mm latus initio hemisphaericus postea conicoconvexus demum applanatus dilute griseus vel dilute griseobrunneus glaber. Lamellae distantes $L = 12\text{--}20$, $l = 1\text{--}3$ adnatae dente decurrenti arcuatae crassiusculae delutissime griseae. Stipes 12–40 mm longus 0.8–3 mm latus aequalis vel ad basin attenuatus initio minute pruinosis mox glaber. Sporae (5.5) 6–8.5 μm longae 3–4.5 μm latae ellipsoideae ad oblongae. Basidia 4-spora clavata. Cheilocystidia in gregibus secus lamellae marginem heterogeneam 30–55 μm longa 6–12 μm lata clavata vel coralloidea. Peleipellis hypharum diverticularum 1.5–6 μm latorum cute. Pileocystidia desunt. Caulocystidia 28–45 μm longa 3–8 μm lata subcylindrica ad coralloidea. Fibulae adsunt. Terricola inter gramina muscosque.

Holotypus: The Netherlands, prov. Zuid Holland, Delft, Leeghwaterstraat, 26. X. 1982 leg. R.W.J.M. v.d. Ham (L)

Holotype: The Netherlands, prov. Zuid Holland, Delft, Leeghwaterstraat, 26 Oct. 1982 leg. R.W.J.M. v.d. Ham (L).

Description: Pileus 5–20 mm, hemispherical at first, then conico-convex, finally appanate with subumbonate then slightly depressed centre, with straight, sometimes somewhat crenulate margin, not or slightly hygrophanous, pale grey or pale grey-brown (Mu 10 YR 5-6/4), sometimes with darker central spot, soon pale beige to almost white (10 YR 8/3–2), with smooth or slightly sulcate margin, glabrous. **Lamellae** distant, $L = 12\text{--}20$, $l = 1\text{--}3$, adnate, with decurrent tooth, arcuate, thickish, very pale grey (2.5 Y 8/2 or paler) with paler edge. **Stipe** 12–40 \times 0.8–3 mm, equal or tapering towards base, somewhat hyaline, white, dry, minutely pruinose at first, soon glabrous. **Smell** spontaneously weak, when crushed sometimes like honey. **Taste** unpleasant.



Pl. 9: *Hemimycena sordida*, photo T. MÜNZMAY

Spores (5.0) $5.5\text{--}8.5 \times 3.0\text{--}4.5 \mu\text{m}$, $E = 1.3\text{--}1.9$, $Q = 1.4$, ellipsoid to oblong. **Basidia** 4-spored, clavate. Lamella edge heterogeneous, with groups of clustered cheilocystidia. **Cheilocystidia** $30\text{--}55 \times 6.0\text{--}12 \mu\text{m}$, clavate with slender stipe or somewhat irregular, coralloid. **Pleurocystidia** absent. **Pileipellis** a thin cutis of diverticulate, $1.5\text{--}6.0 \mu\text{m}$ wide hyphae. **Pileocystidia** absent. **Stipitipellis** a cutis of narrow cylindrical hyphae. **Caulocystidia** present in young specimens, $28\text{--}45 \times 3.0\text{--}8.0 \mu\text{m}$, sub-cylindrical to coralloid. **Clamp-connections** present.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, among mosses and grass and *Achillea millefolium* in poorly manured grassland on clayey-sandy soil; also found in roadside with *Robinia*.

Distribution: So far only known from the type locality in the Netherlands and one in Germany.

Phenology: October.

Collection examined: GERMANY: Nordrhein-Westfalen, Kölner Bucht, Raffälsgelände, 22 May 1997, T. Münzmay 14.97 (Herb. Münzmay). – THE NETHERLANDS: prov. Zuid Holland, Delft, Leegwaterstraat, 26 Oct. 1982 leg. R.W.J.M. v.d. Ham (Holotype, L); Heineoord, Zanddepot, 29 Sept. 2002, A. v.d. Berg (L).

Notes: *Hemimycena sordida* differs from *H. mairei* by the more intensely coloured basidiocarps, and presence of cheilo- and caulocystidia. *Hemimycena juncicola* is less coloured, and has a different microscopy with 2-spored basidia, broader spores, differently shaped cheilocystidia and caulocystidia, and lacks clamp-connections.

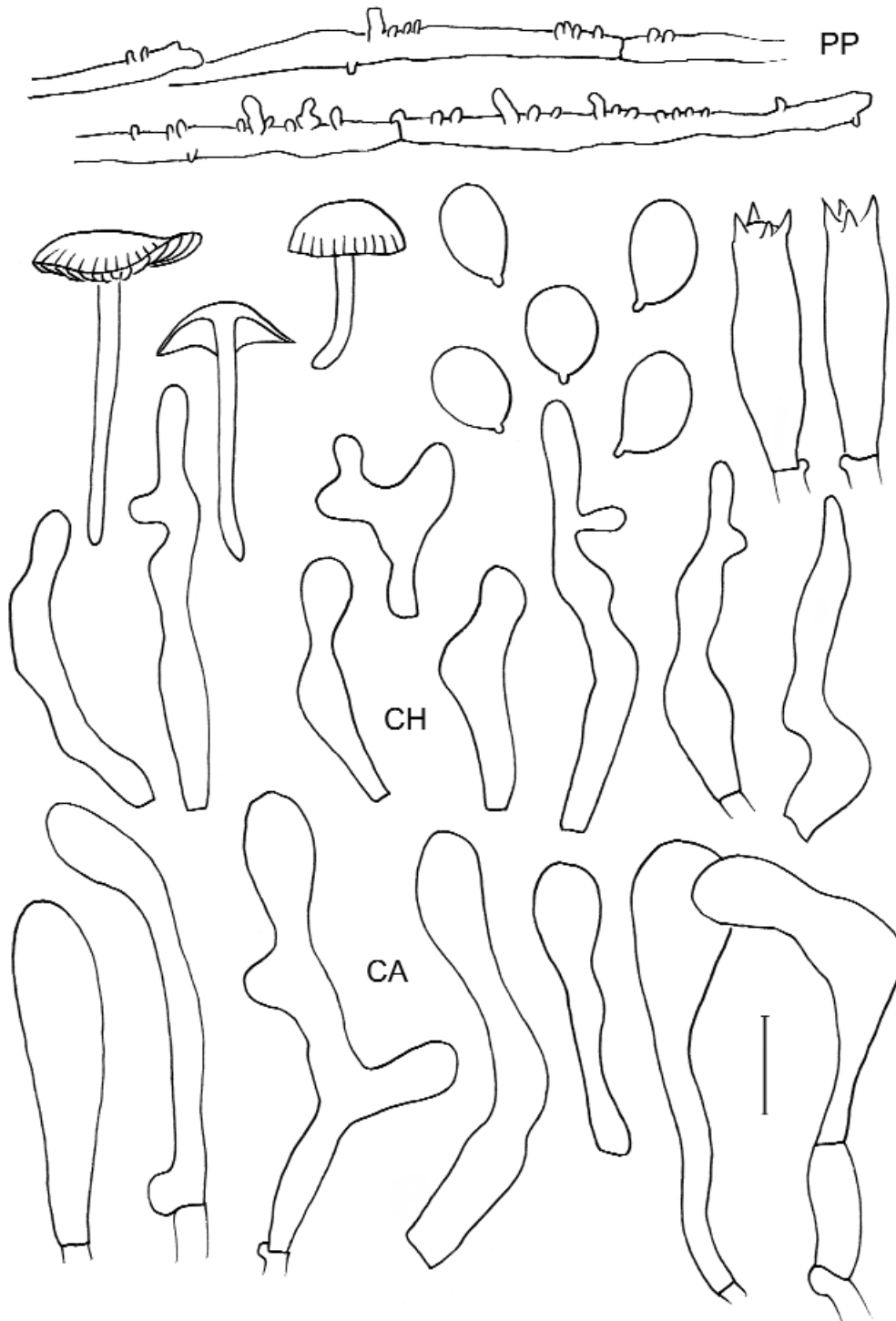


Fig. 10: *Hemimycena sordida*



Pl. 10: *Hemimycena juncicola*, photo K. F. REINWALD

10. *Hemimycena juncicola* Noordel. & Antonín spec. nov Pl. 10 & 11, Fig. 11

Latin diagnosis: Pileus 10–22 mm latus initio campanulatus postea irregulariter convexus non hygrophanus nec translucenter striatus dilute griseus zona marginali alba centro atriore griseobrunneo glaber. Lamellae distantes $L = 20-26$ $l = 1-3$ decurrentes albae. Stipes 10–30 mm longus 0.8–2 mm latus cylindricus basin paulo spissescens (3 mm) albus pruinosis demum glabrescens. Odor et sapor parum farinaceus. Sporae 7.5–9 μm longae 5–6 mm latae late ellipsoideae vel oblongae ad amygdaliformes. Basidia 2-spora. Lamellae margo sterilis. Cheilocystidia 20–29 μm longa 2.5–7 μm lata forma satis variabili e subcylindricoflexuosa ad lageniformi vel tibiiformi ad fusiformi. Pileipellis hypharum diverticulatarum cute. Pileocystidea desunt. Caulocystidia subcylindrica apice rotundato interdum parum capitato. Fibulae desunt. Reactio chemicalis basidiocarporum nulla pars amyloidea vel dextrinoidea. Caespitosus in Junci effusi fasciculis.

Holotypus: Italia, provincia Emilia Romagna, Ravenna, Pineto San Vitale, Bardello, 10. XI. 2000, leg. M. E. Noordeloos 20295, V. Antonín 00.256 et A. Hausknecht (L, isotypus in BRNM et WU).

Holotypus: Italy, Emilia Romagna, Ravenna, Pineto San Vitale, Bardello, 10 Nov. 2000, M. E. Noordeloos, V. Antonín, A. Hausknecht (M.E.N. 20295 - L ; isotypus V.A. 00.256 - BRNM; A.H. - WU).

Description: **Pileus** 10–20 mm, campanulate to conical expanding to irregularly convex with inflexed then straight, undulating margin, not hygrophanous, not translucently striate, pale grey with white marginal zone and darker greyish brownish centre (Mu. 10 YR 7–5/3, 4/3), glabrous, somewhat lustrous. **Lamellae** rather distant, $L = 20-26$, $l = 1-3$, decurrent, arcuate or triangular, white with entire, concolorous edge. **Stipe** 10–30 \times 0.8–2 mm, cylindrical, slightly broadened towards apex and base (up to 3 mm), straight or flexuous, white, finely pruinose, glabrescent with age, with short strigose rhizoids at base. **Context** thin, white. **Smell** indistinct or slightly farinaceous. **Taste** slightly farinaceous.



Pl. 11: *Hemimycena juncicola*, photo A. HAUSKNECHT

Spores 7.5–9.0 × 5.0–6.0 μm, E = 1.4–1.8, Q = 1.5, broadly ellipsoid or oblong to amygdaliform. **Basidia** 22–34 × 5.0–7.5 μm, 2-spored, clavate. **Basidioles** 16–20 × 2.5–6.5 μm, cylindrical to clavate. **Lamella edge** sterile. **Cheilocystidia** 20–29 × 2.5–7.0 μm, rather variable in shape, from subcylindrical-flexuous to lageniform or tibiiform to fusiform, thin-walled. **Hymenophoral trama** made up of 10–30 μm wide, cylindrical to strongly inflated elements. **Pileipellis** a cutis of radially arranged up to 8 μm wide diverticulate hyphae; diverticulae simple, finger-like, rarely branched, 3.0–11 × 2.0–4.0 μm; **pileocystidia** absent. **Stipitipellis** a cutis of narrow, cylindrical, up to 5 μm wide hyphae. **Stipititrampa** made up of thin- to slightly thick-walled, cylindrical up to 25 μm wide hyphae. **Caulocystidia** abundant, 15–40 × 4.0–7.0 μm, subcylindrical with rounded sometimes slightly capitate apex. **Clamp-connections** absent.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Caespitose in dense clusters of *Juncus effusus* in poorly managed semi-natural grassland on calcareous sandy soil.

Distribution: So far only known from the type locality.

Phenology: November.

Collections examined: ITALY: Emilia Romagna, Ravenna, Pineto San Vitale, Bardello, 10 Nov. 2000, M.E. Noordeloos, V. Antonín, A. Hausknecht (M.E.N. 20295 - L, holotype; V.A. 00.256 - BRNM, isotype).

Notes: *Hemimycena juncicola* has a strong resemblance to *H. mairei* and *H. sordida* on account of the omphalinoid habit with greyish tinges in the pileus and well-developed, distant, decurrent lamellae. However the microscopical differences are striking: *H. juncicola* has no clamp-connections, two-spored basidia, and the spores have a different shape and size.

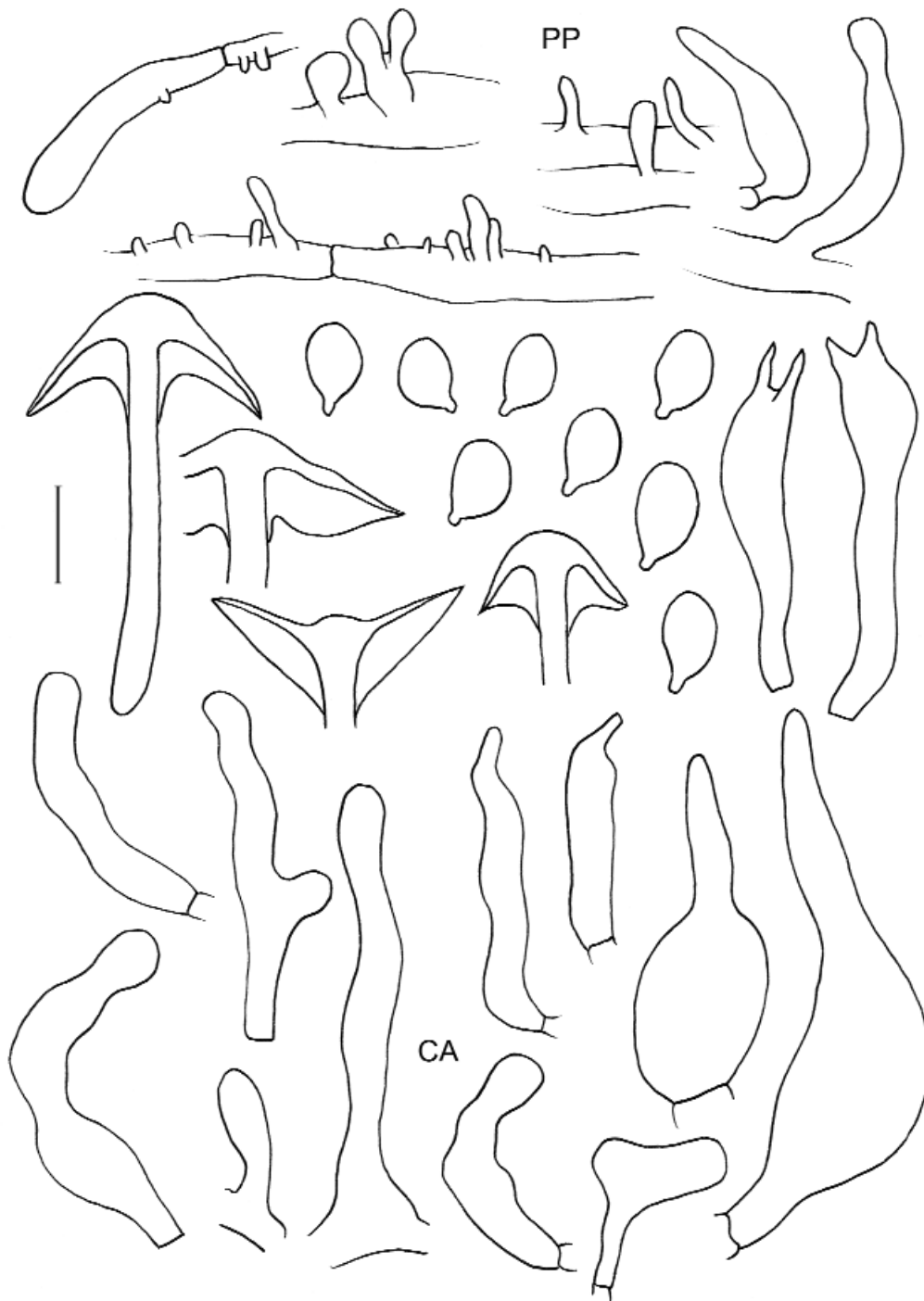


Fig. 11: *Hemimycena juncicola*

11. *Hemimycena ochrogaleata* (J. Favre) M.M. Moser**Pl. 12, Fig. 12**

Mycena ochrogaleata J. Favre, Champ. supér. Zone Alpine Parc Nat. Suisse 5(33): 199. 1955; *Hemimycena ochrogaleata* (J. Favre) M.M. Moser, Kl. Kryptogamenfl. 2b/2, Ed. 4: 167. 1978.

Type specimen: Switzerland, Pass de Fuorn, Taunter Pizza, 5 Sept. 1953 leg. J. Favre (lectotype, G 13899).

Selected icones: Breitenbach & Kränzlin, Pilze Schweiz 3: pl. 218. 1991; Courtecuisse, Mushrooms Britain and Europe: 93. 1999; Moreau, Bull. Soc. Mycol. Bot. Dauphine-Savoie 42(166): 37. 2002; Robich, Mycena d'Europa: 48. 2003 (as *M. ochrogaleata*); Senn-Irlet, Jensen & Gulden, Arct. Alp. Fungi 3: 25. 1990.

Selected literature: Breitenbach & Kränzlin, Pilze Schweiz 3: 194. 1991; Gröger Courtecuisse, Mushrooms Britain and Europe: 670-671. 1999; Boletus 18(3): 94. 1994; Robich, Mycena d'Europa: 47-51. 2003 (as *Mycena ochrogaleata*); Lamoure, Botaniste 41: 56-57. 1974 (as *Mycena ochrogaleata*); Maas Geesteranus, Proc. Kon. Ned. Akad. v. Wetensch. C93(2): 177-178. 1990 (as *Mycena ochrogaleata*); Romagnesi, Bull. Soc. mycol. Fr. 108: 13. 1992 (as *Mycena ochrogaleata*); Senn-Irlet, Jensen & Gulden, Arct. Alp. Fungi 3: 25-26. 1990.

Description: **Pileus** 5–12 mm broad, hemispherical, campanulate or convex with or without small umbo, finally flattened or concave with slightly depressed centre, somewhat hygrophanous, when moist slightly transparently striate, ochraceous-yellow, then ochraceous brownish, sometimes darker brown at centre, glabrous, dull. **Lamellae** distant or subdistant, L = 14–26, l = 1 (3), arcuate-decurrent, narrow, thickish, dorsally intervenose, sometimes furcate towards stipe, white with entire, concolorous edge. **Stipe** 15–45 mm × 0.5–2 mm, solid, subcylindrical, slightly broadened towards base or towards apex, white or with ochraceous hue, minutely pubescent in apical part, rarely over whole length, glabrous in lower part. **Context** ochraceous-yellowish in upper part of pileus, white in other parts. **Smell** weak or herbaceous, some authors report a small like *Pelargonium* or *Melissa*.

Spores 8.0–11 × 4.5–5.5 (6.0) µm, E = 1.7–2.1, Q = 1.9, broadly fusiform to amygdaliform, thin-walled, hyaline. **Basidia** 25–32 × 7.5–9.5 µm, 4-spored, clavate. **Basidioles** 13–30 × 3.0–9.0 µm, clavate, subfusoid, cylindrical. **Cheilocystidia** 26–37 × 3.5–4.6 µm, narrowly lageniform to often irregularly shaped or submoniliform, obtuse, thin-walled. **Trama** made up of up to 20 µm wide cylindrical to inflated elements with smooth walls. **Pileipellis** a cutis of radially arranged, cylindrical, ± slightly thick-walled, ± congophobe, diverticulate, 2–5 µm wide hyphae; diverticulae digitate, mostly small, mixed with scattered larger ones, up to 10.0 × 2.0 µm. **Pileocystidia** absent. **Stipitipellis** a cutis of parallel, cylindrical, smooth, slightly thick-walled, up to 5 µm wide hyphae. **Caulocystidia** (apex) numerous, 15–42 × 3.0–6.5 µm, cylindrical, narrowly clavate, lageniform with attenuate apex, slightly awl-shaped, sometimes branched, slightly thick-walled. **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprophytic or possible parasitic, in groups or fascicles, on roots or on decaying remnants of *Cirsium spinosissimum*, FAVRE (1955) found it along rivulets without mentioning a *Cirsium* species, probably also wood remnants, in alpine habitats. According to SENN-IRLET (1993) it is characteristic for the *Saxifraga-Caricetum frigidae* vegetation type in the Swiss Alps.

Distribution: Widely distributed, but rare in the Alps (Switzerland and Austria).

Phenology: August to September.

Collections examined: SWITZERLAND: Pass de Fuorn, Taunter Pizza, 5 Sept. 1953 leg. J. Favre (lectotype, G 13899). – Kanton Vaud, Pont de Nant, above Bex, 16 Aug. 1992 leg. C. Bas 9314 (L). – ditto, 16 Aug. 1996, Th. W. Kuyper 3209 (L). – Graubünden, Bivio, 7 Aug. 1991, B. Senn-Irlet 91/71 (BERN); Bern, Schynige Platte, 8 July 1992, B. Senn-Irlet 92/65 (BERN)



Pl. 12: *Hemimycena ochrogaleata*, photo K. F. REINWALD

Notes: *Hemimycena ochrogaleata* is easily distinguished in having an ochraceous-yellow, then ochraceous brown pileus, fusiform-amygdaliform spores, narrowly lageniform to subcylindrical-rostrate, often irregular to submoniliform cheilocystidia, diverticulate pileipellis hyphae, cylindrical, narrowly clavate, lageniform to awl-shaped caulocystidia, and the ecology.

In the original description, FAVRE (1955) mentioned longer and narrower basidia ($31\text{--}41 \times 6\text{--}7.5 \mu\text{m}$) and longer cheilocystidia ($35\text{--}50 \mu\text{m}$ long). ROMAGNESI (1992) used the same description in his key. BREITENBACH & KRÄNZLIN (1991) mentioned slightly smaller spores ($7.4\text{--}9.3 \times 3.8\text{--}4.8 \mu\text{m}$), narrower basidia ($5\text{--}7.5 \mu\text{m}$ wide) and longer cheilocystidia ($35\text{--}45 \mu\text{m}$). SENN-IRLET et al. (1990) mentioned larger cheilocystidia ($25\text{--}65 \times 3.5\text{--}6 \mu\text{m}$) and the presence of pleurocystidia and pileocystidia.

GULDEN & JENSEN (1982) published (as *H. aff. ochrogaleata*) from north Norway a two-spored form with larger spores [$10\text{--}12 (17) \times 4.3\text{--}5.5 (7.5) \mu\text{m}$], quite different shape of cheilocystidia and with developed pleurocystidia. It may represent a different taxon; it is included as *H. ochrogaleata* var. *paucicystidiata* Antonín & Noordel. ad int. in a key.

MAAS GEESTERANUS (1990) described larger and narrower basidia ($31\text{--}41 \times 6\text{--}7.5 \mu\text{m}$), longer cheilocystidia ($35\text{--}50 \mu\text{m}$ long), and longer ($16\text{--}60 \mu\text{m}$) and differently shaped caulocystidia. He discussed the taxonomic position, and placed it provisionally in *Mycena* sect. *Adonidae*, in which, he admits, it takes an isolated position because of the shape of cheilocystidia. This was followed in the recent monograph of ROBICH (2003).

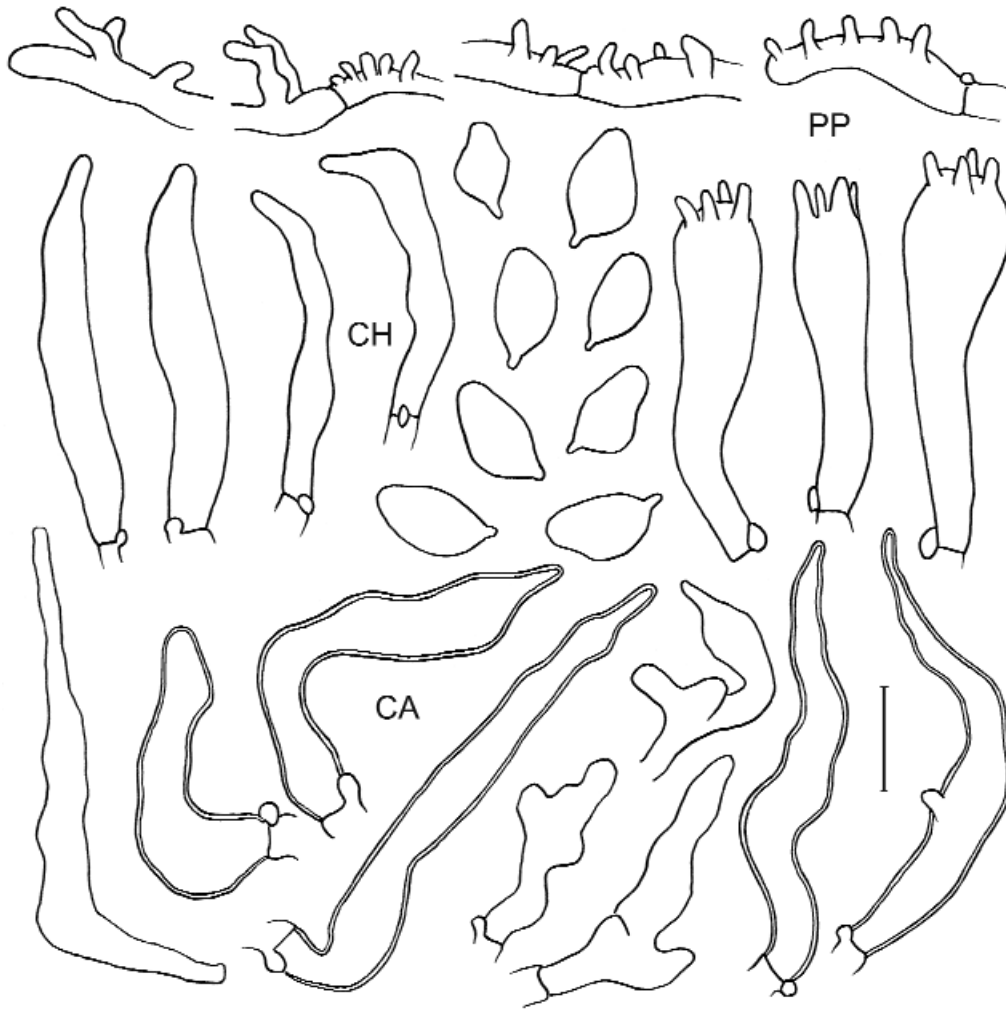


Fig. 12: *Hemimycena ochrogaleata*

***Hemimycena* Sect. *Hirsutae* (Kühner) Antonín & Noordel. comb. nov.**

Basionym: *Mycena* section *Omphaliariae* Kühner subsect. *Hirsutae* Kühner, Genre *Mycena*: 638. 1938.

Lamellae broadly adnate to deeply decurrent, often few, in few species well-developed, but in many species reduced to veins which do not reach the margin of the pileus, or lamellae may even lack in some species. The covering layer of stipe, and sometimes also of the pileus, have well differentiated cystidia in form of attenuated, awl-shaped or setiform hairs, which sometimes end in a small, rather well delimited capitulum.

Type-species: *Hemimycena mauretana* (Maire) Singer

Notes: Species delimitation in sect. *Hirsutae* is very difficult. Many species are minute, and show a considerable variability in microscopic characters. Some of the solutions we have made here must be considered preliminary because of the lack of material. The following characters have been used to delimitate species in sect. *Hirsutae*:

- development of the lamellae:
 - well developed, going from the stipe to the margin of the pileus (*H. angustispora*, *H. tortuosa*)
 - reduced to veins, which often do not reach the margin of the pileus of the stipe (*H. mauretana*, *H. crispula* s.l.).
 - (almost) absent in *H. subtilis* and *H. tatrense* ad.int.
- nature of cystidia on the covering layers
 - setiform and thick-walled in the complex of *H. crispula*
 - awl-shaped, not setiform in *H. mauretana*-complex
 - capitate in the group of *H. tortuosa*

12. *Hemimycena mauretana* (Maire) Singer**Figs. 13, 14**

Omphalia mauretana Maire, Bull. Soc. mycol. Fr. 44 : 43. 1928; *Mycena mauretana* (Maire) Kühner, Genre *Mycena* : 639. 1938; *Delicatula mauretana* (Maire) Kühner & Romagn., Fl. anal. Champ sup. : 117. 1953; *Hemimycena mauretana* (Maire) Singer, Annl. Mycol. 41 : 121. 1943. *Helotium mauretanicum* (Maire) Redhead, Can. J. Bot. 60: 2005. 1982. – *Omphalina cuspidata* var. *stenospora* J. Lange, Dansk. Bot. Ark. 6(5): 18. 1930. – *Mycena mauretana* var. *stenospora* (J. Lange) Kühner apud Kühner & Valla, Trav. Lab. Jaysinia 4: 54-60. 1972. – *Delicatula struthiopteridis* Velen., Novit. mycol. novis.: 45. 1947. – *Omphalia struthiopteris* Velen., Novit. Mycol. (1939): 94. 1940 – ?*Delicatula lacrimans* Velen., Novit. Mycol. (1939): 96. 1940.

Misapplied name: *Hemimycena angustispora* sensu Maas Geesteranus, Proc. Kon. Ned. Akad. Wetensch. Ser. C 84(2): 212. 1981.

Type-collection: not known to be in existence; type-locality: Mauretania, near Icosium

Notes: *Hemimycena mauretana* is characterised by minute, omphalioid carpophores with distinctly hairy pileus, ± reduced lamellae, hairy stipe, cylindrical to allantoid spores, and the presence of attenuated, awl-shaped, thin- to slightly thick-walled pileo- and caulocystidia. Hymenial cystidia are usually absent. While studying literature and the available collections, it was noted that *Hemimycena mauretana* comprises a species complex with a surprising morphological plasticity. Spore size, size and shape of dermatocystidia vary a great deal. In their paper on *Hemimycena* from the Samoëns region in the French Alps, KÜHNER & VALLA (1957) tried to fix this variability with the description of several varieties based on

- size of spores
- size of caulocystidia
- shape of cystidia: with or without small capitulum.

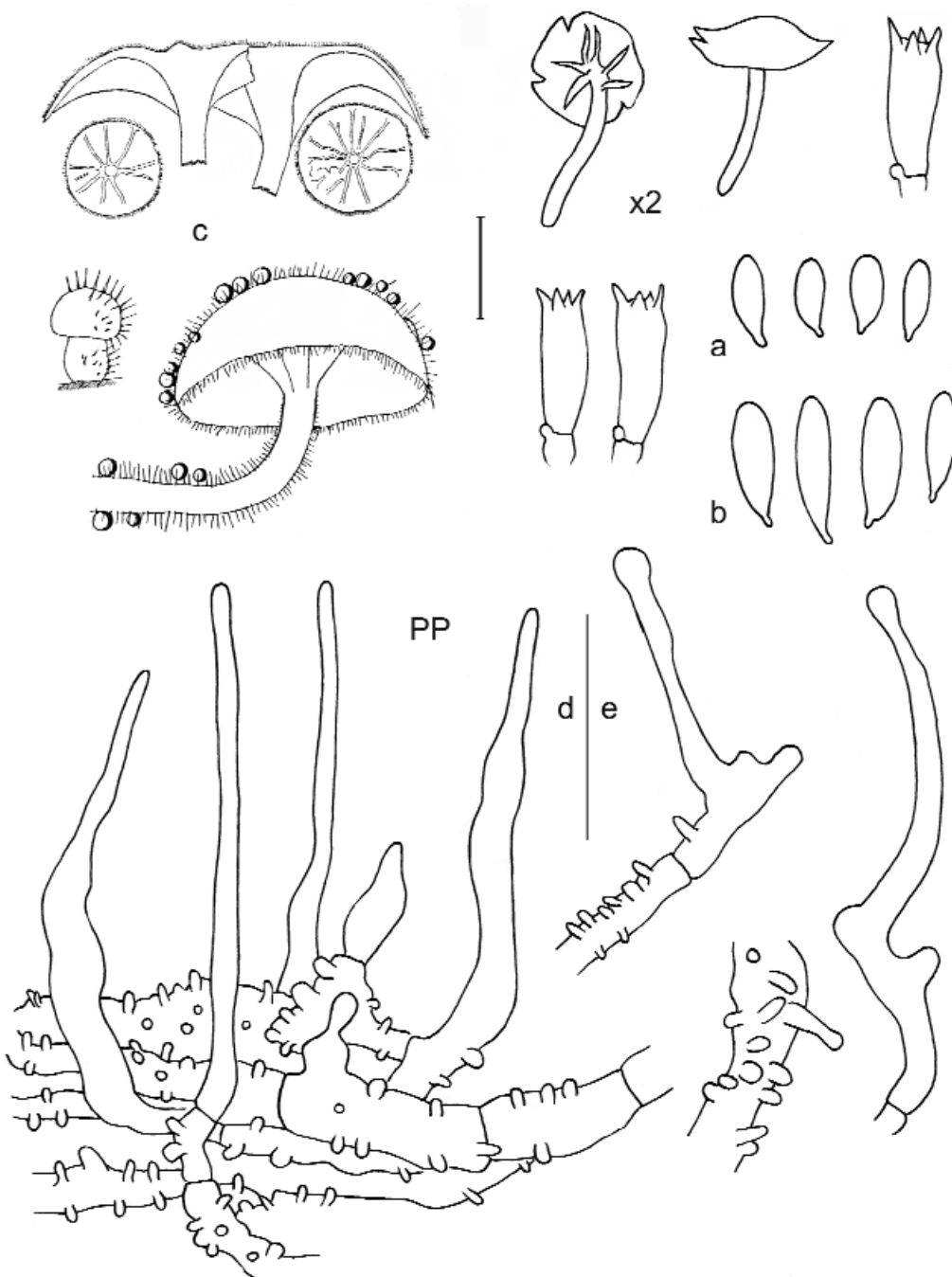


Fig. 13: *Hemimycena mauretana* var. *mauretana* (a, b, c, d), var. *microcephala* (e); (c after KÜHNER 1938)

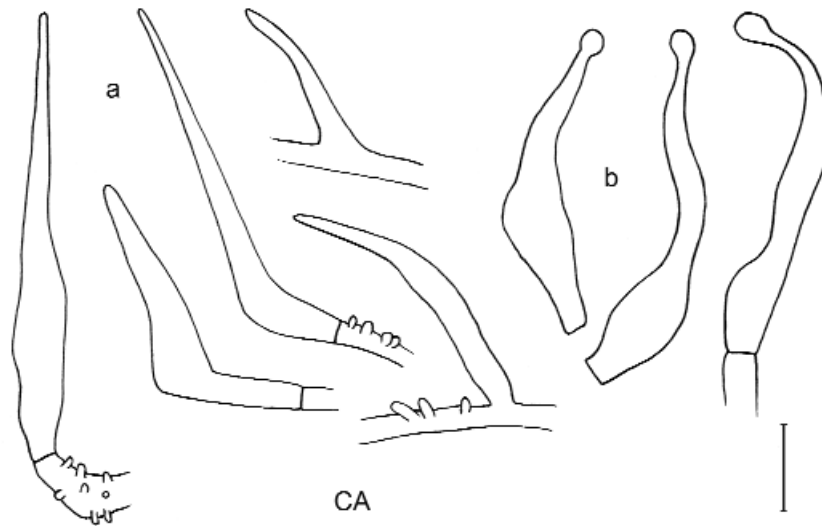


Fig. 14: *Hemimycena mauretunica* var. *mauretunica* (a), var. *microcephala* (b)

To date, the present authors had difficulties in distinguishing clear-cut boundaries with regard to these characters. For example, spore size given for var. *stenospora* ($9\text{--}10.5 \times 2.2\text{--}3.0 \mu\text{m}$) and for the typical variety [$6.5\text{--}8.0$ (9.5) $\times 1.7\text{--}2.5$ (3.0)] μm , seemed to intergrade in the collections we studied. The size and shape of pileocystidia also vary a great deal. Some collections had caulo- and pileocystidia ranging from $20\text{--}80 \mu\text{m}$ long, with attenuated apex, other were attenuated, but ending in a small, discrete knob, corresponding with var. *microcephala*. Caulocystidia, ranging up to $180 \mu\text{m}$ long, and corresponding with var. *longipila*, were also occasionally found. And finally, one well-documented collection from the Netherlands had abundant cheilocystidia.

For these reasons, we have decided to present a rather broad concept of *Hemimycena mauretunica*, uniting all collections with a spore-size ranging from $6.5\text{--}11 \mu\text{m}$ long and with \pm attenuated dermatocystidia into var. *mauretunica*. Forms with extremely long spores, as described for var. *megaspore*, have so far not been encountered. Forms with distinctly capitulate dermatocystidia are distinguished as var. *microcephala*. Finally, the collection mentioned above from the Netherlands with well-differentiated cheilocystidia, is described as a new variety.

Key to the varieties of *Hemimycena mauretunica*

- 1 Basidia 2-spored; clamps absent **12e. var. apogama** (p. xx)
- 1* Basidia 4-spored, clamped **2**
- 2 Spores $11.5\text{--}14 \mu\text{m}$ long **12d. var. megaspore** (p. xx)
- 2* Spores up to $11 \mu\text{m}$ long **3**
- 3 Caulo- and pileocystidia $25\text{--}200 \mu\text{m}$ long, attenuated towards apex
..... **12a. var. mauretunica** (p. xx)
- 3* Caulo- and pileocystidia up to $80 \mu\text{m}$ long, narrowing towards apex, but ending in a small, discrete capitulum **4**
- 4 Cheilocystidia present **12b. var. cystidiatum** (p. xx)
- 4* Cheilocystidia absent **12c. var. microcephala** (p. xx)



Pl. 13: *Hemimycena mauretánica* var. *mauretánica*, photo G. WÖLFEL

12a. *Hemimycena mauretánica* var. *mauretánica*

Pl. 13

Mycena mauretánica var. *longipila* Kühner in Kühner & Valla, Trav. Lab. Jaysinia 4: 68. 1972.

Type specimen: not known to be in existence; (?MPU.)

Selected icones: J. Lange, Fl. agar. dan. 2: pl. 62B. 1936 (as *Omphalia cuspidata* var. *stenospora*); Lonati, Bol. Ass. micol. ecol. Romana 33: 39. 1994; Serafinia, Bol. Gruppo micol. G. Bres. 24(5/6): 22. 1993.

Selected literature: Kühner & Valla, Trav. Lab. Jaysinia 4: 54-60. 1972; Krieglsteiner, Z. Mykol. 49: 83. 1983; Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 97. 1985; Montag & Münzmay, Fauna Fl. Nat. Saarland 21(3/4): 46. 1989; Maas Geesteranus, Proc. Kon. Ned. Akad. Wetensch. Ser. C 84(2): 212. 1981 (as *H. angustispora*); Moreno & al., Bol. Soc. micol. Madrid 12: 37. 1988; Watling & Turnbull, Brit. Fung. Fl. 8: 124. 1998.

Description: Pileus up to 2.5 mm broad, campanulate with obtuse centre or hemispherical, expanding to convex, with inflexed, then deflexed margin, not hygrophanous, not translucently striate, white, minutely, densely puberulous to hairy with patent hairs, sometimes exuding little droplets when moist. **Lamellae** distant, L = 6-9, l = 0-1, broadly adnate to decurrent, triangular, arcuate, not reaching the margin of the pileus, fairly thick, white. **Stipe** 1.5-7 × 0.3-0.5 mm, insititious, straight or curved, cylindrical, white, densely puberulous to hairy with patent hairs, sometimes exuding little droplets when moist. **Context** very thin, white. **Smell** and **taste** indistinct.

Spores 6.5-10 × 2.0-3.5 (4.0) μm, E = 2.2-4.0, Q = 3.2, cylindrical to bacilliform, often attenuated towards apiculus, very thin-walled. **Basidia** 15-24 × 3.0-7.0 μm, 4-spored, clavate. **Lamella edge** fertile. **Hymenial cystidia** absent. **Pileipellis** a cutis of cylindrical, 2.5-4.0 μm wide, diverticulate hyphae; diverticulae short, 1-5 × 0.5-1.5 μm. **Pileocystidia** 20-70 × 2.0-6.0 μm, awl-shaped to setu-

liform with thin- or slightly thickened walls. **Stipitipellis** a cutis made up of 2–5 µm wide, diverticulate hyphae. **Caulocystidia** 40–70 × 4.0–6.5 µm, awl-shaped or setuliform with thin or slightly thickened walls, sometimes diverticulate. **Clamp-connections** present.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, on dead leaves and woody debris of deciduous trees, also recorded from herbaceous debris.

Distribution: Widespread, but distribution poorly known. Recorded from Austria, the Czech Republic, Denmark, France, Italy and Netherlands.

Phenology: (July-)August to November.

Collections examined: **AUSTRIA:** Niederösterreich, Schönberg/Kamp, Mollands, 30 July 1989 leg. A. Hausknecht (WU 8017, var. *stenospora*). – Niederösterreich, Maissau, Grünhof, 19 July 1987 leg. A. Hausknecht (WU 6245). – **CZECH REPUBLIC:** Hořelice, ad glandum quercinum, 30 May 1946 leg. V. Vacek (PRM 668810). – Ochoz, Hornek, aluvium, on leaves of *Alnus glutinosa*, 12 Oct. 2000 A. Vágner (BRNM). – Žarošice, radix arborum, 12 Aug. 1947 leg. V. Vacek (PRM 668827). – Brno, Stránská skála nature reserve, 24 Nov. 2000 leg. V. Antonín 00.263 and Z. Bieberová (BRNM). – Moravian Karst, Vilémovice, punkva Caves, 11 Nov. 2000, S. Kubešova (BRNM). – **FRANCE:** Haute Savoie: Samoëns, Gorge des Tines, 9 Sept. 1943, R. Kühner 51.165 (holotype of var. *longipila*, G); ditto, 9 Sept. 1943, R. Kühner 51.133 (G). – **GERMANY:** Saarland, Hemmersdorf, 13 Oct. 1086, T. Münzmay 202 (Herb. Münzmay). – **NETHERLANDS:** prov. Gelderland, Over Betuwe, Valburg, Oosterhout, 23 Aug. 1980 leg. R. Swart-Velthuyzen (L). – prov. Limburg, Kunderberg, 20 Nov. 1982 leg. J. Schreurs (L).

12b. *Hemimycena mauretana* var. *cystidiata* Antonín & Noordel. var. nov.

Pl. 14 & 15, Fig. 15

Latin diagnosis: A varietate typica lamellae margine sterili cheilocystidiis lageniformibus ad tibiiformibus, pileo- et caulocystidiis tibiiformibus differt. Holotypus: The Netherlands, prov. Noord Holland, Amstelveen, 11 Nov. 1987 leg. J. Neuteboom (L).

Type specimen: The Netherlands, prov. Noord Holland, Amstelveen, 11 Nov. 1987 leg. J. Neuteboom (holotype, L).

Description: **Pileus** 2.0–3.5 mm broad, 1–2 mm high, convex with small papilla, pure white, dry, membranaceous, translucent, grooved on back of lamellae, exuding little droplets when moist, minutely pruinose under lens. **Lamellae** distant, L = 5–8, l = 0–few, strongly decurrent, usually not reaching the margin of pileus, surface between lamellae sometimes minutely veined or anastomosing, with concolorous edge, exuding little droplets when moist. **Stipe** 5–15 × 0.2–0.6 mm, white, shortly pruinose all over.

Spores 9.0–12.5 × 3.0–3.5 (4.0) µm, av. 9.7 × 3.5 µm, E = 2.4–3.8, Q = 2.8, cylindrical to bacilliform, with straight sides or less fusiform with acute apiculus and blunt apex. **Basidia** 12–18 × 3.0–7.0 µm, 4-spored, clamped. **Lamella edge** heterogeneous with abundant cheilocystidia, 27–40 × 4.5–6.0 µm, lageniform with 1.0–2.0 µm wide neck, thin-walled, hyaline. **Lamella trama** regular, made up of strongly inflated elements, 30–75 × 6.0–30 µm, with thin, hyaline walls. **Pileipellis** a cutis made up of 2.0–7.0 µm wide hyphae with numerous diverticulae. **Pileocystidia** abundant, 20–50 × 2.0–7.0 µm, awl-shaped with small, round, often abrupt capitulum, 2.0–4.5 µm broad, thin-walled. **Pileitrama** of short, strongly inflated elements, 22–75 × 8.0–28 µm. **Pigment** absent. **Stipitipellis** a cutis of more or less smooth or slightly diverticulate hyphae. **Caulocystidia** numerous, 18–40 × 3.0–7.5 µm (base), tapering towards abruptly capitate, 2.0–4.0 µm wide apex, thin or very slightly thick-walled, hyaline. **Clamp-connections** abundant.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.



Pl. 14 & 15: *Hemimycena mauretana* var. *cystidiata*, photo G. VAN ZANEN

Ecology: Growing parasitically (?) on fine roots of *Cotoneaster* in pot.

Distribution: Known only from the holotype locality in the Netherlands and the Czech Republic.

Phenology: June to November.

Collection examined: **CZECH REPUBLIC:** Nové Mlýny, Křivé jezero nature reserve, 19 Sept. 1995 leg. V. Antonín 95.188 (BRNM). – Lanžhot, Cahnov nature reserve, 29 June 1995 leg. V. Antonín 95.91 (BRNM). – Nevojice, Malhotky nature reserve, 14 July 1999 leg. M. Knápková (BRNM, BRNOP). – **THE NETHERLANDS:** prov. Noord Holland, Amstelveen, 11 Nov. 1987, J. Neuteboom (L).

Notes: *Hemimycena mauretana* var. *cystidiata* differs from the typical variety by the sterile lamella edge with numerous cheilocystidia and the capitate pileo- and caulocystidia. The cystidial shape is very similar to those of var. *microcephala*, which however has not cheilocystidia and has slightly smaller spores.

It belongs to the complex of *H. mauretana* on account of the presence of pileo- and caulocystidia, broom-like (en brosse) hyphae in pileipellis, spores in tetrads, and small droplets exuded by the basidiocarps when moist. *Hemimycena tortuosa*, which also has capitate pileo- and caulocystidia, and similar cheilocystidia, differs by the typically spirally twisted neck of the cystidia, and general habit with well-developed, ascending, almost free lamellae.

12c. *Mycena mauretana* var. *microcephala* Kühner in Kühner & Valla, Trav. Lab. Jaysinia 4: 68. 1972

Type specimen: France, Haute Savoie: Samoëns, Gorge des Tines, 26 Aug. 1957, R. Kühner 57-2 (G, holotype).

Selected literature: Kühner & Valla, Trav. Lab. Jaysinia 4: 56-57. 1972.

Description: **Pileus** 2 mm broad, hemispherical, papillate, densely but very shortly hirsute. **Lamellae** of the same length, $L = 7$, arcuate, narrow, reaching the pileus margin or not. **Stipe** 3×0.2 mm, filiform, slightly clavate at base, pubescent, always in a lower part.

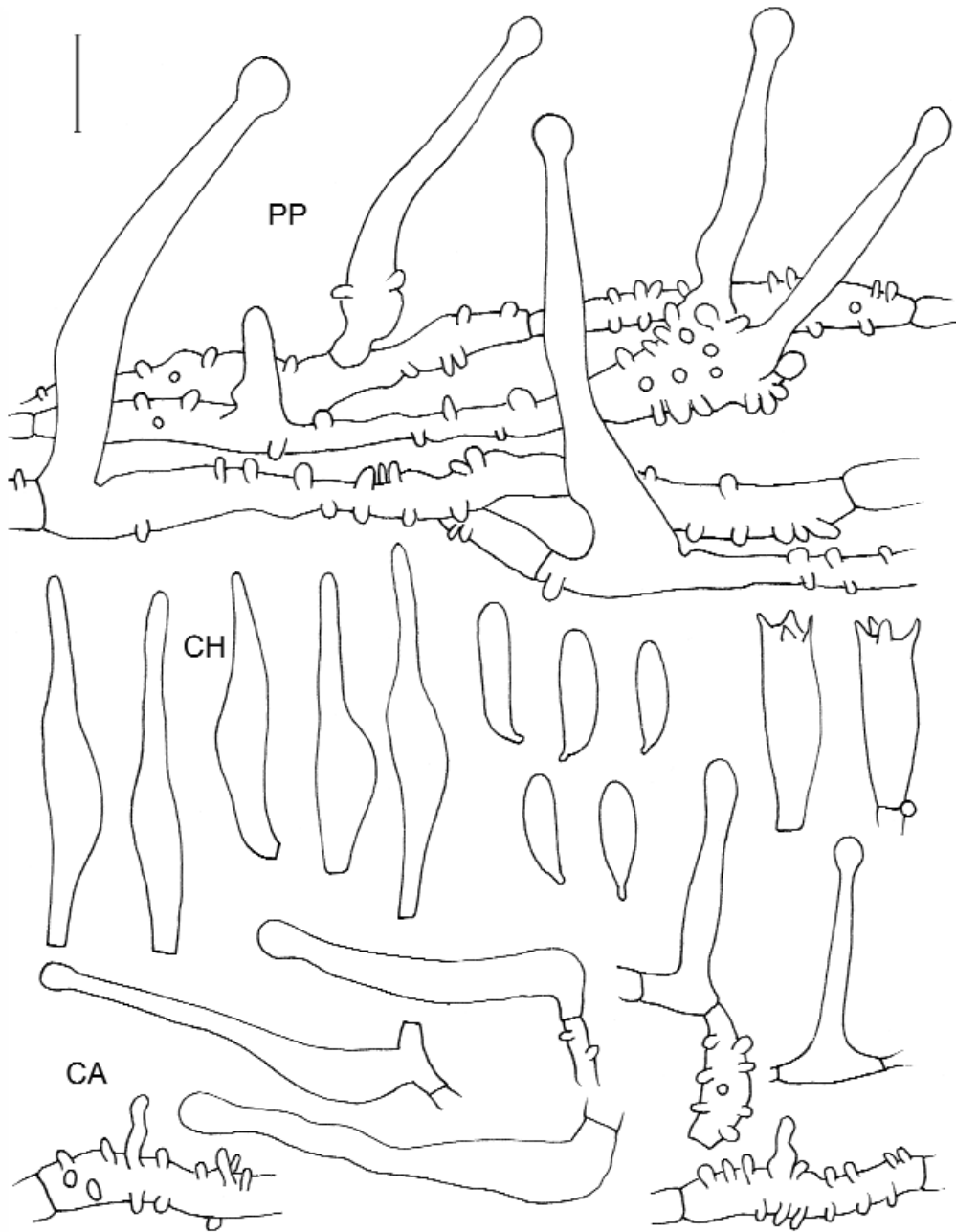


Fig. 15: *Hemimycena mauretana* var. *cystidiata*

Spores 6.5–8.0 × 2.0–4.0 µm, E = 2.1–4.0, Q = 3.0, narrowly ellipsoid, thin-walled, inamyloid. **Basidia** 15–22 × 4.0–7.0 µm, 4-spored, clamped. **Cheilocystidia** absent. **Pileipellis** a trichoderm of capitate pileocystidia, 15–40 × 2.0–4.5 µm, capitate, with a nearly rounded capitulum, 2.0–4.5 µm in diam., originating from diverticulate hyphae. **Stipitipellis** a trichoderm of capitate caulocystidia, 20–90 × 1.5–4.0 µm, with rounded capitulum, 2.0–4.0 µm in diam. **Context hyphae** 2.0–5.5 µm wide, sparsely diverticulate with short, 0.5–2 µm long excrescences. **Clamp-connections** present.

Collections examined: FRANCE: Oise: Coye-la-Forêt, 29 May 1950 leg. H. Romagnesi 50.59 (PC, herb. Romagnesi). – Haute Savoie: Samoëns, gorge des Tines, 26 Aug. 1957, R. Kühner 57-2 (G, holotype).

Notes: *Hemimycena mauretana* var. *microcephala* differs from the typical variety by the capitate hairs on pileus and stipe. Like typical var. *mauretana*, this variety does not have cheilocystidia (compare var. *cystidiata* above).

12d. *Mycena mauretana* var. *megaspora* Kühner in Kühner & Valla, Trav. Lab. Jaysinia 4: 68. 1972.

Selected literature: Kühner & Valla, Trav. Lab. Jaysinia 4: 56–57. 1972.

Type specimen: not existing. Type locality: France, Haute Savoie, Samoëns, F. de Bostan.

Characteristics: Differs from the type variety by the spores measuring up to 11.5–14 × 2.5–3.5 µm.

Notes: needs to be rediscovered to evaluate its status. VELENOVSKÝ (1947) described the same taxon under the name *Delicatula phyllophila* Velen. (ANTONÍN 2003). Unfortunately, the type material is in a poor state.

12e. *Mycena mauretana* var. *apogama* Kühner in Kühner & Valla, Trav. Lab. Jaysinia 4: 68. 1972

Type specimen: not existing; type-locality: France: Haute Savoie, Samoëns, Gorge des Tines.

Selected literature: Kühner & Valla, Trav. Lab. Jaysinia 4: 54–60. 1972.

Collections examined: FRANCE: Haute Savoie: Samoëns, Gorge des Tines, 9 Sept. 1943, R. Kühner 51.133 (G).

Characteristics: **Basidiocarps** very small: **pileus** up to 2 mm broad, entirely hairy; **spores** 10–12 × 2.5–3.5 µm, narrowly cylindrical-fusiform. **Basidia** 2-spored. Pileus with attenuated **pileocystidia**. **Clamp-connections** absent.

Notes: KÜHNER (l.c.) ranged this collection as a variety of *Mycena mauretana*, on account of the hairs on pileus and stipe, but remarked that *H. cyphelloides* (*H. subtilis*) is also very similar, differing by the larger spores. It needs to be rediscovered to evaluate its status.

13. *Hemimycena crispula* (Quél.) Singer

Fig. 16

Omphalia crispula Quél., C. R. Assoc. Fr. Av. Sci. 9(1880, Champ. Jura Vosges, Suppl. 10): 663. 1881; *Omphalina crispula* (Quél.) Quél., Enchirid. fung.: 46. 1886; *Delicatula crispula* (Quél.) Pat., Essai Tax. Hyéménomyc.: 157. 1900; *Mycena crispula* (Quél.) Kühner, Encyklop. Mycol. 10: 642. 1938; *Marasmiellus crispulus* (Quél.) Singer, Lilloa 22: 298. 1951; *Hemimycena crispula* (Quél.) Singer, Ann. Mycol. 41: 121. 1943. – *Helotium gibbum* Alb. & Schwein., Consp. fung.: 350. 1805; *Perona gibba* (Alb. & Schwein.) Pers., Mycol. eur. 2: 3. 1825; *Omphalia gibba* (Alb. & Schwein.) Pat., Tab. anal. fung.: 26, tab. 560. 1886;

Pl. 16:
Hemimycena crispula
 var. *crispula*,
 photo M. WILHELM



Cyphella gibba (Alb. & Schwein.) J. Schröt., Pilze Schlesiens 1: 434. 1889; *Phialea gibba* (Alb. & Schwein.) Sacc., Syl. fung. 8: 271. 1889; *Delicatula gibba* (Alb. & Schwein.) Pat., Essai taxonom.: 157. 1900; *Delicatula gibba* (Alb. & Schwein.) Kühner, Trav. Lab. "La Jaysinia", 1: 69. 1957 (a superfluous combination). – *Cyphella infundibuliformis* Fr., Summa Veget. Scandinav.: 336. 1849 (as nomen novum for *Helotium gibbum*); *Chaetocypha infundibuliformis* (Fr) Kuntze, Rev. gen. plant.: 847. 1891.

Misapplied name: *Helotium hirsutum* Tode, Fungi Mecklenburg. 1: 23. 1790; *Perona hirsuta* (Tode) Pers., Mycol. eur. 2: 3. 1825; *Omphalina hirsuta* (Tode) Quél., C. R. Assoc. Fr. Av. Sci. 18: 509. 1890; *Omphalia hirsuta* (Tode) Sacc., Syl. fung. 9: 45. 1891; *Delicatula hirsuta* (Tode) Cejp, Sp. Přírod. Fak. Karlovy Univ. 98: 84. 1929 s. Redhead 1982, non Tode (= nomen dubium).

Like in *Hemimycena mauretunica*, the complex of *H. crispula* shows a considerable morphological variation. Distinctive are the setiform cystidia, which are always present on the stipe, but may considerably vary in numbers on the pileus. Typical *H. crispula* has abundant pileocystidia, whereas *H. pseudocrispula* has fewer and less developed, smaller pileocystidia. The number of sterigmata per basidium also varies from 2- to 4-spored, both with clamp-connections, and more or less similarly sized spores.

13a. *Hemimycena crispula* var. *crispula*

Pl. 16 & 17

Type specimen: not preserved. Type-locality: France, Jura.

Selected icones: Breitenbach & Kränzlin, Pilze Schweiz 3: pl. 215. 1991; J. Lange, Fl. agar. dan. 2: pl. 62D. ('1936') 1937 (als *Omphalia crispula*); Moser & Jülich, Farbatl. Basidiomyc., Hemimycena 2. 1985; Tabares, Bolets catalunya 8: pl. 367. 1989.

Selected literature: Bañares et al., Bol. Soc. Micol. Madrid 11(1): 63-64. 1986 (as *Delicatula crispula*); Breitenbach & Kränzlin, Pilze Schweiz 3: 192. 1991; Cejp, Atlas Hub Evrop. 4b. Delicatula: 141-142. 1938 (as *Delicatula crispula*); Desjardin, Mycotaxon 42: 191. 1991 (as *Hemimycena hirsuta*); Elborne et al., Nordic Macromyc. 2: 125. 1992 (as *Hemimycena hirsuta*); Gröger, Boletus 18(3): 93 and 98. 1994 (as *Hemimycena hirsuta*); Josserand, Ann. Soc. Lin. Lyon 80: 92-93. 1937 (as *Omphalia crispula*); Kühner, Genre Mycena: 642-645, fig. 230. 1938 (as *Mycena crispula*); Kühner & Valla, Trav. Lab. Jaysinia 4: 65-67. 1972 (as *Mycena crispula*); J. Lange, Dansk bot. Ark. 6(5): 19. 1930; Malençon & Bertault, Champ. sup. Maroc 2: 328-230. 1975 (as *Delicatula crispula*); Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 98. 1985; Pegler, Kew Bull. Add. Series 9: 242. 1983; Redhead, Can. J. Bot. 60: 2007-2010, fig. 27. 1982 (as *Helotium hirsutum*); Romagnesi, Bull. Soc. mycol. Fr. 108: 5. 1992 (as *Mycena crispula*); Watling & Turnbull, Brit. Fung. Fl. 8: 123. 1998 (as *Hemimycena hirsuta*).



Pl. 17:
Hemimycena crispula
var. *crispula*,
photo M. WILHELM

Description: **Pileus** 2–5 (10) mm broad, hemispherical, conico-convex to convex, expanding with age to applanate, usually with slightly depressed centre, sometimes with small papilla, with subinvolute then inflexed finally often undulating margin, white, opaque or slightly translucently striate, distinctly pubescent to hairy (lens). **Lamellae** rather crowded, L = 6–10, l = 0, decurrent, reduced, not reaching the pileus margin, usually fold-like, in young specimens sometimes practically absent, white, with concolorous pubescent edge. **Stipe** 6–7 (12) × 0.2–0.5 mm, cylindrical, slightly broadened above, ± cylindrical at base, white, distinctly pubescent to hairy (lens), without strigose hairs at base. **Context** very thin. **Smell** and **taste** indistinct.

Spores 6.5–8.5 (11.0) × 4.0–4.7 (5.5) μm, E = 1.6–2.0, Q = 1.8, ellipsoid, subamygdaliform, thin-walled, hyaline. **Basidia** 28–33 × 5.7–7.0 μm, 2-spored, (narrowly) clavate, clamped. **Basidioles** 15–30 × 3.0–7.0 μm, cylindrical to narrowly clavate. **Hymenial cystidia** absent. **Trama** made up of cylindrical, ± thin-walled, up to 10 μm wide hyphae. **Pileipellis** a cutis, made up of radially arranged, slightly thick-walled, diverticulate, up to 6 μm wide hyphae. **Pileocystidia** (11) 35–71 × 3.0–5.5 μm, cylindrical, narrowly lageniform, awl-shaped, setiform, sometimes irregular, obtuse, slightly thick-walled. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, up to 7 μm wide hyphae. **Caulocystidia** numerous, 30–90 × (3.5) 4.5–7.0 μm, setiform, awl-shaped, sublageniform or subcylindrical, obtuse to subacute, rarely acute, slightly thick-walled (0.5–1.5 μm). **Clamp-connections** present.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, ± single, on fallen twigs and leaves of broadleaved trees (*Betula pendula*, *Chamaerops humilis*, *Crataegus*, *Eriobotrya japonica*, *Eucalyptus globulus*, *Olea europaea*, *Phillyrea*, *Populus*, *Rubia peregrina*, *Quercus faginea*, *Q. ilex*, *Q. suber*, *Quercus* sp., *Rubus*, *Salix caprea*, *Ulex baeticus*, *Viburnum*), rarely coniferous trees (*Abies pinsapo*, *Picea sitchensis*, *Pinus maritima*, *Pseudotsuga menziesii*), also on grass and plant remnants (e.g. *Agave*, *Calamagrostis montana*, *Filipendula ulmaria*, *Petasites hybridus*, *Polystichum aculeatum*, *Salvia officinalis*, *Umbellularia californica*), found also on fallen cones of conifers, mostly in wet places.

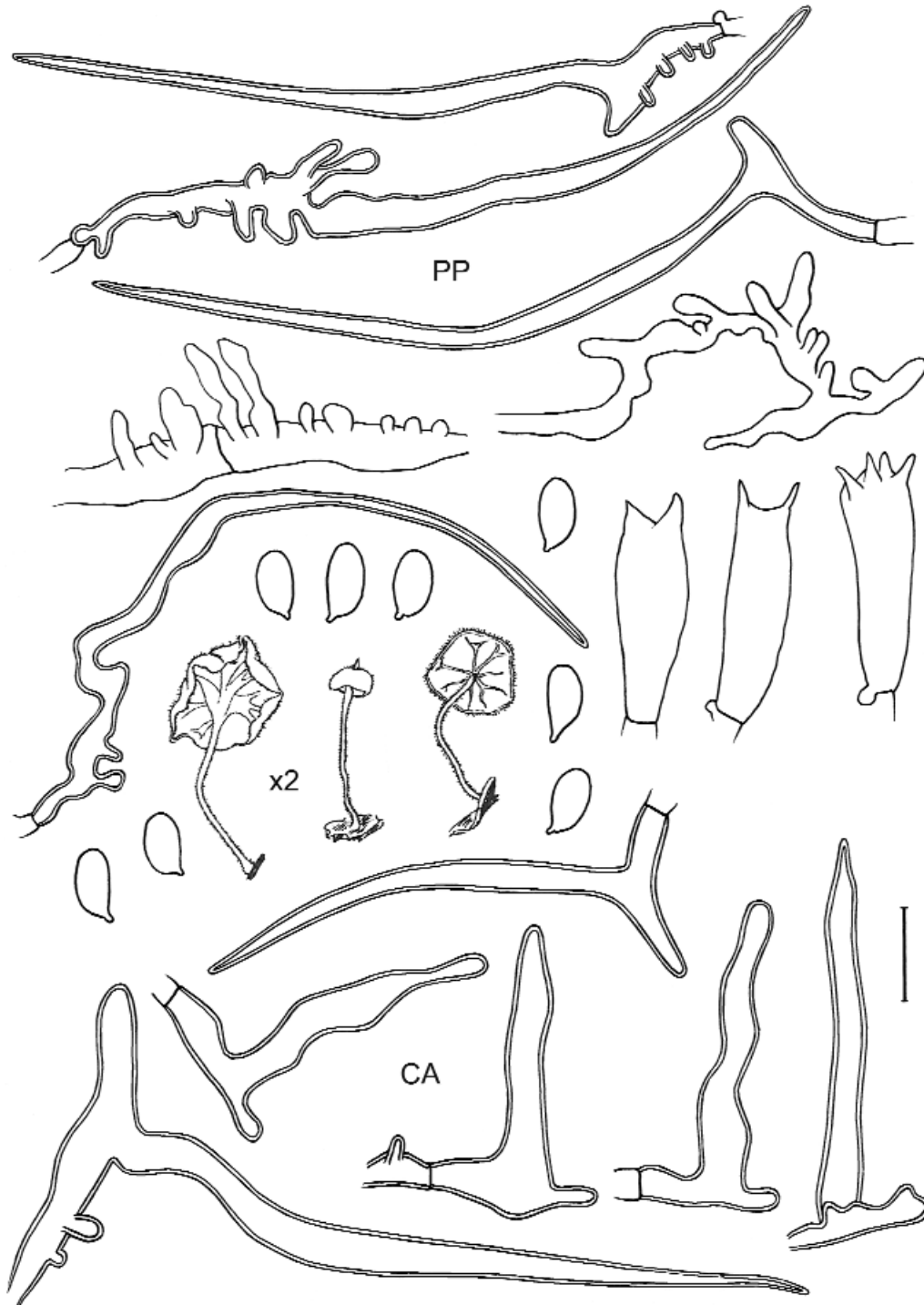


Fig. 16: *Hemimycena crispula* var. *crispula* & var. *tetraspora*

Distribution: Widely distributed in Europe but rarely recorded, and probably overlooked. It is known from Austria, the Czech Republic, Denmark, Finland (both ELBORNE et al. 1992), France, Germany (KREISEL et al. 1987), Italy, Norway (ELBORNE et al. 1992), Spain (ORTEGA et al. 1996; TABARES & ROCABRUNA 1987), Scotland (PEGLER & YOUNG 1971), Slovakia, Sweden (ELBORNE et al. 1992), Switzerland (BREITENBACH & KRÄNZLIN 1991; FAVRE 1960). It has also been collected in North America (British Columbia, Canada, REDHEAD 1982; California and Tennessee, U.S.A., DESJARDIN 1991), Africa (Algeria, MALENÇON & BERTAULT 1975, and Canary Islands, BAÑARES & al. 1986, 1994; BELTRÁN TEJERA et al. 1989) and Australia (MAY & WOOD 1997).

Phenology: (June-) September to November (December to January in Algeria, MALENÇON & BERTAULT 1975)

Collections examined: **AUSTRIA:** Niederösterreich, Traismauer, Vier Eichen, 20 June 1992 leg. W. Klofac (WU 10793). – Vorarlberg, Feldkirch, Meiningen, 5 Sept. 1995 leg. A. Hausknecht (WU 14358). – Steiermark, Leibnitz, Ehrenhausen, 5 Sept. 1996 leg. A. Hausknecht (WU 16806). – **CZECH REPUBLIC:** Louňovice pod Blaníkem, Danica near Roudný, 28 Sept. 1994 leg. F. Kotlaba (PRM 884135). – **FRANCE:** Alsache, St.Louis, 16 Oct. 1997, M. Wilhelm (L). – Retourmac, Forêt de Miaune, 29 Sept. 1999 leg. R. Courtecuisse; Antonín 99.104 (BRNM). – Maysel (Oise), 13 Aug. 1959 leg. H. Romagnesi 59.100 (PC, herb. Romagnesi). – **ITALY:** Siena prov., S. Leonardo al Lago - Montalbuccio, La Piramide, 30 Sept. 1993 leg. A. Laganà, E. Salemi, C. Barluzzi and C. Perini (SIENA 2318). – **SLOVAKIA:** Horná Orava LPA, Oravské Veselé, Pilsko, Randová-valley, 30 Sept. 2000 leg. V. Antonín 00.147 (BRNM). – Belianské Tatry Mts., Hviezdoň, 25 July 1956 leg. K. Kříž (BRNM, 326889). – Malá Magura Mts., Seč, 26 July 1981 leg. J. Kuthan (BRA 1070). – Malá Fatra Mts., Bystrička, Bystrička valley, 4 Oct. 1981 leg. L. Hagara (BRA 253). – Turňa nad Bodvou, Zadielská dolina valley, 4 July 1961 leg. J. Kubička (PRM 839875). – **UKRAINE:** Zámer, Kobylecká Polana, July 1924 leg. A. Pilát (PRM 496167).

Notes: *Hemimycena crispula* is characterised in having small, distinctly pubescent-hairy carpophores with reduced, fold-like lamellae which do not reach the pileus margin, the absence of hymenial cystidia, diverticulate pileipellis hyphae, cylindrical, awl-shaped, narrowly lageniform pileocystidia and setiform caulocystidia.

REDHEAD (1982) identified it with *Helotium hirsutum* Tode. However, the latter fungus differs especially in having smooth hymenophore (it is always at least with fold-like lamellae in *H. crispula*). *Helotium hirsutum* could also stand for *H. pseudocrispula* or *H. subtilis* (= *H. cyphelloides*), and is considered a *nomen dubium* by the present authors.

The description by JOSSERAND (1937) fits well. GRÖGER (1994) mentioned up to 130 respectively 180 µm long pileo- resp. caulocystidia and the presence of a few indistinct cheilocystidia, WATLING & TURNBULL (1998) give shorter basidia (19–22 × 5.5–6.5 µm), KÜHNER (1938) resp. KÜHNER & VALLA (1972) and MEUSERS & MEUSERS (1985) up to 100 resp. 130 µm long pileocystidia and up to 160 resp. 180 µm long caulocystidia; BREITENBACH & KRÄNZLIN (1991) mentioned the presence of pleurocystidioid elements, broader spores (6.9–10.9 × 4.1–6.2 µm) and up to 200 µm long caulocystidia, MALENÇON & BERTAULT (1975) smaller basidia (20–27 × 5.5–7 µm) and up to 115 µm long pileo- and caulocystidia, REDHEAD (1982) smaller basidia (19–22 × 5.5–6.5 µm), RAITHELHUBER (1995) smaller spores (5–7 × 3.5–4 µm). Spores were described by PEGLER & YOUNG (1971).

PEGLER (1983) described as *H. crispula* from Guadeloupe and Venezuela a fungus with a small sulcate pileus, up to 1 mm wide pruinose stipe, small spores (5–6.5 × 3–4 µm), 4-spored basidia, which may represent another taxon.

A.H. SMITH (1947) included *Omphalia apiculata* Kauffm. among the synonyms of *H. crispula*. According to REDHEAD (1982), it represents however *Helotium leucophaeum* (Murrill) Redhead [= *Hemimycena delectabilis* (Peck) Singer in the present work].

CEJP (1938) distinguished two species, *Delicatula crispula* in our sense and *D. hirsuta* which should differ by having a distinctly papillate pileus, vein-like lamellae, awl-shaped hymenial cysti-

dia and ovoid spores with very small projections, and which should grow on *Carex* remnants. The identity of this species remains unknown, since there is no material to check the characters.

13b. *Hemimycena crispula* var. *tetraspora* Antonín & Noordel. var. nov.

Latin diagnosis: A varietate typica basidiis 4-sporis differt. Holotypus: Italia, Tuscany, Castello di Tocchi, 5. XI. 1996 leg. V. Antonín 96.261 (BRNM612468).

Holotype: Italia, Tuscany, Castello di Tocchi, 5. XI. 1996 leg. V. Antonín 96.261 (BRNM612468).

Selected literature: Kühner, *Genre Mycena*: 645-646. 1938; Meusers & Meusers, *Mitt. Arbeitsgem. Pilzk. Niederrhein* 3: 95-96. 1985.

Description: It differs from the typical var. *crispula* only in having constantly 4-spored basidia. Other features fit well with it. Also its ecology is the same as in the typical variety.

Distribution: Unknown, probably widely distributed in Europe.

Phenology: August to December.

Collections examined: ITALY: Tuscany, Siena prov., Casalino, 6 Dec. 1994 leg. V. Antonín 94.335 (BRNM 599261). – Siena prov., Radicondoli, Travale 1, 2 Nov. 1994 leg. A. Laganà, E. Salerni, C. Barluzzi and C. Perini (SIENA 2322). – Siena prov., Radicondoli, Travale 2, 2 Nov. 1994 leg. A. Laganà, E. Salerni, C. Barluzzi and C. Perini (SIENA 2323). – Tuscany, Castello di Tocchi, 5 Nov. 1996, V. Antonín 96.261 (BRNM). – San Agnese, 6 Nov. 1996, V. Antonín 96.266 (BRNM). – SLOVAKIA: Bukovské vrchy Mts., Nová Sedlica, Zbojský potok valley, 8 Oct. 1992 leg. J. Kuthan, Antonín 92.230 (BRNM 570848). – UKRAINE: Tiačevo, Numecká Mokrá, July 1932 leg. A. Pilát (PRM 25323) – Trebushany, Bily potok valley, Aug. 1935 leg. A. Pilát (PRM 19686).

Notes: Already KÜHNER (1938) and MEUSERS & MEUSERS (1985) described a four-spored form with smaller spores, 6.7–8.7 × 3.2–4.5 µm. Our studies showed that the spore size of this 4-spored collections are almost the same as the typical variety.

The present authors also examined a four-spored taxon in the *H. crispula*-group, which, however, also has numerous, differently shaped pileocystidia (especially at pileus margin), which are 15–30 × 3.0–5.0 (7.0) µm, ± clavate, irregular, lobate to branched, rarely subcoralloid, thin-walled, clamped. The status of this form is still unclear.

14. *Hemimycena pseudocrispula* (Kühner) Singer

Pl. 18, Fig. 17

Mycena pseudocrispula Kühner, forme tétrasporique, *Mycena*: 645. 1938; *Delicatulla pseudocrispula* (Kühner) Kühner & Romagn., *Fl. anal. Champ. supér.*: 117. 1953; *Helotium pseudocrispulum* (Kühner) Redhead, *Can. J. Bot.* 60: 2005. 1982; *Hemimycena pseudocrispula* (Kühner) Singer, *Ann. mycol.* 41: 121. 1943.

Type-specimens: Not preserved.

Selected icones: Breitenbach & Kränzlin, *Pilze Schweiz* 3: pl. 220. 1991; Einhellinger, *Hoppea* 41: 370. 1984; Moser & Jülich, *Farbatl. Basidiomyc., Hemimycena*: pl. 2. 1984.

Selected literature: Gröger, *Boletus* 18(3): 98. 1994; Kühner, *Genre Mycena*: 645-646. 1938 (excl. f. bisporique = *H. subtilis*); Kühner & Valla, *Trav. Lab. Jaysinia* 4: 63-64, fig. 10. 1972; Meusers & Meusers, *Mitt. Arbeitsgem. Pilzk. Niederrhein* 3: 95-96. 1985 (as tetrasporic form); Romagnesi, *Bull. Soc. mycol. Fr.* 108: 5. 1992 (as *Mycena pseudocrispula*); Weholt, *Agarica* 4(8): 50. 1983; Watling & Turnbull, *Brit. Fung. Fl.* 8: 129. 1998.

Description: Pileus 2–10 mm broad, campanulate expanding to convex or applanate, depressed, blunt or slightly papillate at centre, with deflexed then slightly reflexed, undulating margin, white, becoming pale yellowish towards margin when dry, apparently almost glabrous to minutely tomentose (lens). **La-**



Pl. 18: *Hemimycena pseudocrispula*, photo A. HAUSKNECHT

mellae very distant, $L = 8-10$, $1 = (0-)1$, decurrent, reduced, not reaching the margin of the pileus, white, with concolorous, subentire edge. **Stipe** $10-35 \times 0.25-0.5$ mm, insititious, milky white, entirely pubescent-hairy with stiff hairs (lens), more distinctly towards base, without basal mycelium.

Spores $8.0-11.5 \times (3.5) 4.0-5.5$ μm , $E = 1.7-2.4$, $Q = 1.9-2.2$, ellipsoid to oblong, somewhat tapered to apiculus or more or less fusiform, thin-walled, hyaline. **Basidia** $27-31 \times 7.5-8.0$ μm , 4-spored, clavate. **Basidioles** $17-30 \times 3.5-8.0$ μm , clavate to cylindrical. **Lamella edge** fertile. **Hymenial cystidia** absent. **Trama** made up of cylindrical to inflated, up to 20 μm wide, thin-walled hyphae. **Pileipellis** a cutis, made up of radially arranged, cylindrical, thin-walled, diverticulate, up to 8 μm wide hyphae; diverticulae digitate, obtuse, \pm thin-walled, up to 4.0×1.0 μm , mixed with larger, irregular, branched or coralloid, thin- to slightly thick-walled, up to 40×4.0 μm large projections. **Pileocystidia** absent or mostly scattered, short (only up to $35 \times 4.0-5.0$ μm) setoid, present especially near pileus margin. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, smooth or minutely diverticulate, up to 8 μm wide hyphae. **Caulocystidia** at apex $7.0-50 \times 3.0-9.0$ (11) μm , awl-shaped to sublageniform, obtuse to subacute, slightly thick-walled; at base setiform with slightly thickened walls, $130-250 \times 4.0-10.0$ μm (base), acute to subacute (apex $1.0-2.0$ μm wide). **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic; on decaying leaves of various greases and herbaceous plants, such as *Deschampsia cespitosa*, *Petasites hybridus*, *P. kablikianus*. RICEK (1989) described it as growing on needles of *Picea*, rarely on remnants of *Rhitiadelphus squarrosus* and dead *Quercus* leaves.

Distribution: Probably widespread but very rarely recorded.

Phenology: July to September.

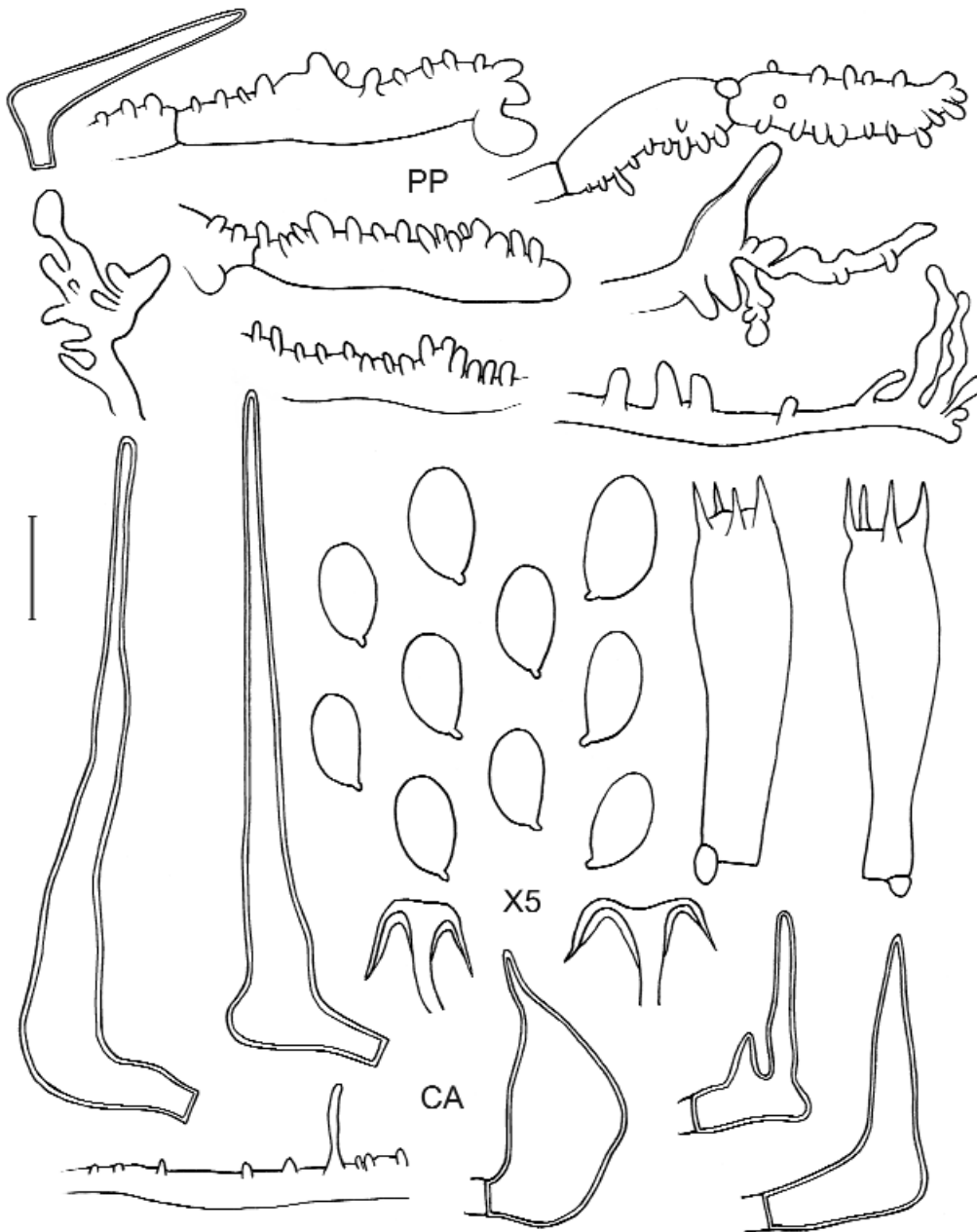


Fig. 17: *Hemimycena pseudocrispula*

Collections examined: **AUSTRIA:** Steiermark, Weichselboden, Rotmoos, 3 Sept. 1994 leg. A. Hausknecht (WU 13088). – Vorarlberg, Bezau, Au, 1 Sept. 1995 leg. A. Hausknecht (WU 14195). – Tristach, Buchwiese, 30 Aug. 2000, M.E. Noordeloos 2042 (L). – **BELGIUM:** prov. Liège, Malmédy, Bévercé, Vallée de la Warche, 12 Sept. 1998 leg. A. Fraiture 2697 (BR 84246-50). – **CZECH REPUBLIC:** Beskydy Mts., Bílá, Smraďavka, 28 July 2001 leg. V. Antonín 01.176 and D. Janda (BRNM). – Orlické Mts., Kačerov, 19 Sept. 2001, O. Jindřich (HR). – Beskydy Mts., Sta-

ré Hamry-Samčanka, 1 Aug. 2002, V. Antonín 02.58 (BRNM). – **FRANCE:** Haute Savoie, Préalpes de Faucigny, Samoëns, 13 Sept. 1953, R. Kühner 53-40(G); ditto, 30 Aug. 1954, R. Kühner 54-13 (G). – **THE NETHERLANDS:** prov. Noord Holland, Amsterdamse Waterleidingduinen, Eiland van Rolvers, 31 Aug. 1986 leg. E.C. Vellinga 946 (L). – Flevoland, Lelystad, Visvijverbos, 20 July 1988, E.C. Vellinga (ECV 1306) & R. Swart-Velthuysen (L). – **SLOVAKIA:** Horná Orava LPA, Mútne, Spálený briežok, 19 July 2001 leg. V. Antonín 01.134 and H. Deckerová (BRNM). – Horná Orava LPA, Oravská Polhora, Vonžovec, 5 June 2002, V. Antonín 96.266 (BRNM). – ditto, 5 June 2002 leg. V. Antonín 02.28 (BRNM). – Vysoké Tatry Mts., Bielovodská dolina valley, 15 July 1955 leg. F. Šmarda (BRNM 326830). – Belianské Tatry Mts., Tatranská Kotlina, Dolina siedmich prameňov valley, Holubyho dül, 24 July 1956 leg. F. Šmarda (BRNM 327169). – ditto, Dolina siedmich prameňov valley, 30 Aug. 1998 leg. V. Antonin 98.95 (BRNM). – ditto, 6 Sept. 2001 leg. V. Antonín 01.235 (BRNM). – ditto, 8 Sept. 2001 leg. H. Deckerová, S. Jančovičová and V. Antonín 01.247 (BRNM). – ditto, Hviezdoň, 28 July 1956 leg. K. Kříž (BRNM 326887). – Belianské tatry, Holubyho dolina valley, 23 June 1959 leg. J. Kubička (PRM 839891). – ditto, 8 Aug. 1957 leg. J. Kubička (PRM 839953). – Slovenský raj LPA, Veľký Kysel valley, ad detr. Petasites, 29 June 1965 leg. J. Kubička and L. Kubičková (PRM 840427).

Notes: *Hemimycena pseudocrispula* is well characterised by its 4-spored, clamped basidia, ellipsoid to oblong spores, setiform caulocystidia and the absence or scarcity of pileocystidia, which, if present, are shorter than in *H. crispula*.

The original description by KÜHNER (1938) differs especially in having slightly narrower spores ($\times 2.7\text{--}4.5\ \mu\text{m}$), narrower basidia ($\times 6\text{--}7\ \mu\text{m}$) and wider pileipellis hyphae ($5\text{--}16\ \mu\text{m}$ wide); he also described the presence of $36\text{--}54\ \mu\text{m}$ long scattered pileocystidia. On the contrary, KÜHNER & VALLA (1972) as well as ROMAGNESI (1992) and GRÖGER (1994) mentioned only up to $20\ \mu\text{m}$ long pileocystidia and, moreover, up to $30\ \mu\text{m}$ wide pileipellis hyphae. MEUSERS & MEUSERS (1985) also accepted the original description of Kühner. BREITENBACH & KRÄNZLIN (1991) mentioned slightly different spores ($7\text{--}12 \times 2.8\text{--}3.9\ \mu\text{m}$) and smaller basidia ($20\text{--}25 \times 5\text{--}7\ \mu\text{m}$) rarely also with two sterigmata, moreover their photograph showed a fungus with a distinctly papillate pileus.

WATLING & TURNBULL (1998) identified this fungus with *Omphalia gibba* s. Rea, and described it with predominantly 2-, rarely also 4-spored basidia. Other features agree with the original description by KÜHNER (1938). They also mentioned the presence of similar 2-spored taxon with larger spores ($11.5\text{--}16 \times 3.5\text{--}4.5\ \mu\text{m}$).

The Slovak collection (Antonín 98.95) and the Austrian collection (WU 14195) differ from the original description in having sometimes papillate pileus and broader spores [$\times 4.5\text{--}5.5$ (6.0) μm]. Moreover, the Austrian collection has also some irregular to subcoralloid elements on the lamellar edge. Other features fit well with our concept of *H. pseudocrispula*.

15. *Hemimycena crispuloides* Antonín & Noordel.

Fig. 18

Latin diagnosis: Pileus 2–5 mm latus, campanulatus ad convexus umbone minuto obtuso vel parum depressus albus. Lamellae distantes $L = 9\text{--}15$, $l = 1$ (2) decurrentes albae. Stipes 10–17 mm longus 0.3–0.6 mm latus cylindricus albus pruinosofurfuraceus. Sporae 9–13 μm longae 4.3–6.5 (7.2) μm latae late ellipsoideae subfusiformes vel ellipsoideae. Basidia 2-spora. Cheilocystidia desunt vel adsunt, sed sparsa et diverticulata. Pileipellis hypharum diverticulatarum cute. Pileocystidia desunt. Caulocystidia 17–35 μm longa 5.5–10 μm lata [ad basim 22–120 μm longa (4.5) 8–12 μm lata], setiformia. Fibulae desunt. In Petasitidis detrito.

Holotypus: Czechia, Bílé Karpaty, Starý Hrozenkov, 21. VI. 1998 leg. V. Antonin 98.12 (holotypus in herbario BRNM 642324 asservatur).

Holotype: Czechia, Bílé Karpaty, Starý Hrozenkov, 21. VI. 1998 leg. V. Antonin 98.12 (holotypus in herbario BRNM 642324 asservatur).

Description: Pileus 2–5 mm broad, campanulate-convex, with a small umbilicus or only slightly depressed at centre, with involute then inflexed margin, hygrophanous, translucently striate, finely tomentose to subglabrous, white. **Lamellae** distant, $L = 9\text{--}15$, $l = 1$ (2), well developed, but sometimes



Fig. 18: *Hemimycena crispuloides*

not reaching the pileus margin, arcuate, decurrent, white, with concolorous, finely pubescent edge. **Stipe** 10–17 × 0.3–0.6 mm, cylindrical, slightly broadened towards base and at apex, white, hyaline, entirely finely pubescent, more distinctly towards base, without basal rhizoid.

Spores 9.0–13 × 4.2–6.5 (7.2) μm, E = 1.6–3.0, Q = 1.9–2.0, variable in shape, broadly ellipsoid, fusoid-ellipsoid, (sub)fusoid, hyaline, thin-walled. **Basidia** 27.5–35 × 7.0–9.0 μm, 2-spored, clavate, clampless. **Basidioles** 11–35 × 3.5–8.0 μm, cylindrical to clavate. **Cheilocystidia** present, but scattered, 14–33 × 4.5–8.0 μm, subcylindrical, sublageniform, narrowly clavate, usually diverticulate in upper part, mixed among basidia. **Trama** made up of cylindrical to (sub)fusoid, thin-walled, hyaline, up to 20 μm wide hyphae. **Pileipellis** a cutis of radially arranged, cylindrical, ± thin-walled, diverticulate, up to 3.0–10.0 μm wide hyphae; diverticulae digitate, obtuse, up to 5.0 × 2.5 μm, thin- to very

slightly thick-walled. **Pileocystidia** none. **Stipitipellis** a cutis, made up of parallel, cylindrical, slightly thick-walled, smooth, up to 8 µm wide hyphae. **Caulocystidia** numerous, 17–35 × 5.5–10.0 µm, lageniform to somewhat awl-shaped, thick-walled at apex, and larger, 22–120 × (4.5) 8.0–12 µm, setiform, lageniform to awl-shaped, with subacute to acute apex, thick-walled, hyaline towards base. **Clamp-connections** absent in all tissues.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic on decaying petioles of *Petasites* in a submontane coniferous (*Picea*) stands.

Distribution: So far only known from the Czech Republic and Slovakia.

Phenology: June.

Collections examined: **CZECH REPUBLIC:** Bílé Karpaty Mts., Starý Hrozenkov, 21. VI. 1998 leg. V. Antonín 98.12 (BRNM 642324). – **SLOVAKIA:** Biele Karpaty Mts., Drietoma-Liešna, 20. VI. 1998 leg. J. Hlaváček (Antonín 98.09, BRNM 642321).

Notes: *Hemimycena crispuloides* is characterised in having well-developed lamellae which, however, do not always reach the margin of the pileus, the absence of basal stipe rhizoids, rather large and broad spores which are very variable in shape, 2-spored basidia, the presence of cheilocystidia and setoid caulocystidia, and the absence of pileocystidia.

The very similar *H. crispula* var. *crispula* especially differs by the presence of setoid pileocystidia, the absence of cheilocystidia or cheilocystidioid elements and smaller spores, *H. crispula* var. *tetraspora*, moreover, by 4-spored basidia. *H. pseudocrispula* has 4-spored basidia, scattered setoid pileocystidia, lacks cheilocystidia or cheilocystidioid elements and has smaller spores.

16. *Hemimycena subtilis* (Velen.) Antonín

Pl. 19 & 20, Fig. 19

Delicatula subtilis Velen., Novit. mycol. novis.: 50. 1947; *Hemimycena subtilis* (Velen.) Antonín, Czech Mycol. 54: 230. 2003. – *Mycena cyphelloides* P.D. Orton, Trans. Brit. mycol. Soc. 43: 178. 1960 (nom. invalid.); *Hemimycena cyphelloides* (P.D. Orton) Maas Geest., Proc. Kon. Ned. Akad. Etsch. Ser. C 84(4): 437. 1981 (nom. invalid.); *Helotium cyphelloides* Redhead, Can. J. Bot. 60: 2006. 1982. – *Mycena pseudocrispula* Kühner, forme bisporique, Genre Mycena: 646. 1938.

Misappl. names: *Omphalia gibba* ss. Pat.; *Delicatula gibba* ss. Kühner – *Mycena pseudocrispula* sensu J. Favre, Hautes Marais: 94. 1948.

Type-specimen: Czech Republic, Mnichovice, Hrusice, 11 June 1941 leg. J. Velenovský (PRM 153656, holotype – it consists of only one very small broken carpophore).

Selected literature: Antonín, Czech Mycol. 54: 230. 2003; Elborne & al., Nordic Macromycetes 2: 125. 1992 (as *Hemimycena cyphelloides*); Favre, Hautes Marais: 94-96. 1948; Gröger, Boletus 18(3): 100. 1994; Kühner, Genre Mycena: 646-647. 1938 (as *Mycena pseudocrispula* forme bisporique); Kühner & Valla, Trav. Lab. Jaysinia 4: 60-63, fig. 9. 1972 (as *Mycena cyphelloides*); Orton, Trans. Brit. mycol. Soc. 43: 178. 1960 (as *Hemimycena cyphelloides*); Redhead, Can. J. Bot. 60: 2006-2007, fig. 20-23. 1982 (as *Helotium cyphelloides*); Romagnesi, Bull. Soc. mycol. Fr. 108: 5. 1992 (as *Mycena cyphelloides*); Velenovský, Novit. mycol. novis.: 50. 1947; Watling & Turnbull, Brit. Fung. Fl. 8: 121. 1998 (as *Hemimycena cyphelloides*).

Description: **Pileus** 0.5–5 mm broad, hemispherical then convex or applanate, blunt, rarely with a small papilla, but usually truncate, often depressed or infundibuliform, white, appearing glabrous, but finely pruinose under lens, often sulcate on back of the lamellae. **Lamellae** usually absent, rarely a few (up to 6) vein-like folds are present, which end halfway the pileus, never reaching the stipe, white.

Stipe 2–20 × 0.1–0.4 mm, filiform, often flexuous, somewhat broadened at apex; white, entirely covered with very fine, short hairs (lens). Context very thin. **Smell** and **taste** not recorded.

Spores 10–16 × 3.5–5.0 μm, fusiform or clavate-fusiform, attenuated towards the apiculus. **Basidia** 20–30 × 4.0–6.0 μm, 2-spored, clavate, clampless. **Lamella edge** fertile. **Hymenial cystidia** absent. **Trama** made up of up to 16 μm wide, cylindrical or inflated hyphae. **Pileipellis** a cutis of 3–12 μm wide, densely diverticulate hyphae; diverticulae 3–7 × 0.5–1 μm; mixed with numerous setiform pileocystidia, up to 100 μm long, 20–30 μm wide at base; awl-shaped, tapering into an acute apex, thick-walled. **Stipitipellis** a cutis, made up of densely diverticulate, up to 7 μm wide hyphae; diverticulae up to 6 × 1–2 μm. **Caulocystidia** abundant, setiform, awl-shaped, thick-walled, up to 50 μm long in upper part of stipe, but considerably longer, up to 130 μm, in basal part of stipe, thin-walled. **Clamp-connections** absent.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic on debris of herbaceous plants, sedges, etc. (e.g. *Carex*, *Scirpus*, *Sparganium*) in marshy places; also found on leaves of *Quercus*.

Distribution: Widely distributed, but rare.

Phenology: (June-)September to October.



Pl. 19 & 20:
Hemimycena subtilis,
photos J. PETERSEN



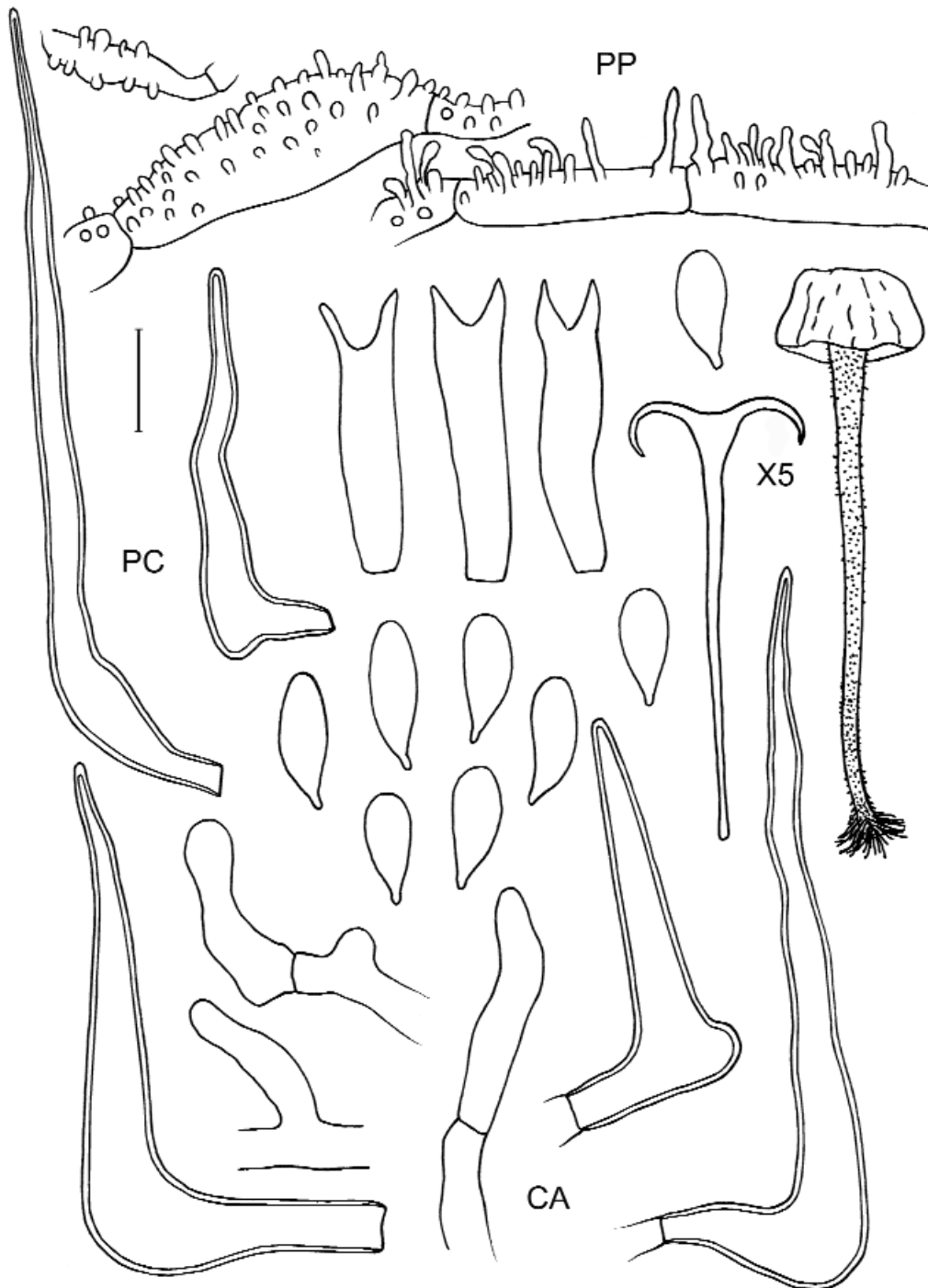


Fig. 19: *Hemimycena subtilis*

Collections examined: **BELGIUM:** prov. Namur, Rochefort, Ave et auffe, 13 Sept. 2003, M.E. Noordeloos 200305 (L). – **CANADA:** British Columbia, Glacier National Park, Beaver R. Valley marsh near Hwy, 11 Sept. 1980 leg. S. A. Redhead (DAOM 180455, holotype of *Helotium cyphelloides*). – **CZECH REPUBLIC:** Czech Republic, Mnichovice, Hrusice, 11 June 1941 leg. J. Velenovský (PRM 153656, holotype). – **THE NETHERLANDS:** prov. Limburg, Kunderberg, 27 Oct. 1980 leg. J. Schreurs 543 (L).

Notes: *Hemimycena subtilis* is very similar to *H. pseudocrispula*, from which it mainly differs by the two-spored, clampless basidia, larger spores and the abundance of long, setoid pileocystidia. It may therefore be only a two-spored, apogamous form (KÜHNER & VALLA 1972). One of us (V.A.) collected a very similar species in Slovakia that differs mainly by the lack of pileocystidia, and by having caulocystidia with a mucous slimy covering over the upper part (see 18. *Hemimycena tatrensis*) below.

VELENOVSKÝ (1947) described the surface of pileus and stipe in *Delicatula subtilis* as glabrous. However, the type revision showed that the surfaces of both pileus and stipe are covered by distinct setoid cystidia and that all features agree with the description of *H. cyphelloides* (ANTONÍN 2003).

FAVRE (1948) resp. KÜHNER (1938) mentioned distinctly broader basidia [$22\text{--}27$ (29) \times $6.5\text{--}7.5$ μm , resp. $23\text{--}29 \times 7\text{--}7.5$ μm], and the absence of pileocystidia (or pileocystidia are rarely present). On the other hand, REDHEAD (1982), GRÖGER (1994), ELBORNE et al. (1992) and WATLING & TURNBULL (1998) described them as abundant in central part of the pileus, and sparse elsewhere. Moreover, KÜHNER & VALLA (1972) mentioned the presence of less frequent setoid pileocystidia. Our concept fits well with their description

17. *Hemimycena angustispora* (P.D. Orton) Singer

Pl. 21, Fig. 20

Mycena angustispora P.D. Orton, Trans. Brit. Mycol. Soc. 43: 305. 1960; *Helotium angustisporum* (P.D. Orton) Redhead, Can. J. Bot. 60: 2004. 1982; *Hemimycena angustispora* (P.D. Orton) Singer, Sydowia 15(1961): 62. 1962; *Omphalia angustispora* Joss., Ann. Soc. Lin. Lyon 80: 82. 1937 (nom. inval., Art. 36.1); *Mycena angustispora* (Joss.) Kühner, Genre Mycena: 638. 1938 (nom. inval., Art 33 and 36); *Delicatula angustispora* (Joss.) Kühner & Romagn., Fl. anal. Champ. supér.: 118. 1953 (nom. inval., Art 33 and 36); *Hemimycena angustispora* Joss. ex Bon, Doc. mycol. 13(49): 38. 1983 (nom. inval., later synonym).

Excluded name: *Hemimycena angustispora* ss. Maas Geesteranus, Proc. Kon. Ned. Akad. Wetensch. Ser. C 84(2): 212, 1981 (= *H. mauretana* s.l.).

Type specimen: England, Surrey, Mickleham Downs, 24 Nov. 1953 leg. P. D. Orton 175 [holotype, as *Mycena angustispora*, K(M) 78941].

Selected literature: Cejp, Atlas Hub Evrop., 4. Omphalia: 119-120. 1936 (as *Omphalia angustispora*); Gröger, Botetis 18(3): 99-100. 1994; Jossierand, Ann. Soc. Lin. Lyon 80: 81-84. 1937 (as *Omphalia angustispora*); Krieglsteiner & al., Z. Mykol. 49(1): 83. 1983; Kühner, Genre Mycena: 638-639. 1938 (as *Mycena angustispora*); Kühner & Valla, Trav. Lab. Jaysinia 4: 52-54. 1972 (as *Mycena angustispora*); Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 98-99. 1985; Orton, Trans. Brit. Mycol. Soc. 43: 305-306. 1960 (as *Mycena angustispora*); Romagnesi, Bull. Soc. mycol. Fr. 108: 7. 1992 (as *Mycena angustispora*); Watling & Turnbull, Brit. Fungus Fl. 8: 125. 1998.

Description: **Pileus** (2) 5–9 (15) mm broad, conical-convex to convex-applanate, with conical or blunt papilla at centre, then sometimes with a small papilla in a small depression, with inflexed obtuse margin, slightly irregular when old, fragile, hygrophanous, translucently striate, white, then sordid white, dry, glabrous to the naked eye, but distinctly pubescent under lens. **Lamellae** moderately crowded to fairly distant, L = 6–12, l = 0–3, well-developed, reaching the margin of the pileus, never vein-like, arcuate-adnate to arcuate-decurrent, (rarely with collybioid habit of almost free to shortly adnexed lamellae), narrow, sometimes forked, sometimes undulate, white, with concolorous, entire edge. **Stipe** 5–25 \times 0.2–1 mm, cylindrical, straight, solid then fistulous, never with bulbous



Pl. 21:
Hemimycena angustispora,
photo G. WÖLFEL

base, white then tinged pale brown or yellow brown near base, entirely finely pubescent, towards base with strigose hairs. **Context** very thin, white. [Macroscopic description based on JOSSERAND (1937, incl. unpublished notes), and ORTON (1960)]

Spores (7.5) 8.0–11.5 (12) × 2.5–3.5 μm, E = 2.7–4.4, Q = 3.3–3.7, narrowly cylindrical to fusiform, often with parallel sides, almost bacilliform, but attenuated towards apiculus, usually appearing in tetrads in microscopical preparations of exsiccates. **Basidia** 17–25 × 6.0–8.0 (9.0) μm, 4-spored, clavate. **Basidioles** 12–27 × 3.0–8.0 μm, cylindrical, clavate. **Hymenial cystidia** usually not found; sometimes very scattered a few cystidia similar to pileocystidia found along edge of lamellae. **Hymenophoral trama** made up of cylindrical, ellipsoid, fusiform to inflated, thin-walled, 3.0–30 μm wide elements. **Pileipellis** a cutis made up of radially arranged, cylindrical, thin- to slightly thick-walled, up to 10 μm wide hyphae. **Pileocystidia** 35–91 × 4.5–8.0 (10.0) μm, awl-shaped, usually distinctly tapering towards acute apex, more rarely more or less cylindrical, often setiform with slightly thickened walls, at least in basal part, sometimes with a few digitate appendages in at base. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, up to 5 μm wide hyphae with pale yellow walls in KOH; with scattered projections or ± erect terminal cells. **Caulocystidia** (16) 25–78 × 3.5–8.0 (10.0) μm, setiform, awl-shaped, usually gradually tapering towards an acute, rarely obtuse apex, often irregularly shaped, with hyaline, slightly thickened walls. **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, single or in small groups, on leaves, on cupulae or on small twigs of *Fagus* and *Quercus*, found also on remnants of herbaceous plants, in various vegetation types.

Distribution: Scattered all over Western and Central Europe; (known from England, France, Germany, The Netherlands, Slovakia and Switzerland), but distribution poorly known.

Phenology: July to November.

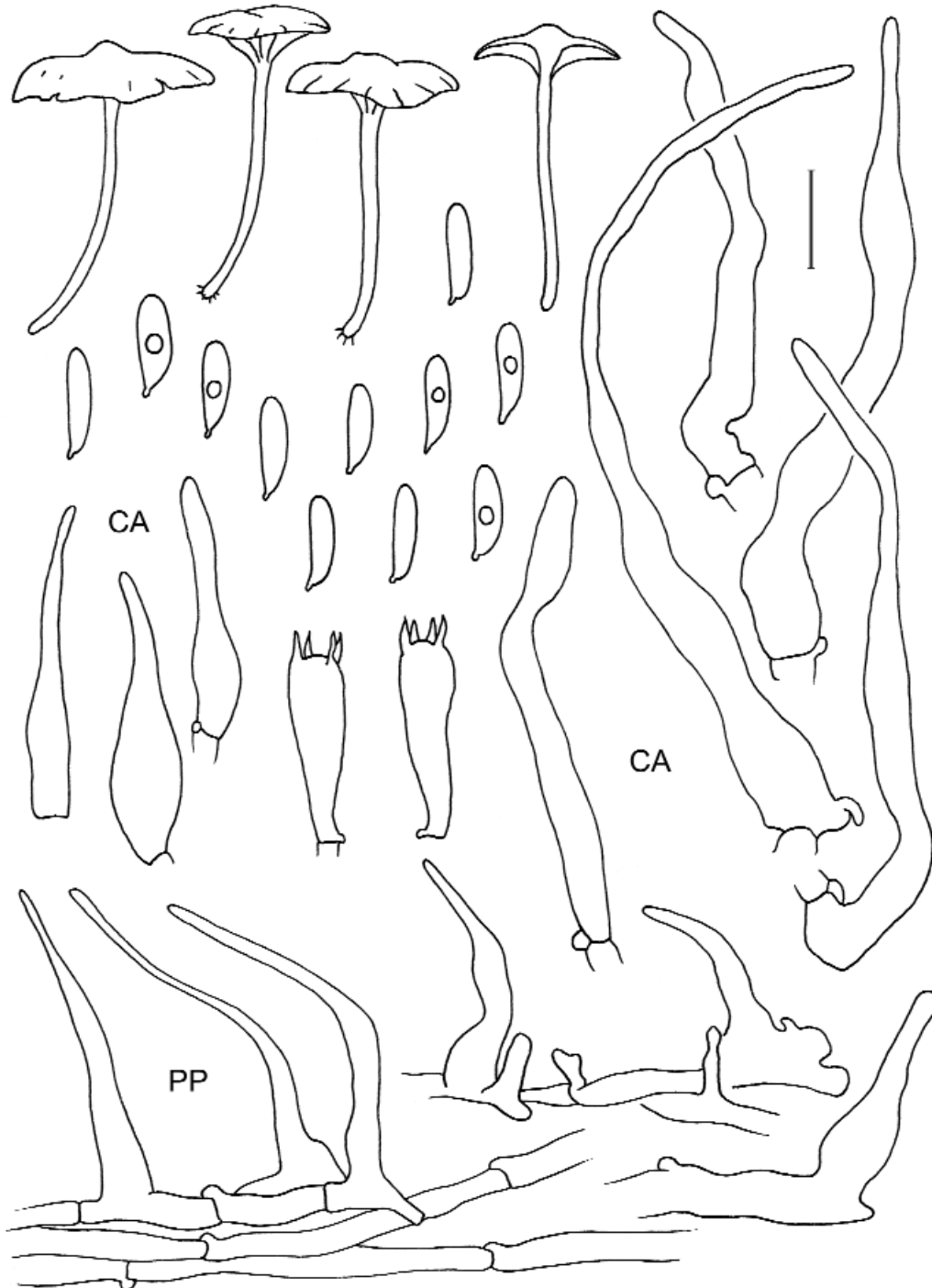


Fig. 20: *Hemimycena angustispora*

Collections examined: **BELGIUM:** Bruxelles, Boitsfort, Forêt de Soignes, 10 Aug. 1988 leg. G. M. Fodor (BR 4831-78). – **FRANCE:** Ain, Seillon, près Burg, 4 Sept. 1935 leg. M. Jossierand (G, herb. Jossierand XIV/89 en bas). – ditto, 12 July 1936 leg. M. Jossierand (G, herb. Jossierand XVI/49); La Chaux, près Besançon, 17 Aug. 1935 leg. M. Jossierand (G, herb. Jossierand); Vosgues, Le Ramausau près Plombières, 20 Aug. 1935 leg. M. Jossierand (G, herb. Jossierand, noted as a type of *Omphalia angustispora* Joss. by Jossierand); Cantal, Brolinge, Cne de St. Cernin, 16 July 1998, P-A. Moreau 98071608 (L); ditto, 17 July 1998, P-A. Moreau 98071703 (L). – **THE NETHERLANDS,** Alphen aan den Rijn, 10 May 1985, C.B. Uljé (L). – **SLOVAKIA:** Belianské Tatry Mts., Tatranská Kotlina, Skalné vráta, 29 Aug. 1998 leg. V. Antonín 98.86 (BRNM). – **UNITED KINGDOM: ENGLAND:** Surrey, Mickleham Downs, 24 Nov. 1953 leg. P. D. Orton 175 [holotype, K(M) 78941].

Notes: *Hemimycena angustispora* is distinguished from the related *H. mauretanica* complex by its white to sordid white pileus, which appears glabrous to the naked eye, and particularly by the well-developed lamellae which reach the margin of the pileus, and often a pale brownish or yellowish brownish tinges in the basal part of the stipe. ORTON (1960) described long thick-walled branched hyphae at stipe base, which, according to our type study, may belong to a mouldy fungus. Spore size varies in the collections studied. Some collections (P-A. Moreau 98071608; P-A. Moreau 98071703) have somewhat small spores ($7.5\text{--}10 \times 2.3\text{--}3.8 \mu\text{m}$) which fit, however, well with some descriptions in literature.

BON (1983) validated the epithet *angustispora* of Jossierand by designating another type specimen than the one selected by JOSSE RAND (1937). However, it represents a later synonym of *Mycena angustispora* P.D. Orton.

A collection from Slovakia (Belianské Tatry Mts., Antonín 98.86) differs in smaller cystidia (pileocystidia $25\text{--}41 \times 3.5\text{--}7.0 \mu\text{m}$, caulocystidia $17\text{--}35 \times 3.0\text{--}6.0 \mu\text{m}$), and cheilocystidia seem to be rare.

The distinction between *Hemimycena angustispora* and *H. mauretanica* is critical. Good distinctive characters are found in the pileipellis: smooth hyphae in *H. angustispora* and diverticulate in *H. mauretanica*. Also the spores are a bit larger in *Hemimycena angustispora*. An additional difference given by ORTON (1960) and by MEUSERS & MEUSERS (1985) is the thick-walled base of the caulo- and pileocystidia, which they call therefore setae, and the basal part of the stipe becoming grey-brown with age combined with the long, thick-walled hyphae at the base of the stipe. (but see notes about mould in the first paragraph!)

18. *Hemimycena tatrensis* ad int.

Pl. 22, Fig. 21

Description: **Pileus** 3.5–5 mm broad, low convex, with \pm applanate centre with a distinct papilla, with inflexed margin, slightly undulate when old, hygrophanous, not translucently striate, or only slightly at margin, white, finely radially rugulose, finely tomentose. **Lamellae** distant, $L = 12\text{--}15$, $l = 0\text{--}1$, lamellulae sometimes venose, arcuate, decurrent, sometimes furcate, especially near the margin, often not reaching the pileus margin, white, with concolorous, finely tomentose edge. **Stipe** $10\text{--}11 \times 0.5$ mm, cylindrical, not broadened at base, insititious, and entirely finely pubescent, hyaline white, without basal rhizoids. **Taste** and **smell** not mentioned.

Spores $12.5\text{--}15 \times (3.7) 4.0\text{--}5.0 \mu\text{m}$, $E = 2.6\text{--}3.5$, $Q = 3.1$, narrowly fusoid, subcylindrical, hyaline. **Basidia** $21\text{--}24 \times 7.0\text{--}7.0 \mu\text{m}$, 2-spored, clavate, clampless. **Basidioles** $12\text{--}25 \times 3.0\text{--}7.0 \mu\text{m}$, cylindrical to clavate. **Hymenial cystidia** not found. **Trama hyphae** of cylindrical to fusoid or ellipsoid, hyaline, thin-walled, up to $30 \mu\text{m}$ wide elements. **Pileipellis** a cutis, made up of radially arranged, cylindrical, \pm thin-walled, diverticulate, up to $6 \mu\text{m}$ wide hyphae; diverticulae up to $8.0 \times 2.0 \mu\text{m}$, digitate, obtuse, often irregular. **Pileocystidia** $18\text{--}30 \times 2.5\text{--}5.0 \mu\text{m}$, thin-walled, cylindrical to narrowly clavate, subfusoid, sublageniform, simple, irregular to at apex branched. **Stipitipellis** a cutis of cy-



Pl. 22:
Hemimycena tatrensis, photo V.
ANTONIN

lindrical, parallel, slightly thick-walled, smooth, up to 5 μm wide hyphae. **Caulocystidia** numerous, at apex up to $22 \times 5.0 \mu\text{m}$, digitate, subclavate, thin-walled, towards base $32\text{--}73 \times 5.0\text{--}13 \mu\text{m}$, awl-shaped, lageniform, slightly thick-walled, often with a mucous cap. **Clamp-connections** absent.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprophytic, on decaying leaves of *Petasites*.

Distribution: Known only from one locality in Slovakia.

Phenology: August.

Collections examined: SLOVAKIA: Západné Tatry Mts., Zadná Tichá dolina, 30 Aug. 1999 leg. V. Antonín 99.62 (BRNM).

Notes: *Hemimycena tatrensis* is characterised by small basidiocarps, lamellae usually not reaching the pileus margin, stipe base without basal rhizoids, rather large spores, the presence of pileocystidia, the absence of hymenial cystidia, 2-spored basidia, clampless hyphae, and attenuate, awl-shaped caulocystidia, which are not setiform, and often bear a mucous cap around the apex.

Hemimycena subtilis (= *H. cyphelloides*) is very similar, but differs in the lack of lamellae, or at most a few vein like structures, and the presence of very long (up to $100 \times 30\text{--}20 \mu\text{m}$), thick-walled setoid pileocystidia.

The first author (V.A.) collected only a few carpophores in one locality. Therefore, it is described *ad interim*.

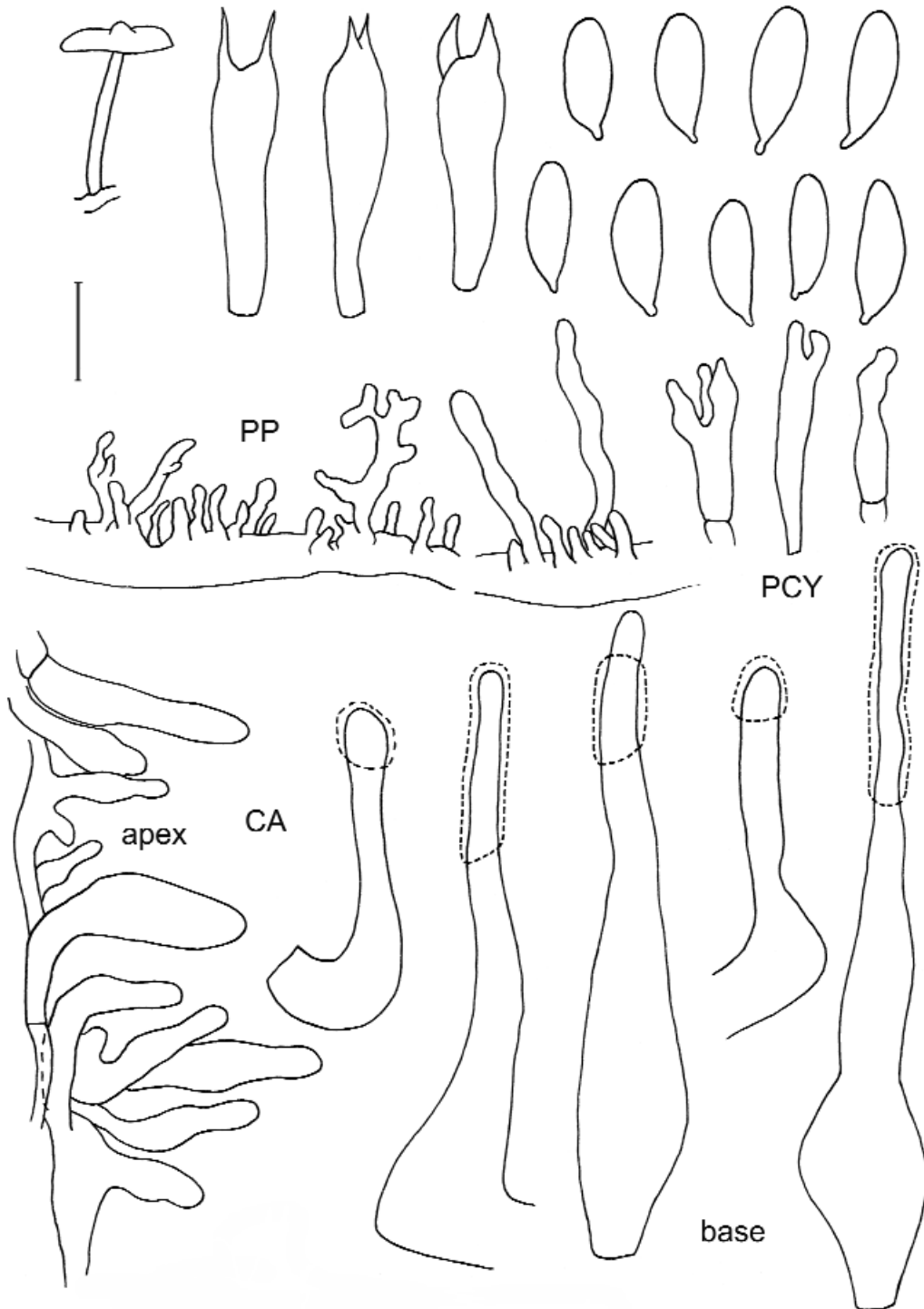


Fig. 21: *Hemimycena tatrensis*



Pl. 23: *Hemimycena tortuosa*, photo T. LAESSÖE

19. *Hemimycena tortuosa* (P.D. Orton) Redhead

Pf. 23, Fig. 22

Mycena tortuosa P.D. Orton, Trans. Brit. Mycol. Soc. 43: 307. 1960; *Helotium tortuosum* (P.D. Orton) Redhead, Can. J. Bot. 60: 2005. 1982; *Hemimycena tortuosa* (P.D. Orton) Redhead, Fungi Canad. 177. 1980.

Type specimen: England, Devon, Membury, Goodworthy Thicket, 1 Nov. 1956 leg. P.D. Orton 800 [holotype, K(M) 78939].

Selected icones: Courtecuisse, Mushrooms Britain and Europe: 112. 1999; Emmet, Mycologist 7(4): 179. 1993; Redhead, Fungi Canad. 177. 1980 (black&white).

Selected literature: Courtecuisse, Agarica 6(12): 111-112. 1985; Courtecuisse, Mushrooms Britain and Europe: 666-667. 1999; Gröger, Boletus 18(3): 96. 1994; Orton, Trans. Brit. Mycol. Soc. 43: 307-308. 1960 (as *Mycena tortuosa*); Romagnesi, Bull. Soc. mycol. Fr. 94: 74-76. 1978 (as *Mycena tortuosa*); Redhead, Fungi Canad. 177. 1980; Romagnesi, Bull. Soc. mycol. Fr. 108: 8. 1992 (as *Mycena tortuosa*); Watling & Turnbull, Brit. Fungus Fl. 8: 130. 1998.

Description: **Pileus** 0.5–12 mm broad, hemispherical, conico-convex or convex, expanding to applanate, often slightly depressed, with involute then straight, regular or lobed-crenulate margin, which often slightly exceeds the lamellae, weakly hygrophanous, slightly translucently striate when moist, purely white, changing to ivory or cream-colour to pale grey when old, opaque when dry, minutely pubescent (lens), the hairs often holding drops of water in moist conditions. **Lamellae** distant to fairly crowded, L = 12–20, l = 1–3 (7), adnate, sometimes with small decurrent tooth or almost free, well-developed, reaching the margin of the pileus, narrow, sometimes crispy in larger specimens, white,

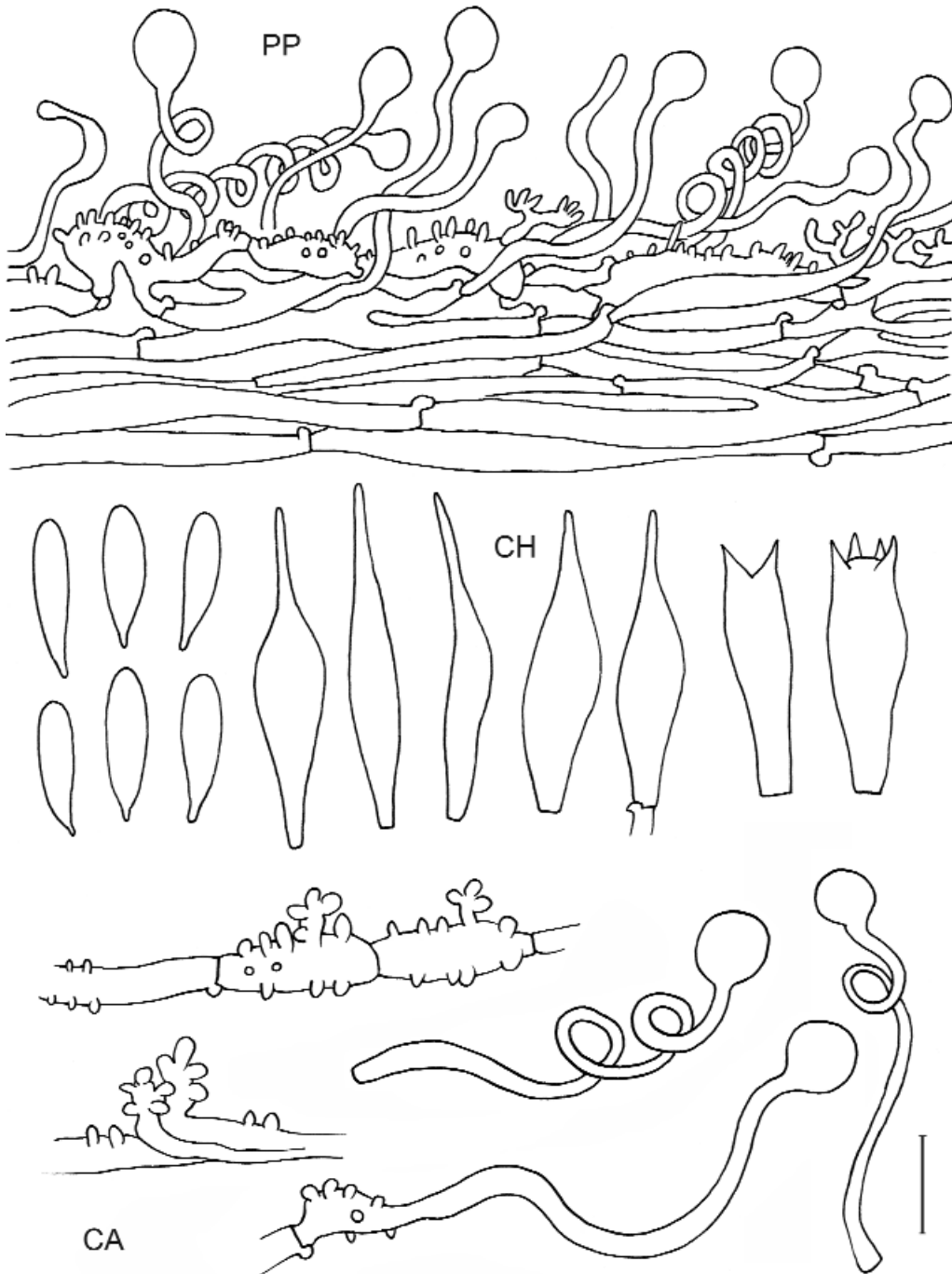


Fig. 22: *Hemimycena tortuosa*

with concolorous, entire or minutely flocculose-denticulate edge (lens). **Stipe** 1–27 × 0.1–1 mm, cylindrical or slightly swollen at base or apex, often very short and sometimes eccentric (when growing on the underside of bark lying on the ground) or longer and central, sometimes flexuous, white, entirely minutely pubescent (lens), the hairs often holding drops of water in moist situations, sometimes with short mycelial strands at base, white. **Context** very thin, white. **Smell** and **taste** indistinct.

Spores (8.5) 9.0–11 × 2.5–4.5 µm, E = 2.2–3.1 (3.8), Q = 2.6–3.0, narrowly fusiform to lacrymoid, rarely subcylindrical, thin-walled, smooth, hyaline. **Basidia** 20–26 × 6.0–8.0 µm, 2- and 4- (rarely 1-) spored, clavate, clamped. **Basidioles** 13–27 × 2.0–9.0 µm, clavate, (sub)cylindrical. **Cheilocystidia** 22–27 (31) × 4.0–8.0 µm, lageniform, subfusiform or clavate, rarely awl-shaped, ± thin-walled, rostrate, subacute to acute, rostrum usually slightly moniliform. **Pleurocystidia** very rare, similar to cheilocystidia. **Context** of cylindrical, thin-walled, hyaline, up to 7 µm wide hyphae. **Pileipellis** a cutis of radially arranged, cylindrical, ± thin-walled, up to 8 µm wide diverticulate hyphae; diverticulae up to 8.0 (10.0) × 2.0 (3.0) µm, digitate, obtuse, often irregular; terminal cells on pileus margin 10.0–25 × 4.0–7.0 µm, (sub)cylindrical, clavate or subfusoid, irregular, diverticulate to coralloid. **Pileocystidia** 30–68 × 4.0–8.5 µm, cylindrical to sublageniform, thin- to slightly thick-walled, often capitate, capitulum 5.0–10.0 µm wide, with often spirally twisted neck, and often diverticulate basal part. **Stipitipellis** a cutis, of parallel, cylindrical, slightly thick-walled, up to 6 µm wide, diverticulate hyphae; diverticulae digitate, up to 10.0 × 1.0–3.0 µm, obtuse, regular or irregular, sometimes branched or coralloid. **Caulocystidia** 28–65 × 5.0–9.0 µm, cylindrical to sublageniform, ± thin-walled, with spirally twisted neck and globose, 5.0–10.0 µm capitulum, sometimes with diverticulate basal part. **Clamp-connections** present in all tissues, but irregularly distributed and usually not frequent.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, in groups, on bark and lying decaying wood of both broadleaved and coniferous trees, sometimes on underside; always in very wet places. It is known from *Abies*, *Alnus*, *Carpinus*, *Fraxinus*, *Salix cinerea*, *Taxus* and *Quercus*.

Distribution: Widely distributed in Western Europe, not recorded from other parts. REDHEAD (1980, 1989) mentioned it in British Columbia (Canada) with notes that it will be surely find in adjacent regions of the U.S.A. Desjardin (an internet message) recorded it from Hawaii (USA).

Phenology: (September-)November to February.

Collections examined: **BELGIUM:** prov. Luxembourg, Hoyet, Bois du Roi, 18 Sept. 2003, leg. G. v. Zanen (L). – **FRANCE:** Saint-Clair (Manche), 11 Aug. 1972 leg. H. Romagnesi 72.138 (PC, herb. Romagnesi). – Région parisienne, 9 Dec. 1985, anon. (PC, herb. Romagnesi). – **GERMANY:** Saarland, Hemmensdorf, 9 Oct. 1993, T. Münzmay 10.93 (Herb. Münzmay). – **THE NETHERLANDS,** prov. Overijssel, Losser, Smoddebos, 15 Oct. 1994, leg. M. Veerkamp (L) – **UNITED KINGDOM: ENGLAND:** Devon, Membury, Goodworthy Thicket, 1 Nov. 1956 leg. P.D. Orton 8000 [K(M) 78939, holotype of *Mycena tortuosa*]. – Surrey, near Leatherhead, Druid's Grove, 30 Jan. 1993 leg. R. Tantram [K(M) 21728]. – Surrey, 25 Dec. 1993 leg. N. W. Legon [K(M) 25365]. – Esher, West End Common, 28 Jan. 1996 leg. B.M. Spooner [K(M) 34164]. – Surrey, Mickleham, Norbury Park, 15 Feb. 1997 leg. N.M. Legon [K(M) 48169]. – Surrey, Mickleham Down, 20 Nov. 1990 leg. A. Henrici [K(M) 16398]. – Lancashire, Silverdale, Trowbarrow Wood, 14 Nov. 1981 leg. J.C. Leedal [K(M) 78942]. – Hampshire, New Forest, Millyford Bridge, 6 Nov. 1988 leg. G.C. Dickson [K(M) 54021]. – Lincolnshire, near Bardney, Chambers Plantation, 10 Sept. 1986 leg. M.C. Clark [K(M) 78937].

Notes: *Hemimycena tortuosa* is easily recognised macroscopically by the very short and eccentric stipe, the presence of watery drops on pileus and stipe surface when moist, and, microscopically, especially by having often capitate pileo- and caulocystidia with a rather long, spirally twisted neck, prostrate, (sub)acute to acute cheilocystidia and narrow fusiform spores.

The original description by ORTON (1960) slightly deviates from our type revision and revision of other specimens by slightly smaller basidia (16–20 × 4.5–6 µm) and cheilocystidia [14–24 × 4–6 (8) µm] and narrower pileo- and caulocystidia [x 3–4 (6) µm]; the description in WATLING & TURNBULL (1998) is likely copied from the original. COURTECUISSÉ (1985) mentioned smaller (11–17 × 4.5–6.5 µm), exclusively 4-spored basidia, absence of clamp-connections, smaller cheilocystidia [15–20 (22) × 1.5–6.5 (8) µm] and narrower pileocystidia (x 1.5–4.5 µm), ROMAGNESI (1978, 1992) gives smaller spores (6.7–8–11.5 × 2.8–3 µm), and absence of clamp-connections, and REDHEAD (1980) smaller pileocystidia (33–52 × 4.5–6.5 µm), smaller cheilocystidia (15–21 × 4.5–5.5 µm), larger basidia (21–33.5 × 5.5–6 µm), and smaller spores (7.5–10 × 3–3.5 µm).

Hemimycena tortuosa resembles some of the *H. mauretanic* var. *cystidiata* and var. *microcephala* in the capitate hairs on pileus and stipe, but the cystidia of these taxa never have a twisted neck, and furthermore reduced, vein-like lamellae, typical for that species complex.

***Hemimycena* Sect. *Omphaliariae* (Kühner) Antonín & Noordel. comb. nov.**

Basionym: *Mycena* section *Omphaliariae* Kühner, Genre *Mycena*: 638. 1938.

Habit omphalioid; basidiocarps usually purely white, very small, with decurrent lamellae which sometimes are reduced to veins which do not reach the margin of the pileus; with or without pileo- and caulocystidia, which never are awl-shaped or setuliform.

Type species: *Hemimycena candida* (Bres.) Singer

20. *Hemimycena candida* (Bres.) Singer

Pl. 24, Fig. 23

Omphalina candida Bres., Fungi Trident. 2: 87. 1892; *Mycena candida* (Bres.) Kühner, Genre *Mycena*: 659. 1938; *Delicatula candida* (Bres.) Kühner & Romagn., Fl. anal. Champ. supér.: 119. 1953; *Hemimycena candida* (Bres.) Singer, Ann. Mycol. 41: 121. 1943; *Helotium candidum* (Bres.) Redhead, Can. J. Bot. 60: 2004. 1982; *Marasmiellus candidus* (Bres.) Singer, Lilloa 22: 299. 1951 [an invalid combination, non *M. candidus* (Bolton: Fr.) Singer, Pap. Mich. Acad. Sci. 32(1946): 129. 1948].

Type specimen: not preserved. Type-locality: Italy, Trento.

Iconotype (selected here): Bresadola, Fungi Trident. 2: pl. 199. 1892 (as *Omphalina candida*). Epitype: Italy, Ravenna distr., Pineta di San Vitale, Bardello, 6 Nov. 2000 leg. V. Antonín 00.212 (BRNM)

Selected icones: Bresadola, Fungi Trident. 2: pl. 199. 1892 (as *Omphalina candida*); Bresadola, Iconogr. mycol. 6: pl. 268. 1928 (as *Omphalina candida*); Cejp, Atlas Hub Evrop., 4. Omphalia: 121–122. 1936 (as *Omphalia candida*); Lange J., Fl. agar. dan. 5: pl. 197C. 1940 (as *Omphalia candida*); Martin, Bull. trimest. Soc. mycol. Fr. 109: Atl. pl. 277. 1993; Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 90–91. 1985; Moser & Jülich, Farbatl. Basidiomyc., *Hemimycena* 3. 1992; Ryman & Holmåsén, Svampar: 344. 1984.

Selected literature: Bresadola, Fungi Trident. 2: 87. 1892 (as *Omphalina candida*); Bujakiewicz, Badania Fizjogr. Polska Zachod. 28: 205–206. 1975; Elborne & al., Nordic Macromycetes 2: 126. 1992; Gröger, Boletus 18(3): 94–95. 1994; Kühner, Genre *Mycena*: 659–661, fig. 236. 1938 (as *Mycena candida*); Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 90–91. 1985; Romagnesi, Bull. Soc. mycol. Fr. 108: 12. 1992 (as *Mycena candida*); Watling & Turnbull, Brit. Fungus Fl. 8: 125–126. 1998.

Description: **Pileus** 3–20 mm broad, hemispherical to convex, with blunt, rarely minutely umbonate centre, expanding with age to applanate, with slightly depressed centre, with deflexed then straight, crenulate, finally sometimes reflexed margin, hygrophanous, when moist translucently striate at margin or even deeply so, almost to centre, white, hyaline, very finely pubescent to subtomentose (lens).



Pl. 24: *Hemimycena candida*, photo K.F. REINWALD

Lamellae moderately distant to distant, $L = 17\text{--}22$, $l = 0\text{--}2$, deeply decurrent, narrow, arcuate, well-developed, reaching the margin of the pileus, white, with concolorous, finely pubescent edge. **Stipe** (15) $20\text{--}48$ (70) $\times 0.7\text{--}1.2$ mm, relatively long and slender, cylindrical, slightly broadened at apex, not broadened or only slightly broadened at base, purely white, entirely finely pubescent (lens), usually with basal radiating strigose hairs at base, running over substratum. **Context** thin, white. **Smell** indistinct. **Taste** mild or slightly bitter.

Spores $8.0\text{--}10.5$ (11) \times (3.1) $4.0\text{--}5.0$ μm , $E = 1.8\text{--}2.6$, $Q = 2.1$, fusiform or limoniform to sublacrymoid, thin-walled, hyaline. **Basidia** $24\text{--}27 \times 6.0\text{--}9.0$ (10.0) μm , 4-spored, clavate. **Basidioles** $12\text{--}26 \times 2.5\text{--}8.0$ μm , cylindrical to clavate. **Cheilocystidia** (19) $24\text{--}31 \times 3.0\text{--}10$ μm , awl-shaped to (sub)lageniform, rostrate, obtuse, often slightly irregular to submoniliform, slightly thick-walled. **Context** made up of cylindrical, up to 16 μm wide, short-celled, thin-walled, hyaline hyphae. **Pileipellis** a cutis made up of radially arranged, \pm thin-walled, weakly diverticulate, up to 6 μm wide hyphae; diverticulae 0.7–3.0 μm wide, scattered to frequent, digitate. **Pileocystidia** $11.5\text{--}25.5 \times 2.3\text{--}3.8$ μm , cylindrical, clavate to subfusoid, obtuse, often slightly irregular. **Subpileipellis** regular, made up of up to 25 μm wide, inflated elements. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, smooth, up to 1.5–7 μm wide. **Caulocystidia** (apex) $14\text{--}31 \times 2.3\text{--}5.0$ μm , (sub)lageniform, subutriform, awl-shaped, clavate or cylindrical, often irregular, obtuse, rarely branched, often slightly thick-walled. **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic or parasitic; in groups or caespitose on decaying corms and stem-bases of *Symphytum officinale*, often on moist, fertile soil, also found also on cultivated *S. asperum* in a garden (RICEK 1989).

Distribution: Widely distributed throughout Europe, rare or locally rather common.

Phenology: (June-)September to November.

Collections examined: **AUSTRIA:** Steiermark, Grazer Becken, Grazer St. Peter, 15 Oct. 1984 leg. J. Poelt and J. Wagner, in: *Plantae Graecenses, Fungi* 509 (PRM 867474). – Niederösterreich, Regelsbrunn, Regelsbrunner Au, 18 Sept. 1992 leg. V. Antonín 92.70 (BRNM). – Niederösterreich, Geras, Langer-Teich, 7 Oct. 1987 leg. A. Hausknecht (WU 6491). – Niederösterreich, Mühlbach, Krotental, 19 Sept. 1984 leg. A. Hausknecht (WU 3701). – Niederösterreich, Maissau, Sonndorferstrasse, 22 Oct. 1983 leg. A. Hausknecht (WU 2928). – Niederösterreich, Pottenbrunn, Wasserburg, 9 Oct. 1999 leg. W. Klofac (WU 19752). – Wien, Lobau, 25 Oct. 1985 leg. A. Hausknecht (WU 5064). – Oberösterreich, Tittmoning, Eettenau, 16 Sept. 1990 leg. T. R. Lohmeyer (WU 9149). – **BELGIUM:** Antwerpen prov., Niel, 18 June 1987 leg. H. De Meulder 924 (BR 1222-58). – Antwerpen prov., Bornem, 3 Oct. 1936 leg. L. Imler (BR 40973-39). – Antwerpen prov., Boutersem, 7 June 1997 leg. J. Lachapelle (BR 75284-12). – Oost-Vlaanderen prov., Aalst, Osbroek, 7 Oct. 1991 leg. O. Van de Kerckhove (BR 19402-02). – **CZECH REPUBLIC:** BOHEMIA: Praha-Motol, V Podhájí, 1 Oct. 1959 leg. E. Wichanský (PRM 519072). – ditto, 26 Oct. 1959 leg. E. Wichanský (PRM 613962). – ditto, 28 Oct. 1964 leg. E. Wichanský (PRM 605505). – Srbsko near Karlštejn, 4 Nov. 1960 leg. E. Wichanský (PRM 534114). – Český Brod, 12 Oct. 1935 leg. J. Sýkora (PRM 22982). – MORAVIA: Kroměříž, Zámeček forest near Stonáč stream, 14 Sept. 1959 leg. H. Zavřel (PRM 614321). – Nová Horka, Nový rybník pond, 30 Sept. 1998 leg. H. Deckerová 4/1274 (OSM). – Kuřim, 5 Oct. 1947 leg. F. Šmarda (BRNM). – Česká, Strážná, 17 Sept. 1939 leg. F. Šmarda (BRNM). – Brno-Soběšice, Suchá hora, 29 Sept. 1973 leg. A. Vágner (BRNM). – Ochoz near Brno, Říčka valley, 18 Sept. 2001 leg. D. Dvořák (herb. D. Dvořák). – Lanžhot, Cahnov nature reserve, 19 Sept. 1996 leg. V. Antonín 96.177 (BRNM). – ditto, 17 Sept. 1995 leg. V. Antonín 95.426 (BRNM). – ditto, 21 Oct. 1992 leg. A. Vágner (BRNM). – ditto, 4 Oct 1988 leg. V. Antonín 88.145 (BRNM). – Břeclav, Pohansko, 21 Oct. 1998 leg. V. Antonín 98.180 (BRNM). – **FRANCE:** Sens (Yonne), Nov. 1936 leg. H. Romagnesi (PC, herb. Romagnesi). – **GERMANY:** Nordrhein-Westfalen, Kölner Bucht, Chorbusch, 4 Nov. 1990, T. Münzmay 73-90 (Herb. Münzmay). – **HUNGARY:** Zempleni hegység, Füzeradvány, 25 Oct. 1986 leg. L. Babos, Antonín 86.82 (BRNM). ditto, M.E. Noordeloos 20260 (L). – **ITALY:** Ravenna distr., Pineta di San Vitale, Bardello, 6 Nov. 2000 leg. V. Antonín 00.212 (BRNM). – **NETHERLANDS:** Prov. Groningen prov., Den Andel, 16 Oct. 1996 leg. R.A.F. Sulck-Enzlin 96120 (L). – prov. Zuid Holland, Biesbosch, t.w. van Hank, 11 Oct. 1989 leg. E.C. Vellinga 1639 (L). – prov. Zeeland, Zuid Beveland, Rietput Goes Sas Wilhelminalpolder, 23 Oct. 1987 leg. W.D.J. Kuijs (L). – prov. Limburg, Schin op Geul, Gerendal, 15 Nov. 1982 leg. J. Schreurs 767 (L). – **SLOVAKIA:** Bukovské vrchy Mts., Topola, 7 Oct 1992 leg. V. Antonín 92.189 (BRNM). – Záhorie LPA, Závod, Abrod, 6 Oct. 2000 leg. V. Kučera and V. Antonín 00.154 and 00.156 (BRNM). – **SWITZERLAND:** Chiasso, Dec. 1927 leg. Benzoni(?) (Trento, herb. Bresadola).

Notes: *Hemimycena candida* is characterised in having well-developed lamellae reaching the margin of the pileus, rather broad fusoid, sublaminiform or sublacrymoid spores, rather short [(19) 24–31 × 3.0–10 µm], awl-shaped to (sub)lageniform rostrate cheilocystidia, similar caulocystidia, diverticulate pileipellis hyphae with well differentiated pileocystidia, and by distinct ecology (*Symphytum*).

In a comparison with the literature, KÜHNER (1938) and MEUSERS & MEUSERS (1985) described only small, cylindrical, very narrow (x 1.5–2.2 µm) cheilocystidia as well as caulocystidia (x 1–3 µm). Also ROMAGNESI (1992) mentioned the same cheilocystidia, and, moreover, narrower spores (11–12 × 2.5 µm). This different feature may represent a mistake by Kühner (only upper parts of cheilocystidia measured, see his drawing in genre *Mycena*: 660, fig. 236). Also WATLING & TURNBULL (1998) mentioned cheilocystidia as "reduced to cylindrical, flexuous and very narrow cells 1.5–2.2 µm broad" or even absent. ELBORNE & al. (1992) described slightly narrower spores (8–12 × 2.5–4.5 µm) and also filiform cheilocystidia. Only GRÖGER (1994) drew the same shape of cheilocystidia.

MAAS GEESTERANUS (1982) did not agree with SINGER (1951) that *Mycena paupercula* (Berk.) Sacc. (= *Agaricus pauperculus* Berk. in Hooker, Engl. Fl. 5: 57. 1936) is identical with *H. candida*. He excluded this taxon from both genera *Hemimycena* and *Mycena*.

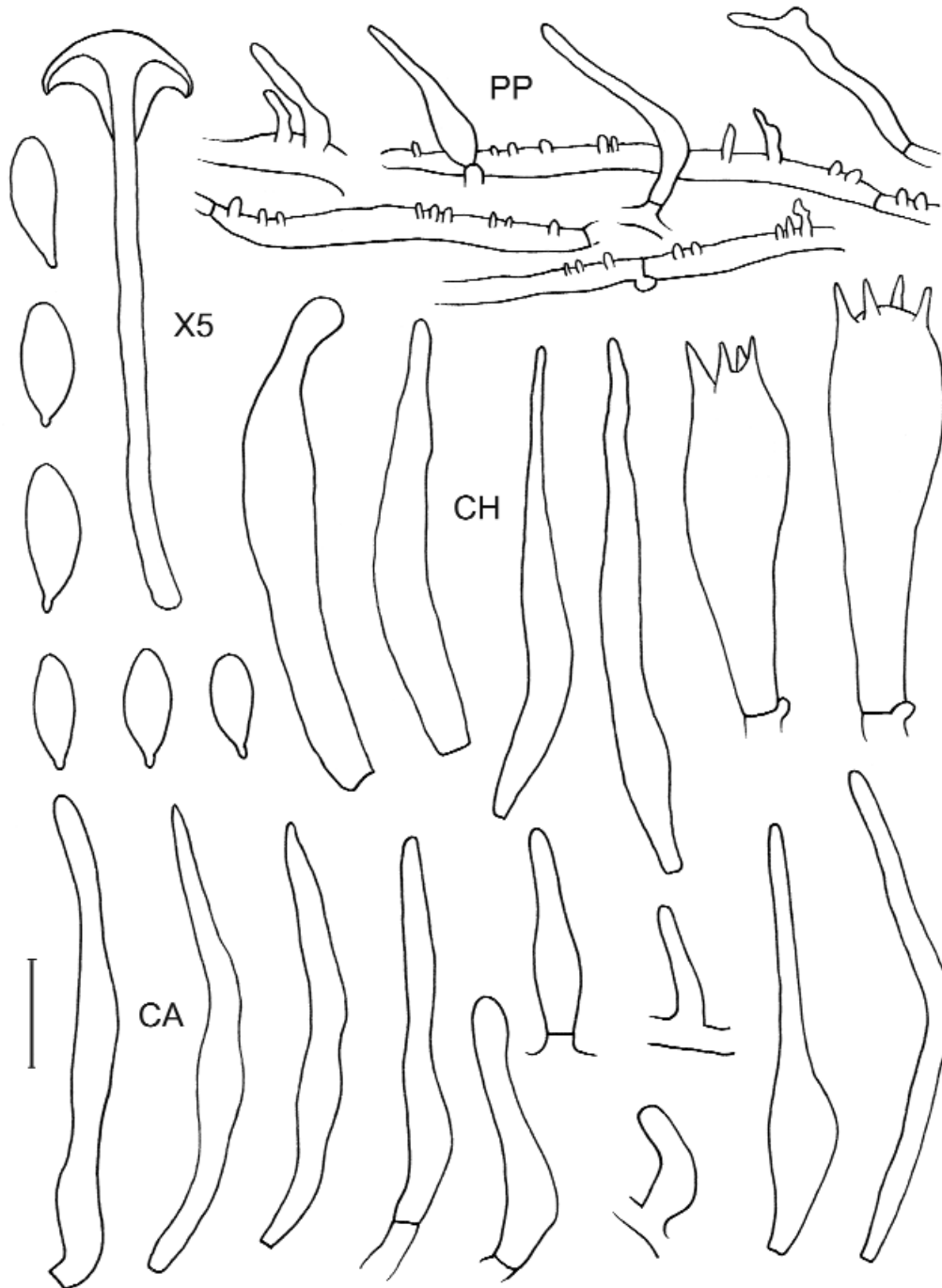


Fig. 23: *Hemimycena candida*

21. *Hemimycena delectabilis* (Peck) Singer**Fig. 24**

Agaricus delectabilis Peck, Ann. Rep. N. Y. State Mus. 27: 93. 1875; *Mycena delectabilis* (Peck) Sacc., Syll. fung. 5: 262. 1887; *Mycena delectabilis* (Peck) Kühner, Genre Mycena: 663. 1938 (a superfluous combination); *Prunulus delectabilis* (Peck) Murrill, N. Amer. Fl. 9: 323. 1916; *Omphalia delectabilis* (Peck) A.H. Sm., Bull. Torrey Bot. Club 64: 482. 1937; *Marasmiellus delectabilis* (Peck) Singer, Lilloa 22 (1949): 299. 1951; *Delicatula delectabilis* (Peck) Kühner & Romagn., Fl. Anal. Champ. Super.: 118. 1953; *Hemimycena delectabilis* (Peck) Singer, Ann. Mycol. 41: 121. 1943. – *Prunulus leucophaeus* Murrill, N. Amer. Fl. 9: 336. 1916; *Mycena leucophaea* (Murrill) Murrill, Mycologia 8: 220. 1916; *Helotium leucophaeum* (Murrill) Redhead, Can. J. Bot. 60: 2005. 1982. – *Omphalia nitrosa* Kauffm., Pap. Mich. Acad. Sci. 11: 202. 1930.

21a. *Hemimycena delectabilis* var. *delectabilis***Pl. 25**

Misapplied names: *Omphalia gracillima* ss. J.E. Lange, Fl. agar. dan. 2: 62-63, pl. 61A, non (Weinm.) P. Kumm. – *Hemimycena stellata* (Fr.) Raitelh. ss. Raitelhuber, Metrodiana 9: 47 1980.

Type specimen: U.S.A., Forestburgh, Sept. 1873 leg. C.H. Peck (NYS, holotype, as *Agaricus delectabilis*).

Selected icones: Emmet, Mycologist 7(4): 179. 1993; J. Lange, Fl. agar. dan. 2: pl. 61A (as *Omphalia gracillima*) and 61B (as *Omphalia stellata*). 1936; Moser & Jülich, Farbatl. Basidiomyc., Hemimycena 3. 1992.

Selected literature: Elborne & al., Nordic Macromycetes 2: 125. 1992; Gröger, Boletus 18(3): 93. 1994; Kauffman, Pap. Mich. Acad. Sci. 11: 202. 1930 (as *Omphalia nitrosa*); Kühner, Genre Mycena: 663-666. 1938; Kühner & Valla, Trav. Lab. Jaysinia 4: 48-49, pl. 8. 1972 (as *Mycena delectabilis*); Meusers & Meusers, Mitt. Arbeitsgem. Pilz. Niederrhein 3: 84-85. 1985; Murrill, N. Amer. Fl. 9: 336. 1916 (as *Prunulus leucophaeus*); Murrill, N. Amer. Fl. 9: 323. 1916 (as *Prunulus delectabilis*); Peck, Ann. Rep. N. Y. State Mus. 27: 93. 1875 (as *Agaricus delectabilis*); Romagnesi, Bull. Soc. mycol. Fr. 108: 9. 1992 (as *Mycena delectabilis*); A.H. Smith, Bull. Torrey bot. Club 64: 482 (as *Omphalia delectabilis*). 1937; A.H. Smith, N. Amer. Species of Mycena: 156-158. 1947; Watling & Turnbull, Brit. Fungus Fl. 8: 121-122. 1998.

Description: **Pileus** 4–16 mm broad, conical to campanulate, more or less distinctly umbonate at centre, with inflexed to slightly involute margin when young, expanding to broadly conical or campanulate, with obtuse, flattened or slightly depressed centre, finally flattened, becoming slightly depressed at centre, with straight to slightly reflexed margin, which may become crenulate or lacerate when old, hygrophanous, translucently striate up to centre, white, with slightly watery greyish or yellowish tinge at centre when moist, white when dry, usually finely tomentose (lens), sometimes glabrous. **Lamellae** distant, L = 12–20 (30), l = (0) 1–2, arcuate to triangular, broadly adnate to distinctly decurrent, well-developed, usually reaching the pileus margin, intervenose when old, white, with concolorous, finely pubescent edge. **Stipe** 7–45 × 0.5–1.5 mm, cylindrical, slightly broadened at apex, cylindrical to very slightly broadened at base, hyaline, white to yellowish, entirely finely hairy, with well-developed basal rhizoids. **Context** concolorous with surface. **Smell** strong, nitrous, especially when bruised. **Taste** bitter.

Spores 7.0–9.0 (9.5) × (3.5) 4.5–5.5 (6.0) μm, E = 1.4–2.1, Q = 1.7–1.9, ellipsoid, broadly ellipsoid, ellipsoid-fusoid, thin-walled, smooth, hyaline. **Basidia** (25) 28–32 × 7.0–10.0 μm, 4-spored, clavate. **Basidioles** 13–30 × 2.5–10.0 μm, clavate to cylindrical. **Hymenial cystidia** numerous, (30) 37–52 (65) × 8.0–16 μm, lageniform to fusoid, with rounded, sometimes irregular or subcapitate apex, thin-walled. **Trama** made up of cylindrical, up to 30 (40) μm wide, thin-walled, sometimes branched, ellipsoid or fusiform elements. **Pileipellis** a cutis of radially arranged, ± thin-walled, slightly gelatinised, up to 7 μm wide diverticulate hyphae; diverticulae digitate, obtuse, often branched, up to 25 × 2.0–4.0 μm long. **Pileocystidia** absent. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, up to 7 μm wide hyphae with hyaline to pale yellowish walls in KOH. **Caulocystidia** 30–65 ×



Pl. 25:
Hemimycena delectabilis
 var. *delectabilis*,
 photo J. PETERSEN

5.5–8.0 (10.0) μm , lageniform, fusoid or cylindrical and capitate, with rounded, sometimes irregular to subcapitate rostrum, sometimes irregular, slightly thick-walled. **Clamp-connections** present.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, mostly in groups, on vegetal debris (grass remnants, herbs, also on very rotten wood (e.g. *Agrostis*, *Cirsium spinosissimum*, *Epilobium angustifolium*, *Lolium perenne*, needles of *Abies*, *Juniperus*, *Picea*, *Pseudotsuga menziesii*), in a variety of habitats, such as short grassland on (rather) dry, weakly acid to subneutral, moderately humose sand (ARNOLDS 1981), in *Juniperus* scrub, also on decaying leaves in Tilio-Carpinetum (LUSZCZYLSKI (1997), in moist secondary *Betula* forest on levelled peat (EINHELLINGER 1977). FAVRE (1948, 1960) found it also in the subalpine zone.

Distribution: Widely distributed in Europe and seems to be rather common in some regions. Known in Austria, Belgium, Britain (WATLING & TURNBULL 1998), Czech Republic, Denmark, Finland (both ELBORNE et al. 1992), France, Germany (KREISEL et al. 1987), the Netherlands (ARNOLDS 1982), Norway (ELBORNE et al. 1992), Poland (LUSZCZYLSKI 1997), Sweden (ELBORNE et al. 1992), Switzerland (FAVRE 1948, 1960). It has been also collected in the U.S.A. PEGLER (1977) recorded it from East Africa (Kenya, Tanzania and Uganda – see notes).

Phenology: August to December.

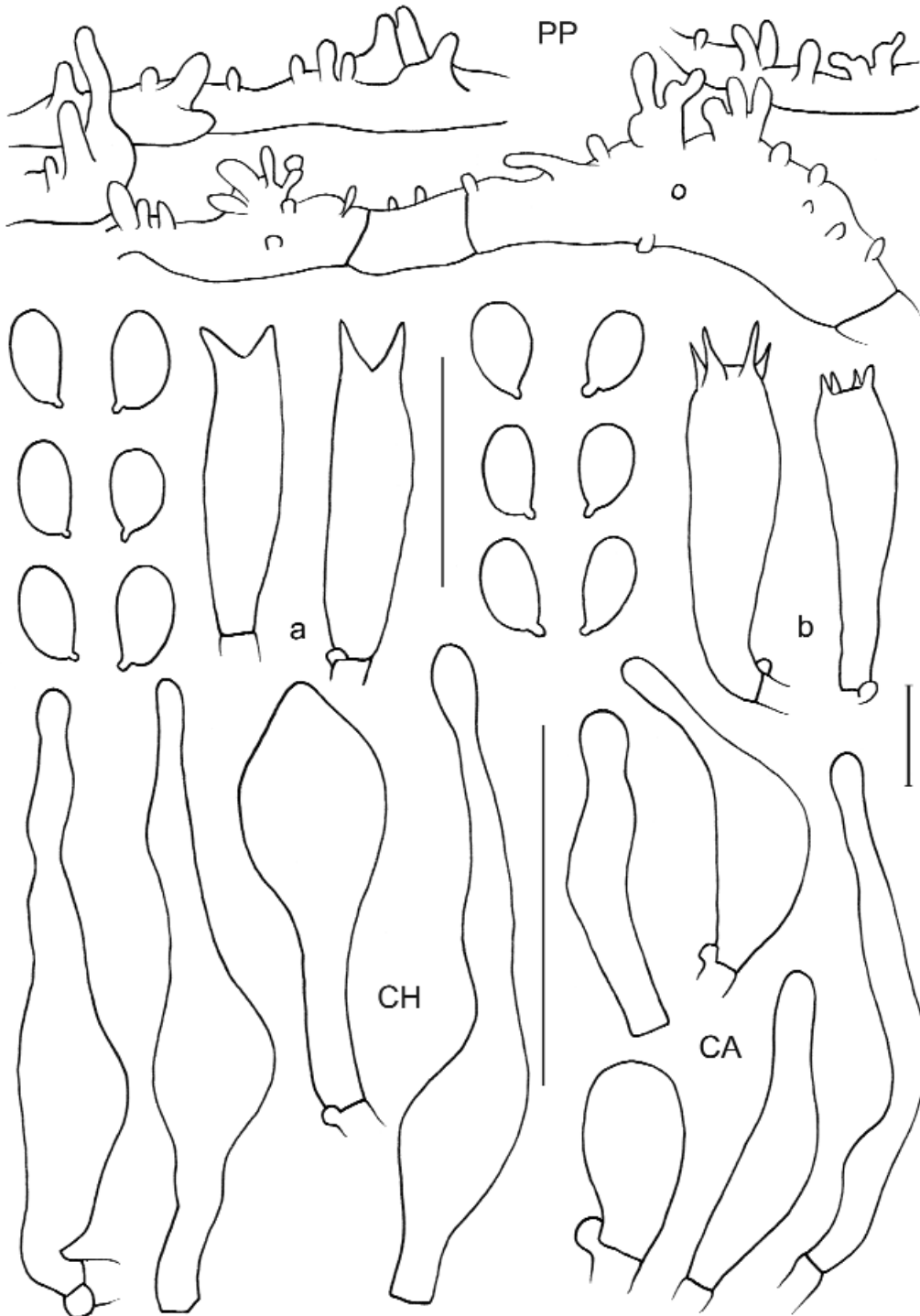


Fig. 24: *Hemimycena delectabilis*

Collections examined: **AUSTRIA:** Niederösterreich, Kernhof, Kleiner Göller, 26 Aug. 1994 leg. A. Hausknecht (WU 12971). – **BELGIUM:** prov. Namur, Resteigne, 8 Sept. 1975 leg. A.E. Jansen (L). – ditto, 3 Oct. 1978 leg. P. van Winden (L). – **CZECH REPUBLIC:** Zádruž near Konstantinovy Lázně, 15 July 1966 leg. A. Pilát (PRM 625054). – Telecí u Poličky, Žleby, 30 July 1965 leg. J. Horníček (BRNM 326998). – Beskydy Mts., Horní Bečva, Vysoká, 23 Aug. 1999 leg. M. Vašutová (OLM). – **DENMARK:** Sjaelland, Helsingør, Villingørød, 2 Oct. 1975 leg. A.K. Masse-link (L). – **FRANCE:** Massif Central, Bois Noir, Sembadel, 28 Sept. 1999 leg. D. Borgarino; Antonin 99.87 (BRNM 648782). – Massif Central, Bonneval, 30 Sept. 1999 leg. V. Antonin 99.97 and 99.98 (BRNM 648789 and 648790). – **GERMANY:** Niedersachsen, Meppen, Meppener Kuhweiden, 21 Nov. 1977 leg. B. de Vries (L). – ditto, 21 Oct. 1968 leg. J.J. Barkman (L). – ditto, Haselünne, 7 Nov. 1969, B.L.W. de Vries 299 (L). – Nordrhein-Westfalen, Kölner Bucht, Dormagen, Raffaels Gelände, 18 Sept. 1994, T. Münzmay 3-94 (Herb. Münzmay) Rheinland-. – Rheinland-Pfalz, Eifel, Gerolstein, Hundsbach, 25 Sept. 1980 leg. A.M. Brand (L). – Bayern, Oberfallheim, 9 June 1981, M. Enderle (L). – **ITALY:** Emilia Romagna, Ravenna, Lido del Dante, 9 Nov. 2002, M.E. Noordeloos 20288 (L). – **THE NETHERLANDS:** prov. Friesland, Terschelling, Boschplaat, Eerste Duintjes, 13 Oct. 1958 leg. W.J. Reijnders (L). – ditto, Oosteren, Jan Thijssenduin, 17 Oct. 1990, Baartmans & al. (L). – prov. Gelderland, Ommeren, 27 Sept. 1970 leg. H.S.C. Huijsman 70-181 (L). – Staverden, 8 Sept. 1970 leg. H.S.C. Huijsman (L). – prov. Drenthe, Hooghalen, 28 Oct. 1987, P.J. Keizer 87310 (L). – de Wijk, Reestdal, 5 Nov. 1976, E.J.M. Arnolds 2746 (L). – prov. Flevoland, Oost Flevoland, Harderbos, 16 Oct. 1986 leg. G. v. Zanen (L). – Roggebootszand, 25 May 1983 leg. E.C. Vellinga 529 (L). – prov. Noord Holland, Velsen, Duin en Kruidberg, 1 Nov. 1989 leg. A.G. Becker 89-90 (L). – Amsterdamse Waterleiding Duinen, Grote Zwarte Veld, 29 Nov. 1991 leg. A. Becker 91-32 (L). – Bussum, Naardermeer, 30 July 1988 leg. C. Uljé 930 (L). – prov. Zuid Holland, Voorne, 10 Nov. 1959 leg. A.C. S. Huijsman (L). – Oostvoorne, Heveringen, 18 Oct. 1978 leg. W. Loerakker (L). – Leiden, Leidsche Hout, 5 July 1954 leg. R.A. Maas Geesteranus 9962 (L). – prov. Zeeland, Haamstede, 1 Nov. 1972 leg. H.S. C. Huijsman (L). – Walcheren, Dishoek, 4 Dec. 1938 leg. H.S.C. Huijsman (L). – prov. Limburg, 30 Oct. 1982 leg. J. Schreurs 761 (L). – Wijlre, Berghofweide, 23 Oct. 1996, E.J.M. Arnolds 6825 (L). – **SWEDEN:** Skaane, Degeberga, 9 Nov. 1982 leg. L. Örstadius 440-82 (L). – **SWITZERLAND:** Kanton Neuchâtel, Bole, 14 Oct. 1969 leg. H.S.C. Huijsman (L). – **U.S.A.:** Forestburgh, Sept. 1873 leg. C. H. Peck (NYS, holotype of *Agaricus delectabilis*). – Adirondac Mts., June 1884 leg. C. H. Peck (NYS, a part of holotype of *Agaricus immaculatus*). – Seattle, 20 Oct.-1 Nov. 1911 leg. W. A. Murrill 384 (NY, holotype of *Prunulus leucophaeus*).

Notes: *Hemimycena delectabilis* var. *delectabilis* is easily recognised on the strong, nitrous smell, the moist slightly greyish or brownish tinged centre of pileus, the well-developed lamellae, the bitter taste, ellipsoid to broadly ellipsoid spores, lageniform to fusiform hymenial cystidia and caulocystidia, and diverticulate pileipellis hyphae without pileocystidia.

KÜHNER (1938) described more distant lamellae, shorter stipe (10–20 × 0.5–1.2 mm), mild taste, and smaller spores (5.5–9 × 3–4.5 µm). KÜHNER & VALLA (1972) described the species with a blunt pileus, without papilla, more distant lamellae (L = 12–14), smaller basidia (24–27 × 5–6 µm), shorter caulocystidia (15–40 µm long) and slightly dextrinoid hyphae at the base of the stipe. ROMAGNESI (1992) and WATLING & TURNBULL (1998) published almost the same description. MEUSERS & MEUSERS (1985) mentioned more distant lamellae (L = 12–16), distinctly smaller spores (5–9 × 3–4.5 µm), also SMITH (1947) published smaller spores (5–7 × 3.5–4 µm); he also noted a sometimes absent smell also in fresh carpophores; (ELBORNE et al. 1992) mentioned broader variability of the spore size (8.8–9.5 × 3.5 µm).

PECK (1875) described stipe as smooth, and a revision of the type specimens showed that caulocystidia are very rare, and spores are (7.5) 8.0–9.0 (11.0) × 4.2–5.0 (6.0) µm. Regarding these features, this fits rather well with var. *paucicystidiata*. Moreover, MURRILL (1916) described it as growing among mosses in woods, which fits with var. *paucicystidiata*.

The holotype specimen of *Prunulus leucophaeus* Murrill (NY!) microscopically agrees with Peck's type except for slightly smaller spores [(6.5) 7.0–8.5 × 3.5–4.2 µm] and shorter basidia (21–25 µm long).

REDHEAD (1982) used the epithet *leucophaeum* for his combination to the genus *Helotium* because the epithet *delectabilis* was preoccupied in that genus (*Helotium delectabile* Massee & Morgan). J. LANGE (1936) probably depicted it twice (pl. 61A and 61B) as *Omphalia gracillima* and *O. stellata*. However, he did not mention the nitrous smell.

The revision of the type specimen of *Agaricus immaculatus* PECK 1885 (= *Hemimycena gracilis*), consisting of two small envelopes, showed that it is a mixed collections, containing one fruit-body fitting with the current concept of *H. delectabilis*, the other being a specimen of *H. gracilis*.

PEGLER (1977) recorded *H. delectabilis* from East Africa (Kenya, Tanzania, Uganda). However, his description differs from material studied by us in having distinctly narrower spores ($6.5\text{--}9 \times 2.5\text{--}4 \mu\text{m}$), distinctly smaller basidia ($18\text{--}22 \times 5\text{--}6 \mu\text{m}$), cylindrical to fusoid and smaller cheilocystidia ($14\text{--}22 \times 3.3\text{--}4.5 \mu\text{m}$) and by the absence of pleurocystidia. It probably represents a different fungus.

Mycena flavoalba (Fr.) Quél., although generally considered to belong to the genus *Mycena*, is very similar. Macroscopically, it mainly differs by the distinctly pigmented, yellowish or ochraceous pileus and the absence of a nitrous smell. Microscopically, the spores are slightly smaller ($6.3\text{--}8.1 \times 3.1\text{--}4.6 \mu\text{m}$) and differently shaped. The hyphae of the pileipellis are slightly gelatinised, and the caulocystidia are differently shaped.

21b. *Hemimycena delectabilis* var. *bispora* (Kühner) Antonín

Pl. 26

Mycena delectabilis (Peck) Sacc. var. *bispora* Kühner in Kühner & Valla, Trav. Lab. Jaysinia 4: 67. 1972; *Hemimycena delectabilis* (Peck) Sacc. var. *bispora* (Kühner) Antonín in Antonín & Škubla, Fungi non delineati 11: 18. 2000.

Type specimen: France: Haute Savoie, Samoëns, entre le chalet Roux et le Grand Nant, 14 Aug. 1953, R. Kühner 53-42 (holotype, G 2708/7)

Selected icones: Antonín & Škubla, Fungi non delineati 11: pl. 8. 2000.

Selected literature: Antonín & Škubla, Fungi non delineati 11: 18-21. 2000; Kühner & Valla, Trav. Lab. Jaysinia 4: 49-51. 1972 (as *Mycena delectabilis* var. *bispora*); Romagnesi, Bull. Soc. mycol. Fr. 108: 9-10. 1992 (as *Mycena delectabilis* var. *bispora*).

Description: **Pileus** up to 10 mm broad, campanulate, obtuse or with a small papilla when young, then obtuse to slightly applanate at centre, hygrophanous, slightly translucently striate, white, sometimes with a pale yellowish tinge at centre, slightly tomentose. **Lamellae** distant, $L = 9\text{--}14$, $l = 1\text{--}2$, arcuate-decurrent with a tooth, white, with concolorous, finely pubescent edge. **Stipe** up to 40×0.5 mm, cylindrical, slightly curved, slightly broadened at apex and at base, white, with white basal rhizoids, finely pubescent. **Context** with a slightly nitrous **smell** only when fresh.

Spores $8.5\text{--}11.0 \times 4.5\text{--}6.0$ (7.0) μm , $E = 1.4\text{--}2.2$, $Q = 1.6\text{--}1.9$, ellipsoid, rarely ellipsoid-fusoid, thin-walled, smooth. **Basidia** $25\text{--}34 \times 6.0\text{--}8.0 \mu\text{m}$, 2-spored, clavate to narrowly clavate. **Basidioles** $13\text{--}31 \times 4.0\text{--}9.0 \mu\text{m}$, cylindrical to clavate. **Hymenial cystidia** $42\text{--}62 \times 8.0\text{--}14$ (19) μm , fusoid to sublageniform, thin- to slightly thick-walled. **Trama** made up of cylindrical, ellipsoid to fusoid elements, thin-walled, hyaline, up to 30 μm wide. **Pileipellis** a cutis made up of \pm radially arranged, diverticulate, \pm thin-walled, up to 15 μm wide hyphae; diverticulae up to $10.0 \times 3.0 \mu\text{m}$, digitate; scattered cylindrical to fusoid, up to $30 \times 5.0 \mu\text{m}$ large pileocystidioid elements present. **Subpileipellis** made up of very wide hyphae (up to 60 μm) of ellipsoid to broadly fusiform elements. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, smooth, up to 7 μm wide hyphae; at base with slightly thick-walled hyphae forming rhizoids. **Caulocystidia** numerous, often in clusters, $25\text{--}51 \times (6.0) 8.0\text{--}13$ (16) μm , clavate, fusoid, lageniform, subcylindrical, often pedicellate or capitate, thin- to slightly thick-walled, hyaline. **Clamp-connections** absent.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, on grass remnants in a xerophytic grassland, on plant remnants in a *Pinus mugo* growth, and on *Picea* roots.



Pl. 26:
Hemimycena delectabilis var. *bispora*,
photo E. SKÁLA

Distribution: Probably widely distributed in Europe but rare. Known from the Czech Republic, France, Germany and Slovakia.

Phenology: August to December.

Collections examined: **CZECH REPUBLIC:** České Středohoří landscape protected area, Třebeň, a north slope of the "Velká Kozí hora" hill, 13 Dec. 1997 leg. E. Skála (BRNM 652702). – **FRANCE:** Haute Savoie, Samoëns, entre le chalet Roux et le Grand Nant, 14 Aug. 1953 leg. R. Kühner 53-42 (holotype, G 2708/7). – **SLOVAKIA:** Belanské Tatry Mts., Tatranská Kotlina (Kežmarok distr.), near to "Skalné vráta", 29 Aug. 1998 leg. V. Antonín 98.85 (BRNM 648827).

Notes: *Hemimycena delectabilis* var. *bispora* is characterised in having well developed rhizoids at the stipe base, a nitrous smell when fresh, a well-developed Ramealis-structure in pileipellis, 2-spored basidia, distinct hymenial cystidia and caulocystidia and clampless hyphae.

The original description by Kühner (KÜHNER & VALLA 1972) differs by smaller carpophores and smaller spores. A type study revealed spore size $8.0\text{--}10.0 \times 4.0\text{--}5.5 \mu\text{m}$, $E = 1.4\text{--}2.0$, $Q = 1.6$, which is well in accordance with the recent collections. The two-spored forms agree well in all other respect with the typical variety. Normally one should expect that two-spored forms of varieties of a species have larger spores than the 4-spored counterpart. This is not the case here. More material is needed to solve the taxonomic problems in this group. Compare also var. *paucicystidiata*, below.

A similar fungus has been found in Sweden with slightly deviating characters. It may represent a new taxon. The following description is made on the rather scanty material (**fig. 25**).

Pileus 8–10 mm broad, pale whitish with slight brown tinge at centre, striate up to half the radius, with fine hairs. **Lamellae** well developed, deeply decurrent. **Stipe** $25 \times 1\text{--}1.4$ mm, hyaline, finely downy. Smell not noted.

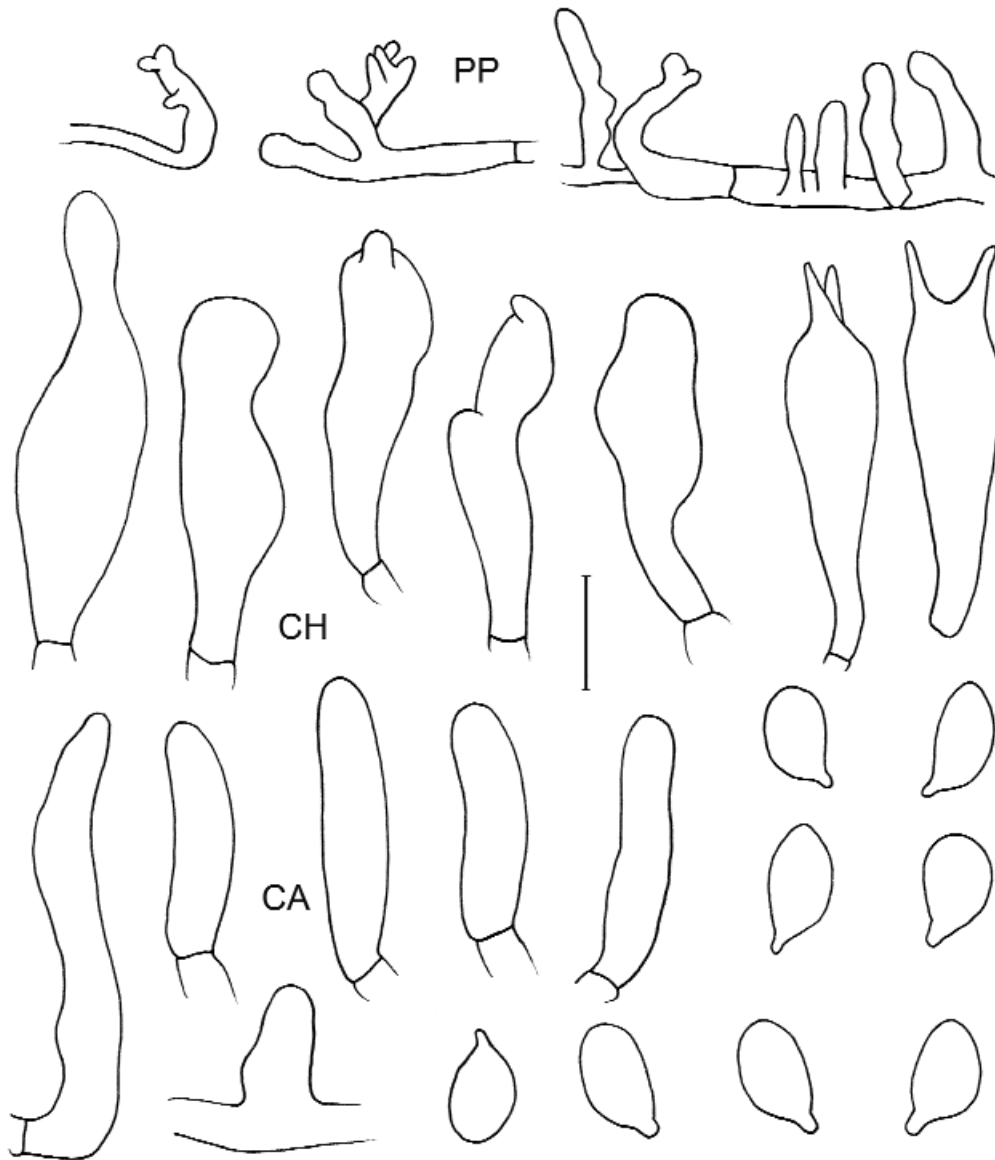


Fig. 25: *Hemimycena delectabilis* forma Sweden

Spores $9.0\text{--}11.5 \times 5.5\text{--}8.0 \mu\text{m}$, $E = 1.2\text{--}2.1$, $Q = 1.65$, (broadly) ellipsoid. **Basidia** $27\text{--}30 \times 7.5\text{--}8.0$, two-spored, clampless. **Cheilocystidia** $228\text{--}30 \times 8.0\text{--}10 \mu\text{m}$, clavate to utriform, sometimes somewhat irregular. **Pileipellis** a cutis of radially arranged, thin-walled, clampless hyphae with up to $20 \mu\text{m}$ long digitate projections, sometimes coralloid. **Caulocystidia** $22\text{--}30 \times 4.5\text{--}7.0 \mu\text{m}$, cylindrical, flexuous to narrowly clavate. **Clamp-connections** absent.

This collection has some resemblance to *H. delectabilis* var. *bispora*, but differs in spore size and shape, and shape of cheilocystidia. More material is needed to evaluate its status.

21c. *Hemimycena delectabilis* var. *paucicystidiata* Gulden & Jenssen

Hemimycena delectabilis var. *paucicystidiata* Gulden & Jenssen, Arctic Alp. Fungi 1: 185. 1982.

Type specimen: Norway, Hordaland, Ulvik, Finse, Nordnut, 9. VIII. 1979 leg. G. Gulden 50/79 (O, holotype).

Selected literature: Gulden & Jenssen, Arctic Alp. Fungi 1: 185-186. 1982.

Description [Macroscopical description according to GULDEN & JENSSEN (1982)]: **Pileus** 7–16 mm broad, convex at first, appanate to slightly depressed at centre, with reflexed margin when old, smooth, translucently striate up to centre, white, with a greyish tinge at centre and at striae. **Lamellae** well developed, subdistant, decurrent, sometimes interveined, thin, white. **Stipe** 20–35 × 0.5–1.5 mm, smooth, fistulous, hyaline. **Context** with an alkali **smell**.

Spores 8.0–10.5 × 4.5–5.2 μm, E = 1.6–2.2, Q = 1.9, ellipsoid to subamygdaliform, smooth, hyaline, thin-walled. **Basidia** 30–36 × 8.0–10.0 μm, 4-spored, clavate or subutriform. **Basidioles** 20–34 × 3.5–9.0 μm, clavate, cylindrical. **Hymenial cystidia** 38–63 × 7.5–13 μm, lageniform or subfusoid, mostly rostrate and (sub)pedicellate, ± thin-walled, rostrum long and rather narrow (10.0–35 × 3.0–4.0 μm), ± cylindrical, obtuse, often slightly irregular to submoniliform. **Context** made up of up to 50 μm wide hyphae, with thin-walled, cylindrical, ellipsoid or fusiform elements. **Pileipellis** a cutis of ± cylindrical, radially arranged, ± thin-walled, slightly gelatinised, up to 6 μm wide, diverticulate hyphae; diverticulae up to 15 × 3.0 μm, ± cylindrical, obtuse, regular or irregular, sometimes branched, hyaline. **Pileocystidia** absent. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled up to 5 μm wide hyphae, subhyaline to pale yellowish in KOH. **Caulocystidia** scattered, 18–43 × 3.0–9.0 μm, lageniform, fusoid, clavate, cylindrical, thin-walled. **Clamp-connections** present.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, ± gregarious, often on basal parts of herbs and among mosses in association *Rumiceto-Salicetum lapponae*, about 1250 m alt.

Distribution: Known only from the type locality in Norway, where it has been collected several times.

Phenology: July to September.

Collections examined: **NORWAY:** Hordaland, Ulvik, Finse, Nordnut, 9 Aug. 1979 leg. G. Gulden 50/79 (O, holotype).

Notes: *Hemimycena delectabilis* var. *paucicystidiata* differs from the type variety (var. *delectabilis*) in having slightly larger spores, hymenial cystidia with longer and narrower rostrum (however, we also found some cystidia with a long rostrum in some collections of var. *delectabilis*), only scattered caulocystidia, and different ecology (but see notes in var. *delectabilis*). According to the description by GULDEN & JENSSEN (1982), pleurocystidia are absent, however, the revision of the type material showed that pleurocystidia are present but they are very rare. It is necessary to recollect and to study the variability of this taxon to decide if it represent a separate variety or if it is identical with var. *delectabilis*. Compare also our comments on the type of *H. delectabilis*.

22. *Hemimycena subglobispora* Aronsen**Fig. 26**

Hemimycena subglobispora Aronsen, Persoonia 14(4): 425. 1992.

Type specimen: Norway, Vestfold, Tønsberg, Kjelle, 9 Oct. 1988 leg. A. Aronsen M 43/88 (O, holotype).

Selected literature: Aronsen, Persoonia 14(4): 425-427. 1992.

Description [Macroscopical description from ARONSEN (1992)]: **Pileus** 1–5 mm broad, hemispherical to convex, then appanate-convex when old, usually with small umbo, sometimes centrally depressed

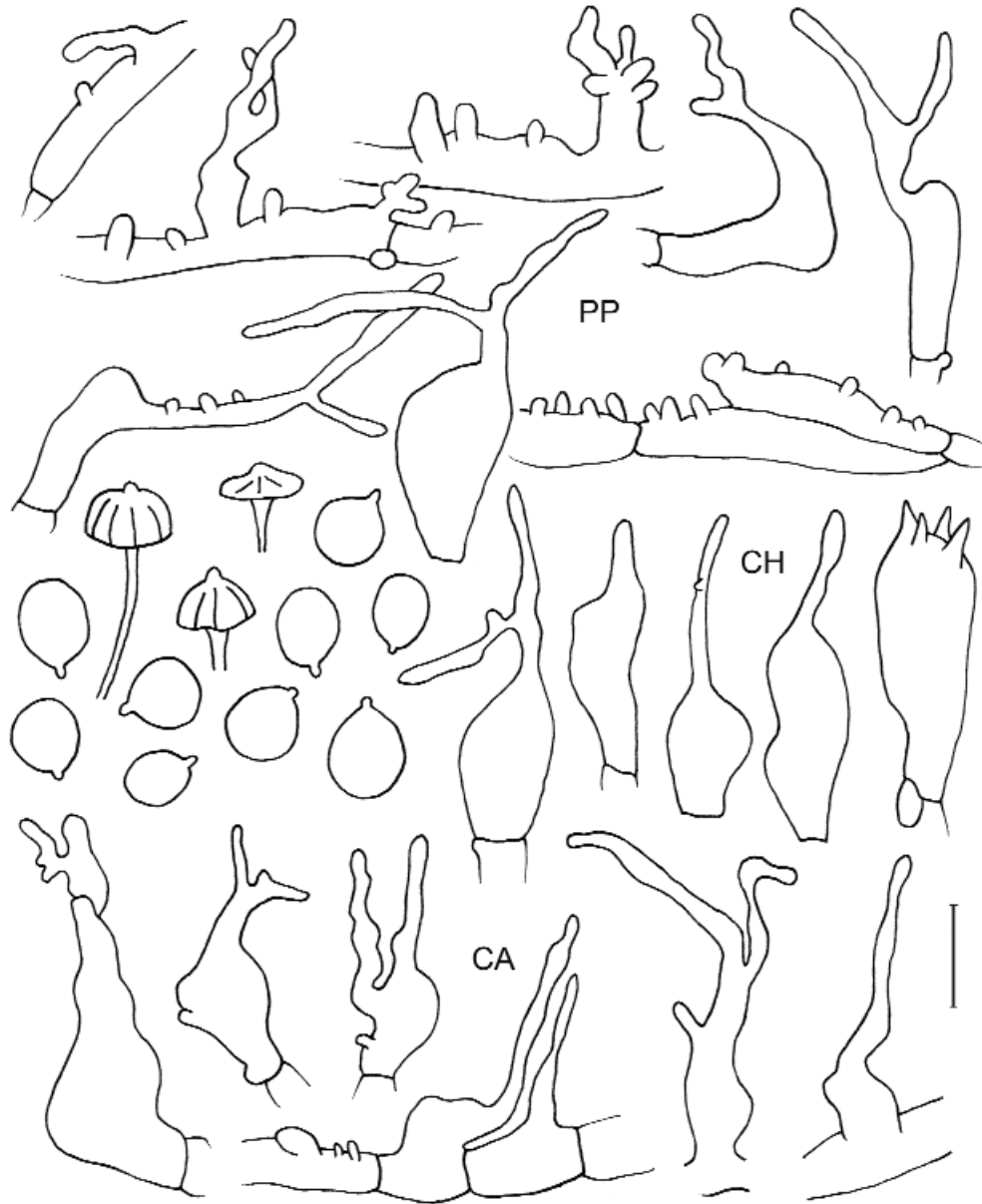


Fig. 26: *Hemimycena subglobispora*

or at least depressed around umbo, with margin long remaining incurved, more or less sulcate, hygrophanous, translucently striate, white, pruinose. **Lamellae** very distant, $L = 4-7$, $l = 0$, broadly adnate to decurrent, with concave edge, sometimes veined, not always fully developed, occasionally one or two forked, white. **Stipe** 8–11 (15) mm long, filiform, cylindrical, usually somewhat curved, white, with age sometimes yellowish from base upward, hyaline, pubescent particularly in lower part, insititious, without basal hairs. **Context** very thin, white, almost translucent with age. **Smell** not distinctive.

Spores (5.5) 6.0–7.5 (8.0) × 5.0–6.5 (7.0) μm, E = 1.0–1.4, Q = 1.1–1.2, subglobose to globose, with a prominent apiculus, thin-walled, hyaline. **Basidia** 23–28 × 8.0–9.5 μm, 4-spored, clavate. **Basidioles** 13–26 × 3.0–9.0 μm, clavate, cylindrical. **Hymenial cystidia** 21–40 × 6.0–9.0 (11) μm, clavate, broadly clavate, vesiculose, fusoid, subutriform, thin-walled, often with a long, thin, obtuse to subacute, sometimes branched, up to 20 (25) × 1.2 (2.0) μm large rostrum. **Trama** made up of cylindrical to inflated, up to 12 μm wide, thin-walled hyphae. **Pileipellis** a cutis of radially arranged, cylindrical, slightly thick-walled, diverticulate, up to 7 μm wide hyphae; diverticulae up to 7 × 1.5 μm, digitate, obtuse. **Pileocystidia** (13) 22–40 × 3.0–10.0 μm, similar to cheilocystidia, the most typically near to pileus margin. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, (sub)hyaline, mostly smooth, rarely scatteredly diverticulate, up to 4 μm wide hyphae. **Caulocystidia** 16–35 × (2.5) 4.0–7.0 (11) μm, neck up to 25 × 2.0 μm, similar to hymenial cystidia or cylindrical, usually irregular to moniliform, slightly thick-walled, (sub)hyaline. **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprophytic, single or 3–4 specimens together in clusters, on decaying, water-soaked stems of *Phragmites australis*.

Distribution: Known only from the type locality in Norway, where it repeatedly has been collected, and once collection from France.

Phenology: July to October.

Collections examined: FRANCE: Dordogne, Clairvivre, 26 Oct. 1997, P.A. Moreau 97102604 (Herb Moreau). – NORWAY: Vestfold, Tønsberg, Kjelle, 9 Oct. 1988 leg. A. Aronsen M 43/88 (O, holotype).

Notes: *Hemimycena subglobispora* is easily distinguished by small umbonate pileus, poorly developed, sometimes venose lamellae, small subglobose to globose spores, shape of pileo-, caulo- and hymenial cystidia, often with a long, thin, obtuse to subacute, sometimes branched, up to 20 (25) × 1.2 (2.0) μm large rostrum, and ecology.

In the original description, ARONSEN (1992) mentioned the absence of cheilo- and pleurocystidia. However, after the type revision, it appeared that cystidia similar to pileo- and caulocystidia are present on lamellae. For some other comments see ARONSEN (1992).

23. *Hemimycena substellata* (Kühner) Antonín & Noordel. comb. nov. Fig. 27

Basionym: *Mycena substellata* Kühner in Kühner & Valla, Trav. Lab. Jaysinia 4: 69. 1972.

Helotium substellatum (Kühner) Redhead, Can. J. Bot. 60: 2011. 1982.

Type specimen: France, Haute Savoy, Samoëns, Gorge de Tines, 9 Sept. 1953 leg. R. Kühner 53.28 (G).

Selected literature: Kühner & Valla, Trav. Lab. Jaysinia 4: 51–52. 1972; Redhead, Can. J. Bot. 60: 2011, fig. 8, 10, 33–36. 1982.

Description [Macroscopical description after KÜHNER (1972)]: **Pileus** 1.5–5 mm broad, bluntly hemispherical then convex, finally only slightly depressed, purely white, slightly sulcate with age, densely shortly pubescent (lens). **Lamellae**, L = 5–13, l = 0–1, adnate to subdecurrent, arcuate, sometimes forked, not plicate, reaching the margin of the pileus in most specimens, purely white with concolorous edge. **Stipe** 2–11 (14) × 0.2–0.6 mm, subequal, slightly swollen at base, white, densely pruinose over whole length, with longer hairs towards base, but base not distinctly strigose.

Spores 5.0–7.5 × 2.7–4.0 μm, E = 1.55–2.2, Q = 1.9–2.0, very bluntly ellipsoid, sometimes short, then more elongate, ellipsoid to cylindrical, sometimes suboval. **Basidia** 4-spored, clavate. **Lamella**

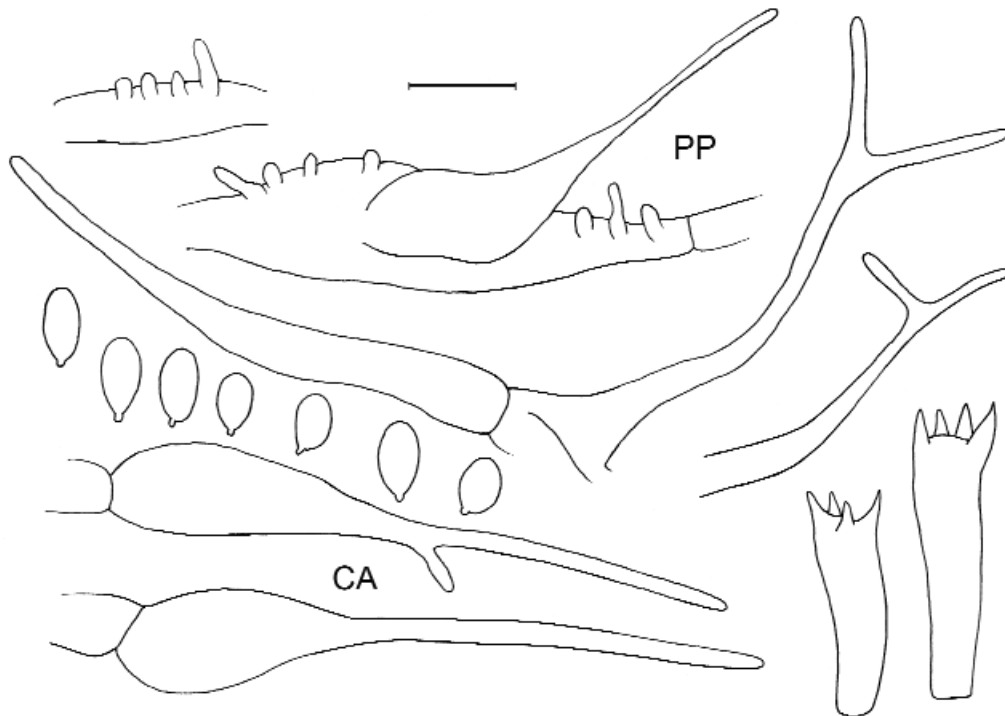


Fig. 27: *Hemimycena substellata*

edge either fertile or with numerous attenuate-flagelliform cheilocystidia with swollen base, $20\text{--}45 \times 10\text{--}12 \times 1.0 \mu\text{m}$. **Pileipellis** a cutis, made up of diverticulate hyphae with short diverticulae, with over the whole surface narrow, thin-walled pileocystidia, $37\text{--}50 \times 1.3\text{--}2.0 \mu\text{m}$; subpellis made up of elongate, radially arranged, $11\text{--}19 \mu\text{m}$ wide hyphae. **Stipitipellis** a cutis of diverticulate hyphae. **Caulocystidia** flagelliform, $60\text{--}100 \times 4.7 \times 0.7\text{--}1.5 \mu\text{m}$, thin-walled, only at very base sometimes slightly thick-walled. **Clamp-connections** present.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, growing in small groups on coniferous litter or on decorticated decayed wood of conifers, mostly (but not only) in montane regions.

Distribution: Very rare: known from France. Also recorded from British Columbia, Canada from the subalpine forest region (REDHEAD 1982). The record from the Netherlands (ARNOLDS et al. 1995: 239) is a misidentification, and most likely refers to *H. cryptomeriae* (see notes with that species).

Phenology: September.

Collections examined: FRANCE: Haute Savoie, Préalpes de Faucigny, Samoëns, Gorge des Tines, 8 Sept. 1953 leg. R. Kühner 53-28 (Holotype, G). – ditto, Haute Joux, 8 Sept. 1955 leg. R. Kühner 55-20 (G). – ditto, Pont de l'Edian, 7 Sept. 1955 leg. R. Kühner 55-16 bis (G). – ditto, Ravin de Nant d'Ant, 9 Sept. 1953 leg. R. Kühner 53-28 bis (G).

Notes: *Hemimycena substellata* is characterised by small carpophores with densely pubescent pileus, well-developed lamellae reaching the margin of the pileus, a stipe base without rhizoids, rather small spores, the presence or absence of cheilocystidia, and the presence of pileo- and caulocystidia.

REDHEAD (1982) studied only the Canadian collection, which fit well with the original description by Kühner, except for smaller caulocystidia ($43\text{--}57 \times 5\text{--}11 \mu\text{m}$). The data in the keys published by GRÖGER (1994) and ROMAGNESI (1992) are entirely adopted from KÜHNER & VALLA (1972).

24. *Hemimycena cryptomeriae* Noordel. & Antonín spec. nov.

Fig. 28

Latin diagnosis: Pileus 8–12 (13) mm latus hemisphaericus ad convexus plerumque umbone debili humectato minime griseus vel ochraceus. Lamellae distantes $L = \text{circa } 20$ $l = 1\text{--}3$ bene evolutae valde arcuatodecurrentes albae. Stipes 15–45 (53) mm longus 0.8–1.2 mm latus cylindricus griseoalbus omnino subtilissime pruinoso-floccosus (oculo armato). Sporae $5.5\text{--}7 \mu\text{m}$ longae $1.5\text{--}4 \mu\text{m}$ latae late ellipsoideae ad ellipsoideae. Basidia 4-spora. Cheilocystidia desunt. Pileipellis hypharum diverticulatarum cute. Caulocystidia $10\text{--}35 \mu\text{m}$ longa $7\text{--}10 \mu\text{m}$ lata clavata ad cylindrica. Fibulae abundantes. In horto in *Cryptomeria japonica* disperso.

Holotypus: Helvetia, Castelfranco, 28. X. 1987 leg. E. Schild (L).

Holotype: Helvetia, Castelfranco, 28. X. 1987 leg. E. Schild (L).

Description: Pileus 8–12 (13) mm broad, hemispherical to convex, mostly with weak umbo, with deflexed to straight margin, translucently striate up to half the radius when moist, opaque when dry, not entirely white, but with very slight grey or ochre tinge when moist. **Lamellae** moderately distant, $L = \text{about } 20$, $l = 1\text{--}3$, strongly arcuate-decurrent, white, with entire, concolorous edge, well-developed, but sometimes not entirely reaching the margin of pileus. **Stipe** 15–45 (50) \times 0.8–1.2 mm, cylindrical, hyaline, greyish white, very finely pruinose-floccose all over (lens). **Smell** and **taste** indistinct. **Spore print** white.

Spores $5.5\text{--}7.0 \times 2.5\text{--}4.0 \mu\text{m}$, $E = 1.5\text{--}1.8$, $Q = 1.6\text{--}1.7$, broadly ellipsoid to ellipsoid, with large apiculus. **Basidia** 4-spored, clavate. **Lamella edge** fertile. **Hymenial cystidia** absent. **Pileipellis** a cutis of diverticulate, $4.0\text{--}11 \mu\text{m}$ wide hyphae, with few to abundant finger-like or cystidioid excrescences, $3.0\text{--}15$ (25) \times $1.5\text{--}3.5 \mu\text{m}$, sometimes resembling pileocystidia. **Subpellis** a compact layer of short, inflated elements, $12\text{--}45 \times 6.0\text{--}18 \mu\text{m}$ with slightly thickened, refractive, hyaline walls. **Stipitipellis** a cutis with abundant caulocystidia, $10\text{--}35 \times 7.0\text{--}10 \mu\text{m}$, clavate to cylindrical, sometimes slightly incrusted; in lower third of stipe tapering hairs present, $60\text{--}90 \times 4.0\text{--}7.0 \mu\text{m}$, with slightly to distinctly thickened walls. **Clamp-connections** abundant.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: On litter of *Cryptomeria japonica* in a garden and in *Juniperus* scrub.

Distribution: So far only known from the type locality in Switzerland and an additional collection from the Netherlands (see notes).

Phenology: October.

Collection examined: SWITZERLAND: Castelfranco, 28 Oct. 1987 leg. E. Schild (L, holotype). – THE NETHERLANDS: prov. Gelderland, 't Harde, 1977 leg. B. De Vries (L).

Notes: *Hemimycena cryptomeriae* has spores similar to those of *H. stellata* and *H. subglobispora*, but the basidiocarps are larger, have a slightly grey to ochre tinge in the pileus, and no flabelliform hairs have been observed on the stipe. It also comes close to *H. crispata* on account of the covering layer of pileus and stipe. A collection from the Netherlands, labelled as *H. substellata*, appears to be very close to *H. cryptomeriae* with regard to the small spores, diverticulate pileipellis, and lack of hymenical cystidia. Also the caulocystidia appear to be coralloid-diverticulate, similar to those found in *H. cryptomeriae*, and unlike the flabelliform caulocystidia of *H. substellata*. The Dutch collection deviates slightly from the type collection of *H. cryptomeriae* in having smaller, purely white basidiocarps, growing on debris of *Juniperus*.

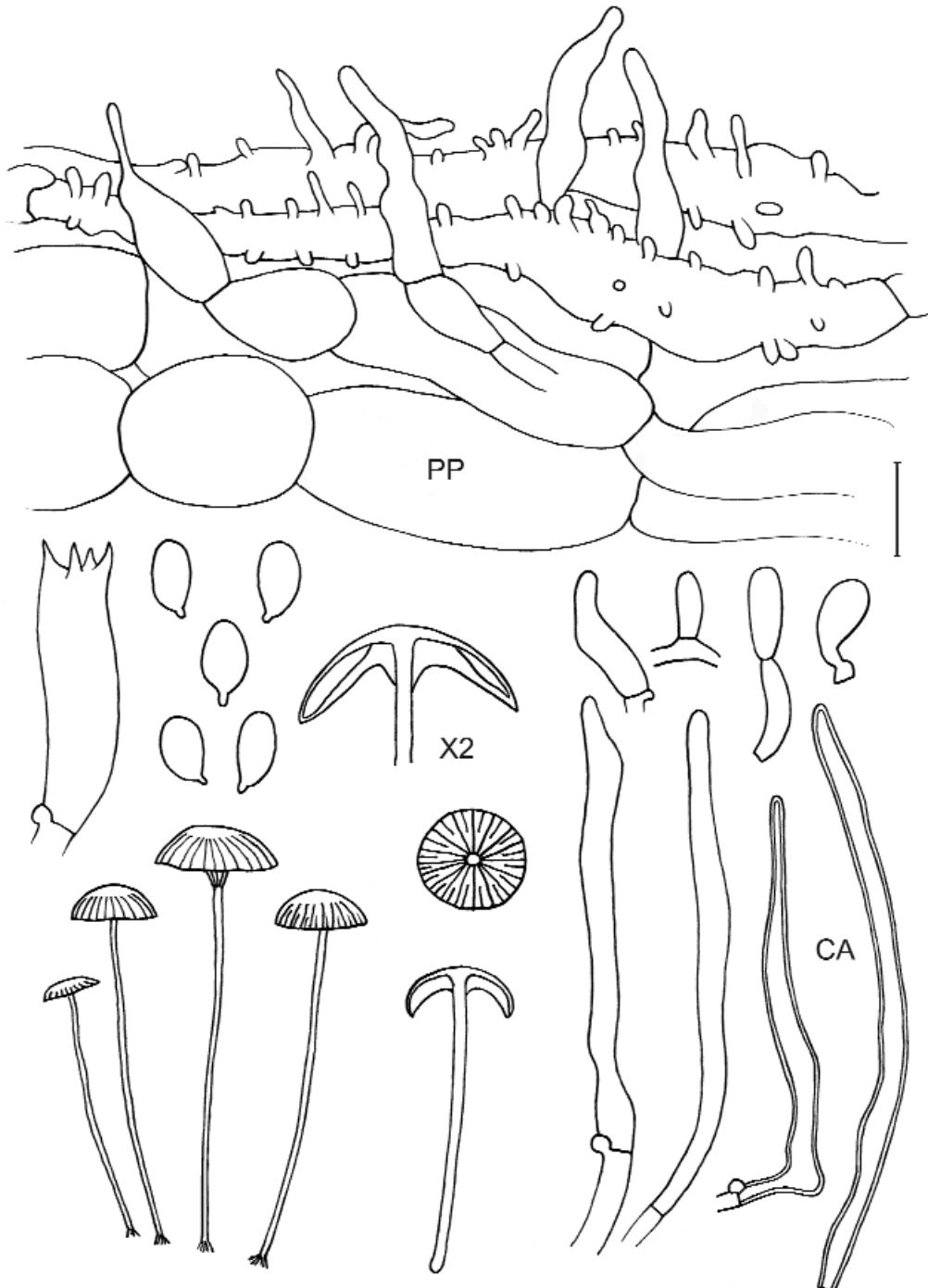


Fig. 28: *Hemimycena cryptomeriae*



Pl. 27: *Hemimycena ignobilis*, photo M. MEUSERS

25. *Hemimycena ignobilis* Joss. ex Bon

Pl. 27 & 28, Fig. 29

Omphalia ignobilis Joss., Ann. Soc. Linn. Lyon 80 (1936): 84. 1937 (nom. inval., Art. 36.1); *Mycena ignobilis* (Joss.) Kühner, Genre Mycena: 667. 1938 (nom. inval., Art 33 and 36); *Clitocybe ignobilis* (Joss.) Singer, Ann. Mycol. 41: 22. 1943; *Delicatula ignobilis* (Joss.) Kühner & Romagn., Fl. anal. Champ. supér.: 118. 1953 (nom. inval., Art 33 and 36); *Hemimycena ignobilis* Joss. ex Bon, Doc. mycol. 13(49): 38. 1983.

Type specimen: Norway, Telemark, Bamble, Gjømle, 19 Nov. 1982 leg. Ø. Weholt 86-82 (herb. M. Bon, holotype, marked as neotype by Bon).

Selected literature: Bon, Doc. mycol. 13(49): 38. 1983; Bon, Agarica 4(8): 78-79. 1983; Gröger, Boletus 18(3): 94. 1994; Jossierand, Ann. Soc. Linn. Lyon 80 (1936): 84-85. 1937 (as *Omphalia ignobilis*); Kühner, Genre Mycena: 667. 1938; Kühner & Romagnesi, Fl. anal. Champ. supér.: 118. 1953; Malençon & Bertault, Trav. Inst. Sci. Cherif. Fac. Sci. Rabat 33 (Champ. sup. Maroc 2): 331-332. 1975 (as *Delicatula ignobilis*); Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 89-90. 1985 (as *Gerronema? ignobilis*); Romagnesi, Bull. Soc. mycol. Fr. 108: 13. 1992 (as *Mycena ignobilis*).

Description: **Pileus** 3–6 mm broad, truncately conical at first, expanding to appanate or concave, never truly infundibuliform, with deflexed, regular finally undulating-crenate margin, hygrophanous, not translucently striate, purely white, dry, glabrous, matt. **Lamellae** distant, L = about 10, l = 0–1, arcuate-deeply decurrent, well-developed, reaching the margin of the pileus, narrow to rather broad, slightly forked and/or anastomosing, white, with entire, concolorous edge. **Stipe** 6–16 × 0.6–1 mm, cylindrical, straight or slightly widened at base, but never bulbous, slender, but not filiform, often short, white, hyaline, glabrous (also under lens), dry. **Context** relatively thick at centre, very thin at margin, white.

Spores (8.5) 9.0–11.5 (14) × (4.0) 4.5–6.0 (6.2) μm, E = 1.6–2.7, Q = 1.9–2.1, oblong to broadly fusiform, hyaline, variable in size (all size types frequent). **Basidia** 20–33 × 7.0–11 μm, 4-spored,



Pl. 28: *Hemimycena ignobilis*, photo T. MÜNZMAY

clavate. **Basidioles** 18–33 × 6.0–11 µm, clavate, subcylindrical. **Hymenial cystidia** absent. **Hyphae of subhymenium** irregular to distinctly coralloid. **Trama** made up of ± cylindrical, thin-walled, smooth, up to 15 µm wide hyphae. **Pileipellis** a cutis of radially arranged, cylindrical, up to 8 µm wide hyphae with slightly thick-walled, smooth or very scattered diverticulate walls. **Pileocystidia** absent. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, hyaline to subhyaline, 2.0–5.0 µm wide hyphae. True **caulocystidia** absent; but scattered cylindrical to clavate, 15–28 × 3.0–7.0 µm large terminal elements observed. **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprophytic, mostly solitary, always on naked soil, along roads and in a *Quercus ilex* and *Q. suber* stands (JOSSE RAND 1937, MALEŃON & BERTAULT 1975, RICEK 1989), also on mosses and on plants remnants (MEUSERS & MEUSERS 1985).

Distribution: Europe and North Africa (Morocco), but distribution poorly known. It was also collected the mountains of Morocco at 1500 m alt. (MALEŃON & BERTAULT 1975).

Phenology: June to August.

Collections examined: **AUSTRIA:** Niederösterreich, Horn, Rosenburg, 18 June 1983 leg. A. Hausknecht (WU). – Niederösterreich, Langenlois, Zöbing, 25 June 1988 leg. A. Hausknecht (WU). – **BELGIUM:** Brabant, Boitsfort, Watermaal-Bosvoorde, 15 Aug. 1987 leg. G. M. Fodor (BR 124202-42). – **CZECH REPUBLIC:** Čimelice, Chlum forest, 26 Aug. 1970 leg. M. Svrček (PRM 714287). – Mašov near Turnov, 21 Aug. 1948 leg. J. Herink (PRM 609355). – Bělá near Turnov, 5 July 1948 leg. J. Herink (PRM 609347). – Smržov, Dvořiště, 12 July 1962 leg. M. Svrček and J. Kubička (PRM 567938). – **FRANCE:** Rhône, Saint-Laurent-d'Agny, 14 July 1936 leg. M. Jossierand (G, herb. Jossierand XVI/96 en note). – Rhône, Lentilly, 14 June 1936 leg. Comman (G, herb. Jossierand XVI/26). – Pontcarré, 24 Oct. 1948 leg. H. Romagnesi (PC, herb. Romagnesi). – **GERMANY:** Saarland: Hüttersdorf, Steyi, 7 June 1992, T. Münzmay 8-92 (Herb. Münzmay); ditto, Baeumarais, 7 June 1992, T. Münzmay 7.92 (Herb. Münzmay). – **THE NETHERLANDS:** Prov. Gelderland, Vorden, 29 Aug. 1987, Th.W. Kuijper 2752 (L). – prov. Zuid Holland, Leiden, Plesmanlaan, 7 Nov. 1995, E.C. Vellinga 1962 (L). – Ter Aar, Langeraar, 19 July 1984, C.B. Uljé (L).



Fig. 29: *Hemimycena ignobilis* (habit after Malençon & Bertault)

Notes: *Hemimycena ignobilis* is a rather enigmatic species with its glabrous pileus and stipe, distant, slightly furcate and long decurrent lamellae, oblong spores, and lack of hymenial cystidia. The pileipellis hyphae are rather smooth, with only a few, scattered diverticulae. We doubt as to its current position in the genus *Hemimycena*. It is not surprising that SINGER (1943) placed it in the genus *Clitocybe*, where it, however, would take a rather isolated position. For the time being, we decided to maintain it in the present genus.

KÜHNER (1938), KÜHNER & ROMAGNESI (1953) and ROMAGNESI (1992) did not know this species from own observation, since they practically copied the original description by JOSSERAND (1937). MALENÇON & BERTAULT (1975) collected it fresh. Their carpophores differ by having slightly smaller spores ($7.5\text{--}9 \times 4\text{--}5 \mu\text{m}$).

BON (1983a) validated *Hemimycena ignobilis* by giving it a formal Latin description and a holotype, which he surprisingly selected from Norway (Weholt 86–82). The original collections by Josserand were not found at that time (BON in litt.). This collection differs considerably from the original material in having smaller spores [$(6.5\text{--}7\text{--}9\text{--}11) \times (3.5\text{--}4\text{--}4.5\text{--}5.5) \mu\text{m}$] and growing on both plants remnants and on soil. Later in the same year (BON 1983b), published another description based on the same material with even smaller spore dimensions [$6.5\text{--}8\text{--}(9) \times 3.5\text{--}4\text{--}(4.5) \mu\text{m}$] and some other minor macroscopic differences. We tried to revise this *typus* established by BON (1983a). However, it has been found neither in the herbarium of Weholt nor in that of M. BON (in litt.).

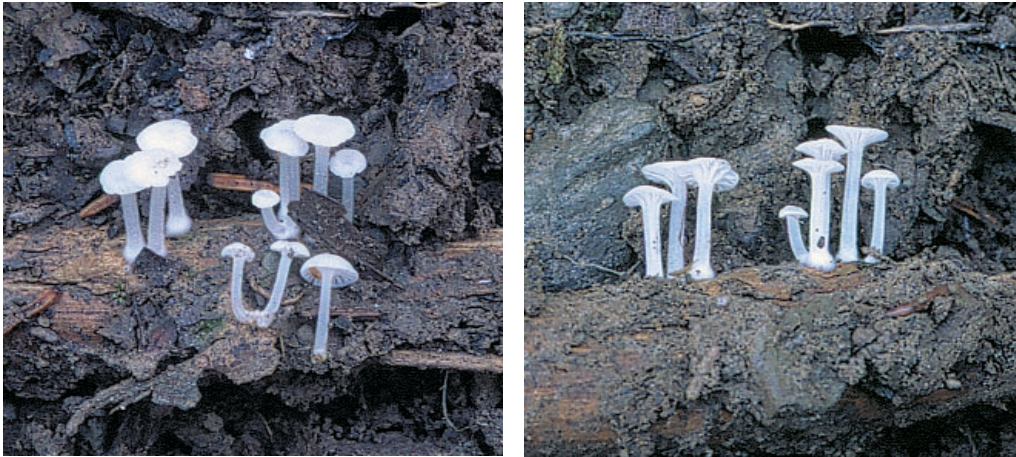
26. *Hemimycena crispata* (Kühner) Singer

Pl. 29 & 30, Fig. 30

Mycena crispata Kühner, Genre Mycena: 686. 1938; *Delicatula crispata* (Kühner) Kühner & Romagn., Fl. anal. champ. supér.: 117. 1953; *Helotium crispatum* (Kühner) Redhead, Can. J. Bot. 60: 2004. 1982; *Hemimycena crispata* (Kühner) Singer, Anns Mycol. 41: 121. 1943.

Type specimen: not preserved.

Selected literature: Beltrán Tejera & al., Doc. Mycol. 19(76): 47. 1989; Elborne & al., Nordic Macromycetes 2: 126. 1992; Gröger, Boletus 18(3): 100-101. 1994; Jamoni, Funghi Ambiente 76: 17. 1998; Josserand, Bull. Soc. mycol. Fr. 44: 6-9. 1948 (as *Mycena crispata*); Kühner, Genre Mycena: 655-659. 1938 (as *Mycena crispata*); Kühner & Valla, Trav. Lab. Jaysinia 4: 41-42. 1972 (as *Mycena crispata*); Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3 : 94-95. 1985; Malençon & Bertault, Trav. Inst. Sci. Cherif. Fac. Sci. Rabat 33 (Champ. sup. Maroc 2): 326-328. 1975 (as *Delicatula crispata*); Meusers & Meusers,



Pl. 29 & 30: *Hemimycena crispata*, photos M.E. NOORDELOOS

Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 94-95. 1985; Montag & Münzmay, Faune Fl. Nat. Saarland 2(3/4): 43-44. 1989; Romagnesi, Bull. Soc. mycol. Fr. 108: 8. 1992 (as *Mycena crispata*); Singer, Beih. Nova Hedwigia 29: 104-105. 1969; Watling & Turnbull, Brit. Fungus Fl. 8: 122-123. 1998.

Description: **Pileus** 2–13 mm broad, campanulate to expanding to convex or applanate, blunt or with a blunt umbo, never umbilicate, with deflexed then straight margin; hygrophanous, slightly translucently striate, white, practically glabrous. **Lamellae** distant, L = 9–15, l = 0–1, arcuate-decurrent, well-developed, reaching the margin of the pileus, sometimes interveined against underside of pileus, white, with concolorous edge. **Stipe** 10–25 × 0.5–2.0 mm, cylindrical, sometimes broadened towards base, white, shortly pubescent to hairy (lens), without basal hairs. **Context** membranaceous, white. **Smell** somewhat spermatic or inconspicuous. **Taste** mild.

Spores 7.5–9.0 (10) × 2.0–4.5 μm, E = 1.9–3.2, Q = 2.3–2.7, subcylindrical, fusiform or pip-shaped. **Basidia** 14–24 × 3.0–7.0 μm, 4-spored, clavate. **Basidioles** 15–24 × 4.0–7.0 μm, subcylindrical to slenderly clavate. **Lamella edge** heterogeneous, rarely completely sterile. **Cheilocystidia** 20–40 × 4.0–7.0 μm, subcylindrical or lageniform, rarely somewhat coralloid (Noordeloos 8313), thin-walled, sometimes with hyaline slime-cap covering the upper half. **Trama** made up of inflated, 12–20 μm wide hyphae. **Pileipellis** a cutis of narrow, cylindrical, diverticulate hyphae; diverticulae digitate, 2.0–7.0 μm long. **Pileocystidia** absent. **Stipitipellis** a cutis of 5.0–9.0 μm wide, diverticulate hyphae. **Caulocystidia** abundant, 10–48 × 3.0–6.0 μm, cylindrical-flexuous, often diverticulate or subcoralloid. **Clamp-connections** present.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic on vegetal debris of herbaceous (grasses) and woody plants, also found in meadows (*Mesobrometa*) in Switzerland (BRUNNER & HORAK 1988).

Distribution: Widespread in Europe, but true distribution poorly known.

Phenology: July to November.

Collections examined: AUSTRIA: Niederösterreich, Hollabrunn, Porrau, 6 Nov. 1990 leg. A. Hausknecht (WU 9070, zahrabané dřevo). – BELGIUM: prov. Namur, Rochefort, Bois de Resteigne, 16 Sept. 2003, M.E. Noordeloos 200316 (L). – CZECH REPUBLIC: Mohelno, Velký kopec, 4 Oct. 1995 leg. V. Antonín 95.302 (BRNM). – Letoni-



Fig. 30: *Hemimycena crispata*

ce, Větrníky nature reserve, 13 July 1999 leg. V. Procházková (BRNOP). – **FRANCE**: Haute Savoie: Samoëns, La Jaysinia, 28 Aug. 1954, R. Kühner 54-3 (G); Oise: Coye-la-Forêt, 13 July 1951 leg. H. Romagnesi 51.64 (PC, Herb. Romagnesi). – **GERMANY**: Baden Württemberg, Maintal, Wiesenfeld, Mäusberg, 22 Oct. 1982 leg. W. Winterhoff 82259 (L). – Grüssheim, 30 Oct. 1982 leg. W. Winterhoff 82313 (L). – Saarland: Berus Kaltborn, 11 Oct. 1987, T. Münzmay 97-87 (Herb. Münzmay). – **ITALY**: Ravenna, Pineta di Classe, 12 Nov. 1993 leg. A. Hausknecht (WU 12186). – **THE NETHERLANDS**: Prov. Zuid Holland, Leiden, Wassenaarseweg, 23 July 1997 leg. E.C. Vellinga 2091 (L). – Alphen aan den Rijn, 16 July 1991, C.B. Uljé 1175 (L). – prov. Zeeland, Clinge, 19 Nov. 1981 leg. A. de Meyer 519 (L). – prov. Gelderland, Buren, Loam-Pits, 12 July 1983, M.E. Noordeloos 8313 (L).

Notes: *Hemimycena crispata* is characterised by to the naked eye the glabrous pileus, well-developed lamellae reaching the pileus margin, stipe without basal rhizoids, 4-spored basidia, inconspicuous cheilocystidia, diverticulate pileipellis hyphae and the absence of setoid pileocystidia. As such it belongs to a complex of very closely related taxa. The limits of the individual taxa are still not completely settled. Important separating microscopical characters can be found in the covering layers of pileus and stipe, in the size and shape of the spores, and the presence or absence of hymenial cystidia. *H. epichloe* is very close, and separated here mainly on account of the spore-size, reduced lamellae, and smooth hyphae of stipitipellis.

Senn-Irlet (Arctic alpine fungi 3: 23-24. 1990) describes the collection as *Hemimycena crispata*, which deviates by having reduced lamellae, not reaching the margin of the pileus, presence of coralloid cheilocystidia and smooth, non-coralloid hyphae in stipitipellis. It probably represents an as yet undescribed species.

In the original publication, KÜHNER (1938) gave two descriptions of *Mycena crispata*, which slightly differed in microscopy. Later on, the second description figured as model for *H. neocrispata* KÜHNER & VALLA, 1972 (now synonym of *H. subimmaculata*), and the description of *H. crispula* was refined.

In later literature there are sometimes slight discrepancies with Kühners concept of the species. MALENCON & BERTAULT (1975) described the presence of basal setoid rhizoids and slightly different spores ($8.3\text{--}10 \times 2.75\text{--}3.3 \mu\text{m}$); but the nature of the lamella edge agrees with KÜHNER (1938). WATLING & TURNBULL (1998) also described the presence of basal rhizoids, and slightly smaller spores [$6\text{--}8.5 (10) \times 2\text{--}3 (4) \mu\text{m}$], GRÖGER (1994) and ROMAGNESI (1992) the absence of basal rhizoids and presence of setoid caulocystidia, ELBORNE & al. (1992) the presence of both 2- and 4-spored basidia and up to 145 μm long caulocystidia at the stipe base. In his very detailed description, JOSSERAND (1948) mentioned a very small fungus with only 2.5–4 (6) mm broad pileus, distant (6–8), adnate-subdecurrent or sinuate-adnate lamellae, the absence of rhizoids at stipe base, $8.8\text{--}10.6 \times 3\text{--}4 \mu\text{m}$ large cylindrical spores and scattered to rather numerous nodulose cheilocystidia with branched apex. It will be apparent, that some of these interpretations may actually refer to different species!

MONTAG & MÜNZMAY (1989) mentioned the presence of 4-, rarely 2-spored basidia, smaller spores ($5.8\text{--}7.2 \times 2.3\text{--}3.0 \mu\text{m}$), and cylindrical to ventricose cheilocystidia. Moreover, they compared the description of this species according to various authors. They made following conclusions about the most constant features: 1. distinctly striate pileus, 2. broad, distant, decurrent lamellae, 3. upright small cylindrical to fusoid caulocystidia.

SINGER (1969) described *H. crispata* from Chile with distant (often up to 5 only), sometimes completely absent lamellae, scattered indistinct cheilocystidia and scattered pileocystidia; it may represent a different species.

27. *Hemimycena epichloe* (Kühner) Singer

Pl. 31, Fig. 31

Mycena epichloe Kühner, Genre Mycena: 686. 1938; *Hemimycena epichloe* (Kühner) Singer, Anns mycol. 41: 121. 1943; *Helotium epichloe* (Kühner) Redhead, Can. J. Bot. 60: 2005. 1982.

Type-specimen: not preserved. Type-locality: France, Region of Paris.

Selected literature: Aronsen, Agarica 12(21): 31. 1994; Benkert, Boletus 4(3) : 44. 1980; Bon & Chevassut, Doc. Mycol. 19(75): 32. 1989; Gröger, Boletus 18(3): 97. 1994; Kubička, Čes. Mykol. 12: 240. 1958 (as *Delicatula epichloe*); Kühner, Genre Mycena: 653-655, fig. 233. 1938; Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3 : 92. 1985; Romagnesi, Bull. Soc. mycol. Fr. 108: 6. 1992 (as *Mycena epichloe*).

Description: Pileus 2–8 mm broad, campanulate at first, soon convex to applanate, truncate becoming umbilicate with age, eventually funnel-shaped, purely white, not translucently striate, glabrous.



Pl. 31: *Hemimycena epichloe*, photo T. LÆSSØE

Lamellae distant, $L = 3-10$, $l = 0$, arcuate, strongly decurrent, vein-like, usually not reaching the margin of the pileus, sometimes reaching only halfway pileus, white. **Stipe** up to $20 \times 0.3-0.5$ mm, cylindrical, filiform, sometimes broadening towards apex, white, hyaline, finely pruinose all over, at base with up to 0.4 mm long, hyaline, strigose hairs. **Smell** none.

Spores $8.0-12 \times (2.5) 3.0-4.5$ μm , $E = 2.4-4.0$, $Q = 2.7-3.4$, subfusoid, cylindrical to somewhat tapering towards pronounced apiculus. **Basidia** $16-26 \times 4.0-7.5$ μm , 4-spored, less frequently mixed with 2-spored, clavate, clamped. **Lamella edge** fertile. **Cystidia** absent. **Hymenophoral trama** of inflated elements, 10–22 μm wide. **Pileipellis** a cutis, made up of diverticulate hyphae, 2.5–9 μm wide with abundant wart- to finger-like, simple, rarely branched, up to 8.0×2.0 μm large excrescences. **Stipitipellis** a cutis of narrow, cylindrical, smooth, 3.0–8.0 μm wide hyphae. **Caulocystidia** single or in clusters, $10-40 \times 2.0-6.0$ μm , subcylindrical, larger ones often flexuous, with rounded, sometimes subcapitate apex, denser towards base. **Clamp-connections** abundant in all parts of basidiocarp.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic on dead leaves and stems of grasses; on leaf-sheaths of *Juncus* sp. and *Scirpus lacustris*, in lawns, marches etc., and on leaves of *Carex* and *Poaceae* in open grasslands and open *Cariceta* stands (KREISEL et al. 1987).

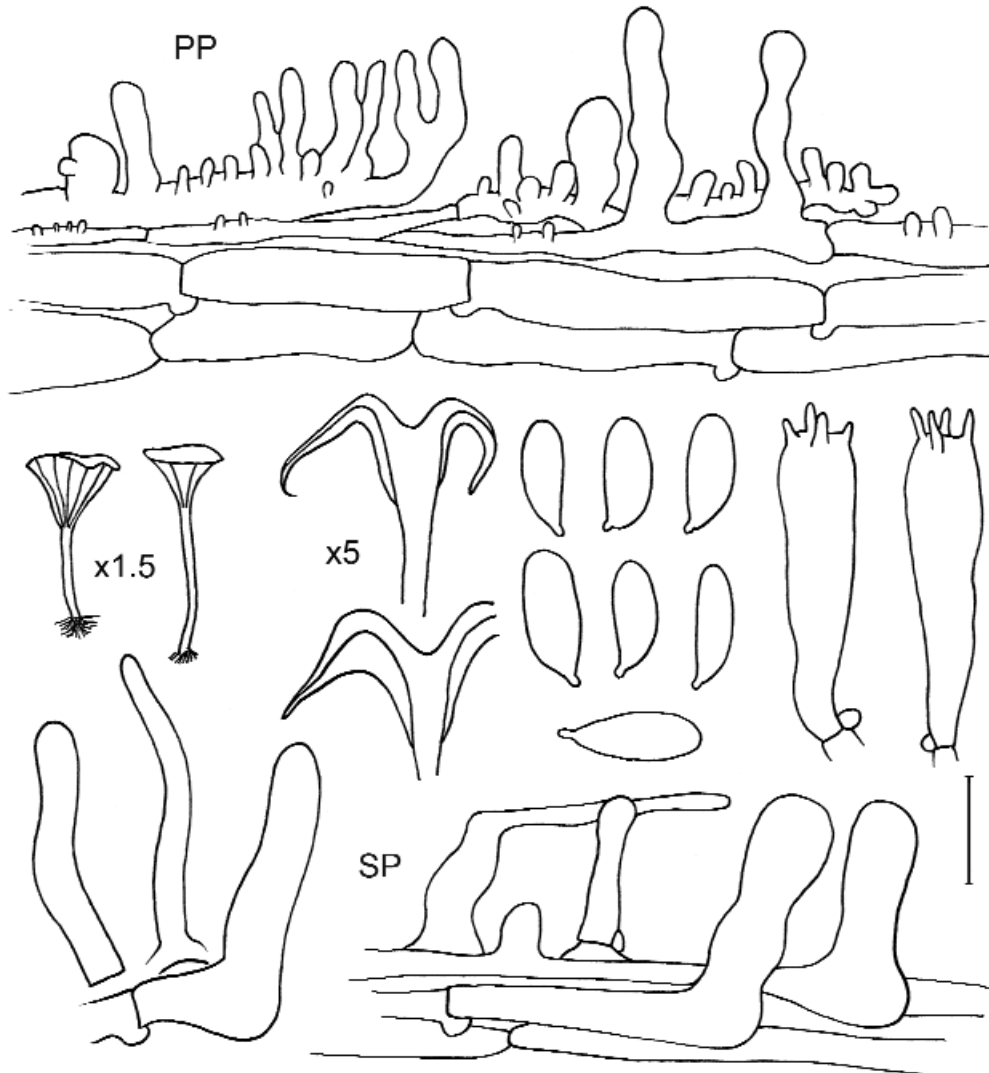


Fig. 31: *Hemimycena epichloe*

Distribution: Widespread but very poorly known. Recorded from the Czech Republic, France, the Netherlands.

Phenology: June-November.

Collections examined: **CZECH REPUBLIC:** Třeboň, Stupský rybník pond, on *Scirpus*, 16 July 1957 leg. J. Kubička (PRM 840350). – ditto, 22 June 1957 leg. J. Kubička (PRM 840351). – **FRANCE:** Savoie, Mentendry, 5 July 2000 leg. P-A. Moreau 00070504 (Herb. Moreau). – **THE NETHERLANDS:** prov. Noord Brabant, Liesbos, 12 Aug. 1965, P.B. Jansen (L). – prov. Zeeland, Hontenisse, 23 Nov. 1981, A. de Meyer 519b (L).

Notes: *Hemimycena epichloe* is characterised by small carpophores, a glabrous pileus, the absence of cheilo- and pileocystidia, 4-, rarely 2-spored basidia, diverticulate pileipellis hyphae, and smooth



Pl. 32: *Hemimycena gracilis*, photo M. MEUSERS

stipitipellis hyphae. The collections studied so far agree with the original description of KÜHNER (1938) in the absence of cheilocystidia.

The descriptions by GRÖGER (1994), MEUSERS & MEUSERS (1985), and ROMAGNESI (1992) are based on the original description, and agree with our studies. A description by KUBIČKA (1958) based on his own collection differs in slightly smaller spores ($7.6\text{--}9.7 \times 3.6\text{--}4.6 \mu\text{m}$) and 2-spored basidia. Two-spored basidia and slightly smaller spores ($8\text{--}10 \times 4 \mu\text{m}$) are also mentioned by BENKERT (1980). BON & CHEVASSUT (1989) give slightly broader spores ($10\text{--}12 \times 4\text{--}5 \mu\text{m}$) and the presence of cheilocystidia; the number of sterigmata on basidia is not mentioned. In all specimens revised, 4-spored basidia were dominant, and 2-spored basidia sparsely present.

28. *Hemimycena gracilis* (Quél.) Singer

Pl. 32, Fig. 32

Omphalia gracilis Quél., C. R. Assoc. Fr. Av. Sci. 9: 662. 1881; *Mycena gracilis* (Quél.) Kühner, Genre Mycena: 650. 1938; *Marasmiellus gracilis* (Quél.) Singer, Lilloa 22(1949): 299. 1951; *Delicatula gracilis* (Quél.) Kühner & Romagn., Fl. anal. Champ. supér.: 119. 1953; *Hemimycena gracilis* (Quél.) Singer, Ann. mycol. 41: 121. 1943. – *Agaricus immaculatus* Peck, Ann. Rep. N. Y. State Mus. 38: 84. 1885; *Helotium immaculatum* (Peck) Redhead, Can. J. Bot. 60: 2005. 1982; *Hemimycena immaculata* (Peck) Watling, Edinb. J. Bot. 55(1): 157. 1998. – *Omphalia tenuispora* Velen., České Houby: 292. 1920.

Misapplied name: *Hemimycena pythia* (Fr.) Dörfelt ss. Ricken 1915, Dörfelt, non Fr.= nomen dubium).

Excluded: *Mycena pithya* s. Pat., ss. J. Lange, Fl. agar. dan. 2: pl. 53C. 1936 (= *Hemimycena lactea*).

Type specimen: not preserved. Type-locality: France, Jura/Vosges.

Selected icones: Breitenbach & Kränzlin, Pilze Schweiz 3: pl. 219. 1991 (as *Hemimycena pithya*).

Selected literature: Antonín, Acta Mus. Moraviae, Sci. natur., 74: 138-139. 1989; Breitenbach & Kränzlin, Pilze Schweiz 3: 194. 1991 (as *Hemimycena pithya*); Elborne & al., Nordic Macromycetes 2: 124. 1992; Gröger, Boletus 18(3): 100-101. 1994; Josserand, Ann. Soc. linn. Lyon 80: 78-81. 1937 (as *Omphalina gracilis*); Kühner, Genre Mycena: 650-653. 1938 (as *Mycena gracilis*); Kühner & Valla, Trav. Lab. Jaysinia 4: 43-46. 1972 (as *Mycena gracilis*); Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 93. 1985; Romagnesi, Bull. Soc. mycol. Fr. 108: 10-11. 1992 (as *Mycena gracilis*); Watling & Turnbull, Brit. Fung. Fl. 8: 119-120. 1998.

Description: **Pileus** 1.5–10 (14) mm broad, hemispherical or campanulate-conical when young, expanding to convex, with a distinct umbo at centre especially when young, less distinct when old, with involute to inflexed, then ± straight, irregular to slightly crenulate margin, hygrophanous, translucently striate up to at least half the radius, white, old carpophores sometimes with watery greyish tinge at centre; radially finely rugulose, finely tomentose, sometimes almost strigose at margin. **Lamellae** distant, L = 9–15, l = 0–2, arcuate, broadly adnate or more frequently shortly but distinctly decurrent, well-developed, reaching the pileus margin, slightly intervenose when old, white, with concolorous, finely pruinose edge. **Stipe** 15–40 (50) × 0.3–0.7 mm, cylindrical, slightly broadened at apex, cylindrical to slightly broadened at base, hyaline, white, entirely finely tomentose-strigose, with distinct, up to 1 mm long rhizoids at base. **Context** very thin, white. **Smell** indistinct, fungoid. **Taste** mild.

Spores (7.0) 8.0–11 (12) × 2.2–3.2 μm, E = (2.7) 3.0–5.5, Q = (2.9) 3.2–3.8 (4.2), cylindrical to cylindrical-ellipsoid, rarely suballantoid, thin-walled, hyaline. **Basidia** (18) 20–27 × 5.5–7.0 μm, 4-spored, clavate. **Basidioles** 12–24 × 2.5–7.0 μm, cylindrical, clavate. **Cheilocystidia** (16) 18–23 (27) × 4.5–7.0 μm, cylindrical, clavate, subfusoid, subutriform, often irregular, slightly thick-walled. **Hymenophoral trama** made up of 3–30 μm wide, cylindrical, ellipsoid or fusiform, thin- to slightly thick-walled elements. **Pileipellis** a cutis of radially arranged, ± slightly thick-walled, diverticulate, up to 2.5–10.0 μm wide hyphae; diverticulae digitate, obtuse, up to 8.5 × 2.5 μm. **Pileocystidia** rather frequent to scattered, 10.0–19 × 2.0–4.0 μm, clavate, subutriform, subcylindrical, sublageniform, irregular, sometimes branched, slightly thick-walled. **Stipitipellis** a cutis, of parallel, cylindrical, slightly thick-walled, up to 5 μm wide hyphae. **Caulocystidia** 12–25 × (3.0) 3.5–5.0 (6.0) μm, cylindrical, clavate, irregular, sometimes moniliform, slightly thick-walled. **Clamp-connections** present.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, often in large groups, on needles of *Picea*, less frequently *Pinus* and *Abies*, rarely on leaves (*Fagus*) or on plant remnants, often in wet places, in *Sphagnum* or under birch in wet coniferous forests, in mosses or dense vegetation; found in various types of coniferous forest. RICEK (1989) described it from various substrates (humus, spruce needles, remnants of grasses and mosses) in shadow, wet places on subneutrophil soil. According to KREISEL et al. (1987) it grows in spruce forests and ± natural forests with spruce. BUJAKIEWICZ (1994) found it in associations *Carici elongatae-Alnetum* and *Circaeo-Alnetum* with spruce in the Białowieża Nationalpark.

Distribution: Common and widely distributed throughout the whole central and northern Europe, probably with a boreal-montane preference, rare in the lowlands of Western Europe. Also collected in North America (U.S.A.) and North Africa (MALENÇON & BERTAULT 1975).

Phenology: May to October (December).

Collections examined: **AUSTRIA:** Niederösterreich, Rosenberg, Wanzenau, 16 July 1988 leg. A. Hausknecht (WU 7022). – Niederösterreich, Imfritz, Etzelsreith, 10 June 1982 leg. A. Hausknecht (WU 2080). – Niederösterreich, Ottenstein, Siebenwirthen, 1 June 1984 leg. I. Riedl (WU 3276). – **BELGIUM:** Prov. Namur, Fagne Pierrard, near Virton & Ethe, 24 Sept. 1985 leg. H.A. v.d. Aa (L). – **CROATIA:** Medvadica Mts., between Puntijarka area and Rau-

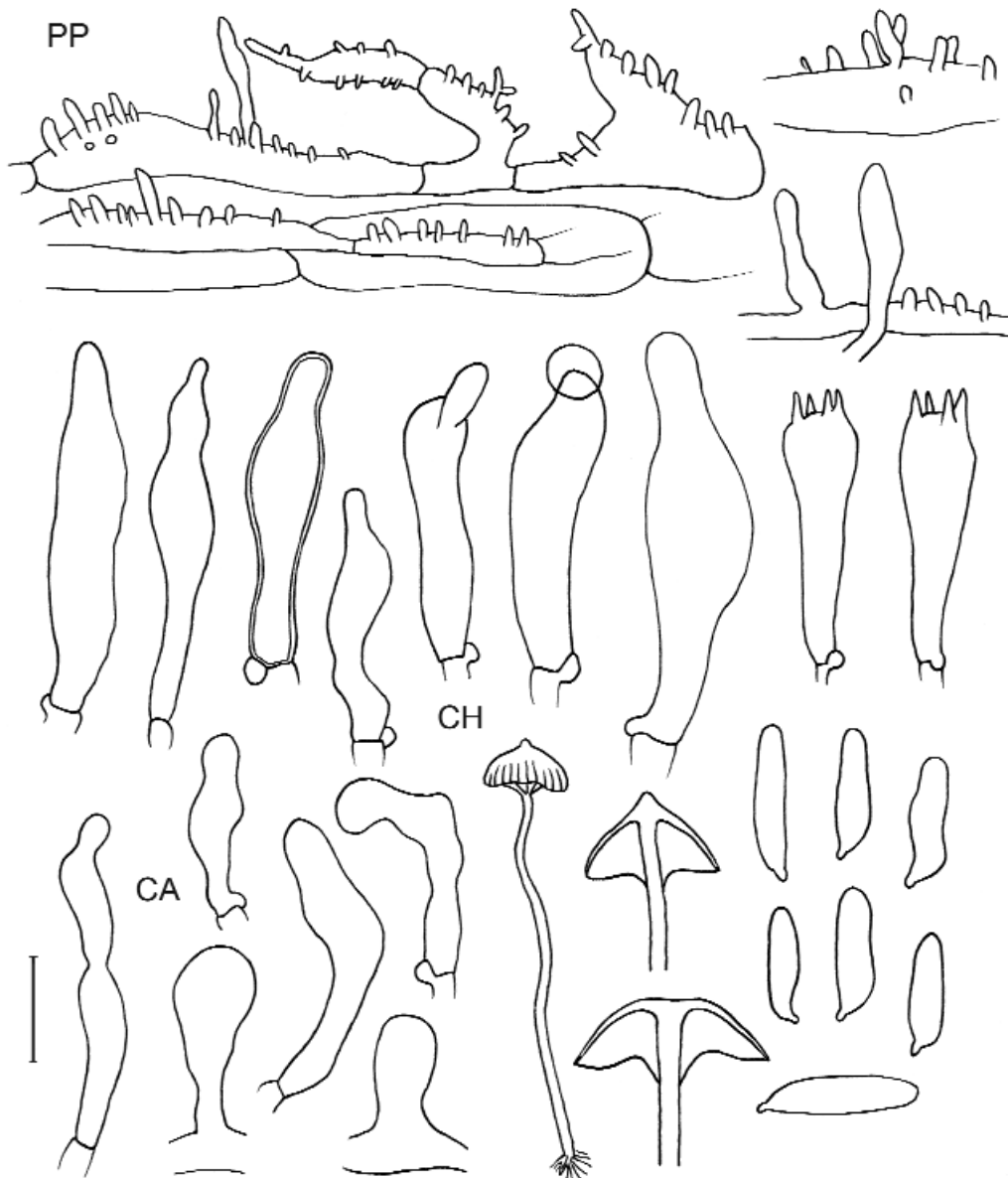


Fig. 32: *Hemimycena gracilis*

chova lugarnica area, 25 Aug. 1963 leg. M. Tortič (CNF 6/17). – **CZECH REPUBLIC:** BOHEMIA: Kokořínsko LPA, Kokořínský Důl, 12 Oct. 1996 leg. V. Antonín 96.232 (BRNM). – ditto, Pokličky, 10 Oct. 1996 leg. V. Antonín 96.215 (BRNM). – Vráž, Žlíbky, 31 May 1972 leg. J. Kubička (PRM 841524). – Zátoň, Boubín, 7 July 1954 leg. J. Kubička (PRM 841369). – Horní Vltavice, Pažení Mt. near Boubín, 31 May 1953 leg. J. Kubička and J. Herink (PRM 841353). – Turnov, Metelkovy sady, 11 July 1948 leg. J. Herink (PRM 609262). – Turnov, Farářství forest, 27 June 1948 leg. J. Herink (PRM 609261). – Křepice near Vodňany, 5 Aug. 1938 leg. J. Herink (PRM 499743). – Golčův Jeníkov, 23 July 1940 leg. J. Herink (PRM 710132). – ditto, 29 June 1940 leg. J. Herink (PRM 710130). – ditto, 19 July 1940 leg. J. Herink (PRM 710129). – Mirošovice, 20 July 1947 leg. V. vacek (PRM 515051). – Čeřenice n. Sáz., Poříčko, 3 Sept.

1944 leg. J. Kubička (PRM 710126). – ditto, 11 July 1943 leg. J. Kubička 424/43 (PRM 710128). – MORAVIA: Beskydy Mts., Staré Hamry, Huckula, 3 Aug. 1999 leg. V. Antonín 99.40 (BRNM). – Beskydy Mts., Horní Bečva, Vysoká, 6 June 1999 leg. M. Vašutová (OLM). – Žďárské vrchy Highland, Cikháj, near Žákova hora, 8 Oct. 1998 leg. V. Antonín 98.167 (BRNM). – Osiky, Horky, 6 Oct. 1999 leg. V. Antonín 99.110 (BRNM). – Lysice, 28 June 1998 leg. M. Horňák (BRNM). – Dražanská vrchovina Highland, Borotín, 6 July 1998 leg. A. Vágner (BRNM). – Dražanská vrchovina Highland, Pohora, place called Svatá Barbora, 15 Oct. 1998 leg. V. Antonín 98.169 (BRNM). – Tišnov, Čebínka, 2 Dec. 1946 leg. F. Šmarda (BRNM). – Bílé Karpaty Mts., Starý Hrozenkov, Rovně, 21 June 1998 leg. V. Antonín 98.13 (BRNM). – FRANCE: Dept. Doubs, Le ussey, 24 June 1956 leg. H.S.C. Huijsman (L). – dept. Ain, La Manche, Plat de Retord, 29 July 1957 leg. H.S.C. Huijsman (L). – Marais de Frasnes (Doubs), 25 Aug. 1979 leg. H. Romagnesi 79.91 (PC, herb. Romagnesi). – Fleurine (Oise), Forêt d'Halatte, 11 July 1963 leg. H. Romagnesi 63.54 (PC, herb. Romagnesi). – GERMANY: Rheinland-Pfalz, Eifel, Gerolstein, 23 Sept. 1980 leg. H.A. v.d. Aa (L). – POLAND: Białowieża, 5 Sept. 1966 leg. J. Kubička (PRM 840390). – ROMANIA: Muntii Rodnei Mts., Pasul Setrefu, 24 June 1986 leg. V. Antonín R86/7 (BRNM). – SLOVAKIA: Kremnické vrchy Mts., Badín, Badínsky prales, 9 July 1983 leg. L. Hagara (BRA). – Malá Fatra Mts., Bystrička, Bystrička valley, 3 July 1983 leg. L. Hagara (BRA). – Horná Orava LPA, Oravské Veselé, Pilsko, Randová-valley, 30 Sept. 2000 leg. V. Antonín 00.147 (BRNM). – Horná Orava, Oravská Polhora, Rabčické bory, 29 Sept. 2000 leg. H. Deckerová; Antonín 00.126 (BRNM). – Belianské Tatry, Holubyho dolina valley, 11 Aug. 1957 leg. J. Kubička (PRM 839954). – ditto, 18 June 1959 leg. J. Kubička (PRM 839903). – Bukovské vrchy Mts., Rabia skala, 6 Aug. 1966 leg. K. Kult (PRM 622255 and 622256). – Sklené Teplice, 22 Aug. 1954 leg. J. Kubička (PRM 841384). – ditto, Kamenný jarčok, 2 Sept. 1954 leg. J. Kubička and J. Janoušek (PRM 841406). – Slovenský Raj LPA, Suchá Belá valley, 29 June 1965 leg. J. Kubička and L. Kubičková (PRM 840421). – Biele Karpaty Mts., Dreitoma-Liešna, 20 June 1998 leg. V. Antonín 98.07 (BRNM). – Belianské Tatry Mts., Tatranská Kotlina, 1 Sept. 1998 leg. V. Antonín 98.109 (BRNM). – Belianské Tatry Mts., Tatranská Kotlina, Dolina siedmich prameňov, 30 Aug. 1998 leg. V. Antonín 98.98 (BRNM). – ditto, 8 Sept. 2001 leg. V. Antonín 01.251 and S. Jančovičová (BRNM). – ditto, Kobylí vrch, 4 Aug. 1989 leg. J. Kuthan (BRA 342). – Malá Fatra Mts., Bystrička, the Bystrička valley, 9 May 1983 leg. L. Hagara (BRA 274). – SLOVENIA: Dovje near Mojstrana, 30 Sept. 1966 leg. M. Tortič and M. Svrček (CNF 6/16). – U.S.A.: Adirondack Mts., June 1884 leg. C. H. Peck (NYS, holotype of *Agaricus immaculatus*). – Michigan, University Biological Station, 30 June 1961 leg. D. A. Reid [K(M) 68764, bisporical form]. – SWEDEN: Småland, Mellby parish, Ämningarp, 22 June 1956 leg. R. Rydberg, in: Lundell & Nannfeldt, Fungi exsiccati suecici, No. 2535 (PRM 515868). – SWITZERLAND: Kant. Luzern, Schüpheim, 10 Aug. 1955 leg. H.S.C. Huijsman (L). – Kant. Vaud, Cudrefin, 9 May 1965 leg. H.S.C. Huijsman (L). – Kant. Neuchâtel, Montezillon, 24 May 1958 leg. H.S.C. Huijsman (L). – Rochefort, 11 May 1965 leg. H.S. C. Huijsman (L).

Notes: *Hemimycena gracilis* is characterised by a distinctly umbonate pileus, well-developed lamellae reaching the pileus margin, well-developed basal rhizoids, narrow cylindrical spores, rather small, indistinct ± cylindrical, clavate, subfusoid, subutriform, often irregular cheilo- and caulocystidia and diverticulate pileipellis.

The descriptions of KÜHNER (1938), MEUSERS & MEUSERS (1985) and WATLING & TURNBULL (1998) fit well with the present concept, with the exception of not mentioning the presence of pileocystidia (Kühner, Meusers & Meusers), larger size of basidia (30–40 × 5–6 µm, Watling & Turnbull). Moreover, KÜHNER (1938) mentioned slightly amyloid hyphae. GRÖGER (1994) mentioned the presence of pileocystidia ("Huthaare") and dextrinoid stipe hyphae; JOSSERAND (1937) mentioned smaller spores [(6.5) 7–9 × (2) 2.2–2.6 µm] and did not describe any pileocystidia but does mention larger diverticulae. KÜHNER & VALLA (1972) and ROMAGNESI (1992) also mentioned the presence up to 40 µm long diverticulae of the pileipellis hyphae. ELBORNE et al. (1992) mentioned 7–15 × 1.5–3 µm large spores; BREITENBACH & KRÄNZLIN (1991) narrower spores (6.5–10 × 1.7–2.1 µm), narrower basidia (× 4.5–5.5 µm), and the absence of cheilocystidia.

KÜHNER & VALLA (1972) described two small forms: 1) "forme mineure" with an only up to 2 mm broad glabrous pileus, a rather long filiform glabrous stipe, smaller spores (7–8.7 × 1.7–2.5 µm) and diverticulate stipitipellis hyphae, and 2) "forme mineure, a pied court" with an only 2.5–3 mm broad glabrous pileus, a filiforme glabrescent stipe, without cheilocystidia and caulocystidia. The first taxon may represent a different species while the second probably represents a small form of *H. gracilis* only.



Pl. 33: *Hemimycena pseudogracilis*, photo A. HAUSKNECHT

REDHEAD (1982) combined the epithet *immaculatum* to the genus *Helotium* for the present taxon, because the epithet *gracilis* was preoccupied in that genus (*Helotium gracile* Cooke & Peck).

The type specimen of *Agaricus immaculatus* Peck (NYS!) microscopically differs from our description of *H. gracilis* in having slightly larger spores [(8.0) 9.5–13 × 2.2–3.5 (4.0) μm] and the presence of both, 2- and 4-spored basidia.

A form with predominantly two-spored basidia was also found by D. A. Reid in the U.S.A. [Michigan, University Biological Station, 30. VI. 1961, K(M) 68764] with slightly larger spores [(9.0) 10.0–13 × 2.5–3.0 μm, E = 3.0–4.8, Q = 4.0] which agrees with the type specimen of *Agaricus immaculatus*.

29. *Hemimycena pseudogracilis* (Kühner & Maire) Singer

Pl. 33, Fig. 33

Mycena pseudogracilis Kühner & Maire in Kühner, Genre Mycena: 648. 1938; *Hemimycena pseudogracilis* (Kühner & Maire) Singer, Anns mycol. 41 :121. 1943. – *Delicatula laevis* Velen., Novit. Mycol. (1939): 96. 1940.

Type-specimen: not preserved. Type-locality: Alger, Bois de Boulogne.

Selected literature: Gröger, Boletus 18(3): 100-101. 1994; Kühner, Genre Mycena: 648-650, fig. 231. 1938 (as *Mycena pseudogracilis*); Kühner & Valla, Trav. Lab. Jaysinia 4: 42-43. 1972 (as *Mycena pseudogracilis*); Meusers & Meusers, Mitt. Arbeitsgem. Pilzk. Niederrhein 3: 94. 1985; Romagnesi, Bull. Soc. mycol. Fr. 108: 11. 1992 (as *Mycena pseudogracilis*).

Description: Pileus 4–6 mm broad, campanulate, with small umbo, expanding with age, hygrophanous, hardly to distinctly translucently striate when moist, white, glabrous. Lamellae distant, L = 10–13,



Fig. 33: *Hemimycena pseudogracilis*

l = 0–1, adnate-decurrent, arcuate, well or poorly developed, but not reaching the margin of the pileus, white with entire, concolorous edge. **Stipe** 20–35 × 0.5–1.5 mm, cylindrical, equal or with slightly swollen base, hyaline, white, practically glabrous (lens), at base with radiating rhizoids. **Context** very thin. **Smell** and **taste** indistinct.

Spores 7.5–9.5 (10.0) × 3.0–4.0 μm, E = 2.1–2.8 (3.2), Q = 2.4–2.7, subcylindrical, subfusoid, lacrymoid, hyaline. **Basidia** 22–30 × 6.0–8.0 μm, 4-spored, clavate. **Basidioles** 15–29 × 3.0–8.0 μm, cylindrical to clavate. **Hymenophoral trama** made up of up to 25 μm wide, thin walled, cylindrical, fusoid to ellipsoid elements. **Lamella edge** fertile. **Cheilocystidia** absent; sometimes basidiole-like, irregular elements present among basidia. **Pileipellis** a cutis, made up of narrow, diverticulate, 2–7 μm wide hyphae; diverticulae 2.0–10.0 (15.0) × 1.5–2.5 (3.0) μm, very fine, cylindrical, digitate, obtuse. **Pileocystidia** absent. **Stipitipellis** a cutis of parallel, cylindrical, smooth, non-diverticulate, up to 5 μm wide hyphae. **Caulocystidia** scattered to infrequent, 18–35 × 4.0–7.0 (12) μm, simple, cylindrical, clavate or subfusoid, sometimes irregular, thin- to very slightly thick-walled. **Clamp-connections** present.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, on leaves and needles or in raw humus and small roots in deciduous and mixed forest in mountainous and subalpine regions.

Distribution: So far only known from Austria, Czech Republic, France, Italy and Norway.

Phenology: June to November.

Collections examined: **AUSTRIA:** Niederösterreich, Ziersdorf, Goggendorf, Mühlberg, 5 Nov. 1992 leg. A. Hausknecht (WU 11206). – Niederösterreich, Rosenburg, Zaingrub, 2 June 1985 leg. A. Hausknecht (WU 6723). – **CZECH REPUBLIC:** Moravian Karst, Ochoz near Brno, Údolí Říčky nature reserve, Lysá hora, 13 Sept. 2001 leg. V. Antonín 01.265 (BRNM). – **FRANCE:** Haute Savoie, Préalpes de Faucigny, Samoëns, Les Vallons, au pied de Criou, 22 Aug. 1956 leg. R. Kühner 56-5 (G). – dept. Ain, Martignat, 4 Sept. 1957 leg. H.S.C. Huijsman (L). – **ITALY:** Emilia-Romagna, Ravenna, Pinea di San Vitale, Fossatone, 5 Nov. 2000 leg. V. Antonín 00.196 (BRNM). – **SWITZERLAND:** Kant. Neuchatel, Bole, 10 June 1955 leg. H.S.C. Huijsman (L).

Notes: *Hemimycena pseudogracilis* is characterised by an (almost) glabrous pileus and stipe surface (lens), the often well-developed lamellae, which nevertheless usually do not reach the margin of the pileus, the absence of hymenial cystidia and pileocystidia, the very scattered to infrequent caulocystidia, diverticulate pileipellis hyphae and smooth stipitipellis hyphae. So far it is poorly known and represented with very few collections.

The original description by KÜHNER (1938) fits well with our concept, except for the slightly smaller caulocystidia ($20 \times 2\text{--}4 \mu\text{m}$). GRÖGER (1994), KÜHNER & VALLA (1972) and ROMAGNESI (1992) mentioned very fine pileipellis diverticulae (up to $1 \mu\text{m}$ wide), MEUSERS & MEUSERS (1985) larger carpophores (pileus 6–16 mm broad, stipe $20\text{--}60 \times 0.7\text{--}1.7 \text{mm}$) and the presence of $30\text{--}40 \times 4\text{--}5 \mu\text{m}$ large cheilocystioid elements, and smaller caulocystidia ($20 \times 2\text{--}4 \mu\text{m}$).

Two collections by F. Šmarda made near the town of Kuřim, Southern Moravia, Czech Republic - Šiberná (BRNM 327019, as *Omphalia gracilis*) and Čebínka (BRNM 313539, as *O. mairei*) - are similar to *H. pseudogracilis*. However, they differ in having long decurrent lamellae and broader spores ($7.0\text{--}9.0 \times 4.0\text{--}5.0 \mu\text{m}$). Unfortunately, macroscopic descriptions are not available, so it remains obscure whether these collections warrant the distinction as a separate taxon.

Delicatula laevis Velen. appears to be a later synonym (ANTONÍN 2003)

30. *Hemimycena pithyophila* (Malençon ex Redhead) Antonín & Noordel. comb. nov. Pl. 34, Fig. 34

Basionym: *Helotium pithyophilum* Malençon ex Redhead, Can. J. Bot. 60: 2005. 1982.

Delicatula pithyophila Malençon in Malençon & Bertault, Trav. Inst. Scient. Cherif. Fac. Sci. Rabat, 33: 339. 1975. (nom. inval., Art. 34.2). – *Hemimycena pithyophila* Malençon in Malençon & Bertault, Trav. Inst. Scient. Cherif. Fac. Sci. Rabat, 33: 339. 1975. (nom. inval., Art. 34.2); – *Hemimycena pithyophila* (Malençon ex Redhead) A. Ortega & Esteve-Rav., Bol. Soc. micol. Madrid 21: 233. 1996 (nom. inval., Art. 34.2).

Type specimen: holotype not preserved (Mathez in litt.). Neotype (design. here): Italy, Roma, 26 Nov. 1985 leg. G. Lonati (herb. Lonati).

Selected icones: Lonati, Boll. Assoc. Micol. Ecol. Romana 18: 15. 1989.

Selected literature: Lonati, Boll. Assoz. Micol. Ecol. Romana 18: 14-17. 1989; Malençon & Bertault, Trav. Inst. Scient. Cherif. Fac. Sci. Rabat (Champ. sup. Maroc 2) 33: 336-341. 1975; Ortega & al., Boll. Gruppo micol. Bres. 43(1): 49-50. 2000.

Description [Macroscopical description in part based on MALENÇON & BERTAULT (1975) and LONATI (1989)]: **Carpophores** purely white, sometimes with yellowish tinge. **Pileus** very small, 2–4 mm broad, globose at first, then ovoid to hemispherical, expanding to campanulate finally convex, with obtuse to slightly umbonate centre, with inflexed then straight, finally crenulate margin, hygrophanous, slightly translucently striate at margin, white, sometimes with yellowish tinge, dull, glabrous. **Lamellae** distant, $L = 4\text{--}10$, $l = 1(2)$, decurrent, triangular, well-developed, reaching the pileus margin, white with concave entire, concolorous edge. **Stipe** $6\text{--}20 \times 0.5 \text{mm}$, cylindrical, slender, slightly broadened at base but never bulbous, white, hyaline, shortly hairy, with rhizoids at base. Context white, slightly translucent. **Smell** and **taste** indistinct.



Pl. 34: *Hemimycena pithyophila*, photo H. BENDER

Spores 10.5–12 (13) × 4.0–5.2 μm, E = 2.3–3.1, Q = 2.6, cylindrical, lacrymoid, subfusiform, hyaline, smooth, often in tetrads or in pairs. **Basidia** 18–28 × 8.0–10.5 μm, 2-, rarely 4-spored, clavate. **Cheilocystidia** and **pleurocystidia** absent. **Trama** made up of cylindrical to inflated, up to 20 μm wide, thin-walled hyphae. **Pileipellis** a cutis of cylindrical, radially arranged, not gelatinised, slightly thick-walled, smooth to diverticulate, up to 5 μm wide hyphae; diverticulae up to 12 × 1.5–4.0 μm, ± digitate; terminal elements or pileocystidia (frequent especially near the pileus margin) 20–35 × 5.0–10.0 μm, adpressed to erect, clavate, subfusoid, subcylindrical, irregular to coralloid, often with projections. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, up to 5.0 μm wide hyphae. **Caulocystidia** 12–36 × 4.0–8.0 μm, clavate, (sub) cylindrical, often capitate, slightly thick-walled, hyaline, sometimes in clusters. **Clamp-connections** absent in all tissues.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic; in groups, single or fasciculate on needles and other debris of *Pinus halepensis* and *P. pinea*, and on remnants of *Abies pinsapo*, *Cistus albidus*, *Ulex baeticus* and *U. parviflorus* (ORTEGA et al. 1996; ORTEGA et al. 2000).

Distribution: Known from the Mediterranean (Italy, Spain, Algeria, Morocco).

Phenology: November.

Collections examined: ITALY: Roma, 26 Nov. 1985 leg. G. Lonati (herb. Lonati, neotype).

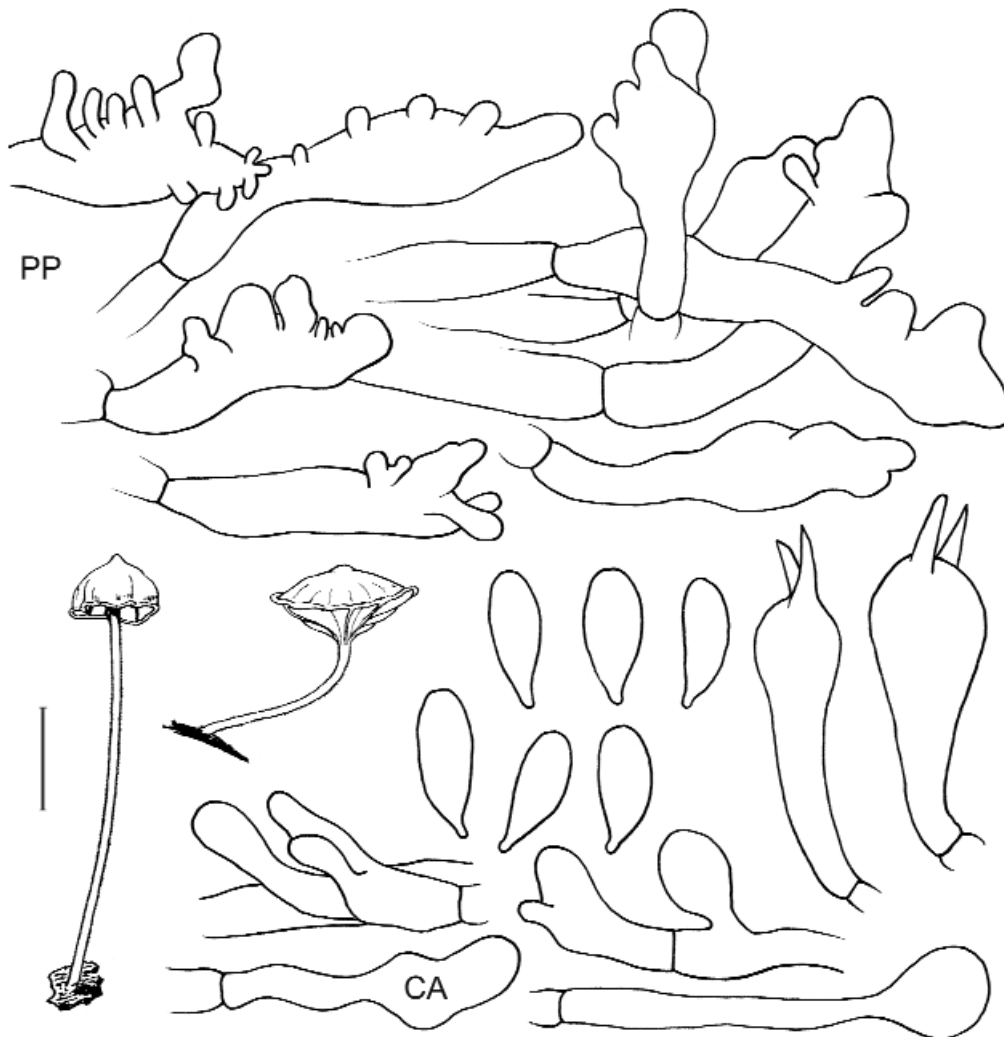


Fig. 34: *Hemimycena pithyophila*

Notes: *Hemimycena pithyophila* is characterised in having tiny carpophores with a very small pileus with an obtuse to slightly umbonate centre, well-developed lamellae reaching the pileus margin, the absence of pileo-, cheilo- and pleurocystidia, diverticulate pileipellis hyphae with developed coral-like terminal elements, and by growing mostly on *Pinus* needles and other debris.

Malençon (MALENÇON & BERTAULT 1975) described it simultaneously under two names, *Delicatula pithyophila* and *Hemimycena pithyophila*. Therefore both names are invalid (Art. 34.2). Ortega and Esteve-Raventós (in ORTEGA et al. 1996) proposed a new combination to the genus *Hemimycena*. However, they used an invalidly published name (*Delicatula pithyophila* Malençon) as the basionym. Therefore, this combination is invalid, and it is formally made here.

Malençon (MALENÇON & BERTAULT 1975) mentioned the presence of both 2- and 4-spored basidia in various specimens, narrower spores ($9.3\text{--}11.7 \times 3.0\text{--}3.6 \mu\text{m}$ in four-spored specimens, $10\text{--}12 \times 3.0\text{--}4.0 \mu\text{m}$ from two-spored basidia), narrower basidia ($22\text{--}24 \times 4.5\text{--}5.0 \mu\text{m}$), longer and more pronounced diverticulae of the pileipellis hyphae, and slightly dextrinoid (!) stipe hyphae; the long terminal elements are not mentioned but nevertheless illustrated (fig. 71I). ORTEGA et al. (2000) mentioned narrower spores ($9\text{--}11 \times 2.5\text{--}3 \mu\text{m}$).

LONATI (1989) measured slightly narrower spores ($9.5\text{--}12 \times 3\text{--}4 \mu\text{m}$) and did not mention the coralloid terminal cells. A specimen revised by us had predominantly 2-spored basidia, 4-spored basidia were extremely rare.

MALENÇON & BERTAULT (1975) described also a “forme cédricole tétrasporique” which may be identical with *H. pseudocrispata* (Valla) Maas Geest. (for detail see notes there).

31. *Hemimycena persimilis* (Malençon ex Redhead) Antonín & Noordel. comb. nov. Pl. 35, Fig. 35

Basionym: *Helotium persimile* Malençon ex Redhead, Can. J. Bot. 60: 2005. 1982.

Delicatula persimilis Malençon in Malençon & Bertault, Trav. Inst. Scient. Cherif. Fac. Sci. Rabat, 33: 336. 1975 (nom. inval., Art. 34.4); *Hemimycena persimilis* Malençon in Malençon & Bertault, Trav. Inst. Scient. Cherif. Fac. Sci. Rabat, 33: 336. 1975 (nom. inval., Art. 34.4).

Type specimen: not preserved (Mathez in litt.). Iconolectotype (designated here): Malençon in Malençon & Bertault, Trav. Inst. Scient. Cherif. Fac. Sci. Rabat, 33: 334, fig. 70. 1975 Epitype: Czech Republic, Lanžhot, Raňšpurk, 19 June 1999 leg. V. Antonín 99.04 (BRNM).

Selected literature: Malençon & Bertault, Trav. Inst. Scient. Cherif. Fac. Sci. Rabat, 33: 333-336. 1975.

Description: **Pileus** 3–10 mm broad, hemispherical then convex, with obtuse or umbonate centre, with inflexed then reflexed, entire, then crenulate margin, hygrophanous, translucently striate, purely white or milky white, radially sulcate, subglabrous to finely velutinous under lens, with minutely ciliate margin. **Lamellae** moderately crowded, L = 10–16, l = (0) 1 (2), adnate or adnate-shortly decurrent with a tooth, well developed, reaching the margin of the pileus, whitish creamy, with concolorous entire edge. **Stipe** 15–40 \times 0.5–0.75 mm, filiform, cylindrical, rigid, white, towards base with slight yellow tinge, entirely pubescent, with white rhizoids at base. **Context** white, without any distinct **smell** and **taste**.

Spores 10.0–12.5 \times 2.7–3.5 μm , E = 3.1–4.4, Q = 3.7, cylindrical, narrowly lacrymoid to narrowly clavate or subfusoid, with attenuate and oblique base, narrow, hyaline. **Basidia** 21–23 \times 7.0–8.0 μm , 4-spored (according to Malençon rarely also mixed 2- and 4-spored), clavate. **Basidioles** 11–24 \times 3.0–9.0 μm , cylindrical to clavate. **Lamellar edge** heteromorphous, cheilocystidia 12–25 \times 3.0–5.0 μm , basidia-like, not well differentiated. **Pleurocystidia** 25–45 \times 7.5–10.0 μm , cylindrical to subfusoid or sublageniform, thin-walled, often very inconspicuous. **Context** made up of cylindrical to broadly inflated, up to 20 μm wide hyphae. **Pileipellis** a cutis of radially arranged, cylindrical, thin-walled, up to 6 μm wide, diverticulate hyphae with abundant pileocystidioid terminal elements, 25–40 \times 6–12 μm , versiform, clavate, lageniform, \pm cylindrical, often irregular, sometimes with small obtuse projections to subcoralloid, thin-walled. **Stipitipellis** a cutis, of parallel, cylindrical, up to 5 μm wide smooth hyphae. **Caulocystidia** 15–45 \times (3.0) 4.5–7.0 μm , cylindrical, obtuse, irregular, slightly thick-walled, often in clusters. **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid; except for some hyphae of stipitipellis and stipititrama which are perhaps slightly dextrinoid.



Pl. 35: *Hemimycena persimilis*, photo A. HAUSKNECHT

Ecology: Saprotrophic on vegetal debris. Recorded from *Cedrus* needles (MALENÇON & BERTAULT (1975)); recently found on wood remnants and coarse humus of broadleaved trees (Antonín 99.04; Münzmay 53.99) and on leaves of *Phragmites* (PAM 00071510).

Distribution: Widespread but rare and/or overlooked in Central Europe. Originally described from Morocco.

Phenology: June to October.

Collections examined: **AUSTRIA:** Wien, Lobau, 23 June 1989 leg. A. Hausknecht (WU 7706). – **CZECH REPUBLIC:** Lanžhot, Ranšpurk, 19 June 1999 leg. V. Antonín 99.04 (BRNM). – Poďyi/Thayatal Nat. Park, Mašovice, Mloči údolí, 19 July 1995 leg. V. Antonín 95.96 (BRNM). – **FRANCE:** Savoie: Le Bourget-en-Huile, 15 July 2000 leg. P.-A. Moreau 00071510 (L). – **GERMANY:** Nordrhein-Westfalen, 5 Nov. 1999 leg. T. Münzmay 53.99 (Herb. Münzmay). – **SLOVAKIA:** Belianské Tatry Mts., Skalné vráta, 29 Aug. 1998 leg. V. Antonín 98.87 (BRNM).

Notes: *Hemimycena persimilis* is characterised by the usually distinctly umbonate pileus which seems glabrous, the well-developed lamellae, rather long and narrow spores, 4-spored basidia, well-developed pleurocystidia, indistinct basidioloid cheilocystidia, pileipellis of smooth hyphae with very large, versiform irregular to subcoralloid pileocystidia (terminal elements) and cylindrical, thin- to slightly thick-walled caulocystidia. We noted that the hyphae in the stipe might be slightly dextrinoid, which is an aberrant feature in the genus *Hemimycena*. Spore size varies in the collections studied from 10.0–12.5 × 2.7–3.5 µm (type description and Antonín 99.04) to 8.0–11 × 3.0–4.0 µm (P.A. Moreau 00071510). It is a poorly known species however, and data on variability of the characters and ecology are few.

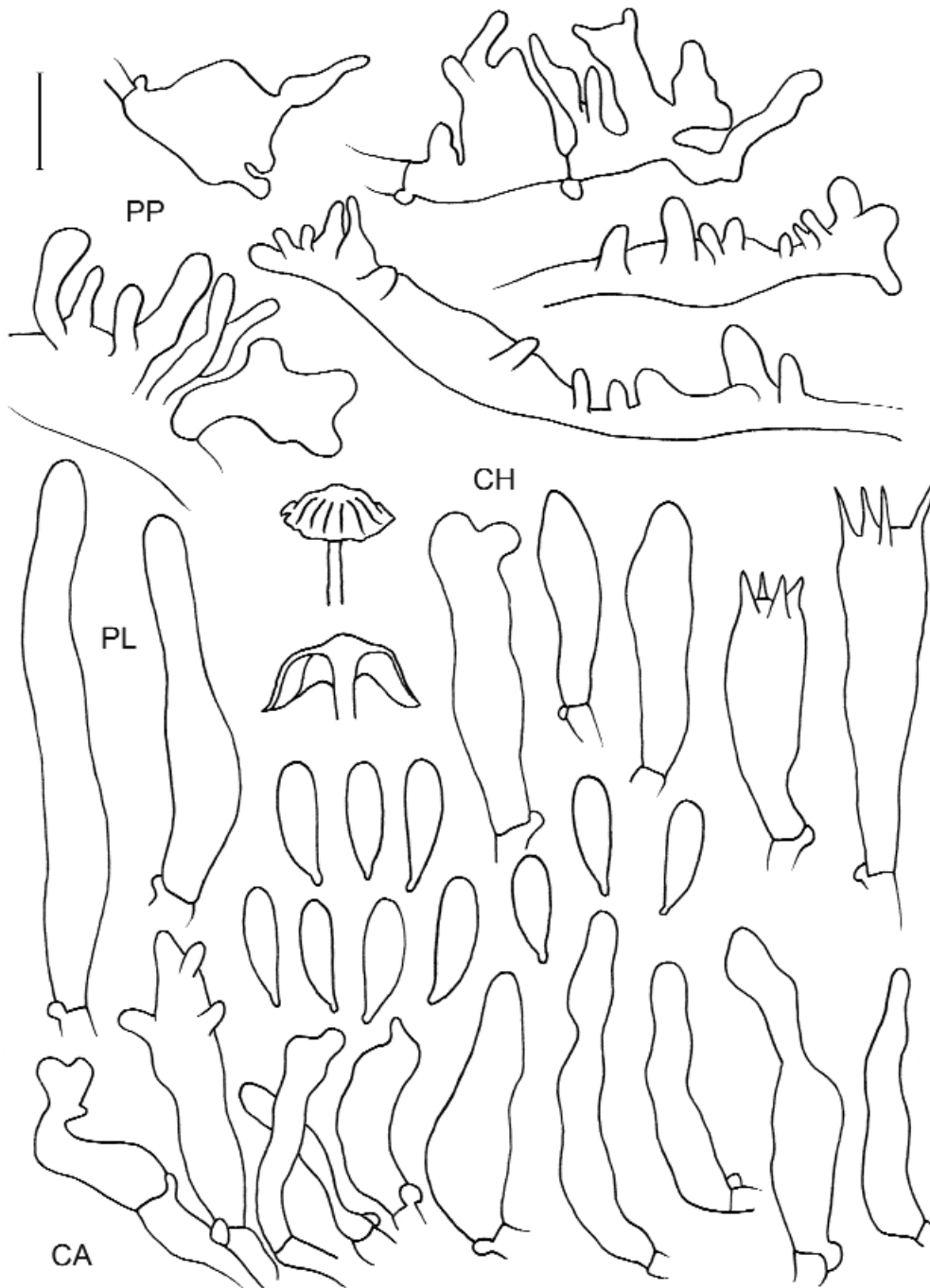


Fig. 35: *Hemimycena persimilis*

32. *Hemimycena pseudocrispata* (Valla) Maas Geest.**Fig. 36**

Mycena pseudocrispata Valla, in Kühner & Valla, Trav. Lab. Jaysinia 4: 63. 1972; *Hemimycena pseudocrispata* (Valla) Maas Geest., Proc. Kon. Ned. Akad. Wetensch. Ser. C 84: 437. 1981.

Type specimen: not preserved. Type locality: France: Haute Savoie, Préalpes de Faucigny, Annemasse.

Selected literature: Gröger, Boletus 18(3): 99. 1994; Kühner & Valla, Trav. Lab. Jaysinia 4: 36-38, fig. V. 1972 (as *Mycena pseudocrispata*); Romagnesi, Bull. Soc. mycol. Fr. 108: 12. 1992 (as *Mycena pseudocrispata*).

Description: **Pileus** 3–10 mm broad, hemispherical, campanulate, then plano-convex, mostly with a small umbilicus, with involute then inflexed margin, hygrophanous, translucently striate, white, finely pruinose-tomentose. **Lamellae** distant, L = 9–15, l = 0–2, well-developed, arcuate, decurrent, white, with concolorous, finely pubescent edge. **Stipe** 10–30 × 0.3–0.7 mm, cylindrical, slightly broadened towards base and at apex, insititious, white, hyaline, entirely finely pubescent (more distinct towards base).

Spores 8.0–9.5 (11) × 2.5–3.5 μm, E = 2.3–3.8, Q = 2.7–3.3, narrowly fusoid-ellipsoid, cylindrical-ellipsoid, hyaline, thin-walled. **Basidia** 20–25 × 5.0–7.0 μm, 2-spored, clavate. **Basidioles** 10–25 × 3.0–7.5 μm, cylindrical to clavate. **Lamella edge** ± homogeneous. **Cheilocystidia** absent; occasionally sterile basidioliform elements observed among basidia. **Trama** made up of cylindrical to (sub)fusoid, thin-walled, hyaline, up to 25 μm wide hyphae. **Pileipellis** a cutis of radially arranged, cylindrical, ± thin-walled, diverticulate, 3.0–8.0 μm wide hyphae; diverticulae digitate, obtuse, 1.5–8.0 (25) × 1.0–2.0 (4.0) μm, thin- to very slightly thick-walled. **Pileocystidia** absent. **Stipitipellis** a cutis, made up of

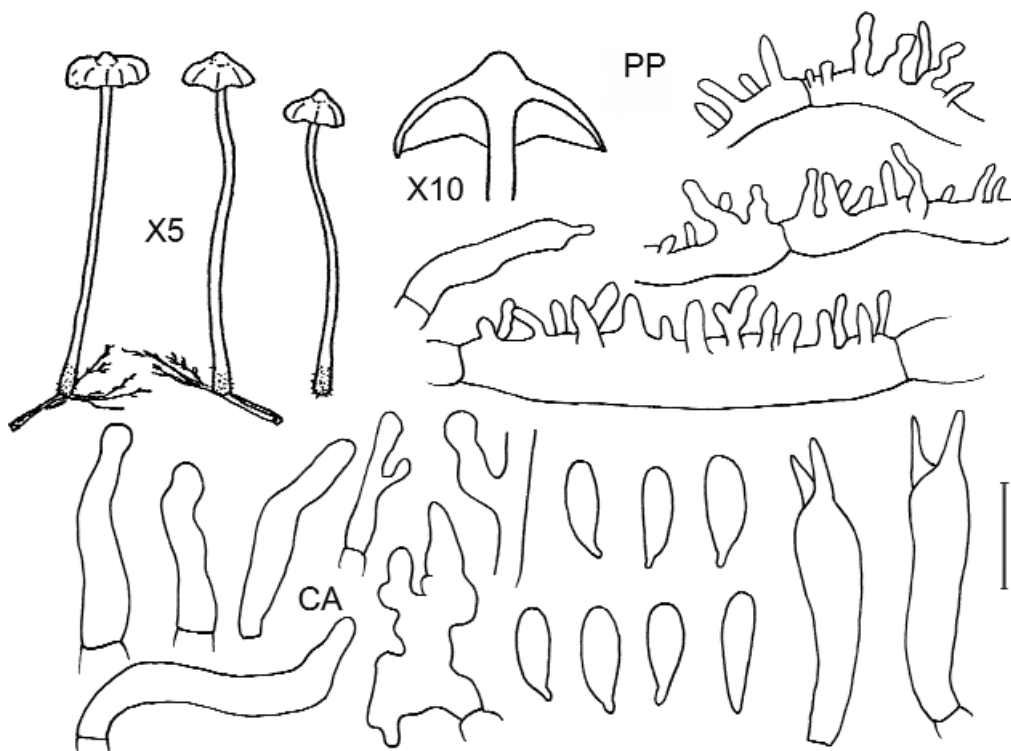


Fig. 36: *Hemimycena pseudocrispata*

parallel, cylindrical, slightly thick-walled, up to 5.0 (7.0) μm wide hyphae, smooth or with scattered diverticulae. **Caulocystidia** numerous, 11–32 \times 2.5–6.0 μm , cylindrical to subfusoid, often irregular to subcoralloid, thin- to slightly thick-walled, hyaline. **Clamp-connections** absent in all tissues.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic; the type has been collected on dead *Sphagnum* in a *Betula* bog, in Austria and in the Czech Republic it occurred on leaves (*Carpinus*, *Quercus*).

Distribution: So far only known from Austria, France, Czech Republic and Slovakia.

Phenology: June to September.

Collections examined: **AUSTRIA:** Niederösterreich, Strass, Elsam, 19 June 1988 leg. A. Hausknecht (WU 6987). – **CZECH REPUBLIC:** Moravian Karst, Mokrá, near a stone quarry, 12 Sept. 2001 leg. V. Antonín 01.252 (BRNM). – **SLOVAKIA:** Velká Fatra Mts., Lubochňa, Kundračka nature reserve, 31 Aug. 2002 leg. V. Antonín 02.112 (BRNM).

Notes: *Hemimycena pseudocrispata* is characterised by well-developed lamellae reaching the pileus margin, the absence (or scattered?) of rhizoids at stipe base, 2-spored basidia, absent cheilocystidia, diverticulate pileipellis cells, the absence of pileocystidia, irregular to subcoralloid caulocystidia, and the absence of clamp-connections.

Comparing literature, it was noted that GRÖGER (1994) described up to 30 μm long and branched diverticulae of pileipellis hyphae, ROMAGNESI (1992) and KÜHNER & VALLA (1972) slightly larger spores (9–13 \times 3–4 μm), longer basidia (25–34 \times 5–7 μm) and also longer pileipellis diverticulae.

The two-spored form of *H. pythiophila* described by MALENÇON & BERTAULT (1975) probably refers to *H. pseudocrispata*.

33. *Hemimycena pseudogibba* (Valla) Antonín & Noordel. comb. nov. Fig. 37

Basionym: *Mycena pseudogibba* Valla in Kühner & Valla, Trav. Labor. „La Jaysinia“ 4: 69. 1972.

Helotium pseudogibbum (Valla) Redhead, Can. J. Bot. 60: 2005. 1982.

Type specimen: not preserved; type locality: France, Haute Savoie, Samoëns, Préalpes de Faucigny, au bord du Giffre.

Selected literature: Gröger, Boletus 18(3): 99. 1994; Romagnesi, Bull. Soc. mycol. Fr. 108: 11. 1992 (as *Mycena pseudogibba*); Valla in Kühner & Valla, Trav. Lab. Jaysinia 4: 35–36, fig. IV. 1972 (as *Mycena pseudogibba*).

Description [macroscopic description based on VALLA (1972)]: **Basidiocarps** totally white, with long stipe, very small, filiform, with a very small pileus. **Pileus** 0.4–1.4 mm broad, broadly conical to truncate campanulate, then hemispherical and sometimes plano-convex, slightly depressed or bluntly umbonate; white, opaque, glabrous, also under lens. **Lamellae** absent or very few (up to 4), reduced to a few vein-like structure which disappear already half way the margin of the pileus; white. **Stipe** 2–10 \times 0.1–0.2 mm, very thin, filiform, flexuous, progressively broadened towards base, white, pruinose in upper part, often somewhat hispid in basal part, insititious, without strigose hairs. **Smell** and **taste** indistinct.

Spores 10–12 \times 3–4 μm , long ellipsoid, with attenuated base. **Basidia** 4-spored or mixed 1-, 2-, and 4-spored, 22–25 \times 5–6 μm , clavate. **Lamella edge** fertile. **Hymenial cystidia** absent. **Pileipellis** a cutis, made up of cylindrical, 2–3 μm wide, diverticulate hyphae; diverticulae short, 2–3 \times 1–1.5 μm , multiseriate; with scattered simple, short terminal elements (‘pileocystidioid elements’), 15–25 \times 3–5 μm with blunt apex and thin walls. **Pileitrama** of 15–20 μm wide, inflated hyphae. **Stipitipellis** a

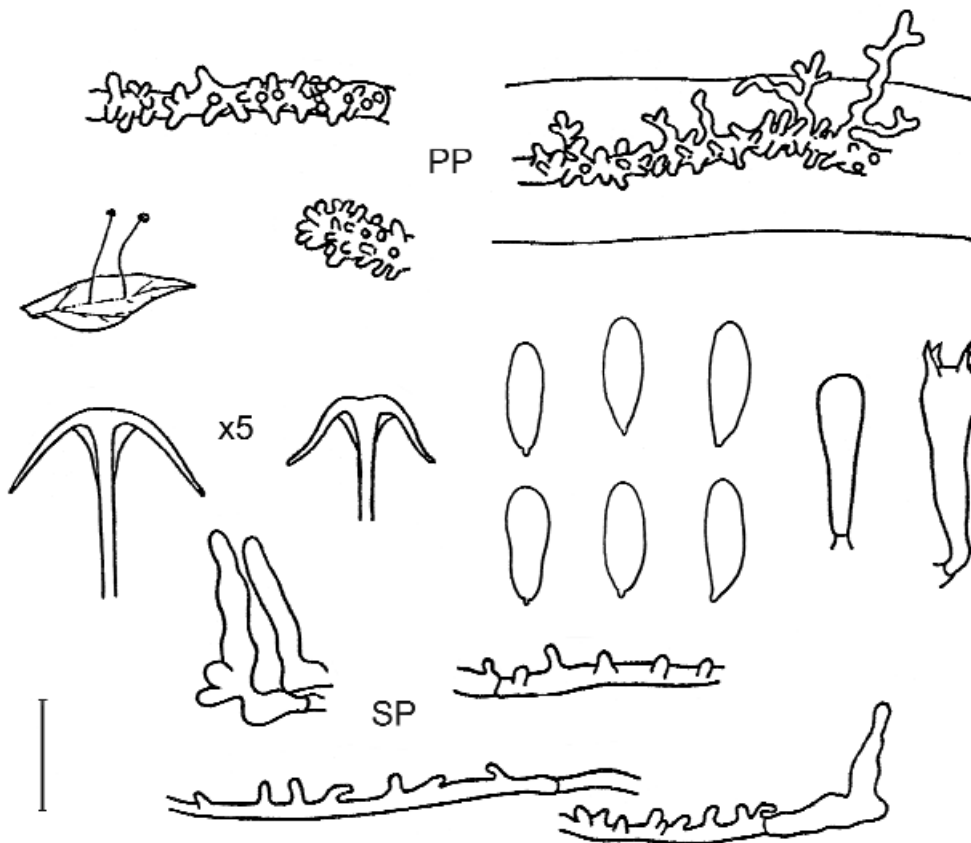


Fig. 37: *Hemimycena pseudogibba*

simple cutis, made up of very narrow, diverticulate, 1–2 μm wide hyphae; diverticulae uniseriate, similar to pileipellis. **Caulocystidia** simple, thin-walled. **Clamp-connections** absent.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, gregarious on dead leaves of *Salix* and *Corylus*.

Distribution: So far only known from the type locality in the French Alps.

Notes: *Hemimycena pseudogibba* is characterised by following combination of characters: tiny basidiocarps, glabrous pileus, the strongly reduced hymenophore, lamellae being absent or very sparse and reduced, the absence of hymenial cystidia, the presence of diverticulate pileipellis and stipitipellis hyphae, and the absence of the clamp-connections.

It resembles *H. subtilis* because of the tiny basidiocarps with strongly reduced lamellae, but clearly differs by the small spores and lack of setiform hairs on the pileus and stipe. *H. pseudocrispata* comes also close, but has larger basidiocarps, well-developed lamellae, and more pronouncedly diverticulate hyphae in the pileipellis. *Hemimycena subimmaculata* has similar pileocystidia, but clearly differs by the presence of the clamp-connections.

Because of the absence of the type specimen and other herbarium specimens available, we adopted the microscopic description according to Valla (in KÜHNER & VALLA 1972). All other descriptions in literature also refer to this publication.

34. *Hemimycena subimmaculata* (Murrill) Elborne & Læssøe Fig. 38

Omphalopsis subimmaculata Murrill, N. Amer. Fl. 9: 315. 1916; *Hemimycena subimmaculata* (Murrill) Elborne & Læssøe, Nord. J. Bot. 11(4): 478. 1991; *Helotium subimmaculatum* (Murrill) Redhead, Can. J. Bot. 60: 2005. 1982. – *Mycena albissima* A. H. Sm., N. Amer. Species of Mycena: 84–86. 1947. – *Mycena neocrispata* Kühner & Valla, Trav. Lab. Jaysinia 4: 68. 1972.

Type specimen: U.S.A., Washington, Seattle, 20 Oct. 1911, Murrill 688 (NY, holotype).

Selected literature: Gröger, Boletus 18(3): 97 and 99–100. 1994; Elborne, Læssøe & Østmoe, in Hansen & Knudsen, Nordic Macromyc. 2: 125–126. 1992; Kühner & Valla, Trav. Lab. Jaysinia 4: 38–40, fig. 7. 1972; Redhead, Can. J. Bot. 60: 2005. 1982; Romagnesi, Bull. Soc. mycol. Fr. 108: 11–12. 1992 (all as *Mycena neocrispata*).

Description: **Pileus** 2–8 mm broad, broadly conical with acute centre, with involute margin, expanding to convex with or without slightly depressed centre, with deflexed margin, white, not to distinctly translucently striate nearly to centre, smooth or slightly rugulose, glabrous. **Lamellae** distant, L = 10–11, l = 0–1, long-decurrent, well developed and usually reaching the margin of the pileus, rather narrow, white with concolorous edge. **Stipe** 10–20 × 0.3–0.5 mm, very slender, cylindrical, slightly broadened at apex and/or base, hollow, white, appearing glabrous or minutely whitish-pruinose (lens), without basal rhizoids. **Context** thin, white. **Smell** and **taste** not distinctive.

Spores (9.0) 10–14.5 (15) × (3.5) 4.0–5.0 (5.5) µm, E = 2.1–3.5, Q = 2.6–3.1, fusiform, sulacrymoid, hyaline. **Basidia** 24–33 × (6.0) 7.5–9.0 µm, 4-spored, clavate. **Basidioles** 10–33 × 4.0–9.0 µm, clavate, cylindrical. **Hymenial cystidia** 21–35 × 5.0–7.0 µm, fusiform, subfusiform, rarely sublageniform or subcylindrical, often rostrate, obtuse to subacute, sometimes with a mucronate cap, thin-walled. **Trama** made up of cylindrical, fusiform, ellipsoid to subglobose, thin-walled, up to 25 µm wide elements. **Pileipellis** a cutis, made up of radially arranged, cylindrical, ± thin-walled, diverticulate, up to 8 µm wide hyphae; diverticulae up to 11 × 2.0 µm, digitate, cylindrical, obtuse, often irregular or sometimes branched; with scattered cystidioid terminal elements, 12–40 × 4.5–6.0 µm, clavate, cylindrical, subfusoid, ± thin-walled, often with a mucronate slime cap. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, smooth or sometimes diverticulate, up to 5 µm wide hyphae. **Caulocystidia** 15–65 × 2.5–7.0 µm, cylindrical, clavate, sublageniform or awl-shaped, often branched or irregular (especially at base), slightly thick-walled, sometimes with a mucronate cap. **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic, on dead leaves and stems of *Petasites*, on fallen leaves of *Alnus*, *Salix* and *Corylus*, and on dead parts of ferns (*Athyrium*, *Dryopteris*), in subalpine copses of *Pinus mugo* or stands of various deciduous trees (*Alnus*, *Salix* and *Corylus*).

Distribution: Widespread, known from (sub-)alpine regions in Europe (France: Haute Savoie; Slovakia: Tatra Mountains), Denmark (KNUDSEN & HANSEN 1992) and in North America.

Phenology: August to September.

Collections examined: FRANCE: Haute Savoie, Préalpes de Faucigny, Samoëns, Chalet roux, 6 Sept. 1953 leg. R. Kühner 53-14 (holotype of *Mycena neocrispata*, G). – ditto, Foret de Vacconnant, 28 Aug. 1954 leg. R. Kühner 54-9 (G). – ditto, Foret de Bastan, 4 Sept. 1951 leg. R. Kühner 51-154 and 14 Sept. 1953 leg. R. Kühner 53-15bis (both

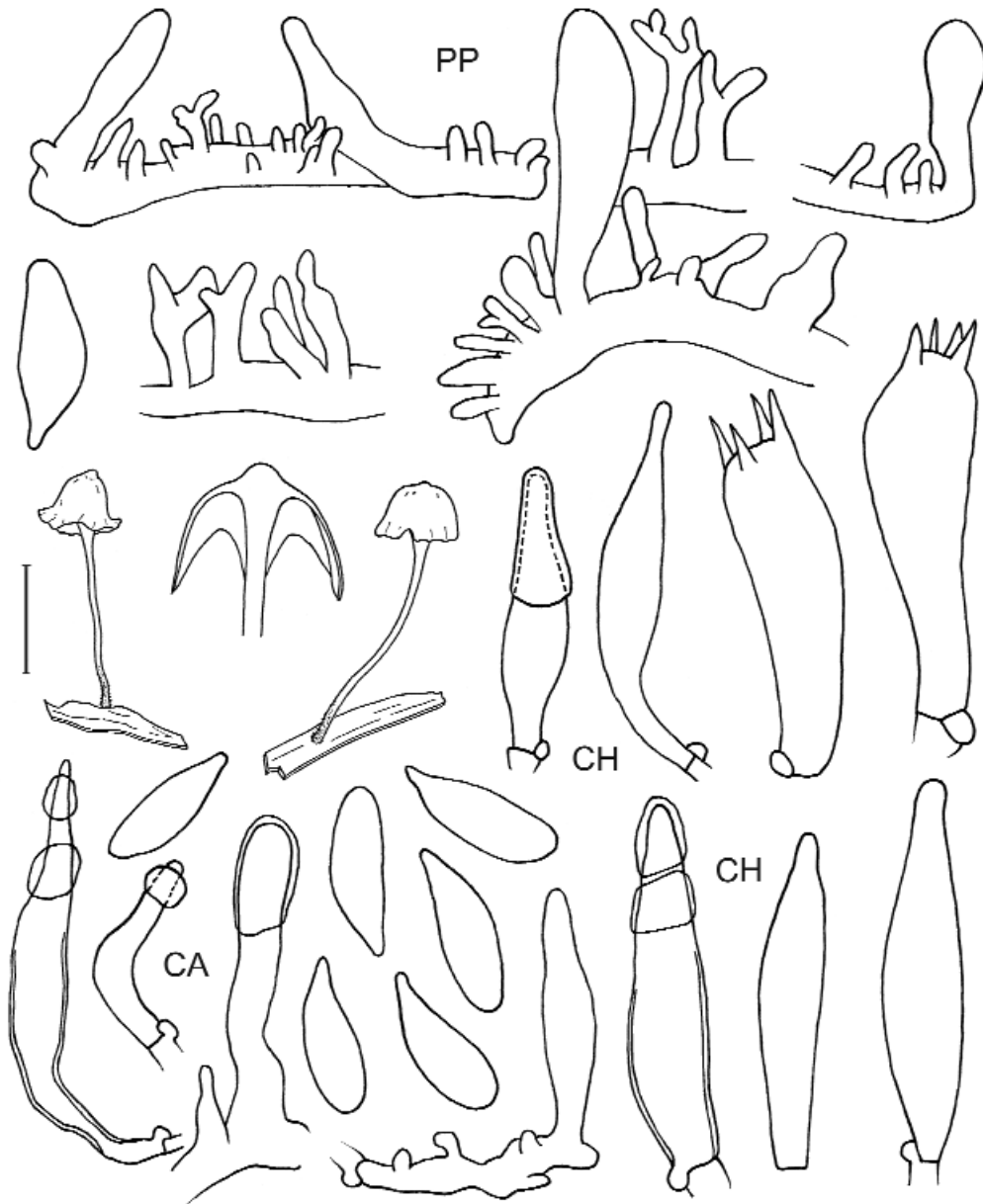


Fig. 38: *Hemimycena subimmaculata*

in G). – **SLOVAKIA:** Západné Tatry Mts, Červené vrchy, Tomanovo sedlo, 31 Aug. 1999, V. Antonín 99.66 (BRNM).
 – **U.S.A.:** Washington, Seattle, 20 Oct.-1 Nov. 1911 leg. W. A. Murrill 688 (NY, holotype of *Omphaliopsis sumimmaculatus*). – A.H. Smith 3780 (MICH, holotype of *Mycena albissima*).

Notes: *Hemimycena subimmaculata* is distinctive because of the glabrous pileus, a (almost) glabrous stipe without basal rhizoids, large spores, and the presence of pileo- cheilo- and caulocystidia. Al-



Pl. 36: *Hemimycena nitriolens*, photo R. WALLEYN

though the holotype of *Mycena neocrispata* is in a very poor state, the microscopical characters observed confirm its synonymy with *H. subimmaculata* from North America.

KÜHNER & VALLA (1972) and ROMAGNESI (1992) described it as having slightly shorter and narrower spores [(6.5) 7.5–12 (12.5) × 2.7–4 μm], narrower basidia (x 5–7 μm), and without hymenial cystidia. However, they mentioned the presence of subcylindrical to subfusoid elements on edge and sides of lamellae only slightly projecting beyond hymenium which, in our opinion, represent cystidia. ELBORNE et al. (1992) described it with slightly smaller spores (7.5–12 × 2.5–4.5 μm), without pleurocystidia and as having indistinct cheilocystidia.

35. *Hemimycena nitriolens* (Valla) Antonín & Noordel. comb. nov. Pl. 36, Fig. 39

Basionym: *Mycena nitriolens* Valla in Kühner & Valla, Trav.Lab. Jaysinia 4: 68. 1972.

Type specimen: not preserved. Type locality: France, dept. Ain, Echets.

Selected literature: Gröger, Boletus 18(3): 101. 1994; Romagnesi, Bull. Soc. mycol. Fr. 108: 9. 1992 (as *Mycena nitriolens*); Valla in Kühner & Valla, Trav.Lab. Jaysinia 4: 46–48, fig. VII. 1972.

Description: **Basidiocarps** entirely white, not fragile, with a stipe, which is very long in comparison with the minuscule pileus. **Pileus** 1–3 (4) mm broad, membranaceous, subhemispherical then broadly conical to plano-convex, with involute then deflexed margin, always with a relatively large pointed umbo, often very irregularly shaped, translucently striate when moist, white, often somewhat wrinkled to grooved, pruinose under lens, sometimes exuding small droplet, like in *H. mauretana*. **Lamellae**, L = 0–3–5 (7), l = 0–2, strongly reduced, sometimes absent, normally only vein-like, not reaching the margin, rarely complete, rarely forked, white, with entire edge. **Stipe** 4–15 × 0.2–0.5 mm, cylindrical

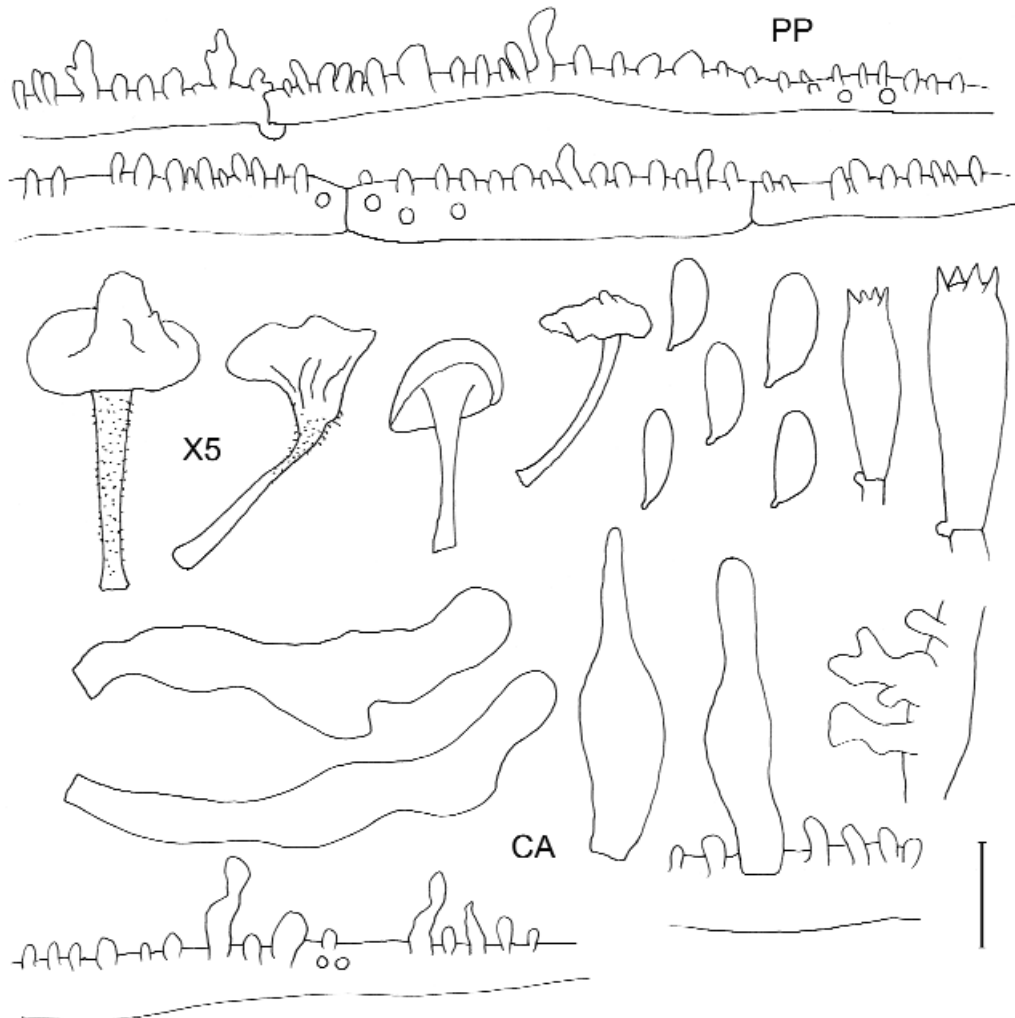


Fig. 38: *Hemimycena subimmaculata*

with broadened base, white hyaline, under lens with fine pruinum, at base with white to brownish rhizoids. **Context** very thin. **Smell** nitrous though not always very distinct. **Taste** unknown.

Spores 6.0–8.0 (10) × (1.5) 2–4 μm, E = 3.0–4.0, Q = 3.4, narrowly ellipsoid to cylindrical, thin-walled. **Basidia** 15–23 (30) × 3.0–7.0 μm, 4-spored, clamped. **Basidioles** subcylindrical. **Hymenial cystidia** absent. **Pileipellis** a cutis, made up of radially arranged diverticulate hyphae; elements 30–80 × 3.0–5.0 μm wide; diverticulae 1.0–6.0 μm wide. **Pileocystidia** absent. **Stipitipellis** a cutis of diverticulate hyphae; diverticulae very irregular, 1–9 × 1–2.5 μm. **Caulocystidia** 14–25 × 5–8 μm, thin-walled, irregularly shaped, often more or less lageniform, with blunt apex, sometimes slightly coral-loid with few diverticulae. **Clamp-connections** present.

Chemical reactions: Neither spores nor tissues amyloid or dextrinoid.

Ecology: Saprotrophic on rotten leaves of *Betula* in subalpine habitat (type). Also found on litter of *Fagus* and *Quercus* in forest.

Distribution: So far only known from France and Belgium.

Phenology: October to March.

Collections examined: BELGIUM: prov. West Vlaanderen, Harelbeke, domein de Gavers, 20 Febr. 2002, and 27 March 2002, L. Vannieuwerburgh (L).

Notes: *Hemimycena nitriolens* is characterised by its tiny basidiocarps, the strongly reduced and sometimes absent, normally only vein-like lamellae not reaching the pileus margin, nitrous smell, 4-spored basidia, diverticulate pileipellis and stipitipellis hyphae, and the presence of caulocystidia. So far this species was only known from the type-locality, but recently we were able to study a recent collection from Belgium which fits very well with the type, except for the not dextrinoid trama hyphae. This character was mentioned in the description of VALLA (1972). If this had been true, the species would not fit the generic circumscription of *Hemimycena*! (Compare also *H. persimilis*). The smell of this collections was nitrous, but less strongly than the type, and absent or weak in some specimens.

Apart from the distinctive smell, *Hemimycena nitriolens* is close to *H. crispata* and *H. pseudo-gracilis* from which it can be distinguished also by the diverticulate hyphae of the cortex of the stipe. The nitrous smell is shared with *H. delectabilis*, which has different microscopy, such as well-developed hymenial cystidia.

4.2. *DELICATULA* Fayod

Delicatula Fayod, Ann. Sci. Nat. Bot., Sér. 7, 9: 313. 1889.

Retocybe Velen., Nov. Mycol. Novis.: 33. 1947. (Novit. mycol.: 91. 1939, nomen nudum, without a Latin generic diagnosis).

Type species: *Delicatula integrella* (Pers.: Fr.) Pat.

Selected literature: Kühner, Bull. Soc. Linn. Lyon, Num. spéc., 49: 771-772. 1980; Kühner & Romagnesi, Fl. Anal.: 116-119. 1953; Ludwig, Pilzkompodium 1 (Beschreibungen): 109-110. 2001; Meusers, Mittbl. Arbgem. Pilzk. Niederrhein 3(2a): 77-99. 1985; Patouillard, Essai taxon.: 157. 1900; Pegler, Kew Bull. Addit. Ser. 12: 179-180. 1986; Singer, Ann. Mycol. 34: 331. 1936; Singer, Ann. Mycol. 41: 65-66. 1943; Singer, Agar. mod. Taxon., Ed. 4: 397-398. 1986; Watling & Turnbull, British Fungus Fl. 8: 110-111. 1998.

Carpophores mycenoid-omphalioid; small to very small, white, translucent; pileus and stipe covered with velar remnants when young; lamellae often reduced (especially in young specimens) and intervenose. Spore print white.

Spores amygdaliform to fusoid, smooth, amyloid; hymenial cystidia absent or indistinct; hyphae neither amyloid nor dextrinoid; pileipellis a cutis made up of radially arranged hyphae, covered with thick-walled velar remnants; clamp-connections present.

Ecology: Saprotrophic on wet decaying wood (stumps, twigs, stems), bark and woody litter of deciduous, rarely of coniferous trees, or on litter of grasses and herbaceous plants.

Distribution: Widely distributed in the temperate Northern Hemisphere, rare in the tropics (PEGLER 1986).

Notes: The genus *Delicatula* was originally defined as a genus of white, omphalioid or mycenoid, white spored agarics with reduced, vein-like lamellae (FAYOD 1889) and a such accepted by PATOULLARD

(1900). KÜHNER (1926) considered it an assemblage of all white species of *Mycena* and *Omphalia*. However, he stressed in this paper as well as in a later publication (KÜHNER & MAIRE 1934) that *Delicatula integrella* takes an isolated position in the genus *Delicatula*, as circumscribed by FAYOD (1889). Later, KÜHNER (1938) proposed to retain the name *Delicatula* for "*Mycena*" *integrella* only, and transferred all other white taxa to *Mycena*. KÜHNER & ROMAGNESI (1953) treated again all white "*Mycenas*" and omphalia-like fungi as belonging to an emended concept of the genus *Delicatula*. CEJP (1938) also kept a broad concept of *Delicatula* including species, which are now placed in the genera, *Hemimycena* and *Mycena*. In recent literature (ARNOLDS et al. 1995; BAS & KUYPER 1995; KREISEL 1987; SINGER 1986) *Delicatula* and *Hemimycena* are considered distinct genera. The genus *Delicatula*, as limited here, is distinguished from *Hemimycena* particularly by the amyloid spores and presence of veil.

In his outline of the classification of agarics, KÜHNER (1980) placed *Delicatula* in tribus *Fayodiae* Kühner. SINGER (1986) on the contrary, ranged them among the *Myceneae* Fayod ex Ulbrich.

VELENOVSKÝ (1947) described the genus *Retocybe* Velen. with the type species *R. miliaris* Velen. and additional species *R. vitrea* Velen. He already published this genus earlier (VELENOVSKÝ 1939), however, without a Latin diagnosis, and thus invalid. Both species of *Retocybe* appeared to be synonyms of *Delicatula integrella* (SVRČEK 1966a). For these reasons, *Retocybe* is a later synonym of *Delicatula*.

In Europe, *Delicatella* is monotypic, with only one species. PEGLER (1986) and SINGER (1986) reported additional species from tropical regions [*D. hyalina* (Petch) Pegler, *D. ralamuensis* (P. Henn.) Cejp, *D. minutissima* (P. Henn.) Cejp, *D. craticula* Heim, and *D. minima* Sing. (ined.) respectively].

Synopsis of European species:

1. *Delicatula integrella* (Pers.: Fr.) Pat.

1. *Delicatula integrella* (Pers.: Fr.) Pat.

Pl. 37 & 38, Fig. 40

Agaricus integrellus Pers., Icones Descr. fung. 54, 1800; *Agaricus integrellus* Pers.: Fr., Syst. mycol.: 1: 161. 1821; *Omphalia integrella* (Pers.: Fr.) P. Kumm., Führer Pilzk.: 106. 1871; *Mycena integrella* (Pers.: Fr.) Gray, Nat. Arr. Brit. Pl.: 621. 1821; *Delicatula integrella* (Pers.: Fr.) Fayod, Ann. Sci. Nat. Bot., Sér. 7, 9: 313. 1889 (unvalid combination); *Delicatula integrella* (Pers.: Fr.) Pat., Essai taxon.: 157. 1900. – *Retocybe miliaris* Velen., Novit. mycol.: 91. 1939. – *Retocybe vitrea* Velen., Novit. mycol. novis.: 34. 1947. – *Delicatula bagnolensis* J. E. Gilbert, Bull. Soc. mycol. Fr. 42: 62. 1926. – *Delicatula major* Velen., Novit. mycol. novis.: 45. 1947.

Type specimen: not preserved. Neotype (designed here, see notes): Västergötland, Göteborg, Hisingen, "Rya skog", 29 July 1942 leg. T. Nathorst-Windahl 3118, in: Lundell & Nannfeldt, Fungi exsiccati suecici, No. 1759 (PRM 710160).

Selected icones: Bol. Catal. 16: pl. 758. 1997; Breitenbach & Kränzlin, Pilze Schweiz 3: 186-187. 1991; Cejp, Atlas hub evrop. 4b: pl. 54/1-2, 55 (black & white). 1938; Courtecuisse, Mushrooms Britain and Europe: 88. 1999; Courtecuisse & Duhem, Champ. Fr. Eur.: pl. 536. 1994; J. Lange, Fl. agar. dan. 2: pl. 62D. 1936; Ludwig, Pilzkompodium 1: pl. 34, fig. 20.1. 2000; Michael, Hennig & Kreisel, Handb. Pilzfr., 2. Ed., 3: 126. 1977.

Selected literature: Breitenbach & Kränzlin, Pilze Schweiz 3: pl. 205. 1991; Cejp, Atlas hub evrop. 4b: 136-137. 1938; Courtecuisse, Mushrooms Britain and Europe: 669-670. 1999; Josserand, Ann. Soc. Linn Lyon 80: 93-96. 1937; Kühner, Botaniste 17: 94-96. 1926; Kühner & Romagnesi, Fl. anal.: 118. 1953; Ludwig, Pilzkompodium 1 (Beschreibungen): 110. 2001; Meusers & Meusers, Mittbl. Arbeitsgem. Pilzkunde Niederrhein 3: 81. 1985; Østmoe, Nordic Macromyc. 2: 120. 1992; Singer, Ann. Mycol. 41: 65-66. 1943; Watling & Turnbull, British Fungus Fl. 8: 110-111. 1998.



Pl. 37:
Delicatula integrilla,
photo M. MEUSERS

Description: **Pileus** 3–17 mm broad, hemispherical to hemispherical-campanulate with \pm applanate or slightly papillate centre when young, expanding to broadly conical or convex with slightly umbonate centre, finally irregularly convex or applanate, with inflexed, then deflexed to straight or slightly reflexed-uplifted, crenate margin, hygrophanous, white, translucently striate when moist, opaque when dry, radially rugulose to subsulcate, finely pubescent, glabrescent. **Lamellae**, L = 10–16 (18), l = (0) 1–3, distant, broadly adnate to slightly decurrent with a tooth, arcuate, often reduced and vein-like, often not reaching the margin of the pileus, interveined, white, with concolorous, almost entire edge. **Stipe** 8–22 \times 0.4–1 (1.5) mm, cylindrical, slightly broadened at apex, slightly broadened to subbulbose at base, often curved, white, hyaline, finely pubescent or flocculose, particularly in upper part, glabrescent with age, opaque when young, lustrous when old, with distinct rhizoids at base. **Veil** distinct in young stages (primordia), later on present as fine flocks on pileus and stipe of young specimens, in old basidiocarps often disappeared. **Context** very thin, white. **Smell** and **taste** indistinct.

Spores 7.5–10.5 \times (4.0) 4.5–6.0 (6.5) μm , E = (1.4) 1.6–2.2, Q = 1.6–1.8 (1.9), amygdaliform, fusoid, thin-walled, smooth. **Basidia** 23–32 (35) \times 7.0–9.0 (11) μm , 4-spored, clavate. **Basidioles** 12–28 (32) \times 2.5–8.0 (11) μm , clavate to cylindrical. **Cystidia** not found (rarely along edge scattered subclavate to fusoid elements present which do not exceed the hymenium). **Pileipellis** a cutis of radially arranged, cylindrical, thin-walled, up to 10 μm wide hyphae; covered with velar remnant, 150 (200) \times 15 (17) μm , fusoid, (sub)rostrate, subcylindrical, narrowly clavate, slightly thick-walled, sometimes irregular or rostrate, obtuse to subacute, rarely branched. **Trama** made up of cylindrical to broadly ellipsoid or subvesiculose, thin-walled, up to 35 μm wide elements. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, up to 8 (10) μm wide hyphae. **Caulocystidia** absent, but velar remnants present similar to those on surface of pileus, 35–75 (151) \times 7.5–11 (20) μm , clavate, subcylindrical, or fusoid; thin- to slightly thick-walled; at base with \pm thick-walled, cylindrical, obtuse, sometimes branched hairs, 20–155 \times 1.5–4.0 μm . **Clamps** connections present.

Chemical reactions: Except for the amyloid spores, no part of basidiocarp dextrinoid or amyloid.



Pl. 38:
Delicatula integrella,
photo M. MEUSERS

Ecology: Saprotrophic; single or in small groups on wet decaying wood and woody debris of deciduous trees (e.g. *Acer pseudoplatanus*, *Alnus glutinosa*, *Fagus*, *Populus tremula*, *Quercus*, *Salix*, *Sambucus nigra*, *Tilia*, *Ulmus*), less frequently of coniferous trees (*Picea*, *Pinus*), sometimes also on mossy trunks and bark of living trees, rarely on grass (*Calamagrostis epigeios*) and plants debris (KREISEL et al. 1987; MAIRE 1937), rarely recorded on naked soil (KREISEL et al. 1987); in damp and rather dry forests (alluvial forests, marshy forests, beech forests, etc.).

Distribution: Common and widespread in Europe and North America (U.S.A., CEJP 1938), known also from Australia (MAY & WOOD 1997).

Phenology: June to November.

Collections examined: **AUSTRIA:** Niederösterreich, Hagenbachklamm, 4 Aug. 1979 leg. ? (WU 0251). – Niederösterreich, Grafenwörth, Jettsdorf, 15 Aug. 1989 leg. A. Hausknecht (WU 7942). – Niederösterreich, Allentsteig, Sonnteiten, 8 Aug. 1998 leg. A. Hausknecht and H. Lauerermann (WU 18255). – Niederösterreich, Waidhofen/Thaya, Jäger-teich, 17 July 1992 leg. A. Hausknecht (WU 10874). – Steiermark, Bad Radkersburg, Klösch, 22 July 1995 leg. W. Klofac (WU 14029). – ditto, 8 July 1995 leg. W. Klofac (WU 13981). – **BELGIUM:** prov. Brabant, Forêt de Soignes, 6 Aug. 1994 leg. J. Lachapelle (BR 35309-01). – prov. Brabant, Meise, Domaine de Bouchout, 3 May 1978 leg. J. Rammeloo 5623 (BR 124437). – prov. Brabant, Humbeek, Gravenbos, 15 Aug. 1980 leg. J. Rammeloo 6928 (BR 2113-76). – prov. Antwerpen, Zoersel, Heiblok, 9 July 1994 leg. H. De Meulder 9864 (BR 28141-11). – ditto, 21 July 1991 leg. H. De Meulder 6310 (BR 15152-20). – prov. Antwerpen, Blaasveld, Arkenbos, 11 July 1992 leg. H. De Meulder 7816 (BR 16865-84). – prov. Atwerpen, Rumst, Afigesneden nete-arm, 28 Aug., 1994 leg. H. De Meulder 9949 (BR 28745-33). – prov. Antwerpen, Hingene, Tussen Nattenhaasdonk, 19 Sept. 1990 leg. A. De Kesel 117 (BR 20092-13). – prov. Antwerpen, Herselt, Langdonken, 5 Aug. 1998 leg. H. De Meulder 11738 (BR 87292-89). – prov. Luxembourg, Villers-sur-Semois, Bois de Brossart, 12 Aug. 1991 leg. A. Fraiture 1399 (BR 23588-17). – prov. Luxembourg, Etalle, Bois de la Voline, 19 July 1992 leg. A. Fraiture 1616 (BR 9717-17). – prov. Liege, Paille, 21 Aug. 1971, C. Bas 5612 (L). – prov. Namur, Rochefort, Bois de Resteigne, 27 Sept. 1974, A.E. Jansen 55 (L). – **CROATIA:** Dubrava forest near Dubravica, 8 June 2001 leg. Z. Tkalčec and A. Mešić (CNF 1/2228). – **CZECH REPUBLIC:** BOHEMIA: Mnichovice, Sept. 1944 leg. J. Velenovský (PRM 154726, holotype of *Retocybe vitrea*). – Mnichovice, Potočiny, 26 July 1939 leg. J. Velenovský (PRM 154728, holotype of *Retocybe milliaris*). – Mnichovice, Sept. 1944 leg. J. Velenovský (PRM 154726, as *Retocybe milliaris*). – Turnov, Kacanovy, 4 Aug. 1944 leg. J. Herink 813/44 (PRM 668814). – Turnov, Ve

struhách, 23 Aug. 1946 leg. J. Kubička (PRM 520764). - Mašov, Pelešany, Valdštejn, 18 Aug. 1948 leg. J. Herink 748/48 (PRM 608697 + 608698). - ditto, 19 Aug. 1945 leg. J. Herink (PRM 668812). - Golčův Jeníkov, 11 July 1940 leg. J. Herink (PRM 668822). - ditto, 19 July 1940 leg. J. Herink (PRM 668819). - Hostouň near Unhošť, 11 Aug. 1939 leg. J. A. Herink (PRM 502120). - Praha-Krč, Krčský les, 18 July 1946 leg. M. Svrček 454/46 (PRM 668813 + 668818). - ditto, 18 July 1946 leg. V. Vacek (PRM 668815). - Praha, Stromovka, 28 Aug. 1939 leg. J. A. Herink (PRM 502121). - ditto, 4 Sept. 1939 leg. J. A. Herink (PRM 502111). - Praha, Kinského sady, 26 Aug. 1958 leg. E. Wichanský (PRM 668816). - Libřice, 20 July 1941 leg. V. Vacek (PRM 668821). - Vlašim, 16 Sept. 1942 leg. J. A. Herink 691/42 (PRM 668823). - Mnichovice, 27 July 1946 leg. V. Vacek (PRM 668817). - ditto 27 July 1946 leg. M. Svrček 488/46 (PRM 668820). - Modřany, 16 June 1945 leg. V. Vacek (PRM 668824). - Těptín, 1 Oct. 1967 leg. K. Kult (PRM 629080). - Vodňany, 6 Aug. 1938 leg. J. Herink (PRM 499747). - Vodňany, along the Blanice river, 11 Aug. 1938 leg. J. Herink (PRM 499760). - Soběslav, Soběslavská (Borkovická) blata nature reserve, Komárovský chobot, on decayed trunk of *Salix pentandra*, 16 Aug. 2002 leg. F. Kotlaba (PRM). - ditto, on decaying *Dryopteris spinulosa*, 25 July 2002 leg. F. Kotlaba (PRM). - Borkovice, Kozohlůdky, ad roots and twigs of *Alnus glutinosa*, 10 Aug. 2002 leg. F. Kotlaba (PRM). - Libějice, Nový Zámek, 16 July 1946 leg. J. Herink 260/46 (PRM 520154). - between Smetanova Lhota and Ostrovec, 23 July 1965 leg. M. Svrček 109/65 (PRM 610031). - Třeboň, Sv. Vít, 23 June 1952 leg. J. Kubička et al. (PRM 668838). - Třeboň, U Jindřů, 24 July 1959 leg. J. Kubička (PRM 613838). - Laziště near Čimelice, Březinka, 21 Aug. 1966 leg. M. Svrček 1152/66 (PRM 625883). - Vrábsko near Čimelice, U dubu, Kovářka, 1 Aug. 1966 leg. M. Svrček 769/66 (PRM 625882). - Prudice near Tábor, 1944 leg. M. V. Svrček 256/44 (PRM 668804). - Cetoraz, 20 Aug. 1961 leg. J. Kubička (PRM 777557). - Nový Bydžov, Králíky, 6 Aug. 1991 leg. L. Drahokoupil (PRM873982). - Běstviňny, Halín forest, 3 Aug. 1998 leg. J. Slaviček (HR). - MORAVIA: Beskydy Mts., Staré Hamry-Samčanka, 30 July 2002, leg. D. Janda and V. Antonín 02.53 (BRNM). - Rajnochovice, Košovy část, the Sochová hill, 8 Aug. 1980 leg. A. Vágnér (BRNM 289084). - Skřípov, 5 Aug. 2000 leg. V. Antonín 00.44 (BRNM). - Bedřichov, Hersica protected area, 31 Aug. 2002 leg. Z. Bieberová (BRNOP). - Kuřim, Zlobice hill, 20 Aug. 1961 leg. F. Šmarda (BRNM 333439). - ditto, 22 July 1941 leg. F. Šmarda (BRNM 313552). - Brno-Útěchov, Coufávaná nature reserve, 9 Aug. 1986 leg. A. Vágnér (BRNM 457461). - Brno-Útěchov, Obora, 12 Aug. 2000 leg. A. Vágnér (BRNM). - Brno-Kohoutovice, 19 Aug. 2000 leg. Z. Bieberová and V. Antonín 00.108 (BRNM). - Horka n. Mor., Plané loučky nature reserve, 22 July 1998 leg. V. Antonín 98.65 (BRNM). - Mladeč, Vrapač nature reserve, 1 July 1999 leg. V. Antonín 99.17 (BRNM). - ditto, 2 Aug. 2000 leg. A. Vágnér (BRNM). - Bílé Karpaty Mts., Tvarožná Lhota, Čertoryje nature reserve, 16 Aug. 2000 leg. V. Antonín 00.87 (BRNM). - Moravský Písek, July 1955 leg. K. Kříž (BRNM). - Uherský Ostroh, 16 July 1955 leg. K. Kříž (BRNM). - Lanžhot, Ranšpurk nature reserve, 19 Aug. 1998 leg. V. Antonín 98.78 (BRNM). - **GERMANY:** Dresden, in: Rabenhorst, Fungi europaei, No. 1705 (PRM 713484). - **ITALY:** Trieste, leg. Rabenhorst, in: Rabenhorst, Fungi europ., No. 1110 (PRM 25329, as *Agaricus integrellus*). - Trento, Borgo, Valle di Sella, 25 July 1994 leg. A. Hausknecht (WU 12901). - **THE NETHERLANDS:** prov. Drenthe, Beilen, Kniepstra's Veentje, 29 June 1980 leg. P.B. Jansen 80-110 (L). - prov. Gelderland, Bergh, Beek, Bijvanck, 12 July 1952 leg. H.S.C. Huijsman (L). - Vorden, Onstein, 5 July 1947 leg. H.S.C. Huijsman 1574 (L). - Lienden, Ommeren, 7 Sept. 1970 leg. H.S.C. Huijsman 70.180 (L). - prov. Noord Holland, Bloemendaal, Middenduin, 24 Nov. 1986 leg. A.G. Becker 86.16 (L). - prov. Zuid Holland, Leiden, Leidse Hout, 30 Aug. 1987 leg. C. Uljé 866 (L). - prov. Noord Brabant: Dorst, 18 Oct. 1974 leg. A.E. Jansen 68 (L). - Udenhout, 5 Aug. 1981 leg. P.B. Jansen (L). - Nieuw Ginneken, Ulvenhousse bos, 9 Aug. 1980 leg. P.B. Jansen 80-180 (L). - Goudbergven, 17 Aug. 1975 leg. A.E. Jansen 91 (L). - **SLOVAKIA:** Zlatno, Klačany, alluvium of "Čerešňovský potok" stream, c. 300 m alt., 21 July 1983 leg. V. Antonín 83.61 (BRNM 289578). - Osadné, "Udava" river valley, 18 Oct. 1989 leg. J. Kuthan (BRA). - Vysoké Tatry Mts., Tatranská Štrba, 6 Sept. 1980 leg. J. Kuthan (BRA). - Snina, "Rybníky", 4 July 1971 leg. J. Kubička (PRM 818228). - Biele Karpaty Mts., Drietoma-Liešna, 22 June 2002, leg. J. Junek (Antonín 02.32, BRNM). - **SWEDEN:** Västergötland, Göteborg, Hisingen, "Rya skog", 29 July 1942 leg. T. Nathorst-Windahl 3118, in: Lundell & Nannfeldt, Fungi exsiccata suecici, No. 1759. (PRM 710160). - Gästrikland, Gävle, Lövudden, on the shore of the river "Gavleån", 15 July - 25 Aug. 1945 leg. J. A. Nannfeldt 7745, in: Lundell & Nannfeldt, Fungi exsiccata suecici, No. 1760. (PRM 710159). - **UNITED KINGDOM: ENGLAND:** Warwickshire, New End, 3 July 1973 leg. M. C. Clark (K). - Warwickshire, Weelhley Wood, 24 Aug. 1975 leg. M. C. Clark (K). - Ockham Common, Boulder Merre, Wisley, 28 July 1979 leg. N. W. Legon (K). - ditto, 14 Sept. 1987 leg. N. W. Legon (K). - ditto 2 July 1990 leg. N. W. Legon [K(M)14559]. - Surrey, Rugate Heath, 27 Sept. 1981 leg. D. A. Reid and A. Thomas (K). - Surrey, Englefield Area, Cooper's Hill, 7 June 1992 leg. N. W. Legon [K(M)19750]. - Ascot, Berkshire, Windsor Park (Blacknest Gate), 10 Sept. 1966 leg. D. A. Reid and A. G. Reid (K). - ditto, Witch Gate, 30 July 1965 leg. D. A. Reid (K). - ditto, Windsor Great Park, 20 Aug. 1995 leg. E. W. Brown [K(M)30536]. - Esher Common, Surrey, 3 Aug. 1980 leg. P. M. Kirk (K). - Arbrook Common, Esher, Surrey, 23 Aug. 1981 leg. D. Kory (K). - Littleworth Common, Surrey, 20 Aug. 1960 leg. R. Melville (K).

Notes: *Delicatula integrella* is characterised in having white coloured carpophores with fine velar fibrils when young, often reduced lamellae not reaching the pileus margin, amyloid, often fusoid spores, absent cystidia, and velar remnants covered pileus and stipe surface (distinct under microscope).

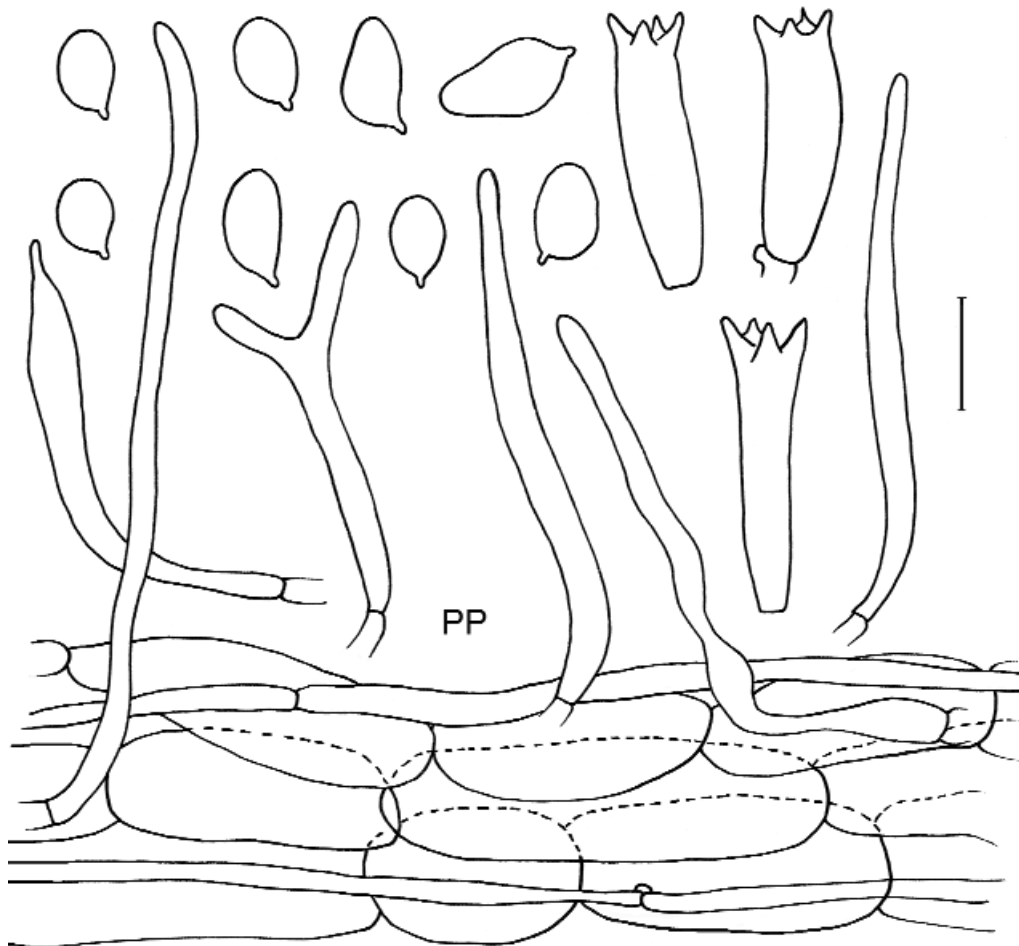


Fig. 40: *Delicatula integrella*

SINGER (1960) studied authentic material of *Agaricus integrellus* in the Persoon Herbarium at Leiden (L 910 255-761) that, according to him, refers to a species of *Mycena* or *Hemimycena*, which he did not attempt to identify. He stressed that the presence of \pm well-developed lamellae in Persoon's specimens does not fit with the interpretation of FRIES (1821) in the sanctioning description. Since the material of Persoon is in a very bad state, Singer did not design it as a lectotype, which seems a wise decision. There is no other authentic material available, and therefore we select a neotype from Sweden, in accordance with the current concept of *Delicatula integrella*.

Our description agrees well with the current literature (e.g. BREITENBACH & KRÄNZLIN 1991, CEJP 1938, JOSSE RAND 1937, KÜHNER 1926, KÜHNER & ROMAGNESI 1953, ØSTMØE 1992, SCHULMANN 1960, SINGER 1943). The description by KÜHNER (1926) differs only by very long basidia (30–40–45 μ m), KÜHNER & ROMAGNESI (1953) described hyphae as slightly amyloid. The ultrastructural morphology of spores is described by PEGLER & YOUNG (1971).

SVRČEK (1966a) and ANTONÍN (2002) revised the original material of *Retocybe militaris* Velen., which represents the type species of the Velenovský's genus *Retocybe*. It undoubtedly represents *Delicatula integrella*.

LANGE (1930) described var. *caricicola* (*O. caricicola* Lasch) with very short, mostly eccentric stipe and present cystidia, growing on dead leaves of *Carex stricta*. He mentioned the possible identity with *Marasmius caricis* P. Karst. No authentic material exists of this taxon.

Delicatula cuspidata Quél., often also included to the genus *Delicatula*, is considered an insufficiently known species (see chapter 5).

4.3. *FAYODIA* Kühner

Fayodia Kühner, *Bull. mens. Soc. linn. Lyon* 9: 68. 1930.

Fayodia subgen. *Fayodia* Singer, *Agar. mod. Tax.*, Ed. 4: 430. 1986.

Type species: *Fayodia bisphaerigera* (J. Lange) Singer

Selected literature: Bon, *Doc. mycol. Mém. hors sér.* 4: 164-165. 1997; Bigelow, *Mycotaxon* 9: 38-47. 1979; Kuyper, *Flora Agar. Neerland.* 3: 153-155. 1995; Kühner, *Bull. Soc. Linn. Lyon, Num. spéc.*, 49: 772-774. 1980; Lange & Sivertsen, *Bot. Tidskr.* 62(2/3): 195-211. 1966; Ludwig, *Pilzkompendium 1 (Beschreibungen)*: 119-120. 2001; Watling & Turnbull, *British Fungus Fl.* 8: 93-94. 1998.

Carpophores omphalioid or mycenoid; pileus smooth, whitish-brownish to dark brown; lamellae adnate to decurrent; stipe more or less concolorous with pileus. Spore print white.

Spores (sub)globose, with a two-layered walls: a non-amyloid epispore with distinct echinulae or verruculae and a smooth amyloid perispore; basidia 2-spored; cheilocystidia present; pileipellis and stipitipellis not gelatinised; hyphae neither amyloid nor dextrinoid; clamp-connections present or absent.

Ecology: Saprotrophic, solitary or in small groups on burnt soil, such as fireplaces, in coniferous, less frequently in broad-leaved forests.

Distribution: Widespread in temperate regions of Europe, according to KUYPER (1995) it may have a worldwide distribution.

Notes: SINGER (1986) kept a broad concept of the genus *Fayodia* with four subgenera (*Fayodia*, *Myxomphalia*, *Heterosporula*, and *Clemenconia*). However, we follow BON (1997) and KUYPER (1995) and distinguish three smaller genera: *Fayodia* characterised by having a very distinct two-layered spore-wall and a dry, not gelatinised pilei- and stipitipellis; *Gamundia* distinguished by verruculose-echinulate, thin-walled, non-amyloid spores and a gelatinised pileipellis, and *Myxomphalia* with thick-walled, smooth to minutely verruculose (SEM!) amyloid spores and a gelatinised pilei- and stipitipellis.

KÜHNER (1980), placed the genus *Fayodia* in tribus *Fayodiae* that he considered close to *Collybia*, BON (1997), however, placed tribus *Fayodiae* into the subfamily *Clitocyboideae* (Fayod) Bon. SINGER (1986) classified *Fayodia* in tribus *Mycenae* Fayod ex Ulbrich, close to other mycenoid genera.

PEGLER & YOUNG (1971) and KÜHNER (1980) and CLÉMENÇON (1997) described the spore structure of *F. bisphaerigera* in detail with help of SEM and TEM respectively.

EMMET (1993) describes a method to loosen the epispore in *Fayodia* in a slide preparation with help of KOH.

Synopsis of European species:

1. *Fayodia bisphaerigera* (J.E. Lange) Singer
 - 1a. var. *bisphaerigera*
 - 1b. var. *longicystis* J. Favre
2. *Fayodia anthracobia* (J. Favre) Knudsen
 - 2a. var. *anthracobia*
 - 2b. var. *bisphaerigerella* (M. Lange) Antonín & Noordel.
3. *Fayodia campanella* Horak

Key to the European species:

- 1 Carpophores mycenoid; pileus small (up to 10 mm), dark coloured (very dark grey-brown to blackish brown, pallescent on drying to dark brown); spores 6.0–8.5 × 6.0–8.2 µm; basidia 15–26 × 6.5–10 µm; clamp-connection absent **2**
- 1* Carpophores mycenoid or omphalioid; pileus small to larger (10–30 mm), always paler coloured (greyish, brownish, pale fuliginous-brown); spores larger (8–12 × 8–12 µm); basidia larger (25–37 × 10–12 µm); clamp-connections present; not on fireplaces **3**
- 2 Pileus umbonate applanate to slightly depressed at centre; stipe up to 18 × 1.5 mm; basidia 21–26 × 7.5–10.0 µm; cheilocystidia lageniform, subcylindrical or subfusoid; growing on fireplaces **2a. *F. anthracobia* var. *anthracobia*** (p. xxx)
- 2* Pileus umbonate; stipe 20–30 × 0.5 mm; basidia 15–21 × 6.5–9.0 µm; cheilocystidia clavate, broadly clavate, utriform, less frequently (sub)cylindrical; growing on peat soil **2b. *F. anthracobia* var. *bisphaerigerella*** (p. xxx)
- 3 Carpophores mycenoid; pileus up to 12 mm broad, whitish-brownish, when dry whitish, beige-greyish to greyish-brownish; lamellae distant, L = 7–8; stipe 30–40 × 1 mm; spores 8.5–12.0 × 8.5–12.0 µm **3. *F. campanella*** (p. xxx)
- 3* Carpophores omphalioid or mycenoid; pileus 10–30 (40) mm broad, isabella-brown, greyish brown or fuliginous-grey; lamellae more close (L = 15–22); stipe 20–50 (80) × 2–3 (5) mm; spores (8.5) 9.0–11.0 (12.0) × (8.0) 9.0–11.0 (12.0) µm **4**
- 4 Cystidia 35–80 × (6.0) 8.5–15 µm **1a. *F. bisphaerigera* var. *bisphaerigera*** (p. xxx)
- 4* Cystidia (40) 58–140 (180) × 7.0–12 µm **1b. *F. bisphaerigera* var. *longicystis*** (p. xxx)

1. *Fayodia bisphaerigera* (J.E. Lange) Singer**Fig. 41**Basionym: *Omphalina bisphaerigera* J.E. Lange, Dansk. bot. Ark. 6(5): 9. 1930.*Mycena bisphaerigera* (J.E. Lange) A.H. Sm., N. Amer. Spec. Mycena: 449. 1947; *Fayodia bisphaerigera* (J.E. Lange) Singer, Rev. Mycol. 1: 279. 1936. – *Omphalia rickii* Killerm., Denkschr. bayer. bot. Ges. Regensburg, 13:5. 1933 (a superfluous name change).**Misapplied names:** *Omphalia striaepilea* s. Ricken, Blätterpilze: 387. 1911; *Fayodia gracilipes* s. Bresinsky & Stangl, Z. Pilzk. 40: 73. 1974; auct. Eur. major.**1a. *Fayodia bisphaerigera* var. *bisphaerigera*****Pl. 39****Type specimen:** not preserved. Neotype (designated here): Denmark: Sjaelland, Jægersborg Dyrehave, Skovriddergården, 4 Nov. 1984 leg. T. Læssøe (C 46258)**Selected icones:** Bon, Champ. Eur. occ.: 130. 1987 (as *F. gracilipes*); Breitenbach & Kränzlin, Pilze Schweiz 3: pl. 208. 1991 (as *F. gracilipes*); Colucci, Rev. micol. 41(1): 4. 1999; Courtecuisse & Duhem, Champ. Fr.

Eur.: fig. 348. 1994 (as *F. gracilipes*); Emmet, Mycologist 7: 178. 1993; J. Lange, Dansk Bot. Arkiv 6(5): pl. I, figs. 7a-b. 1930; J. Lange, Fl. agar. dan. 2: pl. 59H. 1936 (as *Omphalia bisphaerigera*); Lonati, Bol. A.M.E.R. 16: 24. 1989 (as *F. gracilipes*); Ludwig, Pilzkompodium 1: pl. 35, fig. 24.1. 2000; Moser et al., Farbatlas Basidiomyc. 18: Fayodia 2. 2000 (as *F. gracilipes*); Ricken, Blätterpilze: pl. 105. 1911 (as *O. striaepilea*); Ryman & Holmåsén, Svampar: 366. 1984; Senn-Irlet, Z. Mykol., Beih. 9: 46. 1999.

Selected literature: Bon, Doc. mycol. Mém. hors sér. 4: 165. 1997; Colucci, Rev. micol. 41(1): 5-8. 1999; Derbsch & Schmitt, Atl. Pilze Saarlandes 2: 384. 1987 (as *F. gracilipes*); J. Favre, Assoc. fong. Hauts-Marais: 97-98. 1948; Klán, Mykol. Listy 4: 2-4. 1981 (as *F. gracilipes*); Kühner & Romagnesi, Fl. anal.: 126. 1953 (as *Omphalia b.*); Knudsen, Nordic Macromycetes 2: 121-122. 1992 (as *F. gracilipes*); Kuyper, Flora Agar. Neerland. 3: 154. 1995; Lonati, Bol. A.M.E.R. 16: 23-25. 1989 (as *F. gracilipes*); Ludwig, Pilzkompodium 1 (Beschreibungen): 120-121. 2001; Reid, Trans. Brit. mycol. Soc. 41: 423. 1958; Senn-Irlet, Z. Mykol., Beih. 9: 45-48. 1999; Singer, Anns. Mycol. 34: 331. 1961; Watling & Turnbull, British Fungus Fl. 8: 93-94. 1998.

Description: **Pileus** 10–30 (40) mm, ± hemispherical when young, then convex to plano-convex, with applanate (especially when young) to slightly umbilicate centre, hygrophanous, translucently striate up to $\frac{3}{4}$ of diam., smooth, glabrous or finely radially fibrillose, isabella-brown or greyish brown (Munsell: 10 YR 4/3, 5/3, 5/4; Kornerup & Wanscher: paler than 4B1, at centre 6E-F4), pallescent on drying to pale isabella-brown. **Lamellae** subdistant, L = 15–25, l = 1–3 (7), broadly adnate to sub-decurrent, rather broad, slightly intervenose near margin, pale isabella-brown (10 ZR 6/3), greyish (6C1), with almost even to irregularly denticulate, concolorous to slightly paler, pubescent edge. **Stipe** 20–50 (60) × 2–3 (5) mm, cylindrical, slightly broadened above, cylindrical to subbulbose at base, soon fistulose, fragile, minutely fimbriate-subfloccose to distinctly furfuraceous at apex, elsewhere smooth and glabrous, polished, with whitish basal tomentum, whitish at apex, concolorous with pileus (4C2) towards base. **Context** hygrophanous, concolorous with surface, with absent, fungoid to farinaceous or slightly spermatic **smell**; **taste** indistinct to farinaceous, mild.

Spores (8.0) 9.0–11.0 (12.0) × (8.0) 9.0–11.0 (12.0) µm, E = 1.0–1.1 (1.2), Q = 1.05–1.07, globose to subglobose, distinctly two-layered: verruculose-echinulate epispore and smooth perispore, verruculae up to 0.8 (1.0) µm high, hyaline in KOH. **Basidia** 25–37 × 9.0–12 µm, 2-spored, clavate to subutriform or subfusoid. **Basidioles** 10–35 × 4.0–12 µm, clavate or cylindrical. **Cystidia** 35–80 (90) × (6.0) 8.5–17 µm, clavate, utriform, sublageniform, subcylindrical, subfusoid, rarely subcapitate, thin-walled, hyaline in KOH. **Hymenophoral trama** made up of cylindrical, fusoid or (sub)ellipsoid, thin-walled, up to 22 µm wide hyphae with hyaline walls in KOH. **Pileipellis** a cutis, of radially arranged, cylindrical, thin- to slightly thick-walled, incrustated, up to 7 µm wide hyphae with blackish, yellowish grey or greyish brown incrustations in KOH; with adpressed to suberect, clavate to narrowly fusoid, terminal elements. **Subpileipellis** made up of up to 20 µm wide elements. **Stipitipellis** a cutis, of parallel, cylindrical, slightly thick-walled, smooth to minutely incrustated, up to 7 µm wide hyphae with hyaline to pale yellowish-greyish walls in KOH. **Caulocystidia** (at apex) 69–140 × 11–15 µm, adpressed to erect, cylindrical, narrowly clavate, sublageniform, and ± thin-walled. **Clamp-connections** present in all tissues.

Chemical reaction: No part of tissue dextrinoid or amyloid. Spores with non-amyloid epispore including verruculae and amyloid perispore.

Ecology: Saprotrophic; solitary, in groups or in clusters, terrestrial in litter of needles and leaves in both coniferous and broad-leaved forest; probably in rather damp places (e. g. in *Petasites* vegetation along springs and rivulets). RICEK (1989) found it on clayed acid soil rich on minerals, KREISEL et al. (1987) in *Picea* forests on acid soils. KNUDSEN (1992) described its ecology as "in damp places



Pl. 39: *Fayodia bisphaerigera* var. *bisphaerigera*, photo J. PETERSEN

in mixed forests”, SENN-IRLET (1999) found it growing on both, rich and poor on limestone soils, mostly from coniferous forests but also from *Alnus viridis* copses.

Distribution: Widespread all over Europe; probably more common in northern and central Europe.

Phenology: August to October (- November).

Collections examined: **AUSTRIA:** Niederösterreich, Groß-Siegharts, Blamau/Wild, 21 Oct. 1990 leg. A. Hausknecht (WU 9082). – ditto, 5 Sept. 1990 leg. A. Hausknecht (WU 8905). – Oberösterreich, Aigen-Schlögl, Bayrisches Moor, 19 Sept. 1987 leg. A. Hausknecht (WU 6675). – **BELGIUM:** prov. Luxembourg, Buzenol, 23 Sept. 1985, G.A. de Vries (L). – **CZECH REPUBLIC:** Malovice near Rataje, 31 Oct. 1943 leg. J. Kubička (PRM 710073). – Šumava Mts., “Boubínský prales”, 27 Sept. 1970 leg. J. Kubička (PRM 777589). – **DENMARK:** Grib Skov, 28 Oct. 1944 leg. M. Lange (C). – NEZ, Jægersborg Dyrehave, Skovriddergården, 4 Nov. 1984 leg. T. Læssøe (C 46258, neotype). – Silkeborg Sønderkov, 23 Oct. 1947 leg. M. Lange (C 33023). – **FRANCE:** dept. Ain, Nantua, Pl. de Retord, 6 Aug. 1960, H.S.C. Huijsman (L). – Mont Aigoual (Gard), 31 Oct. 1973 leg. H. Romagnesi 73.314 (PC, herb. Romagnesi). – Forêt de Somail (Tarn), 17 Oct. 1978 leg. H. Romagnesi 78.216 (PC, herb. Romagnesi). – Le Puy, Sembadelle-Gare (Haute-Loire), 8 Sept. 1977 leg. H. Romagnesi 77.282 (PC, herb. Romagnesi). – **GERMANY:** Kronach, 27 Sept. 1997 leg. W. Klofac (WU 17714). – **ITALY:** Trento, Cavalese, Lavazé-Joch, 9 Sept. 1991 leg. A. Hausknecht (WU 10116). – **NORWAY:** Akershus, Nannestad, Tømte, 11 Oct. 1971 leg. G. Gulden 1132/71 (120112). – ditto, Hurdal, 10 Oct. 1971 leg. G. Gulden 1138/71 (O 120113). – ditto, Ås, Nordbyveien v/Dylterud, 19 Oct. 1977 leg. K. H. Østmoe 324/77 (O 120114). – Nordland, Rana, Ravnå, 9 Sept. 1976 leg. H. Knudsen (O 120107). – Vestfold, Tønsberg, Gullkrona, 9 Oct. 1988 leg. P. Marstad 124/88 (O 120110). – ditto, Sem, Jarlsberg hovedgård, 5 Oct. 1969 leg. L. Ryvarden (O 120106). – **SLOVAKIA:** Bukovské vrchy Mts., Bahno nature reserve, 19 Oct. 1995 leg. S. Adamčík (BRA). – Západné Tatry Mts., Podbanské, Tichá dolina, 29 Aug. 1999 leg. V. Antonín 99.46 (BRNM). – **SWEDEN:** Bohuslän, Rödbo parish, Ellesbo, 22 Oct. 1938 leg. T. Nathorst-Windahl 1305, in: Lundell & Nannfeldt, Fungi exsiccati suecici, No. 1116 (K). – Medelpad, Torp, Gottjärn, 5 Oct. 1991, L. Örstadius (L). – **SWITZERLAND:** Kanton Neucha-

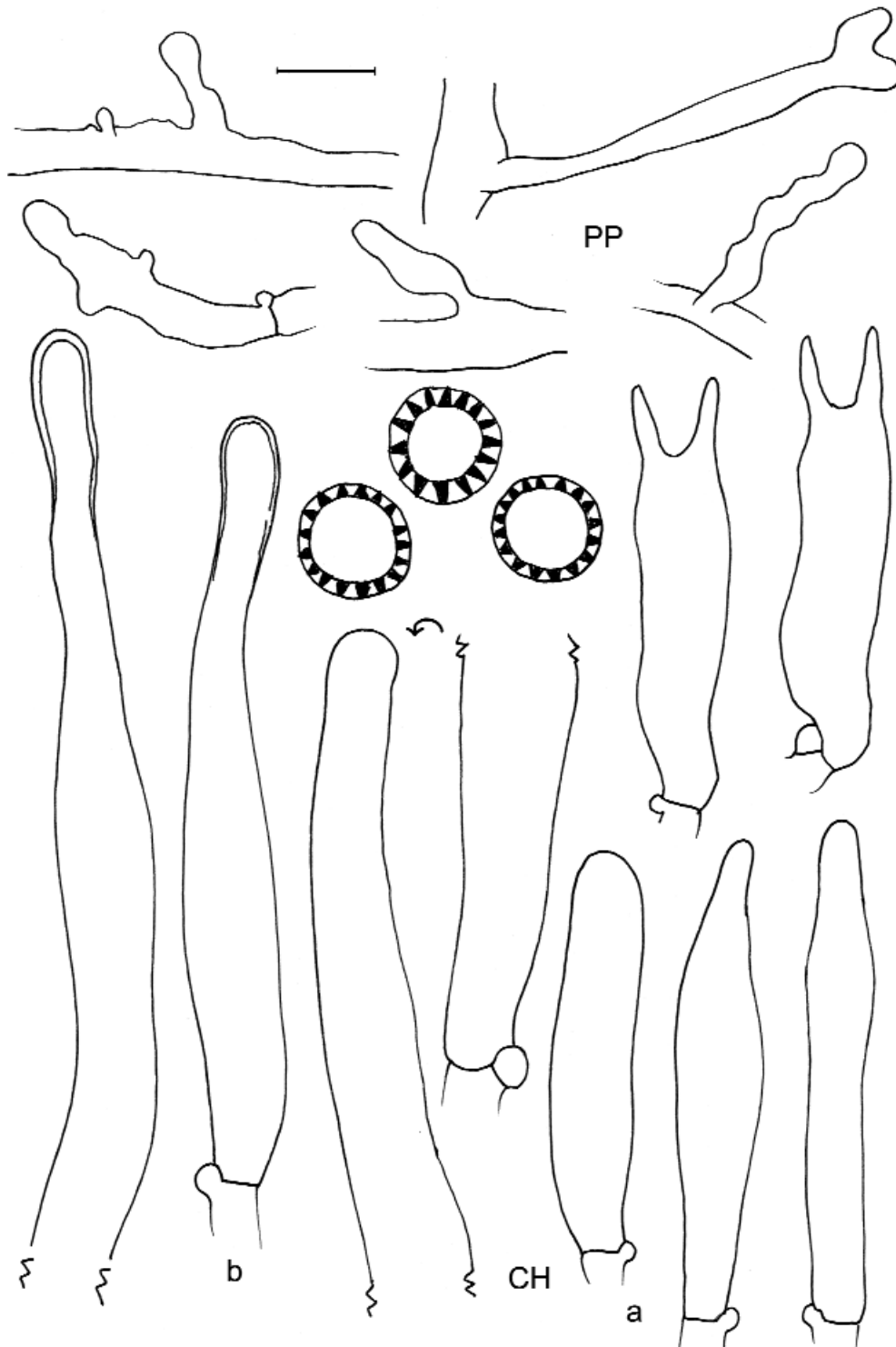


Fig. 41: *Fayodia bisphaerigera* var. *bisphaerigera* (a) & var. *longicystis* (b)

tel, Cernier, 6 Aug. 1960, H.S.C. Huijsman (L). – GR, Dischmatal, Bündenwald, 27 Sept. 1961 leg. E. Horak 61/482 (ZT). – **UNITED KINGDOM: ENGLAND:** Portshire, Dunheld, 23 Aug. 1953 leg. D. A. Reid (K). – **SCOTLAND:** Galloway-Forest Park, 14 Sept. 1993 leg. T. Læssøe 3098 [K(M) 24177]. – Glasgow, without data, leg. R. H. Johnstone (K). – Dougalston, 30 Sept. 1956 leg. R. H. Johnstone (K). – Invernessshire, road from Loch Morlich to Loch Pityoulish, 15 Sept. 1957 leg. D. A. et P. M. Reid (K). – Loch Rannoch, 12 Sept. 1953, 2 Sept. 1999, 8 Sept. 1966, 24 Sept. 1978, E. Kits van Waveren (L). – Perthshire, Dunkeld, 23 Aug. 1953 leg. D. A. Reid (K). – Kindrogan, 6 Sept. 1981, M.E. Noordeloos 1445 (L). – Braemar, 31 Aug. 1961. E. Kits van Waveren (L). – **WALES:** lake Vymwy, 13 Sept. 1967, 8 Sept. 1977, E. Kits van Waveren (L). – **U.S.A.:** Washington, Mt. Rainer National Park, Nisqually Entrance, Kautz Creek, 28 Oct. 1996 leg. E. Horak (ZT 5826).

Notes: *Fayodia bisphaerigera* var. *bisphaerigera* is characterised in having rather large carpophores, and large spores. LOCQUIN (1943) made a very detailed study of the development of the spores and their reaction with various reagents.

In comparison with literature, BON (1997) and LANGE (1930) mentioned smaller spores [(7) 8–9 (10) μm], as well as BREITENBACH & KRÄNZLIN (1991). SCHULMANN (1963) described it as growing in loose clusters on wood (however, this collection was not revised). The description and photograph by LONATI (1989) shows a fungus with a rather dark pileus (fuliginous brown) and long stipe (30–70 \times 2–3 mm), with farinaceous smell and taste, and shorter basidia (25–30 \times 7–9 μm). SENN-IRLET (1999) described it with a small stem (15–25 \times 1–1.5 mm) and published some other records from Switzerland.

SMITH (1947) described slightly smaller basidiocarps (pileus 5–20 mm broad, sometimes slightly umbonate); moreover, he described a 2-spored form with spores 7–9 (10) μm large and farinaceous smell and taste, and a 4-spored form with small spores (5.5–7 μm) and mild smell and taste. In addition, cystidia were said to be absent or inconspicuous, fusoid and very small (25–30 \times 7–9 μm), and, the hyphae are sordid pale brown in Melzer's reagent. Further studies are necessary to evaluate these differences.

This species is also known under the name *Fayodia gracilipes* (BRITZELM. 1890) BRESINSKY & STANGL 1974. However, it is not clear if Britzelmayer's fungus really represents our species. Its description is too short and spores described as globose and spiny ("stachelig"). Since Britzelmayer did not mention the presence of 2-spored basidia and no information is known as to the amyloidity of the spores, we prefer to consider Britzelmayer's taxon as a *nomen dubium*.

1b. *Fayodia bisphaerigera* var. *longicystis* J. Favre

Fig. 41b

Fayodia bisphaerigera var. *longicystis* J. Favre, Assoc. fong. Hauts-Marais: 213. 1948.

Type specimen: France, Jura, Vaudois, Valle de Joux, Tourbiere des Piquet-Dessus, 19 Sept. 1941 leg. J. Favre (G K8074, holotype).

Selected icones: Monthoux, Schweiz. Z. Pilzk. 65: 31. 1987.

Selected literature: Bon, Doc. mycol. Mém. hors sér. 4: 165. 1997; J. Favre, Assoc. fong. Hauts-Marais: 99–100. 1948; Horak, Z. Pilzk. 28: 15. 1962; Ludwig, Pilzkompandium 1 (Beschreibungen): 121. 2001; Monthoux, Schweiz. Z. Pilzk. 65: 29–30. 1987.

Description [macromorphology based on FAVRE (1948), and MONTHOUX (1987)]: **Pileus** up to 28 mm, hemispherical, conical-campanulate, sometimes truncate and slightly depressed at centre, hygrophanous, translucently striate almost to the centre when moist, pale fuliginous-grey brownish to dark brown, darker at centre, slowly becoming yellow, pallescent to greyish whitish, opaque, slightly lustrous, finely silky to minutely radially virgate under lens when dry. **Lamellae** rather distant, L = 16–22, l = (1) 3–7, broadly adnate or with decurrent tooth, sometimes horizontal and subdecurrent, broad, rather thick, slightly intervenose, pale grey, edge greyish whitish and long pubescent. **Stipe** long and terete, up to 80 \times 3.5 mm, curved, fistulose, fragile, glabrous, smooth, hyaline and pale grey at apex, slightly

darker towards base, slowly becoming yellow towards apex. The whole carpophore changing to brownish yellow when old. **Context** concolorous with the surface; **smell** farinaceous.

Spores 9.5–11.5 (13.0) × 9.5–11.0 (13.0) μm, E = 1.0–1.1, Q = 1.03, globose to subglobose, two-layered with verruculose-echinulate epispore and smooth perispore, verruculae up to 1.5 μm high, hyaline in KOH. **Basidia** 30–40 × 8.0–11 μm, 2-spored, clavate. **Basidioles** 13–34 × 3.5–9.0 μm, cylindrical, clavate, subfusoid. **Cystidia** (40) 58–150 × 7.0–12 μm, cylindrical, narrowly lageniform, narrowly fusoid, sometimes (sub)rostrate, thin- to sometimes (especially at the top) slightly thick-walled, hyaline, with refractive contents. **Hymenophoral trama** made up of ellipsoid to cylindrical, ± thin-walled, hyaline, up to 20 μm wide elements. **Pileipellis** a cutis or poorly developed ixocutis made up of radially arranged, cylindrical, slightly thick-walled, smooth to minutely incrustated, up to 10 μm wide hyphae, with pale yellow walls in KOH; with scattered lateral projections, and adpressed to suberect cylindrical, narrowly clavate, regular, irregular to coralloid terminal elements. **Stipitipellis** a cutis, of parallel, cylindrical, slightly thick-walled, subhyaline to pale yellow, 2–5 μm wide hyphae. **Caulocystidia** absent. **Clamp-connections** present in all tissues.

Chemical reaction: No part of tissue dextrinoid or amyloid. Spores with non-amyloid epispore including verruculae and amyloid perispore.

Ecology: Saprotrophic, terrestrial in a spruce forest or on peaty soil.

Distribution: Known from France and Switzerland.

Collections examined: **FRANCE:** Jura, Vaudois, Valle de Joux, Tourbiere des Piquet-Dessus, 19 Sept. 1941 leg. J. Favre (G 8074, holotype). – Haute-Loire, Le Puy, Fontanet, 6 Sept. 1977 leg. H. Romagnesi 77.253bis (PC, herb. Romagnesi). – **SWITZERLAND:** GR, Davos, Wildwald, 26 Sept. 1961 leg. E. Horak 61/410 (ZT).

Notes: *Fayodia bisphaerigera* var. *longicystis* differs from the type variety in having paler coloured, ± mycenoid habit, carpophores slowly becoming yellowish when old, and longer cystidia.

FAVRE (1948) in his original description mentioned longer cystidia [100–170 (190) μm], as well as BON (1997) [up to 150 (200) μm]. HORAK (1962) described very distant lamellae (L = 7–9), however, when studying the herbarium specimen, more lamellae have been observed in Horak's material; microscopically it agrees well with the type material of J. Favre.

2. *Fayodia anthracobia* (J. Favre) Knudsen

Fig. 42

Fayodia bisphaerigera var. *anthracobia* J. Favre, Assoc. fong. Hauts-Marais: 213. 1948; *Fayodia anthracobia* (J. Favre) Kühner & Romagn., Fl. anal.: 126. 1953. (an invalid combination; Art. 33.2.); *Fayodia anthracobia* (J. Favre) Knudsen, Nord. J. Bot. 11(4): 477. 1991.

2a. *Fayodia anthracobia* var. *anthracobia*

Type specimen: Switzerland, Jura, Tourbière des Rousses, 27 Sept. 1935 leg. J. Favre (G 8073)

Selected icones: Ludwig, Pilzkompendium 1: pl. 35, fig. 24.2. 2000; Monthoux, Schweiz. Z. Pilzk. 65: 30. 1987; Moser & Jülich, Farbatlas Basidiomyc.: III *Fayodia* 1. 1994.

Selected literature: Bon, Doc. mycol. Mém. hors sér. 4: 164. 1997; J. Favre, Assoc. fong. Hauts-Marais: 99. 1948; Ludwig, Pilzkompendium 1 (Beschreibungen): 121. 2001; Monthoux, Schweiz. Z. Pilzk. 65: 30. 1987; Knudsen, Nordic Macromycetes 2: 121–122. 1992; Kühner & Romagnesi, Fl. anal.: 126. 1953; Kuyper, Flora Agar. Neerland. 3: 154. 1995.

Description [macrodescription based on FAVRE (1948), M. LANGE (1946), MONTHOUX (1987), and KUYPER (1995)]: **Pileus** 2–12 (15) mm broad, campanulate-hemispherical, with obtusely umbonate,

applanate to slightly depressed centre, slightly hygrophanous, slightly translucently striate when moist, very dark grey-brown to blackish brown, pallescent on drying to dark brown, glabrous, minutely verruculose and slightly granulose at centre under lens, somewhat fibrillose towards margin. **Lamellae** distant, $L = 14\text{--}16$, $l = 1\text{--}3$, broadly adnate to decurrent with tooth, broad, thickish, somewhat intervenose, sometimes furcate, pale grey, with pubescent, concolorous edge. **Stipe** up to 18×1.5 mm [BON (1997): $10\text{--}30 \times 1.5\text{--}3$ mm], cylindrical, fistulose, fragile, fibrillose-striate when young, soon glabrous, white-flocculose at apex, whitish above, dark brown to blackish brown below. **Context** concolorous with pileus and stipe, with indistinct **smell** and mild, indistinct **taste**.

Spores $6.5\text{--}8.5 \times 6.5\text{--}8.2$ μm , $E = 1.0\text{--}1.07$, $Q = 1.03$, (sub)globose, distinctly two-layered with verruculose-echinulate epispore and smooth perispore, verruculae $1.0\text{--}1.2$ (1.5) μm high, hyaline in KOH, easily peeling. **Basidia** $21\text{--}26 \times 7.5\text{--}10.0$ μm , 2-spored, clavate to subutriform or subfusoid. **Basidioles** $13\text{--}23 \times 4.0\text{--}8.0$ μm , clavate or cylindrical. **Cheilocystidia** numerous, $40\text{--}91 \times 11\text{--}23$ μm , lageniform, subcylindrical or subfusoid, \pm thin-walled. **Hymenophoral trama** made up of cylindrical, fusoid or ellipsoid, \pm thin-walled, smooth to incrustated, up to 30 μm wide hyphae with yellowish grey walls in KOH. **Pileipellis** a cutis made up of radially arranged, cylindrical, thin-walled, smooth or minutely incrustated, up to 10 μm wide hyphae, with adpressed to suberect cylindrical to narrowly clavate terminal elements. **Subpileipellis** of cylindrical, sometimes branched, \pm thin-walled, rarely slightly thick-walled, up to 15 μm wide hyphae with distinctly zebra-incrustated walls which are black-brown in KOH. **Stipitipellis** a cutis of parallel, cylindrical, thin- to slightly thick-walled, up to 7 μm wide hyphae with pale yellowish walls in KOH. **Caulocystidia** absent; but scattered adpressed to erect cylindrical to narrowly clavate, obtuse terminal elements present along stipe. **Clamp-connections** absent in all tissues.

Chemical reaction: No part of tissue dextrinoid or amyloid. Spores with non-amyloid epispore including verruculae and amyloid perispore; some peeled spores dextrinoid.

Ecology: Saprotrophic, terrestrial on fireplaces, rarely also on peat soil.

Distribution: Known from Austria, Denmark, France, Norway, the Netherlands and Switzerland.

Phenology: September to October.

Collections examined: **AUSTRIA:** Niederösterreich, Irnfritz, Etzelsreith, 15 Sept. 1987 leg. A. Hausknecht (WU 6490). – ditto, 13 Sept. 1987 leg. R. Schütz (WU 6486). – **NETHERLANDS:** Noord Holland prov., Kortenhoeft, 17 Oct. 1970, J. Daams (L). – **NORWAY:** Buskerud: Ringerike, V. Ådal, 14 Sept. 1974 leg. A.-E. Torkelsen 1142/74 (O 82108).

Notes: *Fayodia anthracobia* var. *anthracobia* is similar to the previous species, and differs especially in having smaller carpophores with darker pileus, smaller spores and clampless tissues, and by the occurrence on burnt ground. Also the warts on the spore wall seem to be narrower than in *F. bisporigera*.

A comparison with description in literature learns that FAVRE (1948) described distinctly narrower basidia ($6.0\text{--}6.5$ μm) and slightly narrower cystidia ($9\text{--}17$ μm), and BON (1997) gives smaller cystidia [(40) $50\text{--}60$ (85) \times (6) $10\text{--}15$ (17)] μm . These differences may be due to infraspecific variation.

The specimen collected by D.A. Reid and preserved in the Kew herbarium [Reading, Sutton's Seeds Ltd., on birch trunk among rootlets of epiphytic orchids, 14 July 1965, K(M) 75594, as *F. bisphaerigera*] has slightly smaller spores ($5.0\text{--}6.2 \times 5.0\text{--}6.0$ μm without spines, $6.5\text{--}7.7$ v $6.5\text{--}7.5$ μm including spines), and mostly (broadly) clavate cheilocystidia ($45\text{--}62 \times 10\text{--}30$ μm), moreover, it seems to have omphalioid habit. It may represent an undescribed species. Unfortunately, a macroscopic description is not available (Reid in litt.).

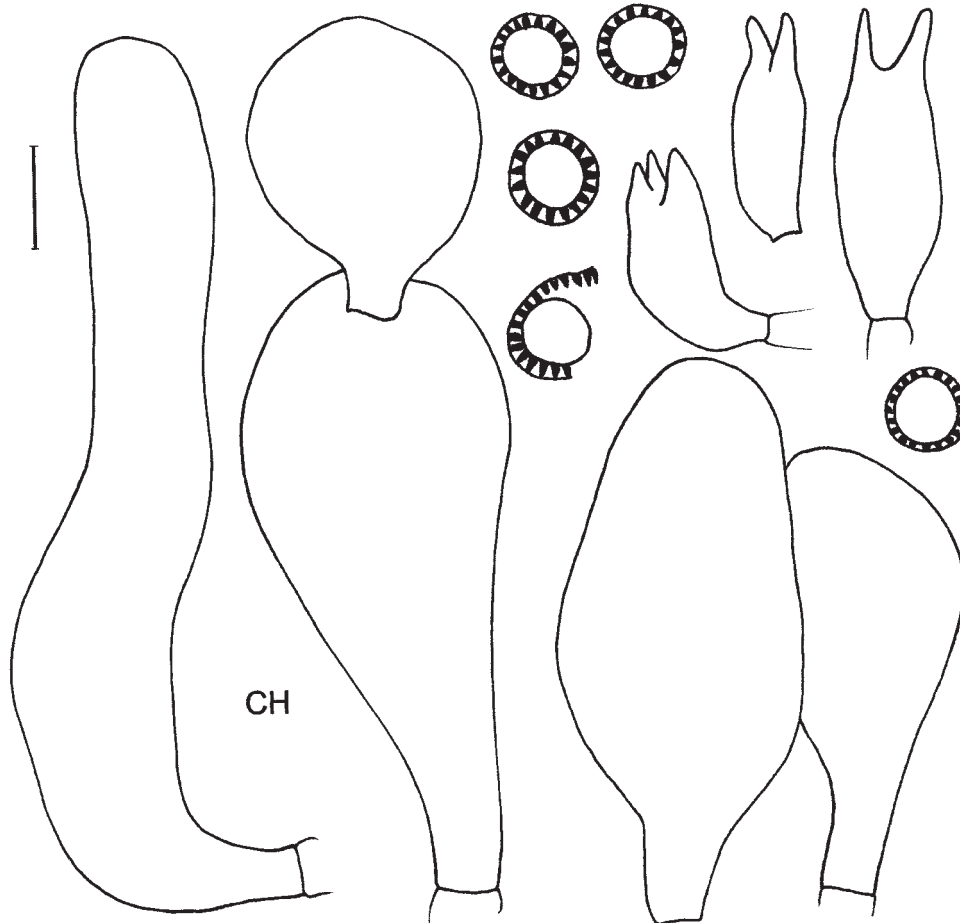


Fig. 42: *Fayodia anthracobia*

2b. *Fayodia anthracobia* var. *bisphaerigerella* (M. Lange) Antonín & Noordel.

Basionym: *Omphalia bisphaerigerella* M. Lange, Friesia 3: 209. 1946.

Fayodia bisphaerigerella (M. Lange) M. Lange & Sivertsen, Bot. Tidskrift 62: 198. 1966; *Fayodia anthracobia* var. *bisphaerigerella* (M. Lange) Antonín & Noordel., Persoonia 18 (in press)

Type specimen: Denmark, Maglemose, Grib skov, 21 Oct. 1944 leg. M. Lange (C, holotype).

Selected icones: Ludwig, Pilzkompendium 1: pl. 35, fig. 24.3. 2000;

Selected literature: M. Lange, Friesia 3: 204-205. 1946; Ludwig, Pilzkompendium 1 (Beschreibungen): 122. 2001; Knudsen, Nordic Macromycetes 2: 121-122. 1992.

Description [macrodescription according to M. LANGE (1946)]: **Pileus** 2–12 (15) mm broad, convex-campanulate, with moderately depressed centre, with undulate-crenulate margin, membranaceous, hygrophanous, glabrous, striate, grey-brown, darkest at centre, pallescent. **Lamellae** subdistant, emarginate, thickish, broad, pale greyish. **Stipe** 20–30 × 0.5 mm, cylindrical, curved, attenuate and hispid at base.

Spores (6.0) 7.0–8.0 × (6.0) 7.0–8.0 μm, E = 1.0–1.07, Q = 1.01, (sub)globose, distinctly two-layered: verruculose-echinulate episporium and smooth perispore, verruculae 0.8–1.2 μm high, hyaline in KOH, easily peeling. **Basidia** 15–21 × 6.5–9.0 μm, 2-spored, clavate to subutriform or subfusoid. **Basidioles** 10–23 × 4.0–8.0 μm, clavate, cylindrical or subutriform. **Cheilocystidia** numerous, forming sterile lamellar edge, 32–87 × (9) 11–23 μm, clavate, broadly clavate, utriform, less frequently ± cylindrical, thin-walled, hyaline. **Hymenophoral trama** made up to cylindrical to narrowly ellipsoid, up to 20 μm wide, thin-walled, hyaline hyphae. **Pileipellis** a cutis, made up of radially arranged, cylindrical to slightly fusoid, thin-walled, mostly minutely incrustate, up to 10 μm wide hyphae, with pale yellowish brownish walls in KOH, with adpressed to suberect cylindrical, narrowly clavate or subfusoid terminal elements. **Subpileipellis** made up of cylindrical, ellipsoid or fusoid elements, sometimes branched, ± thin-walled, rarely slightly thick-walled, distinctly incrustate, up to 30 μm wide. **Stipitipellis** a cutis, of parallel, cylindrical, thin- to slightly thick-walled, smooth to minutely incrustate, up to 7 μm wide hyphae with pale yellowish walls in KOH. **Caulocystidia** absent; scattered adpressed to erect cylindrical to narrowly clavate, obtuse terminal cells present. **Clamp-connections** absent in all tissues.

Chemical reaction: No part of tissue dextrinoid or amyloid. Spores with non-amyloid to dextrinoid episporium, inamyloid, non-dextrinoid verruculae and amyloid perispore.

Ecology: Saprotrophic, terrestrial in pine forest on peat soil (with *Picea abies*, *Betula*).

Distribution: Known from the type locality in Denmark, and also from Sweden and Germany (LUDWIG 2001).

Phenology: August to November.

Collection examined: DENMARK: Maglemose, Grib skov, 21 Oct. 1944 leg. M. Lange (C, holotype).

Notes: The type collection of *Fayodia anthracobia* var. *bisphaerigerella* (M. Lange) M. Lange & Sivertsen is similar to the typical variety of *F. anthracobia*. However, it slightly differs in having a paler pileus (but of the same colour) with ± umbilicate centre, longer and narrower stipe (20–30 × 0.5 mm), constantly smaller basidia (16–21 × 6.5–9.0 μm), more frequently present (broadly) clavate cheilocystidia, and by growing on peat soil. Other features agree with *F. anthracobia* var. *anthracobia*. BON (1997) also mentioned *F. anthracobia* as rarely growing also on peat soil. Therefore, in the time being, we consider it a variety of *F. anthracobia*.

According to KNUDSEN (1992) it may be identical with *F. bisphaerigera*. However, the latter species (as well as macroscopically similar *F. campanella*) differs especially by the presence of clamp-connections.

It is necessary to collect this taxon again to get a better understanding of its taxonomic status. In case the distinguishing characters mentioned above prove to be intergrading with typical *F. anthracobia*, both taxa have to be synonymised. In that case the name *Fayodia bisphaerigerella* has a priority.

3. *Fayodia campanella* Horak

Fig. 43

Fayodia campanella Horak, Z. Pilzk. 28: 14. 1962.

Type specimen: Switzerland, Graubünden, Davos, Aebiwald, 29 Sept. 1961 leg. E. Horak 61/376 (Holotype, ZT).

Selected icones: Horak, Z. Pilzk. 28: 18. 1962 (a black-white pencil drawing).

Selected literature: Bon, Doc. mycol. Mém. hors sér. 4: 165. 1997; Horak, Z. Pilzk. 28: 14–16. 1962; Moser, Kl. Kryptogamenfl., Ed. 5: 186. 1983.

Description (according to the original description and Horak's private notes): **Pileus** 8 (10)–12 mm, campanulate, obtuse papillate, irregularly denticulate at margin, slightly translucently striate, smooth,

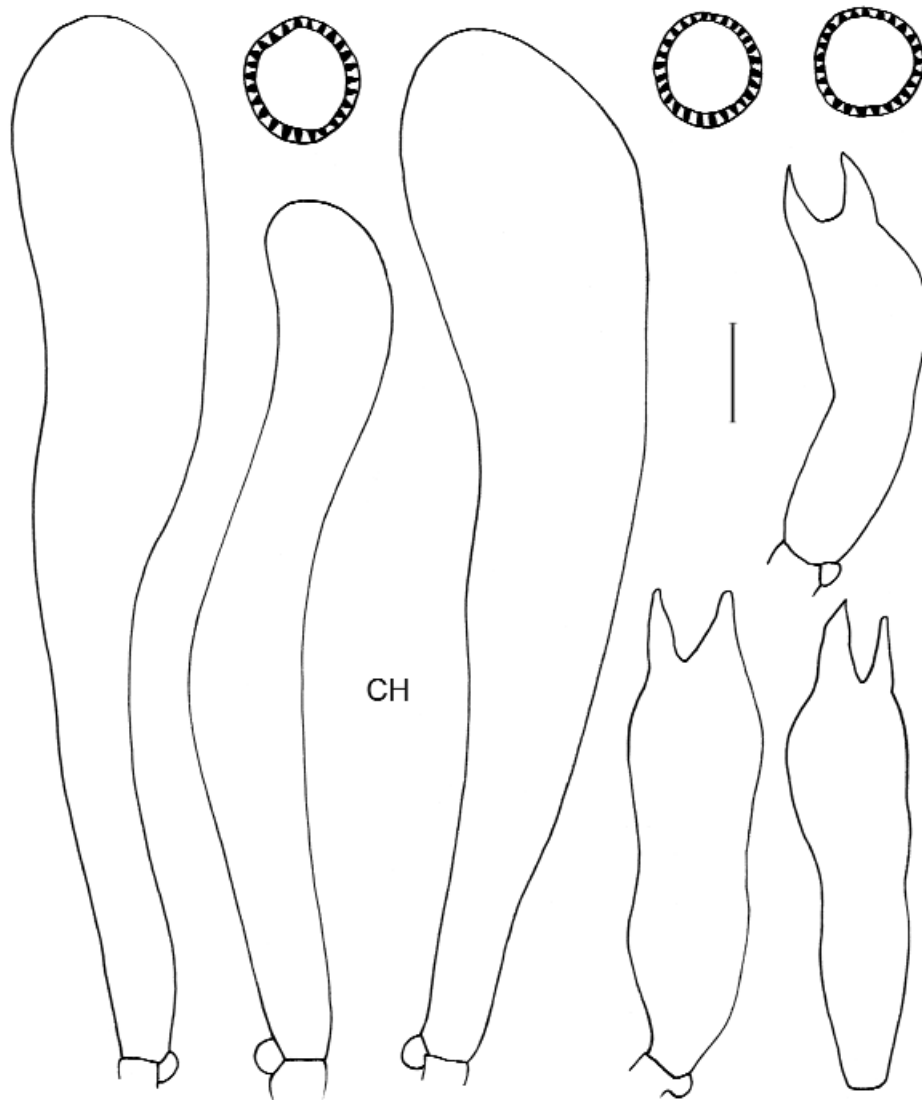


Fig. 43: *Fayodia campanella*

glabrous, whitish-brownish, when dry whitish, beige-greyish to greyish-brownish. **Lamellae** rather distant, $L = 7-8$, $l = 1$, broadly adnate to with slightly decurrent tooth, whitish-greyish, with smooth, sharp edge. **Stipe** $30-40 \times 1$ mm, regularly cylindrical, curved, solid, glabrous, only at apex whitish hairy (lens), whitish-brownish, brown at base. **Context** brownish, with slightly rancid **smell**.

Spores $8.5-12.0 \times 8.5-12.0 \mu\text{m}$, $E = 1.0-1.1$ (1.2), $Q = 1.04-1.06$, (sub)globose, distinctly two-layered: verruculose-echinulate epispore and smooth perispore, verruculae $0.7-1 \mu\text{m}$ high, hyaline in KOH. **Basidia** $26-37$ (43) $\times 10-13 \mu\text{m}$, 2-spored, clavate to subutriform. **Basidioles** $16-40 \times 5.0-10.0 \mu\text{m}$, clavate, subfusoid, subutriform, subcylindrical. **Cystidia** not frequently present, $35-80$ (92) $\times 4.0-16$ (21) μm , cylindrical, clavate, subfusoid, rarely with one lateral projection, thin-walled,

hyaline in KOH. **Hymenophoral trama** made up of cylindrical to ellipsoid, up to 20 µm wide hyphae with thin, hyaline to pale yellowish walls in KOH. **Pileipellis** a cutis, made up of radially arranged, cylindrical, ± thin-walled, smooth or minutely incrustated, up to 15 µm wide hyphae with hyaline to pale yellowish-greyish walls in KOH; terminal elements scattered, adpressed to suberect, obtuse, ± cylindrical. **Stipitipellis** a cutis, of parallel, cylindrical, slightly thick-walled, up to 5 µm wide hyphae with subhyaline to pale yellowish walls in KOH. **Stipititrama** made up of thin-walled, up to 20 µm wide hyphae. **Caulocystidia** absent; scattered (sub)erect or adpressed cylindrical to clavate terminal cells present. **Clamp-connections** present in all tissues.

Chemical reaction: No part of tissue dextrinoid or amyloid. Spores with non-amyloid epispore including verruculae and amyloid perispore.

Ecology: Saprotrophic, terrestrial; in a moist mossy spruce forest, or a submesic-poor spruce forest with *Vaccinium myrtillus*, in altitude between 450 and 800 m (Norway) to 1650 m (Switzerland).

Distribution: Known only from Norway and Switzerland till now.

Phenology: September to October.

Collections examined: **NORWAY:** Akershus: Eidsvoll, Dal, Skytterseter, 18 Oct. 1984 leg. B. Olsen (O 120105). – Akershus: Hurdal, Fjellsjøkampen, Sept. 1978 leg. ??? (O 120115). – Oppland: Lunner, S. Oppdalen, 17 Oct. 1982 leg. E. Bendiksen 601/82 (O 120108). – **SWITZERLAND:** Graubünden, Davos, Aebiwald, 29 Sept. 1961 leg. E. Horak 61/376 (Holotype, ZT).

Notes: *Fayodia campanella* is distinctive because of its small, inconspicuous, pale coloured mycenoid carpophores, and by growing in more or less moist spruce forests. Only under microscope it is possible to recognise it as a *Fayodia* species. *Fayodia anthracobia* var. *bisphaerigerella*, another small species, differs especially by darker coloured pileus and smaller spores.

In the original description, HORAK (1962) gave slightly smaller spores, which probably was copied by BON (1997).

4.4. *GAMUNDIA* Raithelh.

***Gamundia* Raithelh., Metrodiana 8: 34. 1979.**

Fayodia Kühner subgen. *Heterosporula* Singer, Agar. Mod. Taxon., Ed. 2: 395. 1961; *Heterosporula* (Singer) Kühner, Bull. Soc. Linn. Lyon, Num. Spec., 49: 772. 1980; *Stachyomphalia* Bigelow, Mycotaxon 9: 41. 1979.

Type species: *Gamundia pseudoclusilis* (Joss. & Konrad) Raithelh.

Selected literature: Bon, Doc. mycol. Mém. hors sér. 4: 152-153. 1997; Kühner, Bull. Soc. Linn. Lyon, Num. spéc., 49: 772-774. 1980; Kuyper, Flora Agar. Neerland. 3: 155-156. 1995; Ludwig, Pilzkompendium 1 (Beschreibungen): 140. 2001; Singer, Agar. Mod. Taxon., Ed. 4: 428-431. 1986; Watling & Turnbull, British Fungus Fl. 8: 94-97. 1998.

Basidiocarps omphalioid or collybioid; pileus mostly hygrophanous and translucently striate, rarely opaque; lamellae adnate-emarginate to decurrent; stipe cylindrical, pruinose to floccose at least at apex; spore print white.

Spores ellipsoid, minutely echinulate to verruculose, non-amyloid, non-dextrinoid; cheilocystidia present; pleurocystidia usually present; pileipellis an ixocutis or cutis; hyphae neither amyloid nor dextrinoid; clamp-connections present.

Ecology: Saprotrophic, solitary, in small groups or in small clusters, in various biotopes – preferably in coniferous more rarely in mixed woods, along roads and paths, among mosses and lichens, on a range from mesophile to calcareous soils.

Distribution: Probably widely distributed especially in northern temperate zone with some species in alpine/arctic and Mediterranean regions. Probably also present in the tropics.

Notes: The genus *Gamundia* is distinguished from the very similar genus *Fayodia* Kühner by the minutely echinulate to verruculose, thin-walled and non-amyloid spores with uni-layered walls. SINGER (1986) kept a broad concept of the genus *Fayodia*, placing the species now recognised as *Gamundia* in the subgenus *Heterosporula* Singer. We follow BON (1997), BIGELOW (1979), KUYPER (1995), and KÜHNER (1980), however, and consider the species with the above-mentioned characters as an independent genus *Gamundia*. BON (1996, 1997, 1999; BON & RÖLLIN 1999) maintained a small species concept and distinguished six species in *Gamundia*. KUYPER (1995) on the contrary, merged all these taxa in one, variable species, *Gamundia striatula*. The present authors, after a close study of all available material, decided to take an intermediate position with regard to the number of species (see below).

BIGELOW (June 1979) placed the species in question in the new genus *Stachyomphalina*, however, not knowing that RAITHELHUBER (May 1979) did the same one month earlier, while describing the genus *Gamundia*, which therefore has a priority.

Synopsis of European species:

1. *Gamundia striatula* (Kühner) Raithelh.
2. *Gamundia hygrocycyboides* (Lonati) Bon
3. *Gamundia arctica* (Gulden) E. Ludw.
4. *Gamundia lonatii* Bon & Röllin

Key to the European species:

- 1 Pileus dark coloured (dark brown or blackish brown), not hygrophanous, not striate or very faintly translucently striate at outermost margin; spores rather large 6.0–7.0 (8.0) × 4.5–5.5 (6.0) µm; in arctic and alpine habitats **3. *G. arctica*** (p. 150)
- 1* Pileus paler coloured (fuliginous brown, yellow-brown, or yellowish grey-brown, sometimes with dark brown centre), hygrophanous, distinctly translucently striate; spores of the same size or smaller; in different habitats **2**
- 2 Cheilocystidia broad (9.0–20 µm wide), clavate, broadly clavate, subvesiculose **4. *G. lonatii*** (p. 153)
- 2* Cheilocystidia narrower (up to 16 µm wide), variable in shape, lageniform, clavate, fusoid, utri-form **3**
- 3 Pileus small, 5–10 (12) mm broad, honey coloured with well delimited brown centre; lamellae few (L = 13–16); stipe 10–20 × 1–1.5 mm; cheilocystidia 42–60 µm long; spores in SEM with pronounced warts **2. *G. hygrocycyboides*** (p. 148)
- 3* Pileus larger, 7–50 mm broad, pale yellowish grey-brown, fuliginous yellowish, fuliginous brown, beige-isabella, brown greyish, pallescent to pale grey-brown, greyish or yellowish grey, usually without a well delimited dark coloured centre; lamellae more numerous (L = 15–36); stipe (10) 15–55 × 1–8 mm; cheilocystidia 34–90 µm long; spores in SEM with small warts **1. *G. striatula*** (p. 143)

1. Gamundia striatula (Kühner) Raithelh.**Pl. 40, Fig. 44**

Rhodocybe striatula Kühner, Bull. mens. Soc. linn. Lyon 2: 140. 1928; *Omphalina striatula* (Kühner) Kühner & Romagn., Fl. Anal.: 127. 1953; *Clitocybe striatula* (Kühner) P. D. Orton, Trans. Br. mycol. Soc. 43: 174. 1960; *Fayodia striatula* (Kühner) Singer, Beih. Nova Hedw. 29: 146. 1969; *Stachyomphalina striatula* (Kühner) H.E. Bigelow, Mycotaxon 9: 42. 1979; *Gamundia striatula* (Kühner) Raithelh., Metrodiana, Sonderheft 2: 9. 1983. – *Fayodia xerophila* Luthi & Röllin, Bull. trimestr. Soc. mycol. Fr. 88: 174. (1972) 1973; *Gamundia leucophylla* var. *xerophila* (Luthi & Röllin) Bon, Doc. Mycol. 102: 19. 1996; *Gamundia xerophila* (Luthi & Röllin) Raithelh., Metrodiana 8: 34. 1979 (invalid combination); *Gamundia xerophila* (Luthi & Röllin) Raithelh., Metrodiana 9: 48. 1980. – *Collybia pseudoclusilis* (Joss. & Konrad) P.D. Orton, Trans. Br. mycol. Soc. 43: 174. 1960; *Fayodia pseudoclusilis* (Joss. & Konrad) Singer, Sydowia 15: 66. (1961) 1962; *Gamundia pseudoclusilis* (Joss. & Konrad) Raithelh., Metrodiana 8: 34. 1979 (invalid combination); *Gamundia pseudoclusilis* (Joss. & Konrad) Raithelh., Metrodiana 9: 48. 1980. – ? *Omphalia leucophylla* Gillet, Hymenomyc.: 296. 1874. s. J.E. Lange 1930; *Clitocybe leucophylla* (Gillet) M. Lange, Medd. Groenl. 147: 11. 1955; *Fayodia leucophylla* (Gillet) M. Lange & Sivertsen, Bot. Tidskr. 62: 202. 1966; *Gamundia leucophylla* (Gillet) Bigelow, Sydowia 36: 16. 1983. – ? *Omphalia fuscoalba* F.H. Møller, Fungi Faeroes 1: 263. 1945.

Misapplied name: *Omphalia chusilis* (Fr.) Kühner & Romagn. s. Kühner & Romagnesi, non *Collybia chusilis* (Fr.) Gillet s. auct.

Type specimen: France, St. Bon, leg. R. Kühner (G, herb. Kühner, holotype).

Selected icones: Bidaud, Bull. Trim. Féd. Mycol. Dauphiné Savoie 115: 20. 1989 (as *G. pseudoclusilis*); Bon, Champ. Eur. occ.: 130. 1987 (as *G. pseudoclusilis*); Bon & Röllin, Doc. Mycol. 29(114): 11. 1999 (as *G. xerophila*); Breitenbach & Kränzlin, Pilze Schweiz 3: pl. 209. 1991 (as *Fayodia pseudoclusilis*); Courte-cuisse & Duhem, Champ. Fr. Eur.: 349 (as *Fayodia leucophylla*) and 350 (as *Fayodia pseudoclusilis*). 1994; Grilli, in Lanzoni, Fungi non delin. 7: pl. 15. 1999; J. Lange, Fl. agar. dan. 2: pl. 59F. 1936 (as *Omphalia leucophylla*); Lonati, Micol. Veget. Mediter. 3: 77. 1988 (as *Fayodia pseudoclusilis*); Lonati, Bol. A.M.E.R. 10-11: 5. 1994 (as *Fayodia leucophylla*); Ludwig, Pilzkompendium 1: pl. 39, fig. 28.2. 2000; Luthi & Röllin, Bull. Soc. Mycol. Fr. 88: 173. 1973 (as *G. xerophila*); Moser & Jülich, Farbatlas Basidiomyc.: III *Fayodia* 1. 1994 (as *Fayodia pseudoclusilis*); Moser & al., Farbatlas Basidiomyc. 18: *Fayodia* 2. 2000 (as *F. leucophylla*); Ortega, Rev. iberoamericana de micol. 9(3): 67. 1992 (as *Fayodia pseudoclusilis*); Perez de Gregorio, Bolets Catalunya 15: pl. 714. 1996 (as *G. pseudoclusilis*); Wilhelm, Schweiz., Z. Pilzk. 76(5): 229. 1998.

Selected literature: Bidaud, Bull. Trim. Féd. Mycol. Dauphiné Savoie 115: 18-19. 1989 (as *G. pseudoclusilis*); Bidaud, Bull. Fed. Mycol. Dauphiné Savoie 128: 16. 1993 (as *Fayodia leucophylla*); Bigelow, Mycotaxon 9: 42-45. 1979; Bon, Doc. Mycol. 5: 32. 1975 (as *Fayodia p.*); Bon, Doc. mycol. Mém. hors sér. 4: 152 (as *G. pseudoclusilis*) and 153 (as *G. xerophila* and *G. leucophylla*). 1997; Breitenbach & Kränzlin, Pilze Schweiz 3: 188-189. 1991 (as *Fayodia pseudoclusilis*); Derbsch & Schmitt, Atl. Pilze Saarlandes 2: 384. 1978 (as *Fayodia leucophylla*); Einhellinger, Ber. bayer. Bot. Ges. 52: 192. 1981 (as *Fayodia pseudoclusilis*); Grilli, in Lanzoni, Fungi non delin. 7: 28-31. 1999; Gröger, Mykol. Mittbl. 27: 5-6. 1984 (as *Fayodia pseudoclusilis*); Jossierand & Konrad, Bull. Soc. Linn. Lyon 10: 21-23. 1931 (as *Collybia pseudoclusilis*); Knudsen, Nord. Macromyc. 2: 122. 1992 (as *Fayodia leucophylla*); Kühner, Bull. mens. Soc. linn. Lyon 2: 140. 1928; Lonati, Micol. Veget. Mediter. 3: 78-80. 1988 (as *Fayodia pseudoclusilis*); Lonati, Bol. A.M.E.R. 10-11: 4-7. 1994 (as *Fayodia leucophylla*); Ludwig, Pilzkompendium 1 (Beschreibungen): 141-142. 2001; Luthi & Röllin, Bull. Soc. Mycol. Fr. 88: 171-174. 1973 (as *Fayodia xerophila*); Malençon et al, Champ. Penin. Ibérique: 104. 1980 (as *Fayodia pseudoclusilis*); Malençon & Betrault, Fl. Champ. Supér. Maroc 2: 173-175. 1975 (as *Clitocybe pseudoclusilis*); Malençon & Llomina, Ann. Univ. Murcia Ciencias 34: 104. 1980 (as *Clitocybe pseudoclusilis*); Moreno & Checa, Anales Inst. bot. Madrid 40(1): 18. 1983 (as *Fayodia pseudoclusilis*); Perez de Gregorio, Bolets Catalunya 15: 714. 1996 (as *G. pseudoclusilis*); Röllin, Bull. Fed. mycol. Dauphiné Savoie 94: 16-18. 1984 (as *Fayodia xerophila*); Vaill., Rev. Catalana Micol. 20: 171. 1997 (as *G. leucophylla*); Watling & Turnbull, British Fungus Fl. 8: 95 (as *G. pseudoclusilis*) and 96-97. 1998.

Description: **Pileus** (5) 10–45 (50) mm broad, almost hemispherical or convex, then convex-applanate or broadly convex, with slightly depressed to umbilicate centre, sometimes with crenulate margin, hygrophanous, entirely translucently striate, sometimes slightly striate only at margin, uniformly coloured, dirty pale grey-brown-yellowish, brown-grey, fuliginous brown, fuliginous yellowish, beige-isabella, pallescent to pale grey-brown, yellowish grey or whitish grey when dry; glabrous, smooth, lustrous when dry. **Lamellae** moderately distant to rather distant, L = 15–36, l = 3–7 subhorizontal, broadly adnate or slightly decurrent with a tooth, moderately broad to broad (up to 5 mm), sometimes veined at base, white or whitish, then sometimes with grey or brown hue, sometimes reddening in herbarium; with entire, concolorous edge. **Stipe** (10) 20–55 × 1–8 mm, cylindrical, slightly broadened towards base and apex, sometimes twisted, smooth, glabrous except for slightly pruinose apex, solid, then fistulous, smooth or longitudinally striate especially when old, whitish grey-brown, pale horn-coloured, brownish. **Context** thin, concolorous, smell indistinct, or slightly reminiscent of *Melanoleuca grammopodium* to farinaceous-spermatoc, **taste** mild.

Spores 6.0–8.5 (9.0) × (4.0) 4.5–5.0 (6.0) μm , E = 1.3–1.9, Q = 1.4–1.6, ellipsoid to broadly ellipsoid, rarely subamygdaliform, distinctly minutely warty-echinulate, thin-walled, hyaline. **Basidia** 25–35 × 8.5–10.0 μm , 4-spored, sometimes mixed with 2-spored, clavate. **Basidioles** 13–32 × 3.0–10.0 μm , cylindrical to clavate. **Cheilocystidia** 36–92 × 9.0–15 (20) μm , (sub)cylindrical, clavate, subfusoid, subutriform, sublageniform, sometimes pedicellate, obtuse, sometimes subrostrate, sometimes irregular, thin- to rarely slightly thick-walled, hyaline. **Pleurocystidia** similar to cheilocystidia. **Hymenophoral trama** composed of up to 30 μm wide, cylindrical, thin-walled, smooth or minutely incrustated, sometimes gelatinised hyphae. **Pileipellis** a slightly gelatinised cutis to distinct ixocutis made up of radially arranged, \pm thin-walled, smooth or minutely incrustated, up to 3.0–10.0 μm wide hyphae, sometimes (sub)diverticulate or with lateral projections, with subhyaline to pale yellowish greyish walls in KOH; terminal elements and lateral projections adpressed to erect, cylindrical to narrowly clavate, fusiform, regular, irregular to coralloid, thin-walled, up to 6.0 μm wide. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, smooth, rarely subdiverticulate, sometimes gelatinised, 2.0–7.0 μm wide hyphae with pale yellow-grey walls in KOH. **Caulocystidia** (at apex) solitary or more often in clusters, (15) 20–85 × (3.0) 5.0–14 μm , (sub)cylindrical, narrowly clavate, clavate, subfusoid, sublageniform, subutriform, often irregular or with some projections to subcoralloid, \pm thin-walled, hyaline. **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues dextrinoid or amyloid.

Ecology: Saprotrophic, terrestrial, single, in small groups or subcespitate, on soil, on debris, also along small wooden sticks and mulch, among plants, lichens and mosses, on sandy soils, in coniferous and mixed forests (*Picea*, *Pinus*, *Abies*, *Taxus*), also in dunes, coppices and in open areas in xerophytic biotopes (with *Peltigera*, *Artemisia campestris*).

Distribution: Widely distributed, but apparently rather rare. Known from Europe, North America (Canada, U.S.A.), and South America (Argentina).

Phenology: August to November (– April).

Collections examined: **AUSTRIA:** Niederösterreich, Hainfeld, Michelbach, 2 Nov. 1985 leg. W. Klofac (WU 5159). – ditto, 22 Nov. 1986 leg. W. Klofac (WU 5811). – Niederösterreich, Mühlbach/M., Krotental, 30 Oct. 1992 leg. A. Hausknecht (WU 11381). – Niederösterreich, Poysdorf, Staatzer Berg, 29 Nov. 1986 (WU 5790). – Niederösterreich, Gloggnitz, Eichberg, 15 Oct. 1992 leg. W. Klofac (WU 11283). – Niederösterreich, Bad Fischau, Kürassier, 12 Oct. 1990 leg. A. Hausknecht (WU 9069). – Niederösterreich, Missingdorf, Sigmundsherberg, 24 Nov. 1984 leg. A. Hausknecht (WU 3988). – Salzburg, Mittersill, Hollersbachtal, Seestube, 21 July 1992 leg. H. Forstinger (WU 10983). – ditto, 13 July 1996 leg. A. Rheinwald (WU 16346). – **BELGIUM:** prov. Antwerpen, St. Annabos, 17 Oct. 1987 leg.



Pl. 40: *Gamundia striatula*, photo J. PETERSEN

A. Houten (L). – **CZECH REPUBLIC**: sine locality, 13 Dec. 1942, J. Herink 1523/42 (PRM). – Kuřim, Kolibka forest, 20 Nov. 1948 leg. F. Šmarda (BRNM). – Černošice, 1 Nov. 1949 leg. V. Vacek (PRM 710161). – Mnichovice, Meňčice, Oct. 1934 leg. J. Velenovský (PRM 154559). – Mnichovice, Klokočná, Nov. 1937 leg. J. Velenovský (PRM 154523). – Tábor, Arboretum, 4 Dec. 2000 leg. M. Beran (CB). – **FRANCE**: Yveling (78), Poignyla foret, Military Field, 28 Dec. 1997, G. Corriol (BRNM); Meuse (55), Montsac, American Monument, 29 Nov. 1997, G. Corriol (BRNM); Puy de Dome, Chamalières, 21 April 1998, G. Corriol (BRNM). – St. Bon, leg. R. Kühner (G, herb. Kühner, holotype, as *Omphalia leptonioides* = *Leptoniopsis striatulus*). – Chartreuse, 10 Aug. 1934 leg. R. Kühner (G, herb. Kühner 60). – ditto, 2 Aug. 1934 leg. R. Kühner (G, herb. Kühner 21). – Lyon, Le-Pré-Vieux, 29 Nov. 1928 leg. M. Jossierand (G, herb. Jossierand V/47, holotype). – ditto, 16 Nov. 1934 leg. M. Jossierand (G, herb. Jossierand V/47, holotype of *G. pseudoclausilis*). – Lyon, Parc Tête d’G., 9 Nov. 1935 leg. Pouchet (G, herb. Jossierand XV/92). – ditto, 18 Nov. 1949 leg. M. Jossierand (G, herb. Jossierand). – ditto, 9 Dec. 1949 leg. M. Jossierand (G, herb. Jossierand XV/92). – S’ Laurent du Pont, 13 Nov. 1934 leg. M. Jossierand (G, herb. Jossierand XIV/36). – Loire, Saint-Regis-du-Coin, massif du Pilat, 8 Sept. 1976 leg. H. Romagnesi 76.68 (PC, herb. Romagnesi). – Le Lys, Chantilly (Oise), 21 June 1958 leg. H. Romagnesi 58.32 (PC, herb. Romagnesi). – Orry-la-Ville (Oise), 21 May 1972 leg. H. Romagnesi 72.28 (PC, herb. Romagnesi). – Coutainville (Manche), 31 Jan. 1948 leg. R. Meslin (PC, herb. Romagnesi). – ditto, 28 Dec. 1944 leg. R. Meslin (PC, herb. Romagnesi). – entre Fontainebleau and Auxerre, „aire de repos“, 17 Oct. 1983 leg. H. Romagnesi 83.181 (PC, herb. Romagnesi). – **NORWAY**: Ostf., Kråkerog hd., Holme, 23 Oct. 1955 leg. W. Ramm (O). – Oslo, Hovedøya, 1 Oct. 1972 leg. G. Gulden 576/72 (O). – Oslo, Grorud, Frankrig, 6 Nov. 1983 leg. E. Benediksen 490/83 (O 120151). – Nordland, Rana, Storliengen, 7 Sept. 1976 leg. G. Gulden 36a/76 (O 120120). – Østfold, Hvaler, Asmaløy, 30 Oct. 1982 leg. R. Kristiansen (O 120152). – Møre og Romsdal, Fræna, Skutholmen, 30 Sept. 1994 leg. G. Gaarder and J. B. Jordal (O 90342). – Oppland, Jevnaker, Svenådalen, 5 Oct. 1968 leg. S. Sivertsen (O 120118). – Nordland, Saltidal, Junkerdalsura, 16 Aug. 1954 leg. F.-E. Eckblad (O 120122). – Hordaland, Kvinnherad, Rosendal, 5 Sept. 1975 leg. G. Gulden 292/75 (O 120119). – Oppland, Vang hd, Ovenfor Grindahrim, 26 Sept. 1974 leg. J. Stordal 15910 (O 18307). – **SLOVAKIA**: Malá Fatra Mts., Bystrička, the Bystrička river valley, 3 Oct. 1982 leg. L. Hagara (BRA). – **SPAIN**: prov. Burgos, Cornudilla, 8 Dec. 2001 leg. C. E. Hermosilla (herb. Hermosilla 06284, dupl. BRNM). – **SWE-**

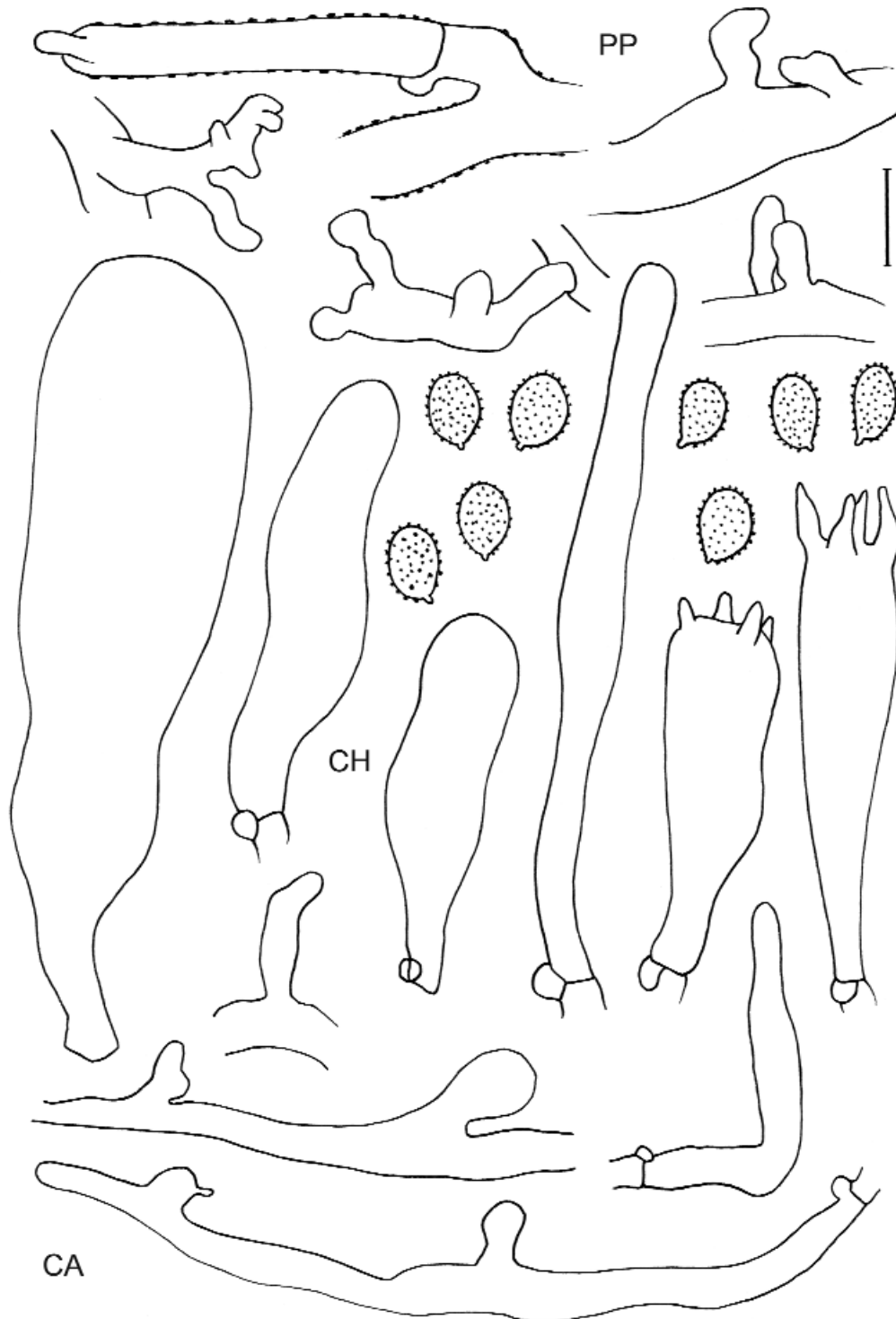


Fig. 44: *Gamundia striatula*

DEN: Jämtland, Åre parish, Handöl, Fjällforsa, 3 Aug. 1951 leg. J. A. Nannfeldt 11679, in: Lundell & Nannfeldt, Fungi exsiccati suecici, No. 2531 (PRM 515889). – **SWITZERLAND:** Boucle du Rhône, Moulin de Vert, 5 Dec. 1971 leg. O. Röllin 6507 (G 5714, holotype of *F. xerophila*). – **SWITZERLAND:** Lengnau/Emmental, Höhwürzhöger, 25 Sept. 1996 leg. M. Wilhelm (WU 16988). – **UNITED KINGDOM: ENGLAND:** Surrey, Kew, Royal Botanic Gardens, 9 Nov. 1990 leg. T. Læssøe 2265 [K(M) 16311]. – ditto, 16 Nov. 1990 leg. T. Læssøe 2267 [K(M) 16319]. – Surrey, Hinhead, 1 Dec. 1947 leg. A. A. Pearson [K(M) 75589]. – Goodwood, 16 Nov. 1938 leg. A. Pearson (G, herb. Josseland). – Lancashire, Gait Barrows Nature Reserve, 11 Nov. 1984 leg. J. C. Leedal [K(M) 75577]. – Lancashire, Freshfield, 29 Oct. 1976 leg. A. Moore 1976/15 [K(M) 78933]. – East Sussex, Broadwater Forest, 27 Nov. 1933 leg. C. Rea [K(M) 78935]. – Surrey, Norbury Park, 27 March 1977 leg. N.W.Legon [K(M) 78932, as *Fayodia pseudoclusilis*]. – ditto, 26 Jan 1975 leg. N.W.Legon [K(M) 78931, as *Fayodia pseudoclusilis*]. – Surrey, Ockley, Vann Lake House, 21 Oct. 1973 leg. D. A. Reid [K(M) 78930, as *Fayodia pseudoclusilis*]. – **SCOTLAND:** Isle of Skye, Inverness, Tormore, Sleat, 24 Sept. 1984 leg. R. W. G. Dennis [K(M) 68757]. – Argyll, Mull of Kintyre, Head of Conie Glen, 23 Sept. 1980 leg. R. W. G. Dennis [K(M) 75590]. – Isle of Rhum, Inverness, Harris, 1 Sept. 1962 leg. R. W. G. Dennis [K(M) 75588]. – Inverness, Isle of Rhum, Harris, 1 Oct. 1967 leg. R.W.G.Dennis 57, 59 [K(M) 78936]. – Inverness, Isle of Harris, south harris, Seilebost, 23 Oct. 1972 leg. R.W.G.Dennis [K(M) 78934]. – **WALES:** Denbighshire (Clwyd), Coed Coch, 18 Oct. 1879 leg. M. J. Berkeley [K(M) 75593]. – ditto, 1865, ex herb. M. J. Berkeley 561 [K(M) 75592].

Notes: *Gamundia striatula* is distinguished by a distinctly translucently striate pileus, relatively crowded lamellae (L = more than 15), and rather large spores [6.0–8.5 (9.0) × (4.0) 4.5–5.0 (6.0) µm], minutely warty in SEM.

Some authors [BIGELOW (1983), BON (1997), LONATI (1994)] synonymised it with *G. leucophylla* (Gillet) Bigelow that has at that case priority. However, the type specimen of *Omphalia leucophylla* Gillet is not preserved (Monthoux in litt.), and therefore important characters could not be verified. The original description does not give much decisive information, so the authors decided to use Kühner's well circumscribed epithet for this taxon. Moreover, the epithet *leucophylla* was used in more senses in literature (for details see LANGE & SIVERTSEN 1966).

Omphalia fuscoalba F. H. Muller is probably also identical with our species. The original description by MØLLER (1945) differs only in smaller carpophores (pileus 10–15 mm broad, stipe 20–25 × 1–2 mm large). Moreover, MØLLER (l. c.) mentioned a similarity with *O. leucophylla* s. Lange (= *G. striatula*). The type specimen is not preserved (Knudsen in litt.).

In the original diagnosis of *Rhodocybe striatula*, Kühner (1928) described slightly smaller spores [5.7–6.5 (6.7) × 4.2–4.7 µm], narrower basidia [5.7–6.5 (6.7) µm], and narrower cystidia (9–11 µm). BIGELOW (1979) described narrower cystidia (5.5–11 µm), smaller basidia (19–27 × 4–8 µm) and slightly smaller spores (5.5–7 × 4–4.5 µm) but he also found up to 11 × 7 µm large spores originating on 2-spored basidia. Bigelow also published a SEM microphotograph of spores, which are scattered minutely warty. KNUDSEN (1992, as *Fayodia leucophylla*) described smaller spores (6–7 × 4–4.5 µm), and the description of this species by LONATI (1994) differs in slightly narrower spores (3.5–4.5 µm), basidia (5–7 µm), cheilo- and pleurocystidia (5–8 µm resp. 7–10 µm). SINGER (1969) described *Gamundia striatula* on account of material collected in Argentina. His fungus differs especially in having dirty grey to pale sordid pileus, narrower spores (3–4.5 µm), narrower cystidia (7–10.3 µm), smaller basidia (19–28.5 × 6–8.2 µm) and gelatinised pileipellis hyphae and by growing on leaves of *Austrocedrus*, *Fitzroya* and *Lomatia* or in humus in coniferous and mixed forests. It may therefore represent another taxon. BIGELOW (1983) published a SEM microphotograph of the spores.

When we compare the descriptions under the name *G. xerophila*, BON (1997) gave smaller spores [(5.0) 6.0–7.0 (8.0) × (3.5) 4.0–5.0 (6.0) µm], and LUTHI & RÖLLIN (1973) slightly smaller cystidia (30–60 × 7.0–12 µm) in their original description.

Gamundia pseudoclusilis slightly differs in having a greasy to subviscid pileus and stipe with accordingly a well-developed ixocutis. However, also *G. striatula* (type revision) has sometimes slight-

ly gelatinised pileipellis hyphae (but never so distinct as in the type specimen of *G. pseudoclusilis*). Other features agree well with *G. striatula*, and therefore, we consider them synonymous. In the original description, JOSSERAND & KONRAD (1931) described spores as smooth. However, all preserved collections from Josserand's herbarium (herb. G) have distinctly minutely warty spores. They also gave slightly narrower dimensions for the basidia (7–8 µm).

Under the name *Fayodia xerophila*, LONATI (1988) clearly misapplied the name for a different taxon, viz. *Gamundia lonatii* BON & RÖLLIN (see below).

KUYPER (1995) kept a broad concept of *Gamundia striatula*, including also *G. arctica*.

Mycena cineraria A. H. Sm. (N. Amer. Spec. *Mycena*: 450. 1947) is often considered synonymous with *G. striatula* or *G. leucophylla* (BIGELOW 1983, KUYPER 1995, LUDWIG 2001). Macro- and microscopically it is very similar indeed, but, however, a type study showed that the spores in SEM are definitely more pronouncedly warty, similar to those of *G. hygrocycoides*.

2. *Gamundia hygrocycoides* (Lonati) Bon

Fig. 45

Fayodia hygrocycoides Lonati, Micol. Veget. Mediter. 11(1): 20. 1996; *Gamundia hygrocycoides* (Lonati) Bon, Doc. Mycol. 27(106): 54. 1997; *Gamundia hygrocycoides* (Lonati) Bon & Röllin, Doc. Mycol. 29(114): 8. 1999 (superfluous combination).

Type specimen: Italy, Aquila, Avezzano, Monte Salviano, 13 Dec. 1994 leg. G. Lonati (AQUI, holotype).

Selected icones: Lonati, Micol. Veget. Mediter. 11(1): 19. 1996.

Selected literature: Lonati, Micol. Veget. Mediter. 11(1): 17–20. 1996; Bon & Röllin, Doc. Mycol. 29(114): 8–9. 1999.

Description (macrodescription according to Lonati): **Pileus** 5–10 (12) mm broad, convex-hemispherical, then convex with slight central depression, not umbilicate, with ± regular, more or less straight margin, translucently striate when moist, honey coloured with well delimited brown centre, glabrous, greasy to touch. **Lamellae** distant, L = 13–16, l = 1–3, adnate, slightly emarginate, to broadly adnate, white, with concolorous, finely pubescent edge. **Stipe** 10–20 × 1–1.5 mm, cylindrical or slightly broadened at apex, distinctly flexuous, fistulous, concolorous with pileus, slightly darker towards base; minutely floccose above, glabrescent below, without basal tomentum, with base attached to mosses. **Context** fragile, glassy translucent, **taste** mild, **smell** indistinct.

Spores (6.5) 7.0–8.0 × 4.5–5.7 µm, E = 1.3–1.6, Q = 1.4, broadly ellipsoid, rarely subfusoid-ellipsoid, distinctly minutely acutely echinulate, thin-walled, hyaline. **Basidia** 15–31 × 7.0–10.5 µm, 4-spored, clavate. **Basidioles** 11–30 × 3.0–9.0 µm, cylindrical, clavate, subfusoid. **Cheilocystidia** not frequent, 40–62 (80) × 8.5–15 µm, clavate, subcylindrical, subtriform, (sub)lageniform, sometimes (sub)rostrate, often pedicellate, thin-walled, hyaline in KOH. **Pleurocystidia** scattered, similar to cheilocystidia. **Hymenophoral trama** made up of cylindrical, subellipsoid, or subfusiform elements, up to 15 µm wide, thin, smooth, rarely minutely incrustated, subhyaline walls, which are pale yellowish in KOH. **Pileipellis** an ixocutis made up of radially arranged, cylindrical, ± thin-walled, smooth to minutely incrustated, gelatinised, hyaline to subhyaline, up to 10 µm wide hyphae; terminal elements and lateral projections cylindrical, clavate, often irregular to coralloid, ± thin-walled. **Stipitipellis** a cutis made up of cylindrical, parallel, slightly thick-walled, slightly gelatinised, up to 5 µm wide hyphae, with smooth to minutely incrustated walls which are pale (greyish) yellowish in KOH. **Caulocystidia** numerous at apex, 50–97 × 7.0–12 µm, in form of typical cystidia or lateral projections, adpressed to erect, (sub)cylindrical to clavate, irregular to coralloid, sometimes (sub)rostrate, sometimes branched or with projections, hyaline. **Clamp-connections** present in all tissues.

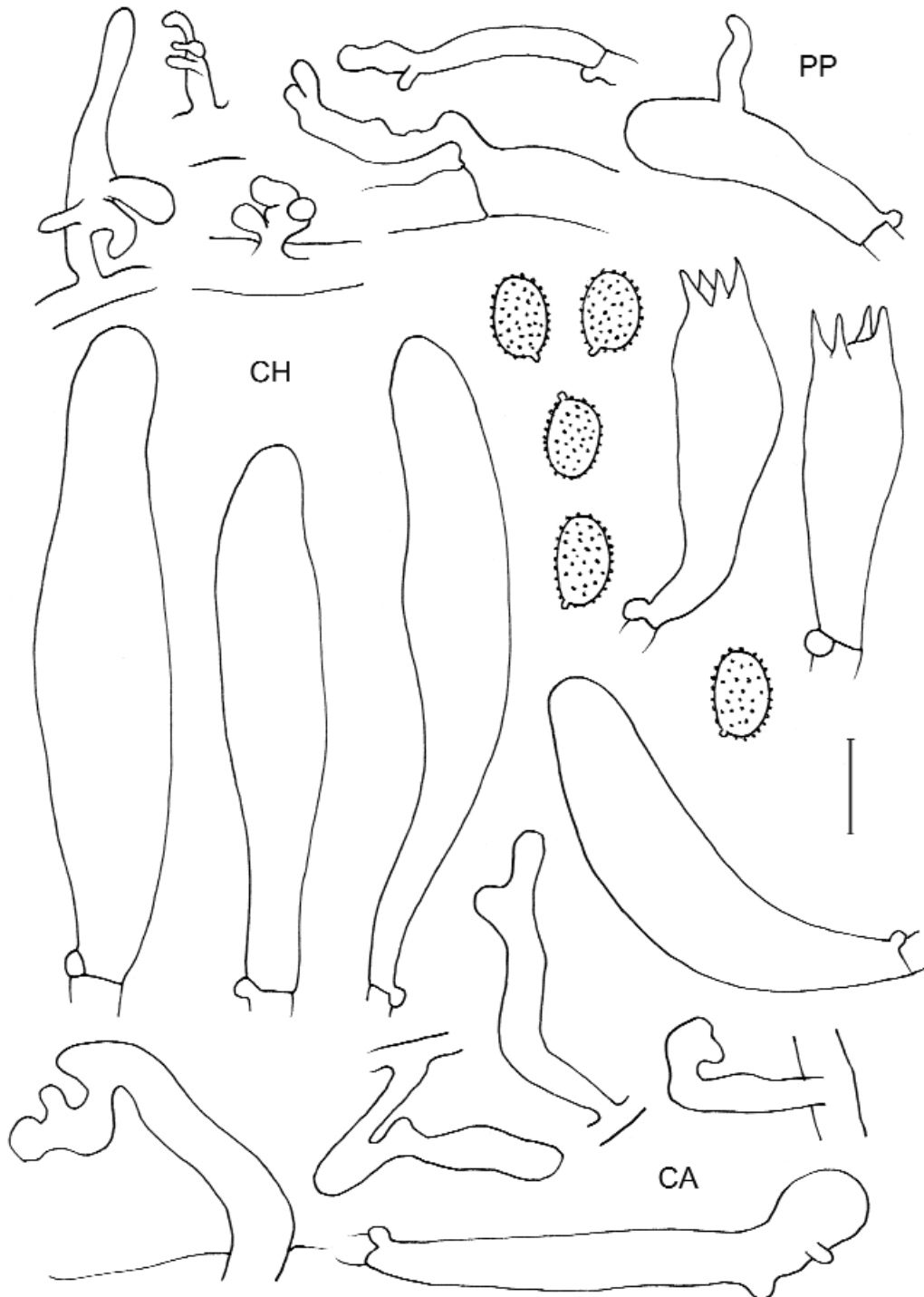


Fig. 45: *Gamundia hygrocoides*

Chemical reactions: Neither spores nor tissues dextrinoid or amyloid.

Ecology: Saprotrophic, terrestrial, among mosses on soil in sunny forest with *Pinus nigra*.

Distribution: Known only from the type locality in Italy.

Phenology: December.

Collections examined: ITALY: Aquila, Avezzano, Monte Salviano, 13 Dec. 1994, leg. G. Lonati (AQUI, holotype).

Notes: *Gamundia hygrocycoides* is characterised by the small carpophores, honey coloured pileus with well delimited brown centre, broadly adnate to adnate-emarginate lamellae, and rather large, distinctly minutely and acutely echinulate spores [(6.5) 7.0–8.0 × 4.5–5.7 µm]. In the SEM microphotograph, spores are with distinct and sharp delimited warts (contrary to other *Gamundia* species, with the exception of *G. lonatii*).

3. *Gamundia arctica* (Gulden) E. Ludw.

Pl. 41, Fig. 46

Fayodia arctica Gulden, Sydowia 40: 52. (1987) 1988; *Gamundia leucophylla* var. *arctica* (Gulden) Bon, Doc. Mycol. 102: 19. 1996; *Gamundia arctica* (Gulden) E. Ludw., Pilzkompodium 1 (Beschreibungen): 140. 2001.

Type specimen: Norway, Svalbard, Kongsfjord distr., Ossian Sarsfjella, 7 Aug. 1986 leg. K. M. Jensen and G. Gulden 262/86 (O 72600, holotype).

Selected icones: Courtecuisse & Duhem, Champ. Fr. Eur.: 347. 1994; Gulden, Arctic Alp. Fungi 2: 39. 1988(1987); Ludwig, Pilzkompodium 1: pl. 39, fig. 28.1. 2000.

Selected literature: Bon, Doc. mycol. Mém. hors sér. 4: 153. 1997; Bon & Röllin, Doc. Mycol. 29(114): 9–10. 1999; Gulden, Sydowia 40: 52–55. 1988; Ludwig, Pilzkompodium 1 (Beschreibungen): 140–141. 2001.

Description (macro description based on Bon & Röllin, Gulden): B 13–35 mm broad, thin-fleshed, convex-applanate to applanate, depressed at centre, with inflexed, crenulate to lobed and undulating margin, not (or faintly?) hygrophanous, opaque or very faintly translucently striate at outermost margin when moist, dark brown or blackish brown (darker than T 30), innately fibrillose, smooth, somewhat greasy-shiny when moist. **Lamellae** moderately crowded, slightly decurrent, with numerous lamellulae inserted from margin and becoming interveined, thin, up to 4 mm high, whitish, becoming pale brownish or greyish (M 50, M 70, N 70, N 71), with age ± dark veined on the sides and with brown to red-brown edge. **Stipe** 14–50 × 2–3.5 mm, cylindrical to subclavate, stuffed, then fistulose, smooth, glabrous, concolorous with pileus at first, fading to paler brown (P 50), often intermediate between pileus and lamellae, and paler at apex and in lower part, at base with white tomentum. **Context** white in pileus and stipe, cortical layers brown; with mild **taste** and indistinct to faintly farinaceous **smell**.

Spores 6.0–7.0 (8.0) × 4.5–5.5 (6.0) µm, E = 1.2–1.5, Q = 1.3, ellipsoid, broadly ellipsoid, sometimes subglobose, minutely echinulate, thin- or slightly thick-walled, hyaline. **Basidia** 25–32 (42) × 8.0–10 µm, 4-spored, clavate. **Basidioles** 10–34 × 3.0–10.0 µm, clavate, cylindrical, subutriform. **Cheilocystidia** scattered, 42–80 (98) × 6.5–13 µm, (sub)cylindrical, clavate, (sub)utriform, and often pedicellate, thin-walled, hyaline. **Pleurocystidia** similar to cheilocystidia. **Hymenophoral trama** made up of cylindrical to subellipsoid, smooth, up to 15 µm wide elements with subhyaline to pale yellowish walls in KOH, with many small vacuoles in Congo red. **Pileipellis** a cutis made up of radially arranged, cylindrical, thin- to slightly thick-walled, up to 8 µm wide hyphae, with a zebra-incrusted walls, sometimes with scattered diverticulae, ± dark-brown in KOH; terminal elements or lateral projections



Pl. 41: *Gamundia arctica*, photo KOLBJORN J. JEMSSEM

adpressed to erect, cylindrical, clavate to subcoralloid, obtuse. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, smooth, up to 6 μm wide hyphae, pale yellowish greyish in KOH. **Caulocystidia** (at apex) numerous, single or clustered, 14–70 \times 4.5–8.0 μm , clavate, (sub)cylindrical, thin-walled, \pm hyaline. **Clamp-connections** present in all tissues.

Chemical reactions: None part of tissue or spores dextrinoid or amyloid.

Ecology: Saprotrophic, terrestrial, single or in small groups, among mosses and lichens, in arctic and alpine communities with *Dryas*, *Salix* spp. on calcareous soil.

Distribution: Known only from Norway (Svalbard) and France.

Phenology: June to November.

Collections examined: NORWAY: Svalbard, Kongsfjord distr., Ossian Sarsfjella, 7 Aug. 1986 leg. K. M. Jensen and G. Gulden 262/86 (O 72600, holotype).

Notes: *Gamundia arctica* is characterised by the dark, not (or faintly) hygrophanous, not translucently striate pileus, lamellar edge turning red-brown with age, the often broadly ellipsoid or subglobose spores and arctic and alpine habitat growing among mosses and lichens with *Dryas* and dwarf *Salix* spp. on calcareous soil. It was originally described from Svalbard, additional localities from this island are given by GULDEN & TORKELSEN (1996).

GULDEN (1988) mentioned, that some *Gamundia* species may be associated with the lichen genus *Peltigera*.

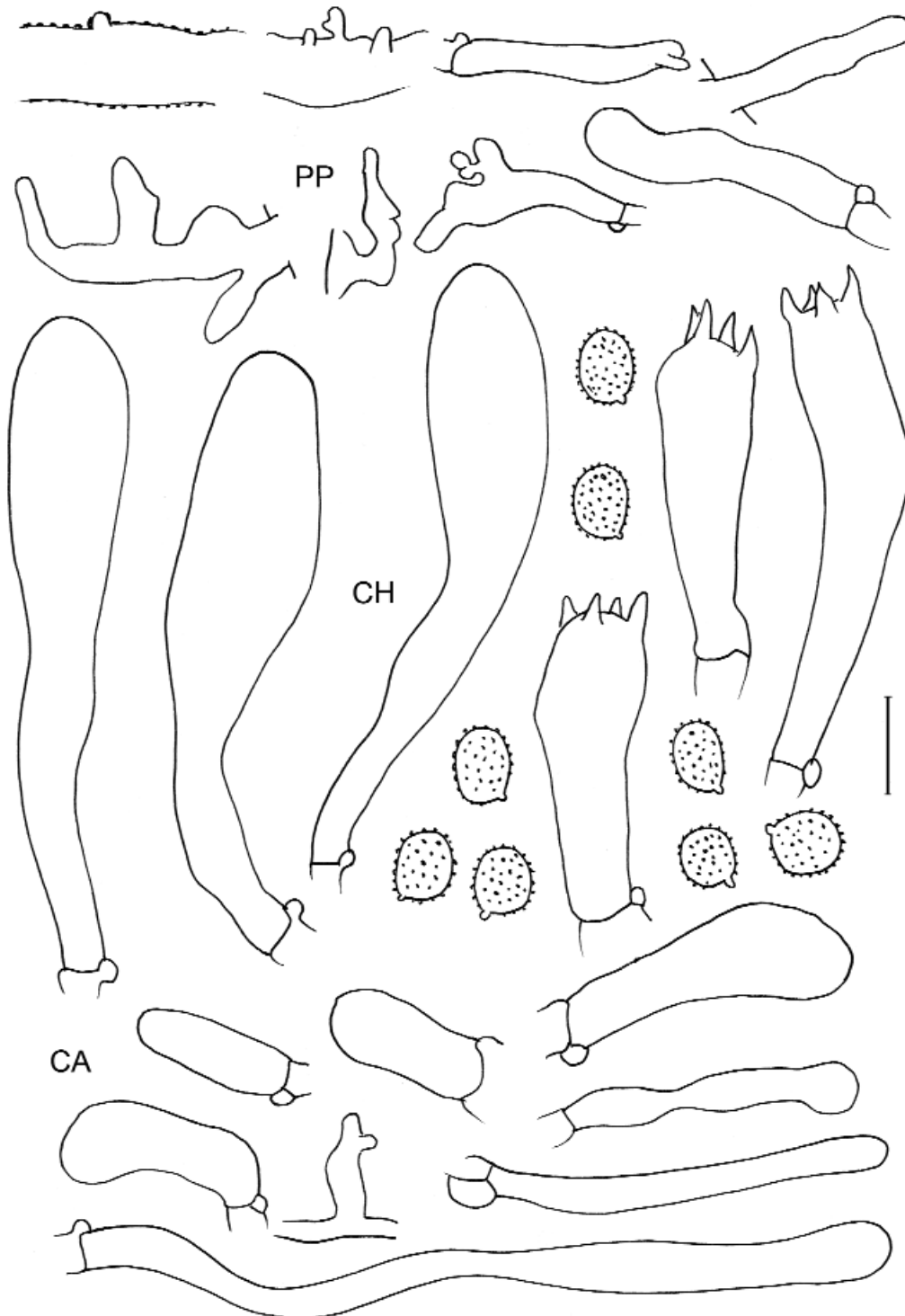


Fig. 46: *Gamundia arctica*

4. *Gamundia lonatii* Bon & Röllin

Fig. 47

Gamundia lonatii Bon & Röllin, Doc. Mycol. 29(114): 8. 1999.

Misapplied name: *Fayodia xerophila* s. Lonati 1996.

Type specimen: Italy, Aquilla, Avezzano, Monte Salviano, 16 Nov. 1995 leg. G. Lonati (G 452166, holotype)

Selected icones: Lonati, Micol. Veget. Mediter. 11(1): 18. 1996.

Selected literature: Bon & Röllin, Doc. Mycol. 29(114): 7-8. 1999; Lonati, Micol. Veget. Mediter. 11(1): 16-17. 1996.

Description (macrodescription after Lonati): **Pileus** 15–40 mm broad, subhemispherical to convex-applanate, distinctly deeply umbilicate, strongly lobate to lacerate when old, hygrophanous, translucently striate up to centre, dark bright brown with fuliginous brown centre, grey-brown upon drying, glabrous. **Lamellae** rather crowded, L = 20–35, l = 3–5, horizontal, adnate with a tooth, whitish, soon pale greyish brownish, with concolorous, eroded edge. **Stipe** 25–35 × 2–5 mm, cylindrical, straight, rarely flexuous, whitish at apex, dark brown towards base; entirely or at least at apex finely furfuraceous; without basal tomentum. **Context** fine, fragile, hyaline whitish in pileus, darker in stipe, cortex concolorous with surface; **smell and taste** distinctly farinaceous-spermatoc.

Spores 6.0–8.0 × 4.2–5.0 (5.5) µm, E = 1.3–1.6, Q = 1.5, ellipsoid to broadly ellipsoid, thin- to slightly thick-walled (0.5 µm), finely echinulate, hyaline. **Basidia** 23–28 × 7.5–9.5 µm, 4-, rarely 2-spored, clavate. **Basidioles** 11–27 × 3.0–9.0 µm, cylindrical to clavate. **Cheilocystidia** numerous but mixed with basidia, 30–50 (60) × 9.0–20 µm, clavate, broadly clavate, subvesiculose, lanceolate, subcylindrical or subfusoid, often pedicellate, hyaline. **Pleurocystidia** similar to cheilocystidia. **Hymenophoral trama** made up of ± cylindrical, ± thin-walled, hyaline, up to 20 µm wide hyphae, sometimes apparently slightly gelatinised. **Pileipellis** a cutis made up of radially arranged, not gelatinised to slightly gelatinised, ± thin-walled, grey-brownish incrustated, 3–8 (10) µm wide hyphae; terminal elements and lateral projections 12–60 × 2.0–7.0 µm, cylindrical or clavate, subhyaline, simple to subcoralloid. **Stipitipellis** a cutis made up of cylindrical, parallel, slightly thick-walled, smooth, subhyaline to pale yellowish-greyish, up to 6 µm wide hyphae. **Caulocystidia** in form of cylindrical to subfusoid, sometimes submoniliform cystidia or lateral projections, 20–120 × 4.5–9.0 µm, single or in small groups, sometimes with small lateral projections, obtuse. **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues dextrinoid or amyloid.

Ecology: Saprotrophic, terrestrial, among mosses and needles on soil in sunny forest with *Pinus nigra*.

Distribution: Known only from the type locality in Italy.

Phenology: November.

Collections examined: ITALY: Aquilla, Avezzano, Monte Salviano, 16 Nov. 1995 leg. G. Lonati (G 452166, holotype).

Notes: *Gamundia lonatii* is characterised by the rather dark, deeply translucently striate pileus, greyish brownish lamellae, distinctly farinaceous-spermatoc smell and taste, rather large spores [6.0–8.0 × 4.2–5.0 (5.5) µm], and broad, voluminous and obtuse cystidia.

LONATI (1996) originally described this species under the name *Fayodia xerophila*.

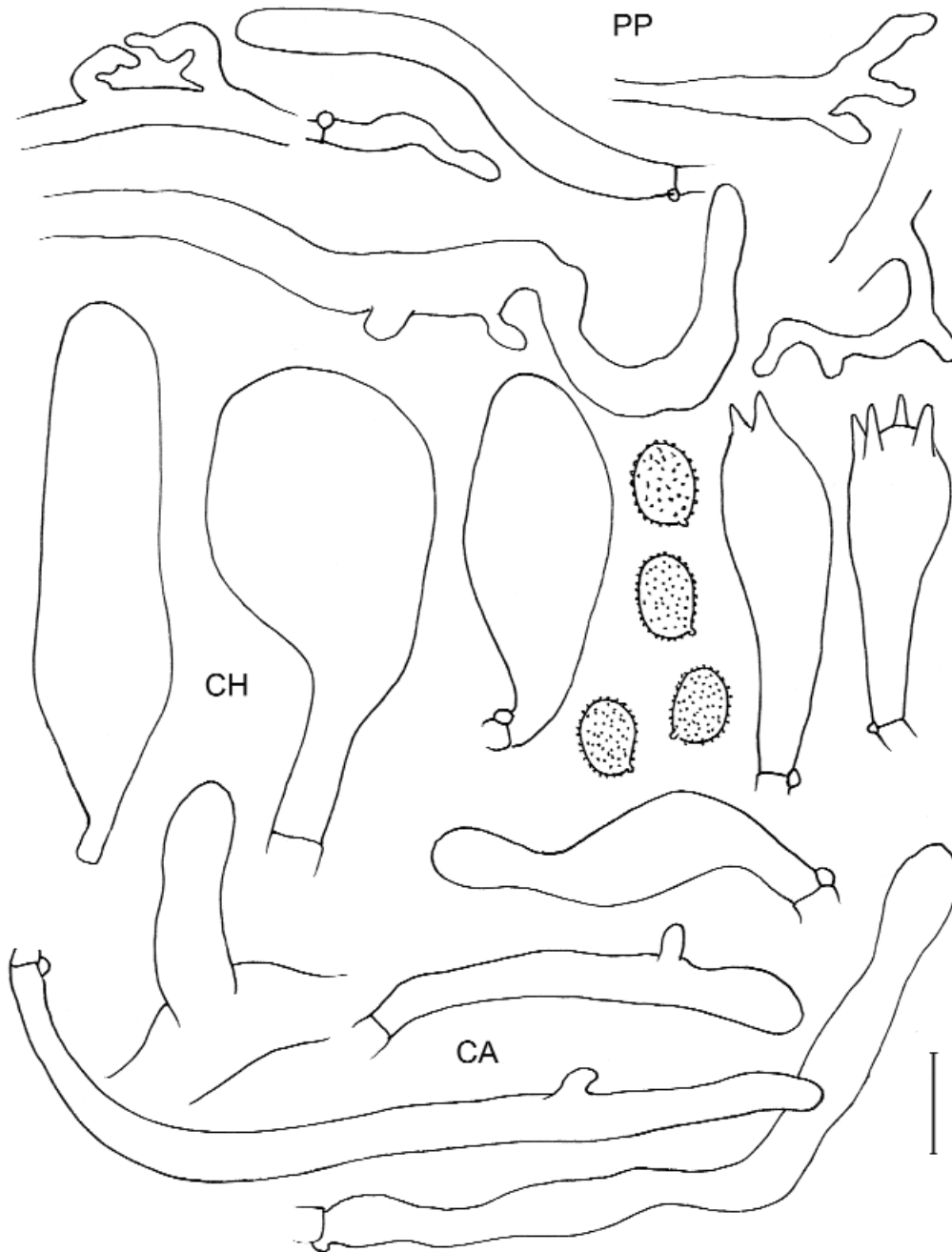


Fig. 47: *Gamundia lonatii*

4.5. MYXOMPHALIA Hora

Myxomphalia Hora, Trans. Br. mycol. Soc. 43: 453. 1960.

Fayodia subgen. *Myxomphalia* (Kühner) Singer, Ann. Mycol. 41: 62. 1943 (an invalid combination, Art. 33.2) ex Singer, Agar. mod. Taxon., 2.ed.: 395. 1962; *Mycena* 4^o (sect.) *Myxomphalia* Kühner, Mycena: 535. 1938 (invalid, without a Latin diagnosis); *Myxomphalia* (Kühner) Bigelow, Canad. J. Bot. 37: 777. 1959 (invalid combination, based on an invalid name).

Type species: *Myxomphalia maura* (Fr.) Hora

Selected literature: Bigelow, Canad. J. Bot. 37: 777. 1959; Hora, Tr. Brit. mycol. Soc. 43: 453. 1960; Kühner, Mycena: 535. 1938; Watling & Turnbull, Brit. Fungus Fl. 8: 97. 1998; Weholt, Agarica 9(17): 71-101. 1988.

Carpophores omphalioid or clitocyboid; pileus umbilicate, hygrophanous, translucently striate, smooth; lamellae adnate-decurrent; stipe more or less concolorous with pileus. Spores thick-walled, amyloid, smooth or minutely verruculose (SEM!); cheilocystidia present; pleuro-cystidia present, abundant or scattered; pileipellis and stipitipellis a well-developed ixocutis; hyphae of context inamyloid, not dextrinoid; clamp connections present.

Ecology: Saprotrophic, in groups, usually on mineralised soil such as burnt soil and fireplaces in wood, rarely on wet places, in and outside forests.

Distribution: Widespread in Europe and North America.

Notes: The genus *Myxomphalia* is very similar to *Fayodia* and *Gamundia*. The genus *Fayodia* differs in having round spores with a two-layered wall consisting of a non-amyloid epispore and amyloid perispore, 2-spored basidia, absence of pleurocystidia and non-gelatinised covering layers of pileus and stipe. *Gamundia* has ellipsoid, thin-walled, non-amyloid, minutely ornamented spores.

The name *Myxomphalia* was introduced by KÜHNER (1938) as a subdivision of the *Spuriae* of the genus *Mycena* with only one species: *Mycena maura*. However, this name has no formal status, since it did not have a Latin diagnosis. BIGELOW (1959) raised *Myxomphalina* Kühner to generic level for the first time. However, this combination was therefore invalid (Art. 33.2). The generic name *Myxomphalia* was validly published by HORA (1960) with a formal Latin diagnosis. SINGER (1986) considered *Myxomphalina* a subgenus of *Fayodia* and included in addition to the taxa discussed below, also *Fayodia alutacea* Bigelow. KNUDSEN (1992) also kept the same concept of the genus *Fayodia*. KUYPER (1995) considers *Myxomphalia*, *Fayodia*, and *Gamundia* as separate genera.

BESSON (1969, 1972) studied the ultra structure of the spore walls of *Fayodia* and *Myxomphalia* with help of electron microscopy. From the results of Besson's studies, BIGELOW (1975) concluded that *Myxomphalia* must be regarded an intermediate genus between *Mycena* and *Fayodia*.

WEHOLT (1988) published a detailed study of the European taxa. He revised the type specimens of *Myxomphalia invita*, *M. marthae*, and *M. agloea* and compared them with recent collections of *M. maura* from the Nordic countries. As a conclusion, he considered all four taxa conspecific (see however also our notes in *M. maura* and *M. agloea*). BON (1997) distinguishes four taxa in the genus *Myxomphalia* at various taxonomic levels – *M. maura*, *M. marthae* and *M. agloea* (as independent species), and *M. invita* (as a variety of *M. maura*). However, he did not revise the type specimens.

Synopsis of European species:

1. *Myxomphalia maura* (Fr.) Hora
 - 1a. f. *maura*
 - 1b. f. *alba* ad int.
2. *Myxomphalia agloea* (Singer & Passauer) Antonín

Key to the European species:

- 1 Spores 5.0–7.0 × (3.5) 4.0–5.0 (6.0) μm, smooth (also in SEM photomicrographs); hymenial cystidia variable in shape, clavate, (sub)cylindrical, (sub)lageniform, (sub)utriform or (sub)fusoid; pileipellis and stiptipellis a well-developed ixocutis; pileus slimy to viscid in moist weather; lamellae beige to greyish (*M. maura*) **2**
- 1* Spores 5.0–6.0 (7.0) × 3.5–5.3 μm, x = 5.7 × 4.4 μm, minutely verruculose in SEM photomicrographs; hymenial cystidia with rather uniform shape, more or less fusoid, with more or less prominent pimple; pileipellis and stiptipellis only slightly gelatinised; pileus relatively dry; lamellae white **2. *M. agloea*** (p. xxx)
- 2 Basidiocarps white **1a. *M. maura* f. *alba*** (p. xxx)
- 2* Basidiocarps pigmented **1b. *M. maura* f. *maura*** (p. xxx)

1. *Myxomphalia maura* (Fr.) Hora**Pl. 42 & 43, Fig. 48**

Agaricus maurus Fr., Syst. mycol. 1:168. 1821; *Omphalia maura* (Fr.) Gillet, Hyménomycetes: 290. 1874; *Omphalina maura* (Fr.) Quél., Enchir. Fung.: 42. 1886; *Mycena maura* (Fr.) Kühner, Genre Mycena: 535. 1938 (non *Mycena maura* Maire, 1928 = *M. floccipes*, see Kühner 1938); *Fayodia maura* (Fr.) Singer, Ann. mycol. 34: 331. 1936; *Myxomphalia maura* (Fr.) Bigelow, Canad. J. Bot. 37: 777. 1959 (an invalid combination, Art 33); *Myxomphalia maura* (Fr.) Hora, Trans. Brit. mycol. Soc. 43: 453. 1960. – *Agaricus invitus* P. Karst., Bidr. Känn. Finl. Nat. Folk 25: 89. 1876; *Omphalia invita* (P. Karst.) P. Karst., Ryssl., Finl. Skand. Halföns Hattsvamp.: 127. 1879; *Omphalia maura* var. *invita* (P. Karst.) Cejp, Atlas hub evrop. 4: 83. 1936; *Fayodia invita* (P. Karst.) Singer, Ann. mycol. 41: 62. 1943; *Myxomphalia invita* (P. Karst.) M. M. Moser, Röhrlinge-Blätterpilze, Ed. 4: 186. 1978; *Myxomphalia maura* var. *invita* (P. Karst.) Bon ad int., Fl. mycol. Eur. 4: 163. 1997 (an invalid combination). – *Fayodia marthae* Singer & Cléménçon, Schweiz. Z. Pilzk. 49: 122. 1971; *Myxomphalia marthae* (Singer & Cléménçon) M. M. Moser, Röhrlinge-Blätterpilze, Ed. 4: 186. 1978.

Type specimen: Upland, Upsala, Stadsskogen, near Kåbo, 5 Oct. 1957 leg. H. Belin, in: Lundell & Nannfeldt, Fungi exsiccati succici, No. 2528. (PRM 515933, as *Omphalia maura*, neotype).

Selected icones: Bolets de Catalunya 9: pl. 429. 1990; Bon, Champ. Eur. occ.: 130. 1987; Breitenbach & Kränzlin, Pilze Schweiz 3: pl. 374. 1991; Cetto, Funghi Vero 4: pl. 1482. 1983; Dähncke, 1200 Pilze: 384, 385. 1993; Gerhardt, BLV Pilzführer: 180. 1997; Konrad & Maublanc Ic. sel. Fung. 3: pl. 234. 1932; Kotlaba & al., _ervená kniha 4: 73. 1995 (as *M. marthae*); J. Lange, Fl. Agar. dan. 2: pl. 59J. 1936; Ludwig, Pilzkompendium 1: pl. 107, fig. 52.1. 2000; Michael, Hennig & Kreisel, Handbuch Pilzfr. 3, ed. 2: pl. 128. 1977; Moser & Jülich, Farbatlas Basidiomyc.: III Myxomphalia 1. 1998; Phillips, Mushr. other fungi: 69. 1981; Ryman & Holmåsen, Svampar: 367. 1984.

Selected literature: Antonín, Mycotaxon 73: 330-332. 1999; Bañares & al., Bol. Soc. Micol. Madrid 11: 65. 1986 (as *Fayodia*); Bigelow, Beih. Nova Hedw. 51: 71-72. 1975; Bigelow, Mycotaxon 9: 45. 1979; Bigelow & Thiers, Studies higher fungi: 71. 1975; Bon, Doc. mycol. Mém. hors sér. 4: 163-164. 1997; Cejp, Public. Fac. Sci. Univ. Charles 100 (Revision II): 45-46. 1929; Kuyper, Fl. agar. Neerland. 3: 156-157. 1995; Kühner, Mycena: 535-537. 1938; J. Lange, Dansk Bot. Arkiv 6(5): 8. 1930; Ludwig, Pilzkompendium 1 (Beschreibungen): 399-400. 2001; Malençon & Bertault, Trav. Inst. Scient. Cherif. Fac. Sci. Rabat, 33: 213-214. 1975; Watling & Turnbull, Brit. Fungus Fl. 8: 97-98. 1998; Weholt, Agarica 9(17): 71-101. 1988.

Description: Pileus 10–40 mm, at first hemispherical to convex with distinctly umbilicate centre, with involute margin, expanding to plano-convex, regular to irregularly lobed when old, with depressed to umbilicate centre, dark grey-brown to almost black (Mu. 10 YR 2/2,3/2), sometimes slightly paler at centre, pallescent to pale grey-brown on drying (10 YR 5/2-3), hygrophanous, distinctly or indistinctly translucently striate, often deeply so when moist, slimy to viscid in moist weather, other-



Pl. 42: *Myxomphalia maura*, photo J. PETERSEN

wise greasy to touch, finely fibrillose, strongly silky shining when dry. **Lamellae**, L = 20–35, l = 3, moderately crowded to crowded, broadly adnate, decurrent to deeply decurrent, sometimes slightly undulate, fairly broad (up to 9 mm), white to pale sepia, grey or grey-brown, strongly contrasting with dark pileus, with concolorous, entire or slightly pubescent edge. **Stipe** 18–45 × 1.5–5.0 mm, cylindrical or compressed, slightly broadened above, slightly broadened to narrowly clavate at base (up to 5 mm), pale at apex, concolorous with pileus or darker grey-brown below, slightly flocculose at apex, somewhat viscid when moist, finely longitudinally striate to ribbed lengthwise. **Context** whitish in pileus, sepia in stipe, particularly near the base. **Smell** farinaceous-spermiatic, often weak. **Taste** mild.

Spores 5.5–7.0 × 4.0–5.3 (6.0) μm, $\times = 6.4 \times 4.5$ μm, E = 1.1–1.6, Q = 1.3–1.5, broadly ellipsoid, slightly thick-walled, smooth (rarely indistinctly verruculose under light microscope). **Basidia** 18–24 × 6.0–8.5 μm, 4-, rarely 2-spored, clavate. **Basidioles** 10–23 × 2.5–7.5 μm, cylindrical to clavate, rarely slightly irregular. **Cheilocystidia** 21–90 × 7.5–23 μm, clavate, (sub)lageniform, (sub)utriform, fusoid, subcylindrical, obtuse, thin-walled, hyaline in KOH. **Pleurocystidia** similar to cheilocystidia, less abundant. **Context** made up of slightly gelatinised, cylindrical to subfusoid, thin-walled, smooth, 3.0–20 (25) μm wide hyphae. **Pileipellis** an ixocutis, made up of radially arranged, ± interwoven, up to 7 (10) μm wide hyphae, with numerous to scattered, cylindrical or clavate, often irregular to coralloid lateral projections or terminal elements. **Subpileipellis** made up of smooth to distinctly incrustated, up to 25 μm wide hyphae, with pale yellowish-greyish walls in KOH. **Stipitipellis** an ixocutis of parallel, cylindrical, smooth, slightly thick-walled, 2–6 μm wide hyphae with pale greyish brown walls in KOH. **Caulocystidia** 15–50 × 4.5–10 μm, cylindrical to clavate, mostly irregular to coralloid, obtuse, sometimes branched. **Clamp-connections** abundant.



Pl. 43: *Myxomphalia maura*, photo M. E. NOORDELOOS

Chemical reactions: Spores strongly to rather weakly amyloid, all other tissues inamyloid and non-dextrinoid.

Ecology: Saprotrophic, terrestrial, in groups on mineralised soil, such as burnt soil and fireplaces in forest (Piceetum, Fagetum, Querceto-Fagetum), meadows, gardens, on other ruderal places, also on wet and mossy sites, wide-spread from the from lowland into mountainous habitats; once found also in a shrub container.

Distribution: Rather common all over Europe, also recorded in North Africa (MALENÇON & BERTAULT 1975) and North America (BIGELOW 1979; SMITH 1949).

Phenology: May to November, in mild areas of Western Europe throughout the winter.

Collections examined: **AUSTRIA:** Niederösterreich, Deutsch-Wagram, 19 Nov. 1984 leg. W. Haberhofer (WU 3958). – Niederösterreich, Vitis, Echsenbach, Gemeindewald, 23 Oct. 1992 leg. L. Sandmann (WU 11446). – Niederösterreich, Litschau, Loimanns, 28 June 1987 leg. L. Sandmann (WU 6229). – Niederösterreich, Groß-Siegharts, Blamau/Wild, 27 Febr. 1995 leg. A. Hausknecht (WU 10490). – Niederösterreich, Schrems, 3 Oct. 1982 leg. L. Sandmann (WU 2496). – Niederösterreich, Imfritz, Teichholz, 8 Oct. 1992 leg. A. Hausknecht (WU 11119). – Niederösterreich, Zwettl, Groß-Reichenbach, 13 Nov. 1994 leg. J. Filler (WU 13467). – **BELGIUM:** prov. Antwerpen, Zoersel, 12 Sept. 1985 leg. H. De Meulder 3473 (BR 11062-04). – prov. Luxembourg, Florenville, Domaine de Epioux, 27 Oct. 1996 leg. A. Fraiture 2550 (BR 55552-68). – prov. Liège, Membach, 8 Oct. 1976 leg. P. Heinemann 6226 (BR 18714-90 ex herb. GBX). – prov. Namur, Willerzie, without date, leg. P. Heinemann 7351 (BR 21701-70). – prov. Namur: Vencimont, 6 Oct. 1982, P.B. Jansen (L). – Oignies, 2 Oct. 1984, P.B. Jansen (L). – Eupen, Herzogenwald, 13 Sept. 1981, J. Schreurs 622 (L). – prov. Antwerpen, Lichtaart, 17 Sept. 1956, O.F. Uffélie (L). – **CYPRUS:** Lefkara, 1924 leg. J. P. Zyngas 14 (K). – **CZECH REPUBLIC:** BOHEMIA: Špindlerův Mlýn, 8 Sept. 1946 leg. J. Kubička (PRM 520864). – Zilvárov, 4 Oct. 1981 leg. J. Hák (PRM 872537). – Pustá Seč u Jičína, 5 Oct. 1972 leg. E. Dlouhý (PRM 725189). – Hanov near Konstantinovy Lázně, 12 Sept. 1972 leg. A. Pilát (PRM 718503). – ditto, 29 Sept. 1972 leg. A. Pilát (PRM 735756). – Daměnice, Bozejny, 13 Oct. 1984 leg. Z. Pouzar (PRM 871018). – Vyklatice, 26 Sept. 1957 leg. M. Svrček (PRM 867190). – Letiny near Přeštice, 14 Sept. 1957 leg. M. Svrček (PRM 867126). – Praha-Bu-

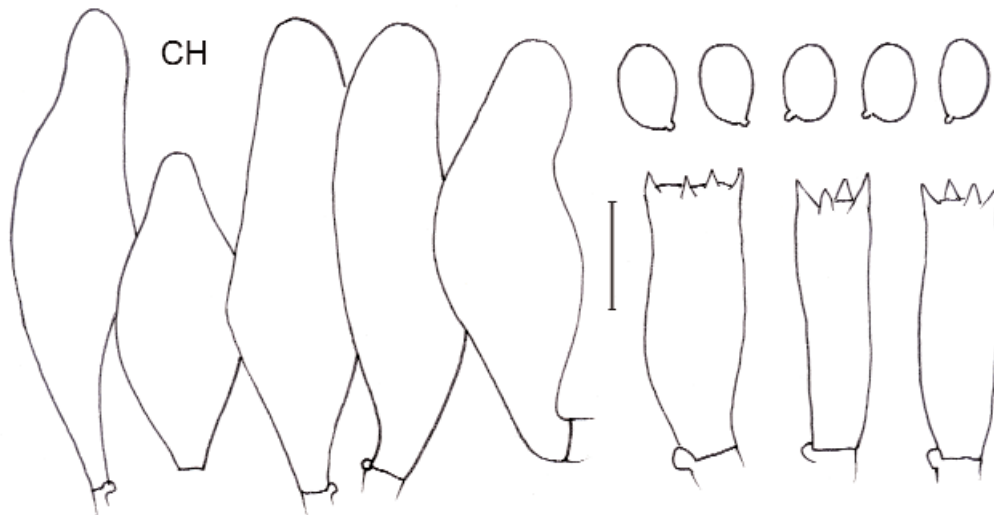


Fig. 48: *Myxomphalia maura*

beneč, 30 Dec. 1997 leg. Z. Pouzar (PRM 891600). – Praha-Smíchov, 29 Oct. 1964 leg. E. Wichanský (PRM 605521). – Praha-Krč, Oct. 1933 leg. V. Sak (PRM 25331). – Praha, Hvězda, 19 Oct. 1945 leg. J. Herink (PRM 710170). – ditto, 31 Oct. 1934 leg. J. Herink (PRM 25335). – Praha, Kinského sady, 26 Sept. 1964 leg. E. Wichanský (PRM 603946). – Praha-Veleslavín, 29 Nov. 1942 leg. J. A. Herink (PRM 710174). – Říčany, 28 Spt. 1941 leg. M. V. Svrček (PRM 710177). – ditto, 29 Nov. 1942 leg. S. Havlena (PRM 710176). – ditto, Nov. 1936 leg. A. Pilát (PRM 34514). – Český Brod, 12. Oct. 1935 leg. J. Sýkora (PRM 22984). – Lány, Šraváš, 7 Oct. 1943 leg. K. Kavina (PRM 710166). – Jevany, 9 Nov. 1947 leg. V. Vacek (PRM 515053). – Jirny, 10 Dec. 1934 leg. V. Sak (PRM 25336). – Myšlín, Oct. 1939 leg. J. Velenovský (PRM 154558). – ditto, Nov. 1938 leg. J. Velenovský (PRM 154521). – Průhonice pr. Praha, arboretum, 15 May 1950 leg. M. Svrček (PRM 717252). – Modřany, Libušino údolí, 13 Oct. 1968 leg. O. Dvořák (PRM 671826). – Dobříš, 25 Oct. 1964 leg. Hubáček (PRM 605541). – Loučky near Teplá, 2 Oct. 1969 leg. M. Svrček (PRM 684346). – Trutnov, 8 Sept. 1954 leg. F. Kotlaba (PRM 710181). – Žamberk, Doly, 19 Sept. 1981 leg. J. Slaviček (PRM 872538). – Horní Lazy, U aleje, 9 June 1970 leg. F. Kotlaba (PRM 709506). – Skalka u Mníšku, 7 May 1944 leg. J. Charvát (PRM 710167). – Čečenice na Sáz., Poříčko, 14 May 1944 leg. J. Kubička (PRM 710068). – ditto, 18 Dec. 1949 leg. J. Kubička (PRM 710169). – Kaplice, Poluška, 19 Sept. 1970 leg. M. Svrček (PRM 715435). – Třeboň, Majdalena, Sv. Barbora, 1 Sept. 1963 leg. J. Kubička (PRM 614882). – Šumava-Mts., Stožec, 28 July 1954 leg. K. Kříž (BRNM 313544). – Radešovice, Oct. 1933 leg. V. Sak (PRM 25332). – Novohradské hory-Mts., Leopoldov, Výhlídka, 29 Oct. 1965 leg. M. Svrček and J. Kubička (PRM 610375). – Vyšší Brod, 23 Sept. 1971 leg. J. Kubička (PRM 842423). – Klíkov, Františkov, 30 Oct. 1970 leg. Z. Borovanská and J. Kubička (PRM 777665). – Lutová, 22 Sept. 1945 leg. M. V. Svrček 349/45 (PRM 710173). – Jindřichův Hradec, Markétský revír, 27 Oct. 1965 leg. M. Svrček and J. Kubička (PRM 610474). MORAVIA: Radešín, 2 Sept. 1957 leg. F. Šmarda (BRNM 313513). – Lipůvka, Dubová hora, 5 Sept. 1963 leg. F. Šmarda (BRNM 313561). – Jihlava, Čeřínek, 11 Sept. 1966 leg. F. Šmarda (BRNM 301694). – Lhotka near Žďár n. Sáz., 30 Oct. 1948 leg. F. Šmarda (BRNM 313545). – Nové Veselí, Budeč, Babín, 14 July 1999 leg. V. Antonín 99.21 (BRNM 648468). – Nové Město na Mor., Plačkovec, 5 Sept. 1963 leg. F. Šmarda (BRNM 313560). – Brno, Husovice, 19 Oct. 1998 leg. A. Barša (BRNM 652666). – Brno-Žebětín, Rakovec, U křivé borovice, 30 Oct. 1996 leg. K. Koncerová (BRNM 301693). – Kuřim, Babí lom forest, 22 Oct. 1939 (BRNM 313546). – ditto, Kopaniny, 17 July 1948 leg. F. Šmarda (BRNM 313543). – Jedlová u Poličky, Balda, 12 Sept. 1963 leg. F. Šmarda (BRNM 313559). – Nová Ves, 17 Oct. 1963 leg. J. Lazebníček and F. Valkoun (BRNM 313562). – Věžná near Nedvědice, 28 Oct. 1944 leg. F. Šmarda (BRNM 313547). – M. Budíkov, V Opálenici, 27 Oct. 1968 leg. A. Čábera (BRNM 313775). – Podolánky, Čeladenka valley, 29 Sept. 1976 leg. J. Kuthan (BRA). – Ostrava, Lučina, 8 Nov. 1967 leg. J. Veselský (BRA). – Borotín, Borotínské čihadlo, 25 Oct. 1999 leg. A. Vágner (BRNM 652604). – Beskydy Mts., Staré Hamry – Jamník, 25 Aug. 2000 leg. V. Antonín 00.29 (BRNM 652812). – FINLAND: *Tavastia australis*, Tammela, Mustiala, 19 Oct. 1878 leg. P. A. Karsten (H, herb. Karsten 1594, as *Collybia invita*). – ditto, sine dato, leg. P. A. Karsten (H,

herb. Karsten 1591, holotype of *Agaricus invitus*). – ditto, 21 Nov. 1878, leg. P. A. Karsten (H, herb. Karsten 1605, as *Omphalia invita*). – ditto, Nov. 1878 leg. P. A. Karsten (H, herb. Karsten 2033b, separated from *Collybia incomis*). – ditto, Oct. 1882 leg. P. A. Karsten. in: Thümen, Mycotheca universalis, No. 2101. (PRM 25330, as *Omphalia invita*). – Oulun Pohjanmaa, Kiiminki, Jääli, 28 Sept. 1989 leg. E. Ohenoja (O 120150). – **FRANCE**: Dontcarré, 26 Oct. 1944 leg. H. Romagnesi (PC, herb. Romagnesi). – ditto, 24 Oct. 1948 leg. H. Romagnesi (PC, herb. Romagnesi). – Beauvais (Oise), Bois de Belloy, 5 Dec. 1959 leg. J. Gasnier (PC, herb. Romagnesi). – **GERMANY**: Bayersbronn Bade, Sankenbachfalle, 15 Sept. 1965 leg. H. Romagnesi 214 (PC, herb. Romagnesi). – Brandenburg, Prenden (Kreis Nieder-Barnim), 4 Oct. 1916 leg. P. Sydow, in: Sydow, Mycotheca germanica, No. 1804 (K, PRM 710164 and 710179). – Görlitz, Oct. 1933 leg. A. Pilát (PRM 25333). – Brandenburg, Prignitz, Triglitz, 8 Oct. 1915 leg. O. Jaap, in: Jaap, Fungi selecti exsiccati, No. 782 (K). – Lichtenfels, Lichtenfelser forest, 15 July 1980 leg. H. Engel 8180 (K). – Berlin, Grunewald, Halensee, Sept. 1895 leg. P. Hennings, in: Sydow, Mycotheca Mahurica, No. 4402 (BRA). – Westphalen, Lohme, 5 Dec. 1976, C. Bas (L). – Ostfriesland, Isl. Borkum, 31 Oct. 1977, C. Bas 7271 (L). – **ITALY**: Savoia, Val Ferret, Frébouze, 8 June 1971 leg. R. Singer (F C5383, holotype of *Fayodia marthae*). – **THE NETHERLANDS**: Prov. Friesland, Opsterland, 15 Oct. 1977 leg. H.A. v.d. Aa (L). – Appelschga, 25 Oct. 1970 leg. G. Stobbe (L). – Drachten, 23 Oct. 1973 leg. Tw. W. Kuyper 1019 (L). – Prov. Drenthe, Dwingeloo, Staatsbossen, 1 & 9 Nov. 1976 leg. Th. W. Kuyper 357 & 419 (L). – Prov. Overijssel, Ruurloo, Oct. 1932 leg. A. Schweers 2941 (L). – Denekamp, Singraven, 13 Oct. 1963 leg. E. Kits van Waveren (L). – Denekamp, 10 Oct. 1966 leg. E. Kits van Waveren (L). – Denekamp, Twickel, 13 Aug. 1966 leg. E. Kits van Waveren (L). – Prov. Flevoland: Roggebotszand, 11 Oct. 1983 leg. Tj. de Cock Buning 420 (L). – Prov. Gelderland, Arnhem, Warnsborn, 28 Sept. 1952 leg. R.A. Maas Geesteranus 9071 (L). – Kootwijk, 17 Oct. 1973 leg. H.S.C. Huijsman (L). – Ede, Wekeromse Zand, 6 Nov. 1972 leg. Tjallingii (L). – Gorssel, 30 Sept. 1951 leg. R. A. Maas Geesteranus (K). – Lage Vuurse, 19 Oct. 1957 leg. J. Daams (L). – Oldenbroek, Heersberg, 5 Nov. 1964 leg. C. Bas 4497 (L). – Apeldoorn, Berg en Bosch, 18 Oct. 1958 and 18 Sept. 1962 leg. A.N. Koopmans (L). – Otterloo, Hoge Veluwe, 13 Nov. 1971 leg. J.A.E. de Kluyster 71105 (L). – Prov. Utrecht, Drieberge, 22 Oct. 1950 leg. O.F. Uffélie (L). – Baarn, Nov. 1948 leg. O.F. Uffélie (L). – Leersum, Leersum Veld, 14 Oct. 1960 leg. D. A. Reid (K). – ditto, 15 Oct. 1960 leg. D. A. Reid (K). – Doorn, 28 Oct. 1956 leg. H.J. v.d. Laan (L). – Prov. Noord-Holland, Overveen, Koningshof, 16 Nov. 1976 leg. M.E. Noordeloos (L). – ,s-Gravenland, Boekesteyn, 3 Oct. 1955 leg. J. Daams (L). – ditto, Schaep-en-Burgh, 22 Oct. 1957 leg. J. Daams (L). – Hilversum, Zonnestraal, 9 Sept. 1956 leg. J. Daams (L). – Velsen, Duin en Kruidberg, 15 Nov. 1984 leg. A. Becker (L). – Prov. Zuid Holland, Delft, Tweemolentjeskade, 26 Oct. 1950, 1 Nov. 1951, 8 Oct. 1952 leg. K. Bakker (L). – Prov. Zeeland, Zuid Beveland, ,s-Gravenpolder, 2 Febr. 1984 leg. W.D. J. Kuijs (L). – Prov. N. Brabant, St. Anthonius, 21 Oct. 1980 leg. C. Uljé (L). – Eindhoven, Wielewaal, 5 Nov. 1947 leg. O.F. Uffélie (L). – Eindhoven, 20 Oct. 1947 leg. J. Daams (L). – Oosterhout, Dorst, 25 Dec. 1959 leg. P.B. Jansen (L). – Nieuw Ginneken, Patersven, 11 Dec. 1966 leg. P.B. Jansen (L). – Vlieden, de Bikkels, 14 Oct. 1958 leg. C. Bas 1606 (L). – **NORWAY**: Akershus, Baerum, 15 Sept. 1955 leg. F.-E. Eckblad (O 120138). – ditto, Lysakerelva, 20 Sept. 1956 leg. F.-E. Eckblad (O 120126). – ditto, 1955 leg. F.-E. Eckblad (O 120124). – Akershus, Ski, 21 Oct. 1848 leg. ? (O 120147). – ditto, 15 Sept. 1946 leg. G. Soot (O 120139). – Akershus, Nannestad, 13 Sept. 1974 leg. G. Gulden 91/74 (O 120137). – ditto, Tømte, 20 Sept. 1977 leg. G. Gulden 203/77 (O 120125). – Akershus, Eidsvoll, Dal, 9 Oct. 1984 leg. B. O. Olsen (O 120117). – ditto, 5 Nov. 1986 leg. B. O. Olsen (O 120116). – ditto, 6 Nov. 1986 leg. B. O. Olsen (O 120140). – Akershus, Nes, Årnes, 23 Sept. 1962 leg. G. Tansen (O 120133). – Buskerud, Nes, sine dato, leg. L. Ryvarden 34594 (O 70726). – Buskerud, Ringerike, V. Ådal, Høgfjell, 14 Sept. 1974 leg. A.-E. Torkelsen 1066 and 1071/74 (O 120144 and 120143). – Oppland, Lillehammer, Rømsåren, 28 Sept. 1975 leg. M. Jenssen (O 120131). – Sør-Fron, 3 Aug. 1978 leg. J. Stordal 19219 (O sine num.). – Gausdal, 11 June 1974 leg. L. Ryvarden 13002 (O 120132). – Vest-Agder, Farsund, 8 Oct. 1978 leg. A. Pedersen and K. Høiland (O 120142). – Vestfold, Tønsberg, 13 Oct. 1981 leg. A. Aronsen (O 120148). – ditto, 2 Oct. 1978 leg. P. Marstad (O 120146). – ditto, Sem, Eik, 9 Oct. 1978 leg. P. Marstad (O 120145). – Vestfold, Nøtterøy, Veierland, 15 Oct. 1982 leg. S. Aase (O 120149). – ditto, 9 Oct. 1977 leg. I. Egeland (O 120141). – Oslo, Tryvath and Nordmarka, 2 Oct. 1977 leg. K. Høiland (O 120128). – ditto, Brannfjell, 20 Oct. 1963 leg. E. Hveem (O 120129). – ditto, Bygdø, Oct. 1916 leg. J. Egeland (O 120134). – ditto, Østmarka, Skullerud, 30 Oct. 1966 leg. S. Sivertsen (O 120127). – ditto, 24 Sept. 1974 leg. I. Egeland (O 120130). – Østfold, Tune, Sarpsborg, 6 Oct. 1974 leg. G. Gulden (O 120136). – Østfold, Fredrikstad, 27 Oct. 1984 leg. Ø. Weholt (O 120123). – Drobok, 19 Oct. 1969 leg. R. W. G. Dennis (K). – Skrim, 20 Sept. 1975 leg. Håkensen (O). – **POLAND**: Karkonosze Mts., Wilcza Poreba near Karpacz (Wolfshau bei Krümmhübel), 13 Aug. 1922 leg. H. Sydow, in: Sydow, Mycotheca germanica no. 1805 (K, PRM 710165 and 710180). – **PORTUGAL**: Beira Lissal, Figuera da Foz, Serra de Boa Viagram, 10 Nov. 1999 leg. A. Hausknecht and F. Rheinwald (WU 20001). – **SLOVAKIA**: Biele Karpaty Mts., Drietoma-Liešna, Machnač, 20 June 1998 leg. V. Antonín 98.10 (BRNM 642322). – Poprad, Kvetnica, Križová, 31 May 1946 leg. J. Kubička (PRM 521306). – ditto, 22 May 1946 leg. J. Kubička (PRM 521308). – Vysoké Tatry Mts., Východná, 13 Sept. 1970 leg. J. Kuthan (BRA). – Vysoké Tatry Mts., Javorina, 13 Sept. 1970 leg. J. Kuthan (BRA). – Vysoké Tatry Mts., Ráčkova dolina, 13 Aug. 1978 leg. J. Kuthan (BRA). – Raková, 6 July 1974 leg. J. Kuthan (BRA). – Bobrov, 7 Aug. 1970 leg. J. Kuthan (BRA). – Tatranská Štrba, Hobákov, 13 Sept.

1988 leg. J. Sand (BRA). – Slovenské rudohorie Mts., Dobroč, 24 Oct. 1993 leg. S. Adamčík (BRA). – Horná Orava LPA, Oravská Polhora, Rabčické bory, 29 Sept. 2000 leg. V. Antonín 00.132 and A. Vágner (BRNM 652887). – **SWE-DEN:** Småland, Femsjö parish, Haggårds tomter, 15 Sept. 1940 leg. S. Lundell, in: Lundell & Nannfeldt, Fungi exsiccati suecici, No. 1115. (K, PRM 710168). – Uppland, Uppsala, Stadsskogen, near Kåbo, 5 Oct. 1957 leg. H. Belin, in: Lundell & Nannfeldt, Fungi exsiccati suecici, No. 2528. (K, PRM 515933). – Uppland, Uppsala, Stadsskogen, 6 Nov. 1949 leg. J. Stordal 3244 (O 120135). – Uppland, Uppsala, Stadsparken, 28 Sept. 1946 leg. A. Melders (K). – Uppland, Åretuna parish, Storvreta, E. outskirts, 27 Oct. 1974 leg. N. Lundqvist 9601, in: Lundell & Nannfeldt, Fungi exsiccati suecici, No. 2907. (K, PRM 821476). – Stockholm, autumn, leg. L. Romell, in: Romell, Fungi exsiccati praesertim scandinavici, No. 105 (BRA, K). **UKRAINE:** Zámer, Kobylecká Polana, July 1924 leg. A. Pilát (PRM 25334). – **UNITED KINGDOM: ENGLAND:** Thursley Common, Surrey, 25 Oct. 1971 leg. A. Thomas (K). – Kent, Bedgebury Pinetum, 1 Nov. 1970 leg. D. A. Reid (K). – ditto, 10 Oct. 1976 leg. D. A. Reid (K). – ditto, 3 Nov. 1963 leg. D. A. Reid (K). – Hampshire, Mortimer, 18 Jan. 1972 leg. A. Khan (K). – Whenfell, Cumbria, 3 Nov. 1975 leg. W. F. Davidson (K). – High Stand, Cumbria, 29 Aug. 1978 leg. W. Davidson (K). – Esher Common, Surrey, 30 Oct. 1977 leg. P. M. Kirk (K). – ditto, 9 Oct. 1979 leg. P. M. Kirk (K). – ditto, 26 Oct. 1980 leg. P. M. Kirk and B. Spooner (K). – Shaesbury, General Cemetery, Nov. 1848 leg. M. Berkeley (K). – Ockham Common, Surrey, Boulder Mere, leg. D. A. Reid (K 342). – Abbots Moss, Delamere Forest area, 26 Oct. 1980 leg. A. Newton (K). – Oxshott, Surrey, 19 Sept. 1965 leg. D. A. Reid (K). – ditto, 12 Oct. 1963 leg. P. C. Holland (K). – Oxshott Heath, Surrey, 3 Oct. 1982 leg. B. Spooner (K). – Wisley Common, Surrey, 25 Oct. 1978 leg. R. Phillips 419 (K). – Warwickshire, Sutton Park, Sutton Coldfield, 8 Sept. 1962 leg. P. W. James (K). – Surrey, Brentmoor Heath, 21 Oct. 1997 leg. N. W. Legon [K(M)55962]. – Surrey, Fetcham Dorn, The Scrubs, 8 Jan. 1995 leg. E. W. Brown [K(M)28358]. – Surrey, Mickleham, The Scrubs, 22 Oct. 1997 leg. N. W. Legon [K(M)55969]. – Rye House, 4 Jan. 1955 leg. F. Clarke (K). – Surrey, Virginia Water, Nov. 1953 leg. E. M. Wakefield (K). – Surrey, Woking, 14 Oct. 1945 leg. A. A. Pearson (K). – Surrey, Ockham Common, 18 Oct. 1962 leg. D. A. Reid (K). – Rye House, 4 Jan. 1955 leg. F. Clarke (K). – Surrey, Virginia Water, Nov. 1953 leg. E. M. Wakefield (K). – Surrey, Woking, 14 Oct. 1945 leg. A. A. Pearson (K). – Surrey, Ockham Common, 18 Oct. 1962 leg. D. A. Reid (K). – **SCOTLAND:** Braemar, 29 Aug. 1961, E. Kits van Waveren (L).

Notes: *Myxomphalia maura* is characterised by the dark grey, grey-brown to almost black pileus, decurrent lamellae, slightly thick-walled amyloid spores and distinctly gelatinised pilei- and stipitipellis; it is often found on burnt sites such as fireplaces in woods. A very good field character to recognise this species is the fact that the lamellae split transversely when the cap is gently torn in two parts.

According to KREISEL et al. (1987) it needs at least one-year-old fireplaces.

Although *Myxomphalina maura* usually is bound to fireplaces and burnt soil in forest, it is sometimes also found in other habitats. RICEK (1989) reports it from acid, sandy and stony soil in the river plain forest of de Danube near Vienna, Austria, frequently together with *Hebeloma mesophaeum*.

The smell of *M. maura* is rather variable. FRIES (1821) and SCHULMANN (1960) did not mention any smell; Gröger (1983) described it as farinaceous, JOSSERAND (1937) as clearly fruity, KÜHNER (1938) as slightly herbaceous (never farinaceous), BREITENBACH & KRÄNZLIN (1991) and MALEŃÇON & BERTAULT (1975) as slightly spermatic. The North American collections seen by BIGELOW (1975, 1979) and A.H. SMITH (1949) were described as inodorous or with a farinaceous to farinaceous-spermatic smell.

The ornamentation of spores also varies a great deal. BIGELOW (1979) published a SEM photograph with totally smooth spores; on the other hand KÜHNER (1938) and PEGLER & YOUNG (1971) described them as minutely verruculose with small, amyloid warts.

SINGER & CLÉMENÇON (1971) described *Fayodia marthae* (= *Myxomphalia marthae*) as a new species, which differed from *M. maura* and *M. invita* in having a rather short stipe, very dark pileus and broad lamellae. A type study revealed only one clear microscopic difference in form of the distinctly incrustated hyphae of the subpileipellis (ANTONÍN 1999). Probably these macro- and microscopical differences are due to infraspecific variation, and to not warrant a distinction on specific level.

Karsten described *Agaricus invitus* from Finland. The revision of the type specimen and other specimens collected by Karsten showed that it is completely identical with *Myxomphalia maura* (Antonín l.c.).

We support therefore the conclusions of WEHOLT (1988) who considered the three names as synonyms.

A white form of *Myxomphalina maura* was described by Kühner (in Vandendries, C. R. Acad. Sci. 204: 1084. 1937), however, without a Latin diagnosis. No original material has been preserved. MALENÇON & BERTAULT (1975) recorded it from Morocco. It was described as a collection with totally white basidiocarps, except for a pinkish-brown tinge at the base of the stipe. We were able to study this collection in the herbarium MPU: Morocco, Moyen Atlas, Azrou, 21 Oct. 1941 leg. G. Malençon et R. Bertault. The material consisted of two basidiocarps, which appeared to be rather mouldy, but the following microscopical characters could be observed:

Spores 5.7–6.7 × 4.0–5.2 µm, E = 1.2–1.6, Q = 1.4, broadly ellipsoid to ellipsoid, slightly thick-walled, smooth. **Basidia** 21 × 6.5 µm, 4-spored, clavate. **Basidioles** 12–24 × 3.0–8.0 µm, clavate, subfusoid, subcylindrical. **Cheilocystidia** 20–53 × 6.5–12 µm, clavate, (sub) cylindrical, subutriform, obtuse, thin-walled. **Pleurocystidia** similar to cheilocystidia. **Context** made up of cylindrical to ellipsoid, thin-walled, gelatinised, up to 12 µm wide hyphae. **Pileipellis** an ixocutis, of radially arranged, cylindrical, ± thin-walled, smooth, up to 6 µm wide hyphae; with scattered 15–32 × 2.0–9.0 µm, clavate, cylindrical, subfusoid, simple, rarely branched terminal elements or lateral projections. **Stipitipellis** an ixocutis, made up of parallel, cylindrical, slightly thick-walled, up to 6 µm wide hyphae. **Caulocystidia** 22–48 × 6.0–9.0 µm, clavate, cylindrical, subutriform, mostly irregular, thin-walled. **Clamp-connections** present.

Chemical reaction: spores amyloid, other tissues inamyloid and non-dextrinoid.

The microscopical characters fit well with typical *Myxomphalina maura*, and therefore we assume that rarely albino forms occur, without formal taxonomic status.

2. *Myxomphalia agloea* (Singer & Passauer) Antonín

Fig. 49

Fayodia agloea Singer & Passauer, Sydowia 32: 299. 1979; *Myxomphalia agloea* (Singer & Passauer) Antonín, Mycotaxon 73: 327. 1999.

Type specimen: Austria: Oberösterreich, Aurach am Hongar near Vöklabruck, cave No. 2, 460 m alt., 2 May 1976 leg. O. Moog (W, holotype).

Selected icones: Singer & Passauer, Sydowia, 32: 301. 1979.

Selected literature: Antonín, Mycotaxon 73: 326–327. 1999; Bon, Doc. mycol. Mém. hors sér. 4: 164. 1997; Singer & Passauer, Sydowia, 32: 301. 1979; Weholt, Agarica 9(17): 71–101. 1988.

Description (macroscopy based on Singer & Passauer 1979): **Pileus** up to 12 mm broad, convex with involute margin when young, umbonate at centre, translucently striate when wet, smooth or indistinctly striate at margin on drying where very small innate fibrils are present, but glabrous, non-viscid, hygrophanous, grey-brown, dirty grey-brown, slightly dry (when fresh) whitish grey dry ash-grey to dirty grey-brown (“brown sugar”, Maerz & Paul), pallescent from centre to whitish. **Lamellae** decurrent, white. **Stipe** 40 × 1.5–2 mm, cylindrical, pruinose at apex, dirty brown. **Smell** pleasant, **taste** mild.

Spores 5.0–6.0 (7.0) × 3.5–5.3 µm, av = 5.7 × 4.4 µm, E = 1.1–1.6, Q = 1.3, broadly ellipsoid, slightly thick-walled, ± smooth in light microscope, minutely verruculose in SEM, amyloid, hyaline in KOH. **Basidia** 4-spored. **Basidioles** 15–23 (25) × 4.0–7.0 µm, clavate, cylindrical to subutriform. **Cheilocystidia** numerous, 22–48 × 9.0–15 µm, fusoid to subfusoid, often rostrate or with an apical pimple, rarely clavate, ± thin-walled, hyaline in KOH. **Pleurocystidia** similar. **Context** made up of

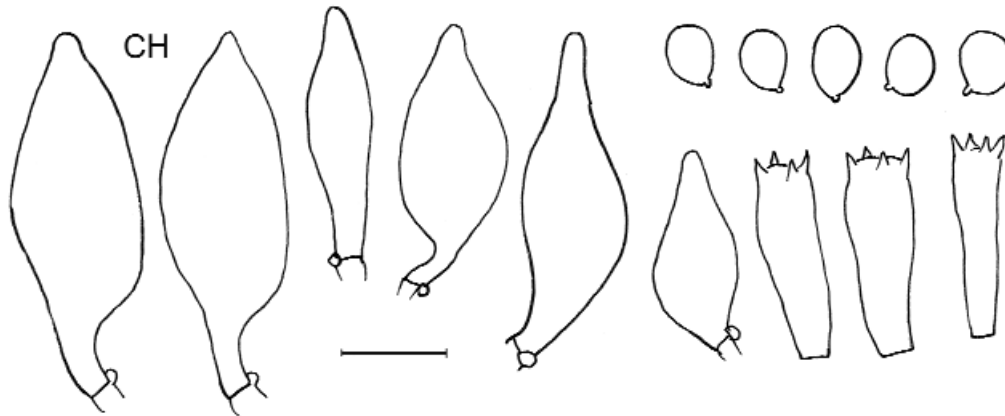


Fig. 49: *Myxomphalia agloea*

cylindrical to ellipsoid, thin-walled, smooth to minutely incrustated, up to 10.0 (15) μm wide hyphae with hyaline or subhyaline walls in KOH. **Pileipellis** an (ixo)cutis, made up of radially arranged, parallel to slightly interwoven, cylindrical, \pm thin-walled, slightly gelatinised to non-gelatinised, up to 2–5 μm wide hyphae, with adpressed to suberect, simple to coralloid lateral projections or terminal elements. **Subpileipellis** made up of cylindrical to strongly inflated, thin-walled, smooth, rarely minutely incrustated, up to 20 μm wide elements. **Stipitipellis** an (ixo)cutis, made up of \pm parallel, thin- to slightly thick-walled, slightly gelatinised or non-gelatinised, 2–5 μm wide hyphae. **Caulocystidia** (at apex) cylindrical, clavate, fusoid, often rostrate, \pm thin-walled. **Clamp-connections** present.

Chemical reaction: spores amyloid, other structures inamyloid and non-dextrinoid.

Ecology: On sandy soil in a cave.

Distribution: So far only known from the type locality in Upper Austria (Oberösterreich).

Phenology: May.

Collections examined: AUSTRIA: Oberösterreich, Aurach am Hongar near Vöklabruck, cave No. 2, 460 m alt., 2 May 1976 leg. O. Moog (W, holotype).

Notes: *Myxomphalina agloea* is characterised by having only slightly gelatinised or quite not gelatinised covering layers of pileus and stipe, and mostly fusoid to subfusoid, often rostrate hymenial cystidia. In addition, the spores are slightly smaller than in *M. maura* and minutely verruculose in SEM photomicrographs. The latter character is more or less intermediate between those of *Myxomphalina* (smooth spores) and *Fayodia/Gamundia* (ornamented spores). The other macro- and micro features fit in variability of common *M. maura*. However, since only one collection is available, not much is known about infraspecific variation. WEHOLT (1988) considered *Myxomphalina agloea* to be identical with *M. maura*. We incline, on account of the type study, to keep both taxa separate on account of the differences mentioned above and consider *Myxomphalina agloea* a separate species transient between *Myxomphalia* and *Fayodia/Gamundia*.

4.6. *RESINOMYCENA* Redhead & Singer

Resinomyцена Redhead & Singer, Mycotaxon 13: 151. 1981.

Type species: *Agaricus rhododendri* Peck

Selected literature: Redhead & Singer, Mycotaxon 13: 150-170. 1981; Singer, Agaricales Modern taxonomy, 4. ed.: 427-428. 1986.

Basidiocarps omphalioid or mycenoid, resinous, covered with oleocystidia intermixed with dendroid, non diverticulate hyphae, white or dully pigmented. Lamellae adnate to slightly decurrent, subdistant to crowded, with resinous edges formed by numerous oleocystidia. Stipe equal, cartilagineous, resinous, covered by scattered or clustered oleocystidia. Trama weakly to strongly dextrinoid. Hymenophoral trama regular. Spores smooth, amyloid, hyaline, acyanophilic.

Ecology: Saprotrophic on litter of coniferous and deciduous trees, and tall herbs, in various biotopes.

Distribution: Widespread in the Northern Hemisphere. Only one species in Europe.

Notes: The genus *Resinomyцена* has recently been split off the genus *Mycena* by REDHEAD & SINGER (1981) mainly because of the structure of the covering layers of the pileus and stipe with abundant oleocystidia. Also in recent phylogenetic studies with molecular data (MONCALVO et al. 2002), the genus seems to be well supported. It comprises a small number of species, including about 5 from North America, and one (perhaps 2) from Europe. All species are very tiny, whitish agarics, growing on all kind of vegetal debris.

Synopsis of European species

1. *Resinomyцена saccharifera* (Berk. & Broome) Redhead

1. *Resinomyцена saccharifera* (Berk. & Broome) Redhead

Pl. 44, Fig. 50

Agaricus (Mycena) sacchariferus Berk. & Broome Ann. Mag. nat. Hist. IV 6: 465. 1870; *Mycena saccharifera* (Berk. & Broome) Gillet, Hym.: 262. 1876; *Pseudomyцена saccharifera* (Berk. & Broome) Cejp, Publ. Fac. Sci. Univ. Charles 104: 147. 1930. – *Omphalia quisquiliaris* Joss., Annl. Soc. linn. Lyon 80: 88, fig. 5. 1937 (not val. publ., no Latin descr.); *Mycena quisquiliaris* (Joss.) Kühner, Genre Mycena: 388, fig. 125. 1938 (not val. publ. + later homonym); not *Mycena quisquiliaris* (Berk.) Sacc. 1887; *Delicatula quisquiliaris* (Joss.) Kühner & Romagn., Flore anal. Champ. sup.: 118. 1953 (not vat. publ.). – *Omphalia minima* Velen., Nov. Mycol. Novis.: 41. 1947. – *Mycena pudica* Hora, Trans. Br. mycol. Soc. 43: 452. 1960. – *Marasmiellus ornatissimus* Barkman & Noordel., Persoonia 13: 254. 1987.

Type specimen: „*Mycena saccharifera* B. & Broome / Batheaston, ad Rubi fruticosi causes aridos, hieme. C.E. Broome- (K, Holotype). - Type distribution: Rabenhorst, Fungi europaei No. 1802.

Selected icons: Antonín & Noordeloos, Libri bot. 17, pl.45. 1997 (as *Marasmiellus ornatissimus*); Courtecuisse & Duhem, pl. 614. 1994.

Selected literature: Antonín & Noordeloos, Libri bot. 8: 175-177, fig. 60. 1993 (as as *Marasmiellus ornatissimus*); Antonín & Noordeloos, Libri bot. 17: 171-173, fig. 50. 1997 (as *Marasmiellus ornatissimus*); Krieglsteiner, Z. Mykol. 46: 68. 1980 (as *Mycena quisquiliaris*); Kubička, Čes. Mykol. 11: 102-104. 1957 (as *Delicatula quisquiliaris*); Kühner, Genre Mycena: 388. 1938 (as *Mycena quisquiliaris*); Noordeloos & Barkman, Persoonia 13: 254-255, fig. 44-49. 1987 (as *Marasmiellus ornatissimus*).

Description: **Pileus** 2–3 mm broad, campanulate, then convex, sometimes slightly umbilicate, radially plicate, not hygrophanous, not translucently striate, white, at centre sometimes tinged brown, dull, entirely pruinose. **Lamellae** distant, L = 7–12, l = 1–3, adnate- decurrent, sometimes loosening from stipe forming a pseudocollarium, segmentiform, pale pink. **Stipe** 2–5 × 0.3 mm, cylindrical,

Pl. 44: *Resinomyцена saccharifera*, photo R. WALLEYN

curved, cream-coloured, more brown at base, entirely white pruinose, white strigose at base with white radiating hairs. **Context** concolorous with surface. **Smell** none. **Taste** not known.

Spores 11–16.5 × 4.–6.5 μm, E = 2.1–2.8 (3.2), Q = 2.6, ellipsoid to lacrymoid, thin-walled. **Basidia** 27–42 × 9.0–12.5 μm, 4-, rarely 2-spored, clavate, clamped. **Basidioles** 18.5–33 × 3.5–11.5 μm, broadly clavate or subfusiform, clamped. **Lamella edge** sterile. **Cheilocystidia** 22.5–50 × 5.0–11 μm, versiform from cylindrical-capitate to irregularly coralloid with finger-like projections or one or more bladder-like swellings at apex. **Pleurocystidia** absent. **Hymenophoral** and **pileitrama** regular, made up of inflated hyphae, elements 30–90 × 8.0–20 (25) μm, intermixed with 4.0–10 μm wide cylindrical hyphae. **Pileipellis** a cutis of 4.0–12 (18) μm wide, inflated hyphae with coralloid to diverticulate endings, mixed with pileocystidioid capitate elements, 21.5–53 × 3.5–12 μm wide. **Stipitipellis** a cutis with numerous cylindrical and capitate or coralloid to diverticulate, thin-walled, hyaline, clamped caulocystidia, 20–48 × 2.0–8.0 (10) μm. **Clamps** abundant in all tissues.

Chemical reactions: Spores amyloid, trama in part of basidiocarp dextrinoid.

Ecology: On branchlets of herbs and scrubs (*Calamagrostis epigeios*, *Calluna vulgaris*, *Carex* sp., *Rubus* spp., *Empetrum nigrum*, *Juncus* spp., *Lysimachia* sp., *Phragmites australis*, grasses, etc.).

Distribution: Widespread, but easily overlooked because of the tiny fruitbodies.

Phenology: May–November.

Collections examined: **AUSTRIA:** Niederösterreich, Imfritz, Teichholz, 29 June 1986 leg. A. Hausknecht (WU 5399). – ditto, 28 Sept. 1988, leg. A. Hausknecht (WU 7201). – Niederösterreich, Gross-Siegharts, Blumau/Wild, 24 May 1992 leg. A. Hausknecht (WU 10714). – Oberösterreich, Schädrring, Kopfung, 13 Sept. 1994 leg. H. Voglmayr (WU 19899). – **BELGIUM:** prov. Antwerpen, Geel, De Zegge, 17 Nov. 1973 leg. L. Imler (BR 42502-16). – **CZECH REPUBLIC:** Třeboň, Prameniště u Jindrů, 14 Oct. 1971 leg. J. Kubička and L. Kubičková (PRM 839082). – Třeboň, Vimperka, 3 June 1957 leg. J. Kubicka (PRM 884515). – Mnichovice, Mirošovice, Aug. 1939 leg. J. Velenovský (PRM

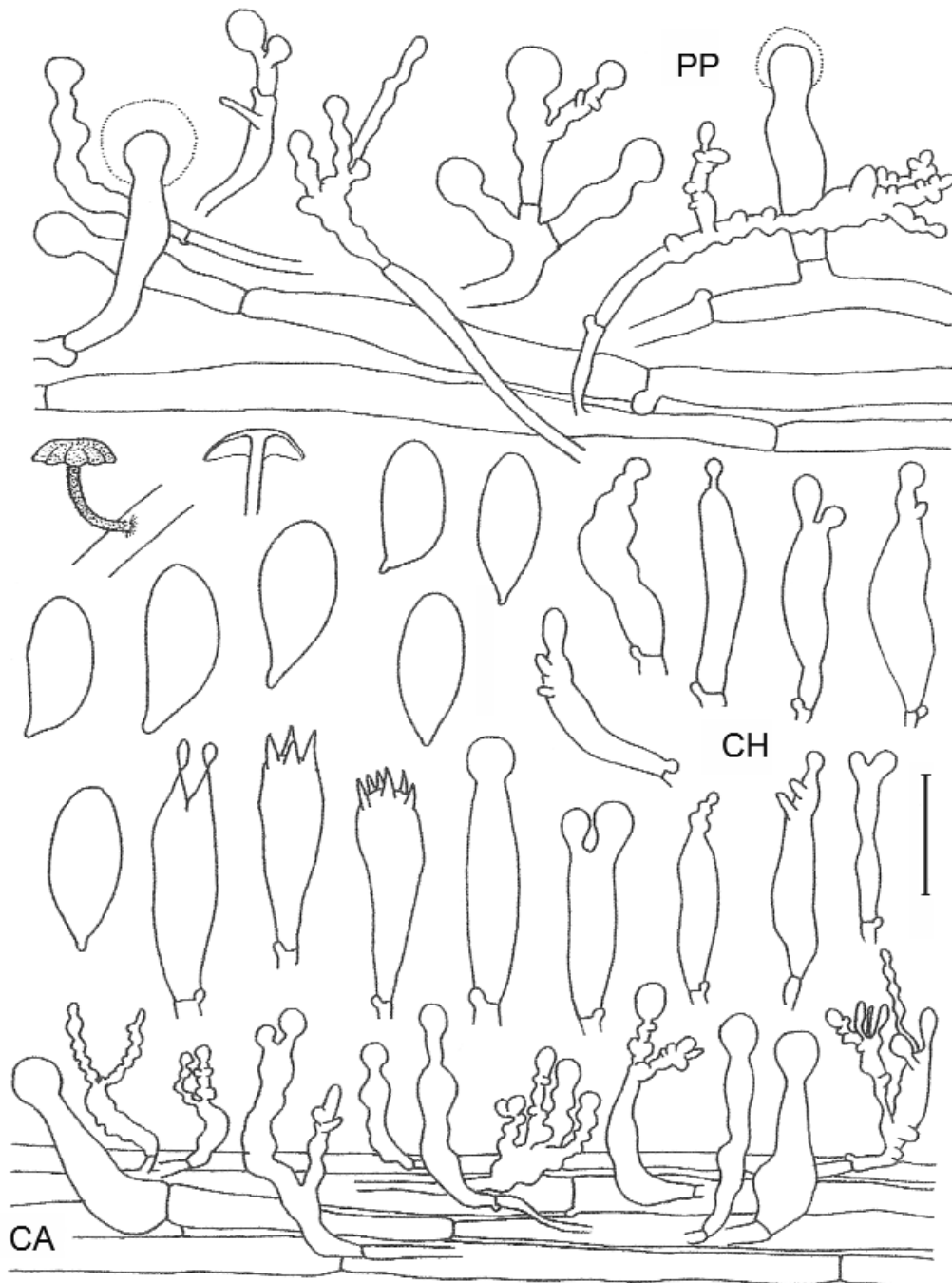


Fig. 50: *Resinomyces saccharifera*

154526 as *Omphalina minima* Velen.). – **FRANCE**: Saint-Sauveur-le-Vicomte (Manche), 12 Aug. 1975 leg. H. Romagnesi 75.116 (PC, herb. Romagnesi). – Orry-la-Ville (Oise), 4 May 1967 leg. H. Romagnesi 67.19 (PC, herb. Romagnesi). – Coye-la-Forêt (Oise), 29 July 1954 leg. H. Romagnesi 54.84 (PC, herb. Romagnesi). – Forêt d' Hallate (Oise), 23 Oct. 1949 leg. H. Romagnesi (PC, herb. Romagnesi). – **GERMANY**: Isl. Langeoog, 27 Oct. 2001, J. Albers (L). – **NETHERLANDS**: prov. Friesland, Isl. Ameland, Duineheide Jan Roepespad, 2 Nov. 2001, P.J. Keizer (L). – prov. Drenthe, Dalerpeel, 25 Oct. 1984, J.J. Barkman 10500 (holotype of *M. ornatissimus*, L). – **UNITED KINGDOM**: England: Batheaston, ad Rubi fruticosi causes aridos, hieme. C.E. Broome (K, Holotype).

Notes: *Resinomyцена saccharifera* is an inconspicuous whitish agaric, easily overlooked, but with a striking morphology. The covering layers of the pileus and stipe are densely diverticulate, and covered in numerous cystidia, which are capitate, often bearing a mucous cap. These cystidia, often called oleo-cystidia, are the most distinctive features, which characterise the genus as a whole. The nomenclatural history is complex, since this species has been described several times by different authors. NOORDELOOS & BARKMAN (1987) and ANTONÍN & NOORDELOOS (1993, 1997) overlooked the rather weak amyloidy of the spores, placing the species for that reason in the genus *Marasmiellus*.

The genus is poorly represented in Europe with *Resinomyцена saccharifera* as the only accepted species. *Resinomyцена pyrenaica* Singer is considered insufficiently known (see chapter 5).

4.7. *RICKENELLA* Raithelh.

Rickenella Raithelh., Métrodiana 4: 67. 1973.

Marasmiellus sect. *Fibulae* Singer, Sydowia 2: 32. 1948; *Gerronema* sect. *Fibulae* (Singer) Singer, Sydowia 15: 51. 1962; *Gerronema* sect. *Fibulae* (Singer) Singer, subsect. *Fibulae* Singer, Nova Hedwigia 7: 87. 1964; *Rickenella* sect. *Cystomphalina* Contu, Micol. Veget. Mediterr. 4(1): 59. 1989. – *Jacobia* Contu, Boll. Gruppo Micol. Bres. 40(2-3): 170. 1997 (nom. inval., ICBN art 53.3); *Contumyces* Redhead et al., Mycotaxon 82: 161. 2002.

Type species: *Rickenella fibula* (Bull.: Fr.) Raithelh.

Selected literature: Bon, Doc. mycol. Mém. hors sér. 4: 147-148. 1997; Clémenton, Z. Mykol. 48: 230-231. 1982; Contu, Micol. Veget. Mediter. 4(1): 57-62. 1989; Contu, Boll. Gruppo Micol. Bres. 40(2-3): 169-173. 1997; Contu, Bon & Curreli, Micol. Veget. Mediterr. 4(1): 57-62. 1989; Kost, Z. Mykol. 50: 215-240. 1984; Kuyper, Famigl. Tricholomataceae: 83-104. 1985; Kuyper, Fl. Agar. Neerland. 3: 157-158. 1995; Lamoure, Beih. Sydowia 8: 251-254. 1979; Ludwig, Pilzkompendium 1(Beschreibungen): 634-635. 2001; Singer, Agar. mod. taxon. Ed. 4: 278. 1986.

Carpophores omphalioid or mycenoid, putrescent; pileus rather small, up to 20 (30) mm broad, minutely pubescent; lamellae shortly to distinctly decurrent, sometimes emarginate and decurrent with a tooth; stipe central, minutely pubescent, non-insititious, but with basal mycelium. Spore print white.

Spores ellipsoid to cylindrical or lacrymoid, non-amyloid, slightly cyanophilous; conspicuous hymenial cystidia, pileo- and caulocystidia present; hyphae of trama non-dextrinoid, often composed of short, ellipsoid to fusoid elements; pileipellis a cutis bearing numerous pileocystidia; pigment parietal; hymenophoral trama regular to irregular, made up of strongly inflated elements which are constricted at the septa; clamp-connections present.

Ecology: Solitary or in groups; saprotrophic in grassy and mossy places to weakly parasitic on mosses and liverworts, not lichenised.

Distribution: Widespread in all regions of Europe, according to KUYPER (1995) it has a worldwide distribution.

Notes: In the morphological tradition, *Rickenella* belongs to the omphalinoid agarics, with the particular feature that the covering layers as well as the edge and sides of the lamellae are provided with abundant cystidia (pileo-, caulo-, cheilo- and pleurocystidia respectively). This combination of characters facilitates to distinguish members of the genus *Rickenella* from *Omphalina* Quél. s. l. and *Gerronema* Singer, which are devoid of cystidia, except sometimes for caulocystidia. The members of the genus *Haasiella* Kotl. & Pouzar, which sometimes are superficially similar, are distinguished by the thick-walled spores with metachromatic walls.

The species accepted in the current concept of *Rickenella* have been placed in various genera. FAYOD (1889) included them in his concept of *Hygrocybe* P.Kumm., KÜHNER (1938) and A.H. SMITH (1947) included them in *Mycena* (Pers.: Fr.) Gray, sect. *Aciculae* Kühner ex Singer. SINGER (1943) first combined them into the genus *Hemimycena* Singer, but transferred them later to the genus *Marasmiellus* Murrill (SINGER 1951), and, finally created for them section *Fibulae* (Singer) Singer in the genus *Gerronema* Singer (SINGER 1962, 1986).

The present authors consider *Marasmiellus* clearly different in having reviving carpophores with subregular lamellar trama, and often distinct coralloid or diverticulate pileipellis hyphae without true pileocystidia. The absence of clamp-connections, subregular lamellar trama, and dimitic context of the stipe distinguish it from *Gerronema*. In this respect, the work of KUYPER (1985) is followed.

KOST (1984), in his very thorough study of *Rickenella*, considered the partially thickened walls near the hyphal septa in the stipitetrata found in *R. fibula* as homologous to the sarcodimitic context of the genus *Trogia* in the sense of CORNER (1950, 1966, 1970). MAAS GEESTERANUS (1990), however, disputed the status of *Trogia* in the sense of Corner, arguing that this is a rather unnatural assemblage of species, based on one feature only.

Detailed cultural descriptions of the mycelium of *Rickenella fibula*, *R. mellea* and *R. swartzii* were published by LAMOURE (1979), some of them being discussed also by EMMET (1993).

CONTU (1997) described the new genus *Jacobia* which was said to differ from *Rickenella* by the irregular hymenophoral trama, and the presence of pileocystidia in form of (sub)erect terminal cells of pileipellis hyphae, and not as discrete true pileocystidia. Three species were transferred to *Jacobia*, viz. *Rickenella brunneolilacina* Contu, Bon & Curreli, *Omphalina vesuviana* (Brig.) Lazzari & Bellù, and *Omphalina rosella* (Moser) Redhead (= *Marasmiellus rosellus* (Moser) Kuyper & Noordel.). However, the generic name *Jacobia* is invalid (Art. 53.3), and, therefore, REDHEAD (2002) renamed it *Contumyces*.

BON (1997) placed the species concerned in a separate section *Cystomphalina* within the genus *Rickenella* differentiating them from the typical section *Rickenella* by the longer basidia [up to 25 (30) μm], spores broader than 7 (8) μm and \pm true omphalioid carpophores. He did not mention differences in the nature of the pileocystidia. Bon (l.c.) included also *Rickenella pseudogrisella* in section *Cystomphalina*, and stressed the intermediate position of *R. mellea* keying it out in both sections.

The present authors accept the generic concept of BON (l.c.) and consequently include the species of *Jacobia* into *Rickenella*. In the current concept, the species of sect. *Cystomphalina* differ from those in sect. *Rickenella* particularly by the rather broad spores and pileocystidia which are often formed by adpressed to erect terminal elements of the pileipellis hyphae. *Rickenella mellea* (currently placed in sect. *Rickenella*) must be considered a link between both sections having longer basidia than the other species of the sect. *Rickenella*, a rather common type of pileocystidia in form of terminal elements of the pileipellis hyphae, combined with a mycenoid-omphalioid habit, narrow spores and more or less regular hymenophoral trama. Also *Rickenella pseudogrisella* takes a more or less intermediate position between both sections with its \pm omphalioid carpophores, broad spores and common pileocystidia in form of terminal elements combined with small size of basidia and regular hymenophoral trama.

Recent molecularly based phylogenetic studies have thrown a new light on the systematics of omphalinoid agarics (HIBETT & THORN 2001, REDHEAD et al. 2002). *Rickenella* and its allies represent a lineage of Homobasidiomycetes outside the agaricales, and are more closely related to Hymenochaetales clade, some of them being very close to *Cotylidia* species. REDHEAD & al. (2002) analysed a number of taxa in this clade, and concluded that the traditional concept of *Rickenella* needed to be adjusted. They propose to restrict *Rickenella* to *R. fibula* and its allies (*R. swartzii*, *R. mellea*) and to accept the generic concept of *Jacobia* Contu for *R. rosella* and its allies. Since the generic name *Jacobia* appeared to be invalid (ICBN Art. 53.3), REDHEAD et al. (2002) introduced the new name *Contumyces* for it. We hesitate, however, to accept this taxonomic concept. First because the taxon sampling (the type species of *Rickenella* not being included), and the number of genes used is rather restricted. Furthermore, the position of *Rickenella pseudogrisella*, which is crucial in our considerations about the concept of *Rickenella* and *Jacobia*, in the cladogram indicates that there is more at hand. Unfortunately Redhead & al. do not comment on this special position, and give no clue where to accommodate that species. For these reasons, we stick to the concept we have on account of the morphology, and treat all species as if they belong to one genus, awaiting the development of the phylogenetic studies in this group. For the same reason, we refrain from formally creating new combinations in *Rickenella*, to avoid possible unnecessary name changes.

Synopsis of European species of the *Rickenella*-complex:

sect. *Rickenella*

1. *Rickenella fibula* (Bull.) Raithehl.
 - 1a. var. *fibula*
 - 1b. var. *hydrina* (Fr.) Krieglst.
 - 1c. var. *pseudocantharellus* Bon
2. *Rickenella swartzii* (Fr.) Kuyper
 - 2a. f. *swartzii*
 - 2b. f. *alnobetulae* Jamoni
3. *Rickenella mellea* (Singer & Cléménçon) Lamoure

sect. *Cystomphalina* Contu

4. *Rickenella pseudogrisella* (A.H. Sm.) Gulden
5. *Rickenella brunneolilacina* Contu, Bon & Curelli
6. *Contumyces rosella* (Moser ex Redhead) Redhead & al.
7. *Contumyces vesuviana* (Brig.) Redhead & al.

Key to the European species:

- 1 Pileus delicately pink, particularly when fresh 6. *C. rosella* (p. xxx)
- 1* Pileus differently coloured 2
- 2 Fruitbodies with purple-violaceous tinges, particularly at centre of pileus and also in upper part of stipe; pileus dark brown, black-brown, black, purplish brown to purplish black at centre, distinctly paler, sometimes almost whitish towards margin; stipe with vilaceous, purplish-brown or brown-purple tinges at apex 3
- 2* Fruitbodies without purple-violaceous tinges; pileus orange, yellow-orange, yellow-brown, brown, honey brown 5

- 3 Spores 8.5–14 (16) × 4.0–6.0 μm; pileus rather pale ochre-brown with lilaceous tinge; in xerophytic grassland **5. *R. brunneolilacina*** (p. xxx)
- 3* Spores much smaller, 4.5–7.0 μm long; in moist places in forest and grassland **4**
- 4 Pileus purplish brown to purplish black, paler ochraceous yellow to almost whitish towards margin, convex, campanulate or broadly obtusely conical, without papilla; stipe purplish-brown or brown-purple at apex; spores 5.0–7.0 × 2.5–3.2 (3.7) μm; basidia only 4-spored; cheilocystidia 32–52 × 8.0–19 μm; pileocystidia 48–115 × 10–23 (32) μm; terrestrial coniferous forests (rarely in under broadleaved trees), in wet pastures and meadows **2a. *R. swartzii* f. *swartzii*** (p. xxx)
- 4* Pileus yellow-brown, ochraceous, paler towards margin, then dark brown, black-brown to black at centre, brown-fulvous, brown-orange with permanent black centre when drying-out (without purplish tinge), convex-campanulate to convex-umbonate, with a distinct papilla; stipe yellow-brownish and darker at apex at first, then grey-brown, grey-blackish with violaceous or grey-violaceous tinge near lamellar attachment; spores 4.5–6.0 (6.5) × 2.5–3.0 μm; basidia 2- and 4-spored; cheilocystidia 35–70 × 9.5–14 μm; pileocystidia 45–70 × 8.0–14 μm; growing under *Alnus viridis* in a subalpine belt **2b. *R. swartzii* f. *alnobetulae*** (p. xxx)
- 5 Pileus rather pale: tinged yellowish-brown, olivaceous-brown, or reddish brown, pallescent when dry; hymenial cystidia often clavate or vesiculose **6**
- 5* Pileus more vividly coloured orange-yellow, reddish yellow, orange-brown, reddish brown; hymenial cystidia usually fusiform, lageniform, rarely also clavate **7**
- 6 Hymenial cystidia clavate or vesiculose, 12–21 (35) μm broad; on the liverwort *Blasia* in arctic-alpine regions; spores (6.0) 6.5–8.5 (9.0) × 3.2–5.0 (5.5) μm, E = 1.7–2.3, Q = 2.1 **4. *R. pseudogrisella*** (p. xxx)
- 6* Hymenial cystidia variable in shape from fusiform, lageniform to clavate or broadly clavate, 7.0–11 μm; spores narrower, 2.7–4.0 μm wide; associated with mosses, usually *Bryum* **3. *R. mellea*** (p. xxx)
- 7 Spores large, 8–12 × 4.5–5.5 μm; pigment incrusting in pileipellis **7. *C. vesuviana*** (p. xxx)
- 7* Spores much smaller, in the range 5.5–8.0 μm long; pigment membranous, not incrusting **1. *R. fibula*** (p. xxx)

Descriptions of European species:

1. *Rickenella fibula* (Bull.: Fr.) Raithelh.

Pl. 45, Fig. 51

Agaricus fibula Bull., Herb. France, tab. 186. 1783; *Agaricus fibula* Bull.: Fr., Syst. Mycol. 1: 163. 1821; *Omphalia fibula* (Bull.: Fr.) P. Kumm., Führer Pilzfr.: 106. 1871; *Omphalina fibula* (Bull.: Fr.) Quéél., Enchir. fung.: 46. 1886; *Hygrocybe fibula* (Bull.: Fr.) Fayod, Ann. Sci. Nat. Bot. 7(9): 309. 1889; *Omphalinopsis fibula* (Bull.: Fr.) Murrill, North Amer. Fl. 9: 314. 1916; *Mycena fibula* (Bull.: Fr.) Kühner, Genre Mycena: 607. 1938; *Hemimycena fibula* (Bull.: Fr.) Singer, Ann. Mycol. 41: 123. 1943; *Marasmiellus fibula* (Bull.: Fr.) Singer, Sydowia 2: 32. 1948; *Gerronema fibula* (Bull.: Fr.) Singer, Publ. Inst. Micol. Recife 304: 13. 1961; *Rickenella fibula* (Bull.: Fr.) Raithelh., Metrodiana 4: 61. 1973.

Type specimen: Bulliard, Herb. France, tab. 186. 1783 (lectotype, designed here).

Selected icons: Bon, Champ. Eur. occ.: 129. 1987; Breitenbach & Kränzlin, Pilze Schweiz 3: pl. 401. 1991; Bresadola, Iconogr. mycol. 6: pl. 275. 1928; Bulliard, Herb. France, tab. 186. 1783-1784 and tab. 550, fig. 1. 1792; Cetto, Funghi Vero 3: 1119. 1979; Courtecuisse, Mushrooms Britain and Europe: 95. 1999; Courtecuisse & Duhem, Champ. Fr. Eur.: pl. 327. 1994; Dähncke & Dähncke 700 Pilze: 127. fig. 4. 1979;



Pl. 45: *Rickenella fibula*, photo E. SKÁLA

Emmet, E., Mycologist 7: 178. 1993; Garnweidner, Houby: pl. 62. 1994; Hagara, Antonín & Baier, Houby: 150. 1999; J. Lange, Fl. agar. dan. 2: pl. 61G. 1936; Ludwig, Pilzkompodium 1: pl. 168, fig. 76.3. 2000; Moser & Jülich, Farbatlas Basidiomyc. 11: *Rickenella* 1. 1993; Phillips, Mushr. other Fungi: 75. 1981; Ricken, Blätterpilze: pl. 105/9. 1915; Ryman & Holmåsen, Svampar: 264. 1984.

Selected literature: Bon, Doc. mycol. Mém. hors sér. 4: 146. 1997; Cléménçon, Z. Mykol. 48: 230-231. 1982; Courtecuisse, Mushrooms Britain and Europe: 816. 1999; Kost, Z. Mykol. 50: 217-218. 1984; Kuyper, Fl. Agar. Neerland. 3: 158. 1995; Lamoure, Sydowia, Beih. 8: 251-254. 1979; Ludwig, Pilzkompodium 1(Beschreibungen): 637-638. 2001; Singer, Nova Hedwigia 7: 88. 1964.

Description: **Pileus** 3–15 mm broad, convex with flattened to slightly papillate centre, with entire, inflexed margin when young, then plano-convex, expanding to plano-convex with depressed or umbilicate centre, finally often infundibuliform, with reflexed, often undulating or crisped marginal zone, hygrophanous, translucently striate to $\frac{3}{4}$ of radius or up to centre, vivid orange, yellow-orange or reddish brown at centre (6–7A6–8, 6C6), often slightly to distinctly paler towards margin (5–6A5–8), pallescent with age to pale orange, yellowish or almost white (5–6A5–8 to 4A4–5), finely pubescent all over (lens). **Lamellae** distant, L = (12) 14–20, l = 1–2 (3), arcuate, decurrent, sometimes furcate, slightly intervenose when old, white to pale cream coloured when young, with cream-orange tinge (4–5A2) when old, with entire, concolorous edge, finely pubescent (lens). **Stipe** 10–50 × 0.5–1.0 (2.0) mm, cylindrical, slightly broadened above, almost cylindrical to slightly clavate at base, finely pubescent, often curved, with whitish rhizoids at base, orange to pale orange-yellow (6–7A6–7); mat, finely pruinose all over (lens). **Context** thin, concolorous with surface, without distinct **smell**, **taste** mild.

Spores 5.5–7.0 (8.0) × 2.0–3.0 (3.5) μm, E = 1.8–3.5, Q = 2.1–2.8, cylindrical, ellipsoid-cylindrical, sometimes cuneate, thin-walled, smooth, hyaline. **Basidia** 14–20 × 4.5–5.0 μm, 4-spored, clavate. **Basidioles** 10.0–20 × 2.0–6.0 μm, cylindrical to clavate. **Cheilocystidia** 30–57 × 6.5–13 μm, fusoid, sublageniform, rostrate, rarely clavate, mostly (sub)capitate, ± thin-walled, hyaline. **Pleurocystidia** similar to cheilocystidia. **Hymenophoral trama** made of cylindrical, fusoid to ellipsoid, thin- to slightly thick-walled, up to 20 μm wide elements, with hyaline to pale yellowish walls in KOH. **Pileipellis** a cutis, made up of radially arranged, cylindrical, slightly thick-walled, ± hyaline, smooth to scatteredly diverticulate, up to 10.0 (13) μm wide hyphae, with subhyaline to pale yellowish walls in KOH; terminal cells adpressed to (sub)erect, cylindrical to clavate. **Pileocystidia** 38–80 × 10.0–16 (18) μm, lageniform, awl-shaped, (sub)fusoid, mostly capitate, slightly thick-walled, hyaline. **Stipitipellis** a cutis, of cylindrical, parallel, slightly thick-walled, up to 6.0 (8.0) μm wide hyphae with yellowish walls in KOH. **Caulocystidia** 30–100 × 8.0–17 μm, lageniform, awl-form, (sub)fusoid, mostly capitate, slightly thick-walled, hyaline. **Clamp-connections** present in all tissues.

Chemical reactions: None part of tissue or spores dextrinoid or amyloid.

Ecology: Single or in groups, probably parasitic, in moss and *Sphagnum* in humid places; found in both coniferous (*Picea*, *Pinus*) and broadleaved forests (*Carpinus*, *Fagus*, *Quercus*), as well as in alluvial stands and moist meadows. Sometimes found also in rather dry associations but always in moss growths.

Distribution: Very common, widespread in the Northern Hemisphere.

Phenology: May to November.

Collections examined: **AUSTRIA:** Wien, Maurerwald, 20 June 1982 leg. ??? (WU 2102). – Niederösterreich, Göstling/Ybbs, Leckermoor, 29 Aug. 1979 (WU 0794). – Niederösterreich, Imfritz, Etzelsreith, 27 June 1986 leg. A. Hausknecht (WU 5391). – Niederösterreich, Retz, Ober-Nalb, Sandgrube, 8 Nov. 1981 leg. A. Hausknecht (WU 1803). – Tirol, Ofenspitze, Moosalm, 6 July 1982 leg. I. Krisai-Greilhuber (WU 17092). – **BELGIUM:** prov, Luxembourg, Hoyet, Bois du Roi, 18 Sept. 2003, M.E. Noordeloos 200337 (L). – **CROATIA:** Mrkopalj, Sungerski lug forest, 8 June 2000 leg. Z. Tkalčec and A. Mešić (CNF 1/1481). – **CZECH REPUBLIC:** BOHEMIA: Zadní Jeřichovice, 3 July 1969 leg. M. Svrček 338/69 (PRM). – Kacanovy near Turnov, 4 Aug. 1944 leg. J. Herink (PRM). – Turnov, Prachovské skály, 25 June 1946 leg. M. Svrček 293/46 (PRM). – Praha, Divoká Šárka, between Vizerka and Želivka, 21 May 1996 leg. M. Svrček 50/96 (PRM). – Praha, Krčský les, 4 Nov. 1936 leg. J. Herink (PRM). – ditto, 23 June 1945 leg. M. V. Svrček 136/45 (PRM). – Praha-Bohnice, Aug. 1941 leg. B. Vošoust (PRM). – ditto, 4 Aug. 1941 leg. B. Vošoust (PRM). – ditto, 31 Oct. 1936 leg. J. Herink (PRM). – ditto, 2 June 1941 leg. J. Nitka (PRM). – ditto, Zabítý háj, 31 Oct. 1942 leg. J. Herink 1085/42 (PRM). – ditto, 29 Sept. 1938 leg. J. Herink (PRM). – Praha, Stromovka, 30 Oct. 1936 leg. J. Herink (PRM). – Praha, Nebušice, 1 Nov. 1942 leg. O. Chyba (PRM). – ditto, 25 Oct. 1942 leg. O. Chyba (PRM). – Praha-Modřany, 16 June 1945 leg. V. Vacek (PRM). – Praha-Malá Strana, Petřín, 12 Sept. 1939, leg. J. Herink (PRM). – Praha, Kinského sady, 16 June 1965 leg. E. Wichanský (PRM). – ditto, 21 July 1968 leg. E. Wichanský (PRM). – Praha, Královská obora, 10 Oct. 1937 leg. J. Herink (PRM). – Praha, Tuchoměřice, 15 Oct. 1938 leg. J. Herink (PRM). – ditto, 27 Sept. 1939 leg. J. A. Herink (PRM). – Praha, Hodkovičky, 17 Oct. 1937 leg. J. Herink (PRM). – Mnichovice, Aug. 1939 leg. J. Velenovský (PRM). – Hřebečnický, 12 Sept. 1940 leg. J. Herink (PRM). – Brdy Mts., Černolice, 20 Sept. 1938 leg. J. Herink (PRM). – ditto, 18 Oct. 1938 leg. J. Herink (PRM). – Závist near Zbraslav, Hradiště, 3 Oct. 1996 leg. M. Svrček 894/96 (PRM). – Stříbrná Skalice, Studený vrch, 30 July 1950 leg. Z. Pouzar (PRM). – Světlá nad Sázavou, 16 July 1942 leg. J. Herink 274/42 (PRM). – Karlštejn, 18 Oct. 1938 leg. J. Herink (PRM). – Srbsko, 3 Sept. 1956 leg. E. Wichanský (PRM). – Dobřichovice, Hviždinec, 7 Aug. 1996 leg. M. Svrček 290/96 (PRM). – Černolice, Dobřichovice, 10 June 1951 leg. A. Pilát (PRM). – Květuš, 27 Sept. 1943 leg. K. Kavina (PRM). – Rochoty, 25 June 1926 leg. K. Kavina (PRM). – Kvasy, 8 Aug. 1938 leg. K. Kavina (PRM). – Nouzov near Unhošť, 13 June 1965 leg. E. Dlouhý (PRM). – Čelákovice, 1 Oct. 1939 leg. K. Kult (PRM). – Kladno, Kožová hora, 19 Sept. 1941 leg. J. Herink 1017/41 (PRM). – ditto, 1 Aug. 1941 leg. J. Herink 388/41 (PRM). – Nové Strašecí, Ruda, 17 Oct. 1937 leg. J. Herink (PRM). – Kolín, 11 Nov. 1938 leg. J. Herink (PRM). – Golčův Jeníkov, 27 June 1940 leg. J. Herink (PRM). – Bavorov, Helfenburg, 19 Aug. 1937 leg. J. Herink (PRM). – Chotěboř, Sobiňov – Bílek, 27 May 1944 leg. F. Šmarda (BRNM). – Dolní Poustevna, Spálený vrch, 23 June 1996 leg. M. Svrček 101/96 (PRM). – Protivín, Hájek, 7 Aug. 1937 leg. J.

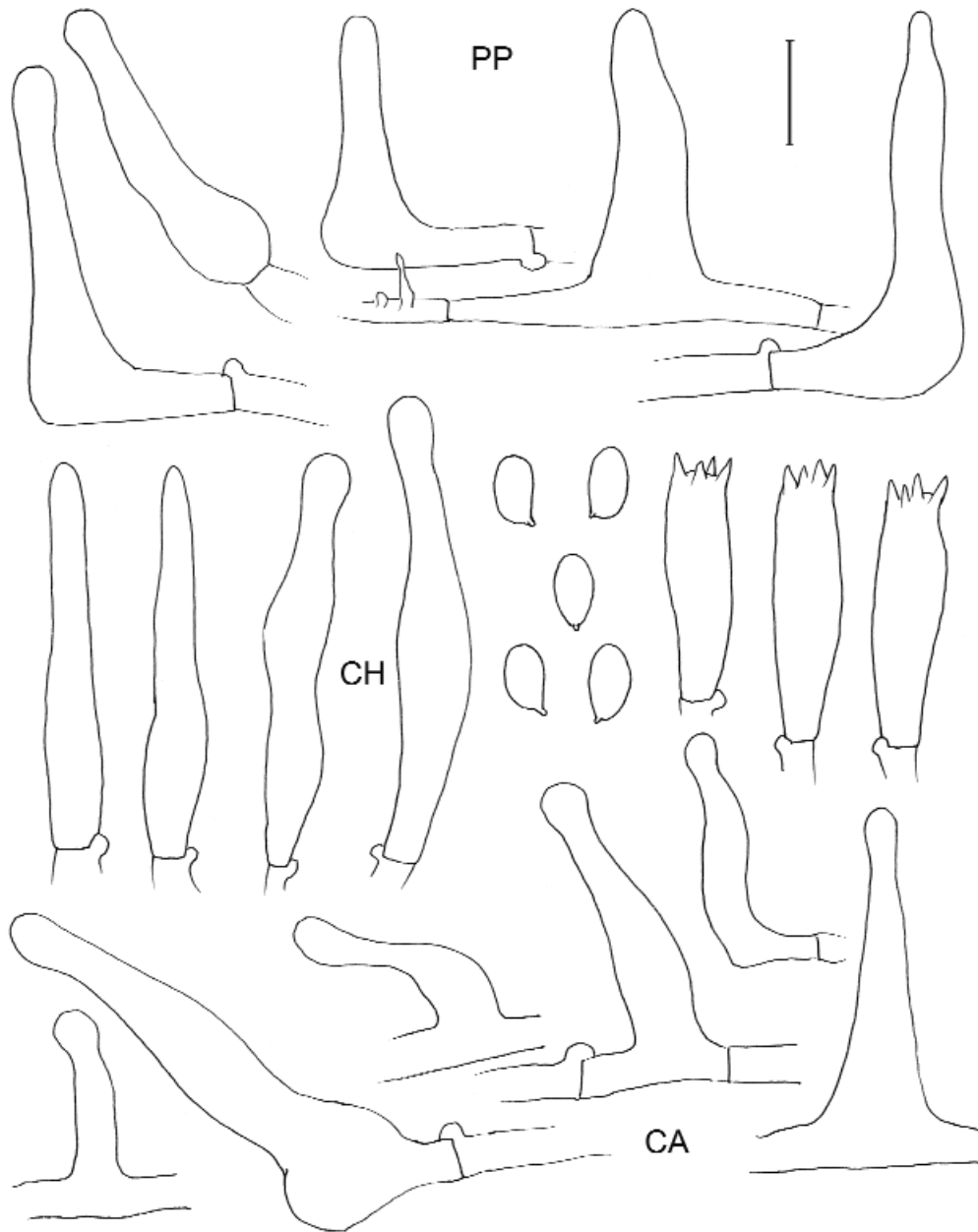


Fig. 51: *Rickenella fibula*

Herink (PRM). – Probulov near Orlik, 5 Aug. 1968 leg. M. Svrček 479/68 (PRM). – Novosedly, 8 June 1962 leg. Z. Borovanská (PRM). – Vodňany, 12 Aug. 1934 leg. J. Herink (PRM). – ditto, 13 Aug. 1937 leg. J. Herink (PRM). – ditto, 1 July 1936 leg. J. Herink (PRM). – Chelčice near Vodňany, 2 Sept. 1938 leg. J. Herink (PRM). – České Budějovice, Haklový Dvory, 11 Sept. 1971 leg. J. Kubička (PRM). – Třeboň, Vimperka, 4 Aug. 1981 leg. J. Kubička (PRM). – Staňkov near Chlum u Třeboně, Staňkovský rybník, 18 Sept. 1993 leg. M. Svrček 166/93 (PRM). – Soběslav,

Blata, 30 June 1951 leg. F. Kotlaba (PRM). – ditto, 8 July 1951 leg. F. Kotlaba (PRM). – MORAVIA: Dolní Lomná, Mionší virgin forest, 30 Aug. 1962 leg. F. Šmarda (BRNM). – Kežlice, 2 Oct. 1971 leg. A. Čábera (BRNM). – Orlovy, 19 Sept. 1954 leg. A. Čábera (BRNM). – Borovná near Telč, Smíchov pond, 17 June 1944 leg. F. Šmarda (BRNM). – Kněžice, Chaloupky, 13 Oct. 2000 leg. V. Antonín 00.166 (BRNM). – Nedvědice, Býšovský potok valley, 8 Sept. 1947 leg. F. Šmarda (BRNM). – Hrubšice, Nad řekami, 15 Oct. 1993 leg. V. Antonín 93.405 (BRNM). – ditto, 20 Oct. 1994 leg. V. Antonín 94.251 (BRNM). – Čebín, Zlobice hill, 15 Aug. 1961 leg. F. Šmarda (BRNM). – ditto, 19 May 1963 leg. F. Šmarda (BRNM). – Lažánky, 15 Nov. 1963 leg. J. Lazebníček (BRNM). – Veverská Bítýška, 12 July 1954 leg. F. Šmarda (BRNM). – Brno-Bystrc, Chvalovka, 10 Sept. 1988 leg. K. Sutorý (BRNM). – Litovelské Pomoraví LPA, Moravičany, Doubrava protected area, 9 Aug. 2000 leg. V. Antonín 00.55 (BRNM). – Moravian Karst, Ochoz near Brno, Údolí Říčky nature reserve, 13 Sept. 2001 leg. V. Antonín 01.272 (BRNM). – Čejkovice, Kapansko forest, 14 Nov. 1954 leg. F. Šmarda (BRNM). – Hodonín, Doubrava forest, 14 Nov. 1955 leg. K. Kříž (BRNM). – Podyjí Nat. Park, Vranov nad Dyjí, Braitava, 13 Oct. 1993 leg. V. Antonín 93.380 (BRNM). – Pasohlávky, Betlém, 29 June 2001 leg. A. Vágner (BRNM). – Lanžhot, Ranšpurk, 8 Aug. 1965 leg. L. Fiala (BRNM). – **FRANCE:** Yvillers (Oise), Forêt d'Halatte, 28 July 1959 leg. H. Romagnesi 59.68 (PC); Les Bois aux environs de Senlis, Aug. 1883, C. Roumeguère (L). – **GERMANY:** Leipzig, leg. Auerswald (PRM). – **ITALY:** Ravenna distr., Pineta di San Vitale, Fossatone, 5 Nov. 2000 leg. V. Antonín 00.189 (BRNM). – **MONTENEGRO:** Komovi Mts., Preslo, 13 July 1973 leg. M. Tortič (CNF 6/13). – **THE NETHERLANDS:** prov. Groningen, Eemshaven, 19 July 1996 leg. L. Jalink & R. Sullock-Enzlin (L). – prov. Overijssel, Twickel, 28 June 1958 leg. E. Kits van Waveren (L). – prov. Gelderland, Wageningen, Arboretum, Aug. 1971 leg. H.S.C. Huijsman (L). – prov. Noord-Holland, Wieringermeer, Dijkgatbos, 31 Oct. 1970 leg. J. Geesink (L). – Kortenhoeft, 23 Sept. 1983 leg. J. Daams 83/37 (L). – ditto, 6 June 1984 leg. J. Daams 84/6 (L). – Baarn, 6 Sept. 1963 leg. H.A. v.d. Aa (L). – Callantsoo, Zwanewater, 21 Oct. 1979 leg. P.B. Jansen (L). – prov. Zuid-Holland, Voorschoten, Ter Horst, 7 Aug. 1974 leg. M.E. Noordeloos s.n. (L). – Wassenaar, Harstenhoek, 3 Nov. 1987 leg. L. Jalink 3778 & 3779 (L). – Oostvoorne, Weeversduin, 7 Aug. 1972 leg. J.A.E. de Kluijver (L). – pov. Flevoland, Noordoost Polder, Kuinderbos, 1 Sept. 1980 leg. A.M. Brand (L). – prov. Zeeland, Zuid Beveland, Kruiningen, 28 June 1985 leg. W. Kuijs (L). – Lenshoek, 9 Aug. 1984 leg. W. Kuijs (L). – De Piet Oost, 27 June 1987 leg. W. Kuijs (L). – Den Inkel near Kruiningen, 3 Aug. 1985 leg. W. Kuijs (L). – Yrseke, July 1984 leg. W. Kuijs (L). – Schouwen-Duiveland, Westenschouwen, 7 Sept. 1989 leg. W. Kuijs (L). – ditto, 8 Aug. 1985 leg. J. Schreurs 929 (L). – prov. Noord Brabant, Nieuw Ginneken, Patersmoer, 27 July 1968 leg. P.B. Jansen (L). – **POLAND:** Wrocław (Breslau), Botanical garden, in: Schroeter, Pilze Schlesiens, No. 1444 (BRA). – **RUSSIA:** Siberia, Baikal lake, Arangatui, 28 Aug. 1994 leg. S. Adamčík (BRA). – Siberia, Baikal lake, Sviatoy nos peninsula, 22 Aug. 1994 leg. S. Adamčík (BRA). – **SLOVAKIA:** Velké Leváry, 6 June 1965 leg. J. Lazebníček (BRNM). – Tríbeč Mts., Klátova Nová Ves, Cibajky, Podskalie, 2 June 1996 leg. M. Benko (BRA). – Štiavnické vrchy Mts., Štiavnické Bane, Piargské jazero lake, 18 Sept. 1984 leg. L. Hagara (BRA). – Hronská pahorkatina, between Podhájska and Čechy, Dlhý vrch, 26 June 1985 leg. J. Kuthan (BRA). – Veporské vrchy Mts., Dobroč, Sihlianská planina, 18 June 1988 leg. L. Hagara (BRA). – Ipeľská pahorkatina, Čenkov, Horná hora, 8 June 1988 leg. J. Kuthan (BRA). – Malá Fatra Mts., Bystrička, Dubový diel, 6 Sept. 1981 leg. L. Hagara (BRA). – Slovenské Rudohorie Mts., Dobročský prales, 17 Sept. 1979 leg. J. Kuthan (BRA). – Liptovská kotlina, Pribylina, Hrdovo, 10 July 1998 (BRA). – Slanské vrchy Mts., Zlatá Baňa, Chabzdová, 26 Sept. 1990 leg. V. Antonín 90.109 (BRNM). – Čergov, Mincol, 10 Oct. 1996 leg. S. Adamčík (WU 16982). – Bukovské vrchy Mts., Ruské, Cirocha valley, 9 Aug. 1990 leg. J. Kuthan (BRA). – ditto, Plaša hill, 28 Aug. 1991 leg. J. Terray (BRA). – Bukovské vrchy Mts., Stakčín, Vršok hill, 24 Oct. 1991 leg. J. Kuthan et al. (BRA). – **SLOVENIA:** Krakovski gozd forest near Kostanjevica na Krki, 8 Aug. 1972 leg. M. Tortič (CNF 6/14). – **SWEDEN:** Upland, Upsala, Exercisfältet, 11 Sept. 1938 leg. S. Lundell, in: Lundell & Nannfeldt, Fungi exsiccati suecici, No. 708 (PRM). – Östergötland, Gryt parish, Säterön, 26–29 Sept. 1978 leg. J. A. Nannfeldt 24976, in: Lundell & Nannfeldt, Fungi exsiccati suecici, No. 2910 (PRM). – **SWITZERLAND:** Kanton Neuchâtel, Bole, Planeyse, 27 July 1965, H.S.C. Huijsman (L). – **UKRAINE:** Trebushany, Bily potok valley, Aug. 1935 leg. A. Pilát (PRM). – **UNITED KINGDOM:** Scotland, Inverness shire, Pitlochry, Vrackie Mts., 23 Sept. 1983, W. Gams (L); Fort William, 19 Sept. 1983, Th. W. Kuyper 2401 (L); ENGLAND: Buckinghamshire, Gerards Cross, 14 Oct. 1951, P. A. Buyten (L). – **U.S.A.:** Tennessee, Great Smoky Mts. Nat. Park, Greenbrier Area, Bridge to Ramsay's Cascades, 20 June 1991 leg. V. Antonín 91.23 (BRNM)

Notes: Bulliard published two pictures of this species in Herb. France: pl. 186 (1783-1784) and pl. 550, fig. 1 (1792). The first one represents the typical *Rickenella fibula*, growing among moss, the second depicts pale carpophores growing on twigs. Therefore, the first picture (pl. 186) is selected here as lecto(icono)type.

Rickenella fibula is characterised in having orange to orange-yellow coloured pileus and stipe, and distinct, rather slender hymenial cystidia.

This mushroom is so characteristic that most macroscopic descriptions are almost identical. CLÉMENÇON (1982) described a slightly different spore size ($4.0\text{--}7.0 \times 1.6\text{--}3.2 \mu\text{m}$) and narrower cystidia ($40\text{--}55 \times 4.0\text{--}8.0 \mu\text{m}$). KOST (1984) published a very detailed anatomical and morphological description, and indicated the spore size as $4.0\text{--}7.0 \times 1.5\text{--}3.5 \mu\text{m}$. Several authors (e.g. CLÉMENÇON 1982; KUYPER 1995) described the hymenial cystidia as similar to caulo- and pileocystidia. However, our observations show that the latter are distinctly larger than the cheilo- and pleurocystidia.

A. Hausknecht noted the potentially big phenotypic variability of *Rickenella fibula* in one of his collections (Niederösterreich, Retz, Ober-Nalb, Sandgrube, 8 Nov. 1981, WU 1803). He found more than 100 carpophores and noted the pileus colour ranging from orange, creamy white to ochraceous, and recorded decurrent, furcate, rugose-venose, intervenose to reduced lamellae. Microscopically, all specimens fitted well with the current concept of var. *fibula*.

Notes on the infraspecific variability

Considering the rather large morphological variability, it is not surprising that several taxa have been described close to *Rickenella fibula*, which may be apparent from the following key:

- 1 Pileus rather robust, up to 20 (30) mm broad; lamellae furcate; stipe short and thick, $10\text{--}30 \times 2\text{--}5$ mm; spores $5.0\text{--}6.0$ (7.0) \times $2.0\text{--}2.5$ (3.0) μm ; [pileipellis with diverticulate elements?, see discussion] ***R. fibula* var. *pseudocantharellus***
- 1* Pileus smaller, up to 15 (20) mm broad; lamellae never furcate; stipe longer and slender, $20\text{--}50 \times 1\text{--}2$ mm; spores $4.0\text{--}7.0 \times 2.0\text{--}3.5 \mu\text{m}$; pileipellis never diverticulate [see discussion] **2**
- 2 Pileus up to 15 mm broad, \pm convex, with non-undulate margin, orange, orange-yellow, pallescent to \pm whitish; spores $5.5\text{--}6.5 \times 2.5\text{--}3.0 \mu\text{m}$; hymenial cystidia $45\text{--}85 \times 10\text{--}17$ ($25?$) μm ; pileocystidia $55\text{--}95 \times 12\text{--}22$ (30) μm ; growing in very wet to marshy, mostly montane habitats in the moss *Aulacomnium* ***R. fibula* var. *hydrina***
- 2* Pileus larger, $10\text{--}20$ mm broad, more distinctly applanate, undulate at margin, orange to orange-brown, pallescent to pale brown or yellow-brown; spores $5.5\text{--}7.0$ (8.0) \times $2.0\text{--}3.0$ (3.5) μm ; hymenial cystidia $30\text{--}57 \times 6.5\text{--}13 \mu\text{m}$; pileocystidia $38\text{--}80 \times 10.0\text{--}16$ (18) μm ; growing in moist habitats in other moss species ***R. fibula* var. *fibula***

Rickenella fibula var. *hydrina* (Fr.) Krieglst.

Agaricus (var.?) *hydrinus* Fr., Observaciones 1: 89. 1815; *Agaricus fibula* var. *hydrinus* (Fr.) Fr., Syst. mycol. 1: 164. 1821; *Rickenella fibula* var. *hydrina* (Fr.) Krieglst., Beitr. Kenntn. Pilze Mitteleur. 7: 77. 1991. – *Rickenella aulacomniophila* G. Kost, Z. Mykol. 50(2): 228. 1984; *Rickenella fibula* var. *aulacomniophila* (G. Kost) Bon, Doc. mycol. 22(86): 40. 1992.

Type specimen: not preserved.

Selected literature: Bon, Doc. mycol. Mém. hors sér. 4: 147. 1997; Fries, Observaciones 1: 89-90. 1815; Fries, Syst. mycol. 1: 164. 1821; Kost, Z. Mykol. 50(2): 219-220. 1984.

Characteristics: Fruitbodies similar to *R. fibula*, but larger, orange-brown, somewhat deeper in colour than in typical *R. fibula*; hymenial cystidia up to $25 \mu\text{m}$ wide; pileocystidia $55\text{--}95 \times 12\text{--}22$ (30) μm .

Ecology: Single or in groups, probably parasitic, in mosses (especially *Aulacomnium palustre*, may be also *Climacium*, BON 1997) in montane or alpine marshes.

Distribution: Poorly known, collected in Austria, Germany, Sweden (Fries), however, it surely is more widely distributed.

Phenology: July to September.

Collections examined: **AUSTRIA:** Kärnten, Fragrant, Dürer, 11 July 1982 leg. I. Krisai (WU 17093). – Jenbach, Angerberg, 10 Sept. 1982 leg. H. Romagnesi 82.117 (PC, herb. Romagnesi). – **GERMANY:** Bayern, Allgäu, Oberjoch, Kemnatsrieder Moos, 26 Sept. 1983 leg. G. Kost (M 6034, holotype of *R. aulacomniophila*).

Notes: KOST (1984) recently described his taxon as *Rickenella aulacomniophila*. According to KOST (1984), it differs macroscopically from the *R. fibula* in having more robust carpophores, with straight and undulate-flexuose pileus margin, and orange-brown pileus pallescent to brown (without red or orange tinge). Microscopically, it differs by larger pleuro- and cheilocystidia [type revision: 45–85 × 10–17 µm, according to KOST (1984) up to 25 µm wide], and larger pileocystidia [55–95 × 12–22 (30) µm]. The spores size found in the type specimen agree more or less with the var. *fibula* (5.5–6.5 × 2.5–3.0 µm) although, according the original description, they are said to be a bit smaller (4–5 × 2.5–3.5 µm).

Rickenella aulacomnophila agrees well, however, with *Agaricus hydrinus* FRIES (1815), which is the reason KRIEGLSTEINER (1991) made the new combination as a variety of *R. fibula*.

KUYPER (1995d) and LUDWIG (2000) consider it conspecific with *R. fibula*, however, because of intergradating characters of var. *hydrinus* with the typical variety. Moreover, typical *R. fibula* with 7.0–12 µm wide hymenial cystidia may also be found growing among *Aulacomnium palustre* (e.g. revised specimens: Soběslav, Blata, 8 July 1951 leg. F. Kotlaba, PRM; ditto, 30 June 1951 leg. F. Kotlaba, PRM; Chotěboř, Sobiňov – Bílek, 27 May 1944 leg. F. Šmarda, BRNM; Borovná near Telč, Smíchov pond, 17 June 1944 leg. F. Šmarda, BRNM). Due to our observations, within these populations sometimes more robust carpophores are formed, fitting with the concept of *R. aulacomniophila*.

Our observations confirm therefore the conclusions of KUYPER (1995d) and LUDWIG (2000). Considering the small differences and overlap of characters. *R. aulacomniophila* should be considered a phenotypic variety of *R. fibula*.

***Rickenella fibula* var. *pseudocantharellus* Bon, Doc. mycol. 22(86): 40. 1992**

Type specimen: M. Bon 071120702 [holotype, Lille].

Selected literature: Bon, Doc. mycol. 22(86): 40. 1992; Bon, Doc. mycol. Mém. hors sér. 4: 146. 1997; Bon & Van Haluwyn, Doc. mycol. 12(46): 37. 1982.

Notes: This variety is said to differ from the type by having cantharelloid habitus with up to 20 (30) mm broad pileus, 10–30 × 2–5 mm large stipe, furcate lamellae (similar to the genus *Hygrophoropsis*), slightly narrower spores [5.0–6.0 (7.0) × 2.0–2.5 (3.0) µm], some pileocystidia and pileipellis hyphae diverticulate, and by growing singly or in groups, probably parasitic, in xerophilous associations with *Bryaceae*, mostly on silicate soils.

The microscopical differences given by BON (l.c.) fit well into the variability of *Rickenella fibula*. Diverticulate hyphae in the pileipellis have been observed in typical *Rickenella fibula*, though only scarcely so. Therefore var. *pseudocantharellus* should better be considered as a variant without formal taxonomic status, also in view of the observations by Hausknecht mentioned above.

2. *Rickenella swartzii* (Fr.: Fr.) Kuyper**Pl. 46 & 47, Fig. 52**

Agaricus swartzii Fr., *Observationes* 1: 90. 1815; *Agaricus fibula* var. *swartzii* Fr.: Fr., *Syst. Mycol.* 1: 164. 1821; *Omphalia swartzii* (Fr.: Fr.) Quél., *Bull. Soc. Mycol. Fr.* 1: 27. 1885; *Omphalina swartzii* (Fr.: Fr.) Kotl. & Pouzar, *Česká Mykol.* 20: 136. 1966; *Omphalina fibula* var. *swartzii* (Fr.: Fr.) Quél., *Enchir. fung.*: 46. 1886; *Mycena fibula* var. *swartzii* (Fr.: Fr.) Kühner, *Genre Mycena*: 608. 1938; *Mycena swartzii* (Fr.: Fr.) A.H. Sm., *North Amer. Mycena*: 123. 1947; *Rickenella swartzii* (Fr.: Fr.) Kuyper, *Persoonia* 12: 188. 1984. – *Agaricus setipes* var. *acrocyaneus* Fr., *Icon. Select. Hymen.* 1: pl. 75, fig. 4. 1873.

Misapplied names: *Agaricus setipes* Fr., *Observ.* 2: 162. 1818; *Agaricus fibula* Fr.: Fr., *Syst. Mycol.* 1: 159. 1821; *Omphalia setipes* (Fr.: Fr.) Quél., *Mém. Soc. Emul. Montbéliard (Champ. Jura Vosges)* 2(5): 220. 1872; *Omphalina setipes* (Fr.: Fr.) Quél., *Enchir.*: 46. 1886; *Hemimycena setipes* (Fr.: Fr.) Singer, *Ann. Mycol.* 41: 123. 1943; *Gerronema setipes* (Fr.: Fr.) Singer, *Sydowia* 15: 51. 1961; *Rickenella setipes* (Fr.: Fr.) Raithelh., *Métrodiana* 4: 61. 1973.

2a. *Rickenella swartzii* f. *swartzii*

Type specimen: not preserved (Sweden). Neotype: Sweden, Västergötland, Göteborg, Botanic garden, 22 July 1939 leg. T. Nathorst-Windahl 1518, in: Lundell & Nannfeldt, *Fungi exsiccati suecici*, No. 1118 (PRM 611316).

Selected icones: Bon, *Champ. Eur. occ.*: 129. 1987; Breitenbach & Kränzlin, *Pilze Schweiz* 3: pl. 402. 1991; Bresadola, *Iconogr. mycol.* 6: pl. 274. 1928; Cetto, *Funghi Vero* 4(Ed. 3): 1484. 1993; Courtecuisse, *Mushrooms Britain and Europe*: 94. 1999; Courtecuisse & Duhem, *Champ. Fr. Eur.*: pl. 328. 1994; J. Lange, *Fl. agar. dan.* 2: pl. 61D. 1936; Ludwig, *Pilzkompendium* 1: pl. 168, fig. 76.4. 2000; Moser & Jülich, *Farbatlas Basidiomyc.* 11: *Rickenella* 1. 1993; Phillips, *Mushr. other Fungi*: 75. 1981; Ricken, *Blätterpilze*: pl. 105/1. 1915; Ryman & Holmåsen, *Svampar*: 264. 1984; Stappung, *Schweiz. Z. Pilzk.* 78(4): title page. 2000.

Selected literature: Bon, *Doc. mycol. Mém. hors sér.* 4: 147. 1997; Cléménçon, *Z. Mykol.* 48: 230. 1982 (as *R. setipes*); Courtecuisse, *Mushrooms Britain and Europe*: 816-817. 1999; Kost, *Z. Mykol.* 50: 218-219. 1984; Kuyper, *Fl. Agar. Neerland.* 3: 157-158. 1995; Lamoure, *Sydowia, Beih.* 8: 251-254. 1979 (as *R. setipes*); Ludwig, *Pilzkompendium* 1(Beschreibungen): 638-639. 2001; Singer, *Nova Hedwigia* 7: 88-89. 1964 (as *R. setipes*).

Description: **Pileus** 4–13 mm broad, convex, campanulate or broadly obtusely conical, then up to conical-convex, almost applanate when old, obtuse, in old carpophores depressed at centre, margin entire, straight then slightly uplifted, hygrophanous, translucently striate almost to centre, finely pubescent (lens), dark purplish, purplish brown to purplish black (8–9F7–8) at centre, paler, violaceous grey-brown, ochraceous yellow (5B4, 7D4) towards margin, outermost margin sometimes almost white, pallescent on drying. **Lamellae** distant, L = 14–20, l = (1) 2, broadly adnate to decurrent, arcuate, pubescent, slightly intervenose, especially when old, whitish to pale cream-colour, with concolorous pubescent edge. **Stipe** 20–45 × 0.5–1.0 (1.5) mm, cylindrical, sometimes curved, somewhat broadened at apex, cylindrical to subclavate at base, entirely white pubescent, with whitish rhizoids at base, purplish grey-brown (± 16D–E3, 8–9F8) at apex, pale yellow-brown or ochraceous yellow (5A3–5, 5B3) below, sometimes almost white in basal part. **Context** thin, concolorous with surface, with indistinct **smell** and mild **taste**.

Spores 5.0–7.0 × 2.5–3.2 (3.7) μm, E = 1.5–2.8, Q = 1.8–2.3, ellipsoid, cylindrical-ellipsoid, thin-walled, hyaline. **Basidia** 13–23 × 4.5–5.5 μm, 4-spored, clavate. **Basidioles** 8.0–21 × 2.5–6.0 μm, cylindrical to clavate. **Cheilocystidia** 32–52 × 8.0–19 μm, fusoid, sublageniform, (sub)utriform, with cylindrical to mostly subcapitate, obtuse rostrum, thin- to slightly thick-walled, hyaline. **Pleurocystidia** similar to cheilocystidia. **Hymenophoral trama** composed of cylindrical to inflate, ± thin-walled,



Pl. 46: *Rickenella swartzii*, photo V. KABÁT

smooth to minutely incrustated, hyaline, up to 25 μm wide hyphae. **Pileipellis** a cutis of up to 10 μm wide, cylindrical to fusoid elements with slightly thickened walls, with scattered lateral projections, with pale purplish greyish walls in KOH; terminal elements adpressed to suberect, cylindrical to clavate, up to 11 μm wide. **Pileocystidia** 48–115 \times 10–23 (32) μm , similar to cheilocystidia but larger and more robust. **Stipitipellis** a cutis of up to 6 μm wide, parallel, cylindrical, slightly thick-walled hyphae with hyaline to pale greyish walls in KOH. **Caulocystidia** 53–100 \times 10–18 μm , similar to pileocystidia. **Clamp-connections** present in all tissues.

Chemical reactions: No part of tissue or spores dextrinoid or amyloid.

Ecology: Single or in groups, probably parasitic, in mosses in humid places mostly on rich soils, in coniferous forests (rarely in under broadleaved trees), on wet pastures, wet meadows, up to 1450 m alt.

Distribution: Very common, widespread in the Northern Hemisphere.

Phenology: (May-)June to September(-October).

Collections examined: **AUSTRIA:** Niederösterreich, Litschau, Brand, Bummermoos, 23 June 1993 leg. A. Hausknecht (WU). – Niederösterreich, St. Pölten, Nützing, 1 July 1989 leg. W. Klofac and A. Hausknecht (WU). – Niederösterreich, St. Pölten, Burbach, 12 Aug. 1984 leg. W. Klofac (WU). – Niederösterreich, Schrems, Behofen, 3 June 1983 leg. L. Sandmann (WU). – Niederösterreich, Groß-Siegharts, Blumau/Wild, 22 Sept. 1990 leg. A. Hausknecht (WU). – Oberösterreich, Grieskirchen, Peuerbach, 4 Sept. 1994 leg. H. Voglmayr (WU). – **CROATIA:** Mrkopalj, Sungerski lug, 8 June 2000 leg. Z. Tkalčec and A. Mešić (CNF 1/1479). – **CZECH REPUBLIC:** BOHEMIA: Zádub near Konstantinovy Lázně, 15 July 1966 leg. M. Svrček 431/66 (PRM). – Hlučov near Kokořín, 13 July 1996 leg. M. Svrček 146/96 (PRM). – Praha, Stromovka, Oct. 1937 leg. J. Herink (PRM). – ditto, 28 July 1939 leg. J. Herink (PRM). – ditto, 25 Sept. 1943 leg. M. V. Svrček and J. Herink 200/43 (PRM). – Praha, Petřínské sady, 22 May 1958 leg. E. Wichanský (PRM). – Praha, Královská Obora, 27 Sept. 1950 leg. Z. Pouzar (PRM). – Praha-Modřany, 11 July 1948



Pl. 47:
Rickenella swartzii, photo V.
KABÁT

leg. V. Vacek (PRM). – ditto, 27 Sept. 1942 leg. J. A. Herink 774/42 (PRM). – Jíloviště, 22 June 1947 leg. V. Vacek (PRM). – Mnichovice, 4 June 1944 leg. M. Svrček (PRM). – Hostomice p. Brdy, Písek Mt., 31 May 1990 leg. M. Svrček 496/90 (PRM). – Turnov, park, 6 Aug. 1944 leg. J. Herink (PRM). – Cisařský Les, Podhorní vrch, 31 July 1950 leg. M. Svrček (PRM). – Golčův Jeníkov, 22 July 1940 leg. J. Herink (PRM). – ditto, 19 July 1940 leg. J. Herink (PRM). – ditto, 30 July 1940 leg. J. Herink (PRM). – Pacov, 13 Aug. 1942 leg. J. A. Herink 520/42 (PRM). – Čerčovice na Sázavě, Poříčko, 26 Sept. 1943 leg. J. Kubička (PRM). – ditto, 3 Oct. 1948 leg. J. Kubička (PRM). – Kersko near Poříčany, 30 July 1944 leg. M. V. Svrček 208/44 (PRM). – Vodňany, Haniperk, 7 Sept. 1938 leg. J. Herink (PRM). – Hracholusky, 24 Sept. 1940 leg. J. Herink (PRM). – ditto, 11 Oct. 1940 leg. J. Herink (PRM). – Hořelice near Nučice, 5 July 1946 leg. M. Svrček 356/46 (PRM). – Vřesce near Tábor, 9 Aug. 1946 leg. M. Svrček 648/46 (PRM). – Jedlany near Tábor, 3 Aug. 1946 leg. M. Svrček 647/46 (PRM). – Smržov near Lomnice nad Lužnicí, 1 June 1960 leg. J. Kubička (PRM). – Chotýčany, Libochovka valley, 13 July 1962 leg. M. Svrček 372/62 (PRM). – Čimelice, 16 June 1961 leg. M. Svrček (PRM). – ditto, Borky, 23 July 1965 leg. M. Svrček 129/65 (PRM). – Vrábsko near Čimelice, Nerestec, 25 Aug. 1963 leg. M. Svrček 600/63 (PRM). – ditto, Kovářka, 23 July 1964 leg. M. Svrček 152/64 (PRM). – ditto, U dubu, 1 Aug. 1966 leg. M. Svrček 772/66 (PRM). – Šumava Mts., Modrava, 14 Aug. 1993 leg. V. Antonín 93.112 (BRNM). – MORAVIA: Staré Hamry, Jamník, 28 July 2000 leg. V. Antonín 00.35 and D. Janda (BRNM). – Jedlová near Polička, Balda forest, 25 July 1961 leg. K. Kult (BRNM). – Křtiny, Arboretum, 16 July 1982 leg. A. Vágner (BRNM). – Babice, June 1962 leg. K. Koncerová (BRNM). – Lelekovice, Babí lom, 23 June 1940 leg. F. Šmarda (BRNM). – ditto, Koutův žleb, 29 Sept. 1944 leg. F. Šmarda (BRNM). – Vanová, Býšovský potok valley, 1 July 1944 leg. F. Šmarda (BRNM). – Ořešín, 15 July 1962 leg. K. Koncerová (BRNM). – Žarošice, 9 Sept. 1949 leg. V. Vacek (PRM). – **GERMANY:** Erzgebirge (Krušné hory Mts.), Tannenberg, Obertannenberger Tal, 24 Sept. 1988 leg. V. Antonín 88.123 (BRNM). – **FRANCE:** La Chapelle-en-Serval (Oise), 19 July 1958 leg. H. Romagnesi 58.78 (PC, herb. Romagnesi). – **THE NETHERLANDS:** Prov. Utrecht, Veenendaal, De Blauwe Hel, 24 Sept. 1981, C.M. Swart-Velthuyzen 81/304 (L); Prov. Zeeland, Walcheren, Vrouwenpolder, 10 Nov. 1984, J.W. Jongepier 118 (L); Zuid Beveland, Biezellinge, 13 Nov. 1986, W. Kuijs (L); Zeeuws Vlaanderen, Aardenburg, Elderschans, 6 July 1980, A. de meyer 70 (L). – **SLOVAKIA:** Horná Orava LPA, Oravské Veselé, Pílsko, Randová valley, 30 Sept. 2000 leg. V. Antonín 00.140 (BRNM). – Horná Orava LPA, Mútne, Zlatná dolina, 21 July 2001 leg. V. Antonín 01.141 and H. Deckerová (BRNM). – Horná Orava LPA, Zákamenné, 21 July 1951 leg. J. Kubička (PRM). – Kvetnice, Křižová Mt., 16 June 1946 leg. J. Kubička (PRM). – Vysoké Tatry Mts., Kežmarok, 19 June 1963 leg. E. Končeková (PRM). – Belianské Tatry Mts., Hviezdoň, near Studený prameň stream, 16 Aug. 1957 leg. K. Kříž (BRNM). – Bukovské vrchy Mts., Bahno Nature reserve, 19 Oct. 1995 leg. S. Adamčík (BRA). – **SWEDEN:** Västergötland, Göteborg, Botanic garden, 22 July 1939 leg. T. Nathorst-Windahl 1518, in: Lundell & Nannfeldt, Fungi exsiccatai suecici, No. 1118 (PRM, neotype). – **UKRAINE:** Komsomolskoje (Německá Mokrá), July 1932 leg. A. Pilát (PRM).

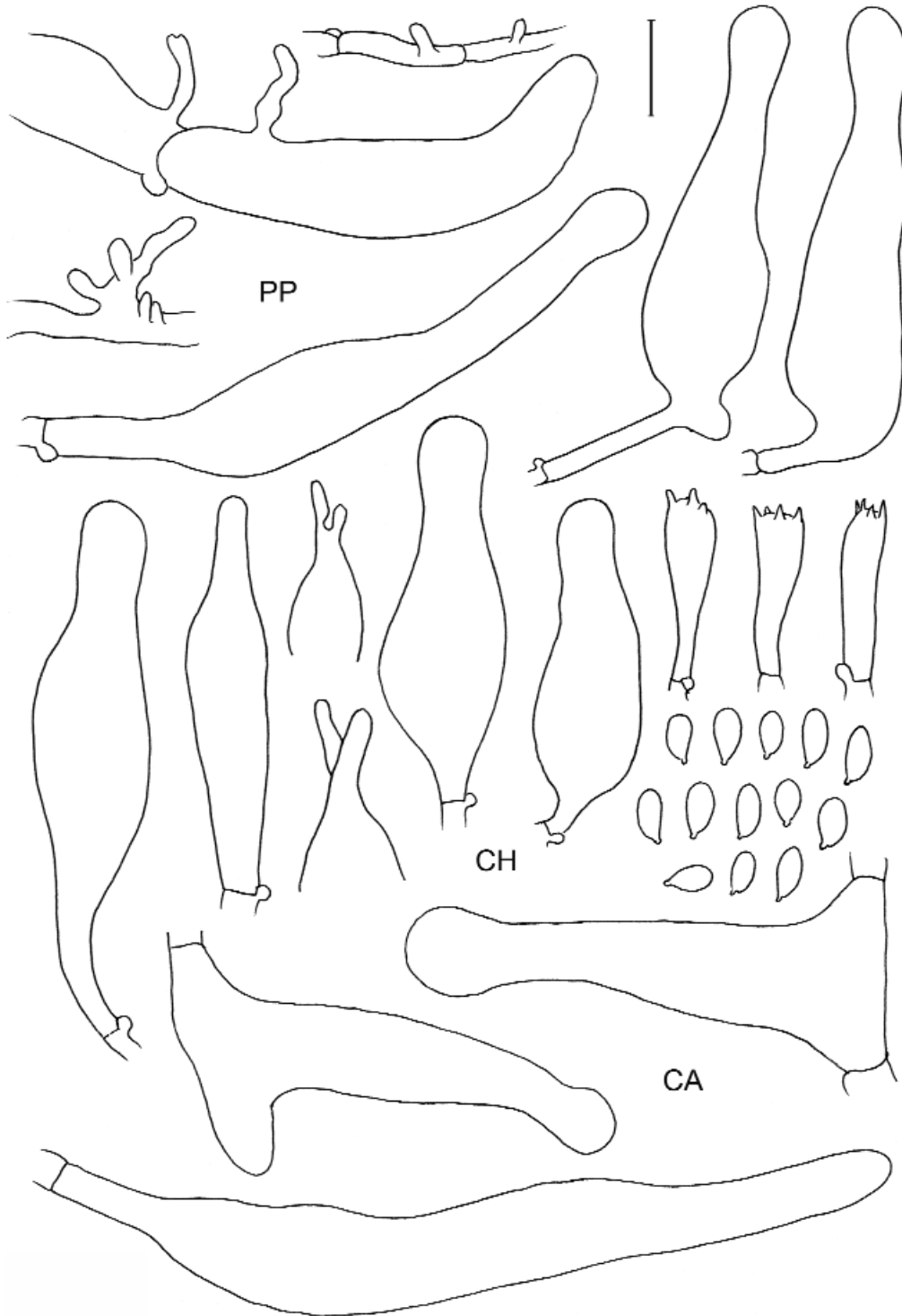


Fig. 52: *Rickenella swartzii*

Notes: *Rickenella swartzii* is easily recognised by the purple brown to purple black coloured centre of the pileus and apex of stipe, combined with distinct, rather robust hymenial cystidia. However, the variability of the width of hymenial cystidia is very broad – we found 8–12 µm, and 12–19 µm wide cystidia in various collections.

KUYPER (1995d) mentioned shorter cystidia [(31) 35–54 × (7) 8–13 (14) µm], CLÉMENÇON (1982), CONTU (1989) and KOST (1984) very small spores (4–5 × 2–3 µm). KOST (1984) also described in detail the pigmentation and structure of lamellar trama. BON (1997) mentioned very small spores (4–5 × 2–3 µm) and narrower cystidia [x 6–12 (15) µm].

This species is also known under the name *R. setipes* (Fr.: Fr.) Raithelh. However, KUYPER (1984) clearly demonstrated that the original description by FRIES (1818) represents a *Mycena* species. Only the unnamed variety later called *A. setipes* var. *acrocyaneus* Fr. undoubtedly represents *R. swartzii*. Therefore, we use the name proposed by KUYPER (1984), also in the accordance with DENNIS & al. (1960), KÜHNER (1938), and SMITH (1947).

2b. *Rickenella swartzii* f. *alnobetulae* Jamoni

Rickenella swartzii f. *alnobetulae* Jamoni, Boll. Gruppo micol. Bres. 40:270. 1997.

Type specimen: Italy, Monte Rosa, Alagna Valsesia, Val d'Olen, 9 Aug. 1994 leg. P. G. Jamoni (holotype, herb. GMFN 2923).

Selected literature: Jamoni, Boll. Gruppo micol. Bres. 40:226–271. 1997; Ludwig, Pilzkompodium 1(Beschreibungen): 723. 2001.

Description (according to JAMONI 1997): **Pileus** 5–12 mm broad, convex-campanulate, convex-umbonate, with small papilla, then applanate or slightly depressed at centre, but never infundibuliform, almost glabrous, hygrophanous, translucently striate up to centre when moist, yellow-brown, pale brown, or ochraceous at first, paler towards margin and darker at centre, later on dark brown, brown-black to black at center when old, greasy, like lubricated to touch and sparsely pruinose under lens; when old or when bruised turning brown-fulvous, brown-orange with permanent black centre. **Lamellae** distant, L = 12–14, l = 1, arcuate-decurrent, broad, white with a greyish reflex, with concolorous smooth edge. **Stipe** 15–22 × 0.5–1.2 mm, cylindrical, slightly broadened at apex, bulbillose at base, often curved, solid then fistulous, first yellowish-fulvous, then darker at apex, finally grey-brown to greyish black with a violaceous or grey-violaceous tinge at apex, just below attachment of lamellae, opaque, densely white pubescent over whole length, with age turning yellow-fulvous at upper part and yellow-orange in lower part, the violaceous tinge remaining however, at extreme apex, finally sometimes the stipe is uniformly orange except for darker, black-purple apex; with white basal mycelium. **Context** thin, grey-black in pileus and stipe apex, with slight violaceous tinge, concolorous with surface in other places. **Smell** absent, **taste** not tested.

Basidiospores 4.5–6.0 (6.5) × 2.5–3.0 µm, ellipsoid to cylindrical-ellipsoid, smooth, hyaline. **Basidia** 18–20 × 4.0–5.0 µm, 4- (rarely 2-)spored, clavate. **Cheilocystidia** 35–70 × 9.5–14 µm, fusoid, (sub)lageniform, often (sub)capitate, rostrate (rarely with branched rostrum), thin- to slightly thick-walled. **Pleurocystidia** similar to cheilocystidia. **Hymenophoral trama** made up of up to 15 µm wide, cylindrical to (sub)fusoid, smooth or minutely incrustated hyphae with hyaline to pale yellowish-greyish walls in KOH. **Pileipellis** a cutis, made up of cylindrical to inflated, up to 15 µm wide elements with ± slightly thickened, smooth or minutely incrustated walls, subhyaline to pale greyish-yellowish in KOH, often with digitate irregular lateral projections; terminal elements adpressed to suberect, cylindrical to clavate, up to 15 µm wide. **Pileocystidia** 45–70 × 8.0–14 µm, similar to cheilocystidia but more

variable in shape. **Stipitipellis** a cutis, of parallel, cylindrical, thin- to slightly thick-walled, up to 6.0 µm wide hyphae with pale violaceous-yellow-grey walls or contents in KOH. **Caulocystidia** numerous, 45–85 × 10–14 µm, lageniform, less frequently subfusoid, often capitate, thin- to slightly thick-walled, with subhyaline walls in KOH. **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues dextrinoid or amyloid.

Ecology: In groups, often caespitose (2–3 specimens unified at base), probably parasitic, among mosses only (?) under *Alnus viridis* in the subalpine belt (1700–2000 m alt.).

Distribution: Known only from Italy.

Phenology: July to August.

Collections examined: ITALY: Monte Rosa, Alagna Valsesia, Val d'Olen, 9 Aug. 1994 leg. P. G. Jamoni (holotype, herb. GMFN 2923). – ditto, 22 July 1993 leg. P. G. Jamoni (herb. GMFN 2694).

Notes: The form *alnobetulae* differs from the typical form especially in having more brightly coloured carpophores, convex-papillate pileus, basidia 4-spored interspersed with rare 2-spored ones, smaller spores from 4-spored basidia, smaller pileocystidia, and the habitat in *Alnus viridis* copses.

3. *Rickenella mellea* (Singer & Cléménçon) Lamoure

Fig. 53

Gerronema melleum Singer & Cléménçon, Schweiz. Z. Pilzk. 49: 120. 1971; *Rickenella mellea* (Singer & Cléménçon) Lamoure, Sydowia, Beih. 8: 251. 1979.

Type specimen: Switzerland, Valais, near Borgne du Ferpècle, under Gletscher Mont Miné, 11 July 1971 leg. R. Singer C5453 (F, holotype).

Selected icones: Courtecuisse & Duhem, Champ. Fr. Eur.: pl. 329. 1994; Ludwig, Pilzkompodium 1: pl. 168, fig. 76.1. 2000; Moreau, Bull. Soc. Mycol. Bot. Dauphine-Savoie 42(166): 34. 2002; Senn-Irlet, Arctic and Alpine Fungi 3: 21. 1990.

Selected literature: Bon, Doc. mycol. Mém. hors sér. 4: 147. 1997; Cléménçon, Z. Mykol. 48(2): 231. 1982; Lamoure, Sydowia, Beih. 8: 251–254. 1979; Ludwig, Pilzkompodium 1(Beschreibungen): 635–636. 2001; Senn-Irlet, Arctic and Alpine Fungi 3: 21–22. 1990; Singer & Cléménçon, Schweiz. Z. Pilzk. 49: 120. 1971.

Description (macroscopy after SINGER & CLÉMENÇON 1971, CLÉMENÇON 1982): **Pileus** 4.5–6 mm broad, convex, with papilla, slightly hygrophanous, slightly translucently striate, finely pubescent with hyaline hairs (lens), slightly grooved, honey coloured, yellow-beige or chamois to “macaroons” (M&P), darker, up to 14H7 to 15K9 (M&P) towards centre, pallescent when dry (“acorn”) with darker margin and whitish centre. **Lamellae** distant to very distant, lamellulae present, decurrent, arcuate, rather broad, stramineous to beige or almost whitish, whitish with sparse brown stains. **Stipe** 8–15 × 0.8–1.2 mm, cylindrical, smooth, apparently glabrous, but finely pubescent under lens, totally glabrescent when old, concolorous with lamellae or pileus; with white basal mycelium. **Context** very thin and fragile, almost concolorous or paler than surface, without colour change, without smell.

Spores 6.5–9.0 (10.0) × 2.7–4.0 µm, E = 1.6–2.9, Q = 2.4, cylindrical, cylindrical-ellipsoid, ellipsoid, rarely ovoid, sometimes slightly allantoid, thin-walled. **Basidia** 21–27 × 5.0–8.0 µm, 4-spored, clavate. **Basidioles** 15–30 × 2.5–7.0 µm, cylindrical to clavate; irregular basidioloid elements present on lamellar edge. **Hymenial cystidia** 25–46 × 7.0–11 µm, lageniform, fusoid, less frequently clavate, mostly capitate or subcapitate, capitulum up to 10 µm wide, slightly thick-walled. **Hymenophoral trama** composed of thin- to slightly thick-walled, up to 25 µm wide hyphae, made up of cylindrical,

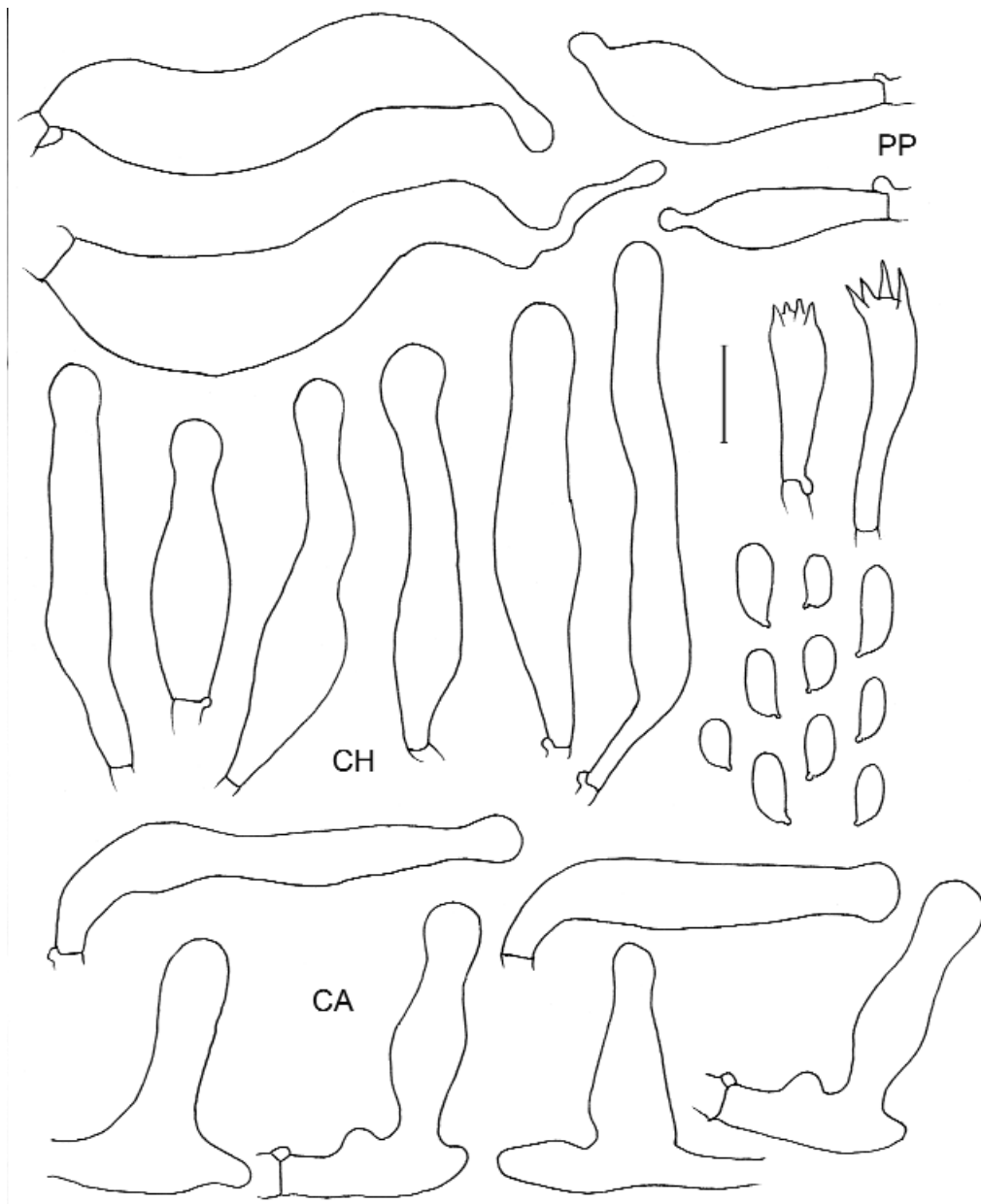


Fig. 53: *Rickenella mellea*

ellipsoid or fusoid elements. Pileipellis a cutis, made up of radially arranged, \pm interwoven, \pm thin-walled, up to 12 μm wide cylindrical hyphae, sometimes constricted at septa, with hyaline walls in KOH. **Pileocystidia** discrete or in form of (sub)erect terminal elements, 25–65 \times 7.0–15 μm , versiform, clavate, broadly clavate, cylindrical, lageniform, subfusoid, rarely rostrate, thin- to slightly thick-walled. **Stipitipellis** a cutis, of parallel, cylindrical, slightly thick-walled, smooth, up to 5 μm wide

hyphae. **Caulocystidia** discrete or in form of lateral projections of surface hyphae, 23–58 × 5.0–8.5 µm, lageniform, conical, fusoid, often (sub)capitate, thin- to slightly thick-walled. **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues dextrinoid or amyloid.

Ecology: Single or in groups, probably parasitic, among mosses (*Bryum capillare*, *Philonotis* sp.) in sunny and moist places in the arctic-alpine belt.

Distribution: Known only from France, Italy, Norway and Switzerland; probably occurring in all arctic-alpine regions in Europe.

Phenology: July–September

Collections examined: **ITALY:** Alpe tre Potenze, 22 July 1995 leg. M. Antonini (SIENA, BRNM). – **SWITZERLAND:** Valais, near Borgue du Ferpècle, under Mont Miné, 11 July 1971 leg. R. Singer C 5453 (F, holotype); Col de Oberalys, 12 Aug. 1982, J. Trimbach (L); Berne, Oberaar, Gr. Wang, 16 Sept. 1981, B. Senn-Irlet (L).

Notes: *Rickenella mellea* is characterised in having yellow-beige, pale olivaceous brown, cinnamon brown, yellow-brown, honey brown, small, up to 6 mm broad pileus, rather short stipe concolorous with pileus, versiform, mostly clavate pileocystidia, lageniform or fusoid hymenial cystidia and caulocystidia, and by growing in arctic-alpine regions.

BON (1997) mentioned smaller spores [6–7 (8) × 2.5–3 µm] and smaller basidia (up to 20 × 5–6 µm).

REDHEAD (1980) synonymised *R. mellea* with *R. pseudogrisella*. However, although macroscopically very similar, the latter one has slightly broader spores [(6.0) 6.5–8.5 (9.0) × 3.2–5.0 (5.5) µm] and especially distinctly broader and differently shaped hymenial cystidia. Also a connection of *R. mellea* with the liverwort *Blasia pusilla* is not conformed; it is always mentioned as growing in mosses. Therefore, we consider both species separate taxa.

Frequently pale forms of *Rickenella fibula* are reported as *R. mellea*, which, however, can readily be distinguished by the microscopical characters, in particular the slender, lageniform cystidia.

4. *Rickenella pseudogrisella* (A.H. Sm.) Gulden

Pl. 48, Fig. 54

Mycena pseudogrisella A.H. Sm., N. Amer. Mycena: 124. 1947; *Gerronema pseudogrisella* (A.H. Sm.) Gulden & M. Lange, Norw. J. Bot. 18: 8. 1971; *Rickenella pseudogrisella* (A.H. Sm.) Gulden, in Gulden, Jenssen & Stordal, Arctic Alpine Fungi 1: 17. 1985. – *Omphalina demisella* M. Lange, Meddel. Grønland 147(11): 23. 1955; *Rickenella demisella* (M. Lange) Cléménçon, Z. Mykol. 48(2): 231. 1982.

Type specimen: U.S.A., Michigan, Ontonagon Co., Porcupine Mts., 14 Sept. 1933 leg. E.B. Mains and A.H. Smith 33-960 (holotype, MICH).

Selected icones: Gulden, in Gulden, Jenssen & Stordal, Arctic Alpine Fungi 1: 17. 1985; Ludwig, Pilzkompodium 1: pl. 168, fig. 76.2. 2000.

Selected literature: Bon, Doc. mycol. Mém. hors sér. 4: 148. 1997; Cléménçon, Z. Mykol. 48(2): 231. 1982 (as *R. demisella*); Gulden, in Gulden, Jenssen & Stordal, Arctic Alpine Fungi 1: 17–18. 1985; M. Lange, Meddel. Grønland 147(11): 23–24. 1955 (as *Omphalina demisella*); Ludwig, Pilzkompodium 1 (Beschreibungen): 636–637. 2001; Redhead, Fungi Canad. 170. 1980 (as *Gerronema pseudogrisella*); Smith, N. Amer. Mycena: 124–126. 1947 (as *Mycena* p.).

Description (macroscopical description according to GULDEN 1985, LANGE 1955, REDHEAD 1980, and SMITH 1947): **Pileus** 2–9 mm broad, convex to plano-convex, becoming slightly to moderately depressed at centre, with straight and entire, then crenulate and reflexed margin, hygrophanous, trans-



Pl. 48: *Rickenella pseudogrisella*, photo G. GULDEN

lucently striate, glabrous, radially sulcate when old, honey to olivaceous buff, sometimes buff to whitish at margin, pallescens when dry. **Lamellae** moderately distant, $L = \text{ca. } 10$, $l = 2$, adnate to adnexed with decurrent tooth, moderately broad, often ventricose, whitish with pale olivaceous tinge. **Stipe** $6\text{--}16 \times 0.5\text{--}1.5$ mm, tapering below, with slightly clavate base, fistulose, cartilaginous, somewhat translucent, glabrous, slightly pubescent especially at apex, with whitish basal mycelium, slightly paler than pileus. **Context** white, without any distinct **smell** and **taste**.

Spores (6.0) $6.5\text{--}8.5$ (9.0) \times $3.2\text{--}5.0$ (5.5) μm , $E = 1.7\text{--}2.3$, $Q = 2.1$, ellipsoid, cylindrical-ellipsoid, cylindrical, thin-walled, smooth, hyaline. **Basidia** $16\text{--}25 \times 5.5\text{--}7.0$ μm , 4-spored, clavate. **Basidioles** $10\text{--}25 \times 3.5\text{--}7.5$ μm , cylindrical to clavate. **Hymenial cystidia** $39\text{--}68 \times 12\text{--}21$ (35) μm , clavate, broadly clavate, utriform, rarely vesiculose, \pm thin-walled to very slightly thick-walled. **Hymenophoral trama** composed of cylindrical, ellipsoid or fusoid elements, thin-walled, up to 22 μm wide. Pileipellis a cutis, made up of radially arranged, \pm thin-walled, up to 10 μm wide cylindrical hyphae, sometimes constricted at septa, smooth or rarely with scattered \pm digitate projections. **Pileocystidia** suberect to erect, rarely adpressed, $23\text{--}47 \times 8.0\text{--}17$ μm , clavate, (sub)utriform, vesiculose, rarely irregular, thin- to slightly thick-walled. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, smooth, up to 10 μm wide, with subhyaline to pale greenish walls in KOH. **Caulocystidia** adpressed to erect, $32\text{--}85 \times 8.0\text{--}17$ μm , clavate, (sub)cylindrical, rarely sublageniform, \pm thin-walled. **Clamp-connections** present in all tissues.

Chemical reactions: Neither spores nor tissues dextrinoid or amyloid.

Ecology: Single or in groups, probably parasitic, always on the liverworts (*Blasia pusilla*), on exposed sandbanks in creeks, on muddy or clayed soils along rivers.

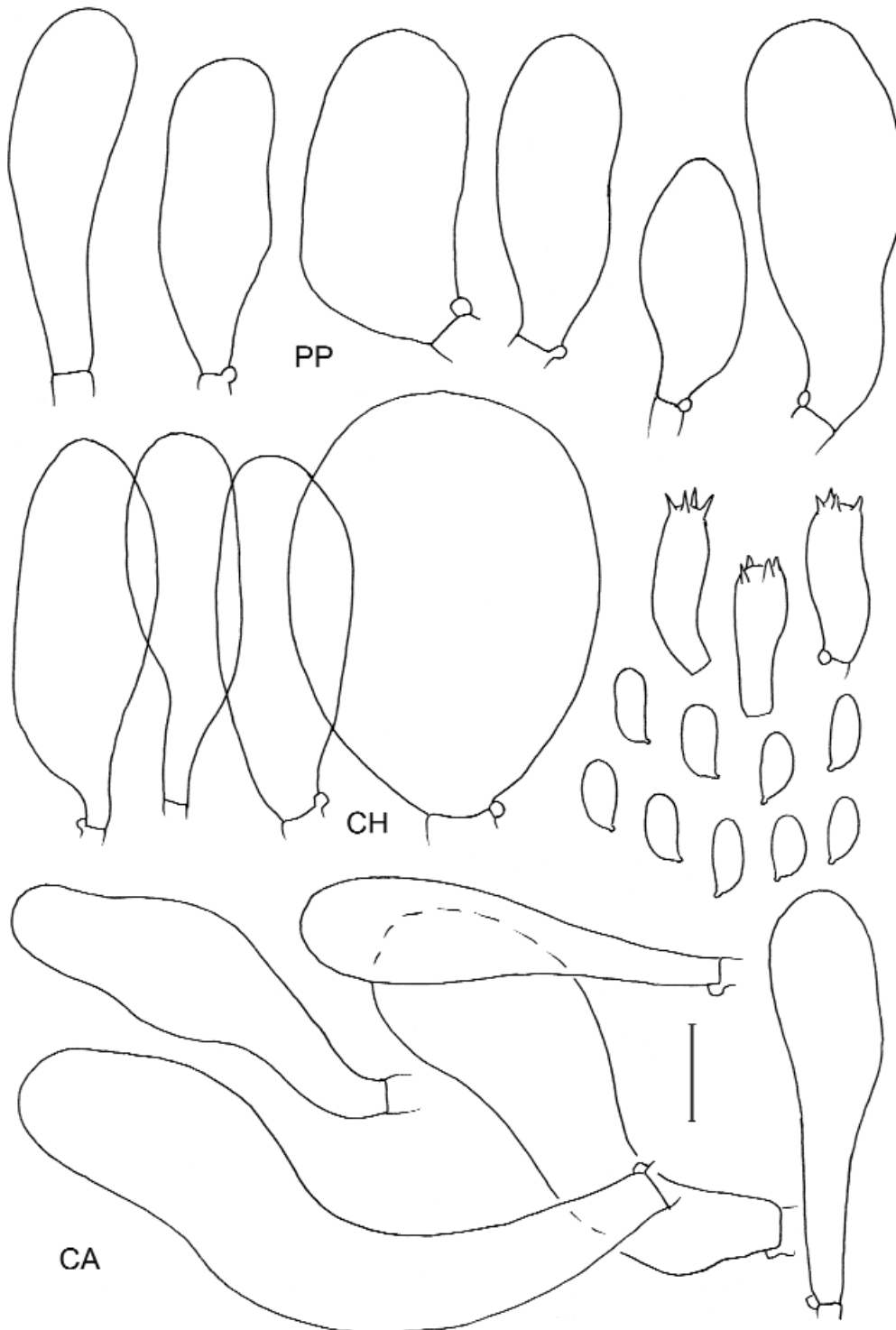


Fig. 54: *Rickenella pseudogrisella*

Distribution: Although *Blasia* grows from lowlands to the alpine belt, this fungus seems to be restricted only to the arctic-alpine regions. In Europe, it is known from Finland, Greenland, Iceland, Norway, and Switzerland. It was collected also in the U.S.A. (SMITH 1947) and Canada (REDHEAD 1980); according to CLÉMENÇON (1982), it probably grows also in the Alps.

Phenology: July to September (Canada also in June).

Collections examined: **DENMARK:** Greenland, Grønnedal near Ivigtut, 11 July 1946 leg. M. Lange, in: The Botanical Expedition to West-Greenland 1946, No. 26 (C, holotype of *Omphalina demisella*). – **U.S.A.:** Michigan, Ontonagon Co., Porcupine Mts., 14 Sept. 1933 leg. A. H. Smith 33-960 (MICH, holotype).

Notes: *Rickenella pseudogrisella* is characterised in having small honey to olivaceous buff coloured pileus, adnate to adnexed lamellae with decurrent tooth, short stipe, rather large spores, clavate to vesiculose hymenial cystidia, and association with the liverwort *Blasia*. The macroscopically very similar *R. mellea* especially differs by smaller spores ($6.5\text{--}7.7 \times 2.5\text{--}2.7 \mu\text{m}$) and ecology.

The revision of the type specimens of *Mycena pseudogrisella* and *Omphalina demisella* showed, that both taxa differ in the size and shape of spores. The spores are slightly more slender and narrow in *M. pseudogrisella* ($6.5\text{--}8.5 \times 3.2\text{--}4.5 \mu\text{m}$) than in *O. demisella* [$(6.0)\ 7.0\text{--}8.0\ (8.5) \times 4.0\text{--}5.0\ (5.5) \mu\text{m}$]. However, macroscopic and other microscopic features, as well as their ecology, are identical. Therefore, we agree with GULDEN (1985) and REDHEAD (1980) and we consider both identical. SMITH (1947) mentioned even more narrow spores ($7\text{--}8 \times 3\text{--}3.5 \mu\text{m}$), however, we found also broader spores in the type specimen.

BON (1997) mentioned larger basidia ($25\text{--}30 \times 6\text{--}8 \mu\text{m}$) and smaller cystidia [$30\text{--}45\ (55) \times 8\text{--}12\ (15) \mu\text{m}$], and he included it in the sect. *Cystomphalina* Contu (= *Jacobia* Contu).

REDHEAD (1980) studied rhizoids of *Blasia* growing with this fungus, and he mentioned the presence of clamped hyphae forming numerous massive clasping appresoria.

5. *Rickenella brunneolilacina* Contu, Bon & Curelli

Fig. 55

Rickenella brunneolilacina Contu, Bon & Curelli, Micol. Veget. Medit. 4(1): 58. 1989; *Jacobia brunneolilacina* (Contu, Bon & Curelli) Contu, Boll. Gr. Micol. Bres. 40(2-3): 171. 1997 (invalid, Art. 41); *Contumyces brunneolilacina* (Contu, Bon & Curelli) Redhead & al., Mycotaxon 82: 162. 2002.

Type specimen: Italy, Sardinia, Villacidro, 18 Feb. 1985 leg. L. Curreli (CAG 851802/01, holotype; LIL-herb. Bon, paratype).

Selected literature: Bon, Doc. mycol. Mém. hors sér. 4: 147-148. 1997; Contu, Boll. Gr. Micol. Bres. 40(2-3): 171. 1997; Contu, Bon & Curelli, Micol. Veget. Medit. 4(1): 57-62. 1989; Ludwig, Pilzkompendium 1 (Beschreibungen): 635. 2001.

Description (macroscopical description according to CONTU, BON & CURELLI 1989; Dähncke in litt.):

Pileus (5) 10–15 (20) mm, membranaceous, applanate, depressed at centre, with sulcate margin, hygrophanous, slightly translucently striate or not, finely tomentose to pubescent, ochraceous-brown to whitish, with distinct lilaceous or violet tinge, especially at centre. **Lamellae** distant, L = 16–18, broad, thin, sometimes furcate, distinctly decurrent, pale lilaceous-pink, with not denticulate, slightly darker edge. **Stipe** 15–20 \times 1–2 mm, about the same length as pileus diameter, cylindrical, with slightly broadened base, gracile, dry, sericeous, glabrous, fistulose, concolorous with pileus or slightly paler, with white basal mycelium. **Context** fragile, thin, pale lilaceous, with slight *Pelargonium* smell and mild taste.

Spores 8.5–14 (16) \times 4.0–6.0 (7.0) μm , E = 1.6–3.1, Q = 2.1–2.3, variable in form and size, ellipsoid, fusoid-ellipsoid, ovoid, lacrymoid, thin-walled, smooth. **Basidia** 26–35 \times 8.0–10.0 μm , 4-, rarely

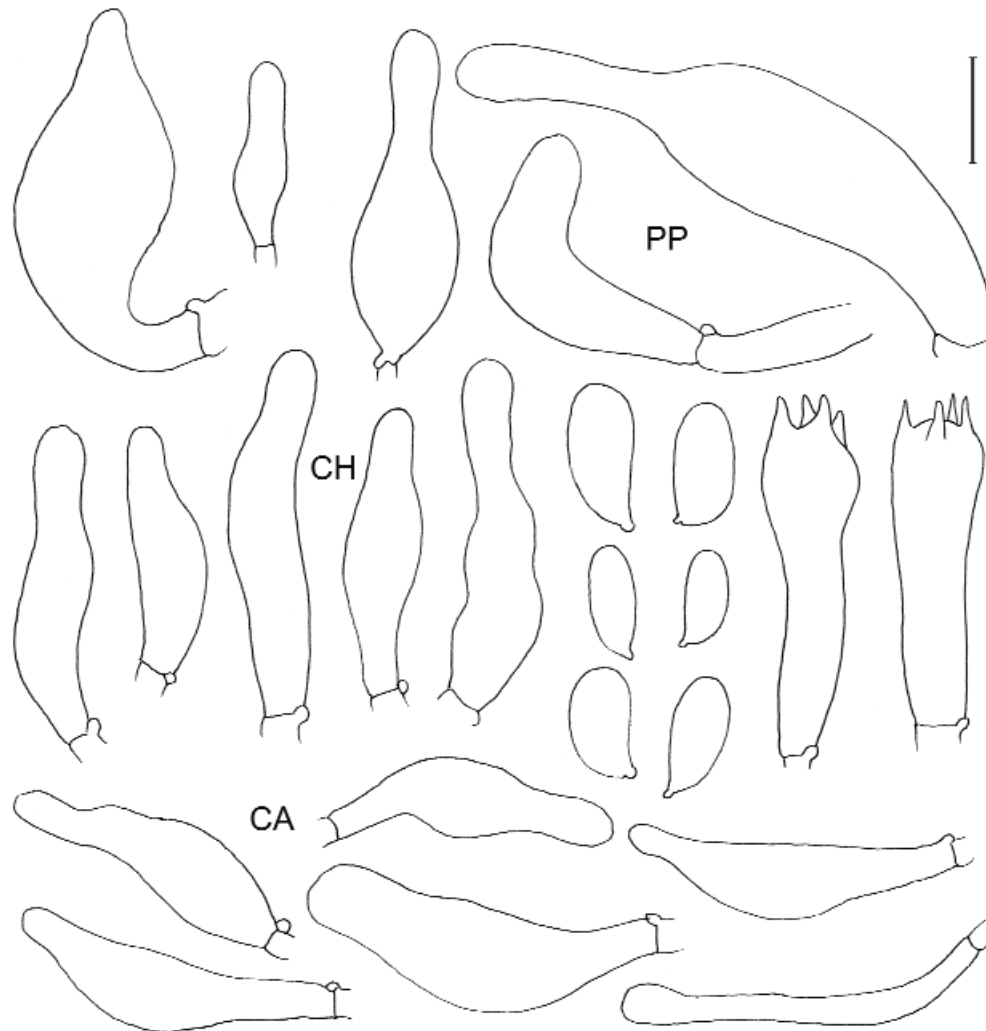


Fig. 55: *Rickenella brunneolilacina*

2-spored, clavate. **Basidioles** 15–30 × 5.0–11 μm, cylindrical to clavate. **Hymenial cystidia** 23–36 × 5.0–10.0 μm, lageniform, fusoid, rostrate, obtuse, rarely subcapitate, thin-walled. **Hymenophoral trama** composed of cylindrical, thin-walled, up to 10 μm wide hyphae. **Pileipellis** a cutis, made up of loosely interwoven, cylindrical, thin- to slightly thick-walled, up to 9 μm wide hyphae, with smooth, rarely scatteredly diverticulate walls. **Pileocystidia** numerous, discrete or in form of terminal elements, adpressed to erect, 28–60 × 5.0–15 μm, fusoid, lageniform, less frequently clavate, mostly rostrate, obtuse, sometimes subcapitate, ± thin- to slightly thick-walled. **Stipitipellis** a cutis of cylindrical, parallel, slightly thick-walled, up to 6 μm wide hyphae, with smooth, pale yellow walls in KOH. **Caulocystidia** 26–38 × (4.0) 8.0–11 μm, lageniform, fusoid, less frequently ± cylindrical, often rostrate, obtuse, sometimes subcapitate, thin- slightly thick-walled. **Clamp-connections** present in all tissues.

Chemical reactions: None part of tissue or spores dextrinoid or amyloid.

Ecology: Gregarious, xerophilous, growing on silicate soils in grasslands and along roads.

Distribution: Known only from two localities in Italy and Spain (Canarias) till now, probably more distributed in Mediterranean regions.

Phenology: November to February.

Collections examined: ITALY: Sardinia. Villacidro, 18 Febr. 1985 leg. L. Curreli (CAG 851802/01, typus). – SPAIN: Canarias, La Palma, Los Castañeros, 18 Dec. 1999 leg. R. Dähncke 1359 (herb. A. Hausknecht).

Notes: *Rickenella brunneolilacina* is characterised in having ochraceous-brown to whitish, distinctly lilaceous or violet tinged pileus, pale lilaceous-pink lamellae, rather short stipe concolorous with pileus, large spores, large basidia and mostly lageniform to fusoid cystidia.

In the original description, CONTU & al. (1989) mentioned only 8.5–10 µm long spores. However, we found a distinctly wider range. BON (1997) gave smaller spores [(8) 8.5–9 (10) × (4) 4.5–5 (5.5) µm] and larger cheilocystidia [30–50 (70) × 5–8 (10) µm].

The collection from the Canarias differs by longer hymenial cystidia (35–70 × 7.0–9.0 µm), longer basidia (35–45 × 8.5–10.0 µm) and slightly longer caulocystidia (27–83 × 6.0–13 µm); the macro- and other microscopic features, as well as ecology agree, however, with the type specimens. More collections are needed to clarify the variability observed

6. *Contumyces rosella* (Moser ex Redhead) Readhead et al.

Pl. 49, Fig. 56

Omphalina rosella Moser ex Redhead, Mycologia 87(6): 880. 1995; *Omphalia rosella* J. E. Lange, Dansk Bot. Ark. 6: 14. 1930 [nom. illeg., non *Omphalia rosella* (Batsch) Gray]; *Omphalina rosella* (J.E. Lange) Moser, Kl. Kryptogamenfl. 2, Ed. 1: 58. 1953 (invalid comb.); *Gerronema rosellum* (Moser) Singer, Beih. Sydowia 7: 14. 1973; *Marasmiellus rosellus* (Moser) Kuyper & Noordel., Proc. Int. Symp. Tricholomataceae, Borgo Taro, 1984: 100. 1986; *Jacobia rosella* (Moser ex Redhead) Contu, Boll. Gr. Micol. Bres. 40(2-3): 171. 1997; *Contumyces rosella* (Moser ex Redhead) Readhead & al., Mycotaxon 82: 161. 2002 – *Mycena carnicolor* P.D. Orton, Trans. Br. mycol. Soc. 43: 178. 1960.

Type specimen: not preserved. Type locality: Denmark: Fyn, Odense. – J. Lange, Flora agar. dan. 2, pl. 60C. 1937 (Iconotype). **Epitype:** Netherlands, prov. Zuid Holland, Isl. Goeree, Westduinen, 18 Nov. 1989, Groenendaal (L).

Selected icones: Contu, Boll. Gr. Micol. Bres. 40(2-3): 171. 1997 (as *Jacobia r.*); Hausknecht & Reinwald, Natur und Mensch, Jubiläumausgabe: 201. 2001 (as *Marasmiellus r.*); J. Lange, Flora agar. dan. 2, pl. 60C. 1937 (as *Omphalia r.*); Ludwig, Pilzkompendium 1: fig. 46.6. 2000; Redhead, Mycologia 87(6): 881. 1995 (var. *vinacea*, as *Omphalina r.*).

Selected literature: Antonín & Noordeloos, Libri bot. 8: 164-165 (as *Marasmiellus r.*); Bon, Doc. mycol. Mém. hors sér. 4: 124. 1997 (as *Omphalina carnicolor*); Contu, Boll. Gr. Micol. Bres. 40(2-3): 171-172. 1997; Hardtke, Mykol. Mittbl. 32: 16-17. 1989 (as *Marasmiellus r.*); Hausknecht & Reinwald, Natur und Mensch, Jubiläumausgabe: 201-202. 2001 (as *Marasmiellus r.*); Ludwig, Pilzkompendium 1 (Beschreibungen): 347. 2001 (as *Marasmiellus r.*); Malençon & Bertault, Fl. Champ. super. Maroc 2: 207-209, fig. 35. 1975 (as *Omphalina r.*); Moser, Sydowia 4: 100. 1950 (as *Clitocybe r.*); Noordeloos, Fl. Agar. Neerland. 3: 126. 1995 (as *Marasmiellus r.*); Redhead, Mycologia 87(6): 880-885. 1995 (as *Omphalina r.*).

Description: Pileus 5–20 mm, plano-convex, slightly to deeply umbilicate, with involute then deflexed, crenulate margin, hygrophanous, not translucently striate, or at very margin only, pink or pinkish-lilacinous, slightly pallescent on drying to cream-coloured grey; minutely appressed fibrillose to felted-tomentose. **Lamellae** distant, L = 4–11, l = 0–3, arcuate-decurrent, slightly intervenose, pink,



Pl. 49: *Contumyces rosella*, photo K. F. REINWALD

with entire, concolorous edge. **Stipe** 10–30 × 1–2 mm, cylindrical, white or hyaline pink, very finely pruinose (lens). Context white in pileus, pink in stipe, especially in lower part. **Smell** and **taste** indistinct.

Spores (7.0) 8.5–10.5 (11.0) × 4.0–6.0 μm, E = 1.7–2.5, Q = 2.0, ellipsoid to oblong or lacrymoid, thin-walled. **Basidia** 22–35 × 7.0–10 μm, 2- and 4-spored, clamped. **Basidioles** 20–30 × 6.0–9.0 μm, cylindrical to fusiform, clamped. **Lamellar edge** heterogeneous. **Cheilocystidia** 30–50 × 4.0–10 μm, lageniform. **Pileipellis** a cutis with transitions to a trichoderm, made up of 4.0–12 μm wide hyphae with clavate to lageniform terminal elements, 40–65 × 8.0–11 μm. **Pigment** membranous and (coarsely) encrusting in pileipellis. **Clamps** abundant.

Ecology: Terrestrial in grassland with mosses on nutrient poor soil.

Distribution: Very rare, probably overlooked, Europe and North Africa.

Phenology: October to November.

Collections examined: NETHERLANDS: prov. Zuid Holland, Isl. Goeree, Westduinen, 18 Nov. 1989, Groenendaal (L). – prov. Noord Brabant, Drongelen, Drongelens Kanaal, 23 Oct. 1983, Th. W. Kuyper (L).

Notes: *Rickenella rosella* is a very distinctive species because of its omphalioid habit and pink colour. In the first part of our marasmioid and collybioid monograph (ANTONÍN & NOORDELOOS 1993) it was included into the genus *Marasmiellus*. However, it has putrescent carpophores and non-insititious stipe, and the same type of cystidia as *Rickenella brunneolilacina* it is transferred to *Rickenella*.

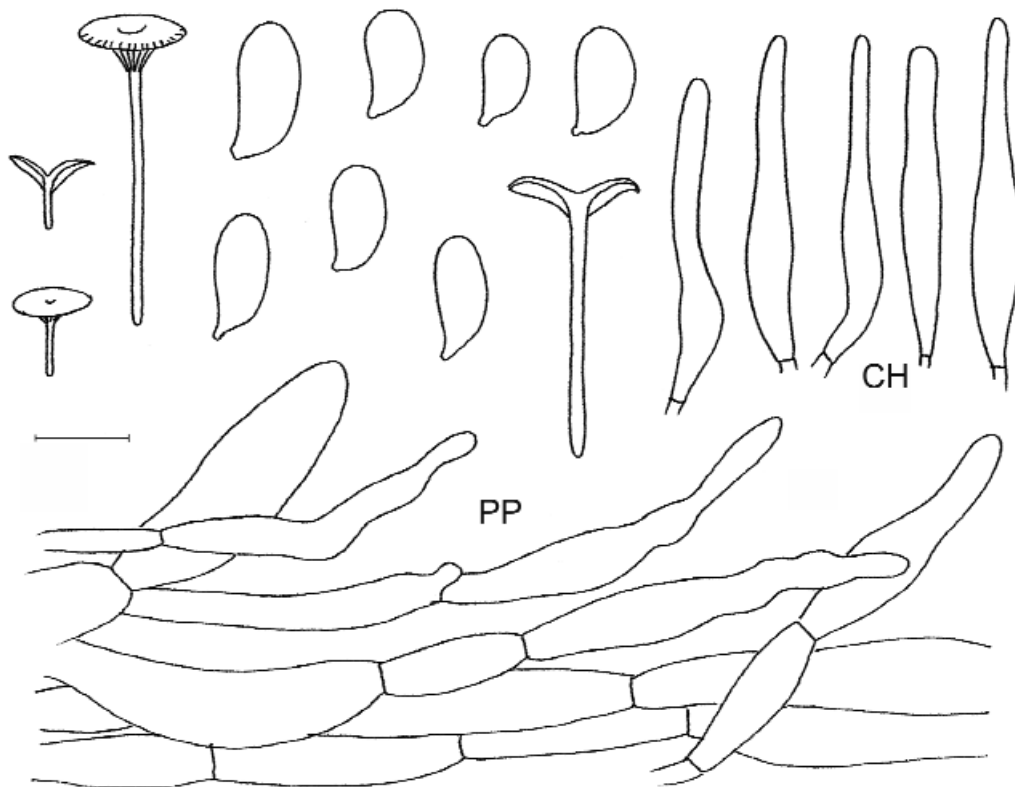


Fig. 56: *Contumyces rosella*

7. *Contumyces vesuviana* (Brig.) Redhead et al.

Pl. 50

Agaricus vesuvianus Brig., Hist. Fung. Regni Neapol.: 115. 1848; *Omphalia vesuviana* (Brig.) Sacc., Syll. Fung. 5: 313. 1887; *Omphalina vesuviana* (Brig.) Lazzari & Bellù, in Lazzari, Atl. Iconogr. 1981-1983: 122. 1985; *Jacobia vesuviana* (Brig.) Contu, Boll. Gr. Micol. Bres. 40(2-3): 172. 1997; *Contumyces vesuviana* (Brig.) Redhead & al., mycotaxon 82: 162. 2002.

Type specimen: Briganti, Hist. Fung. Regni Neapol.: tab. 3, figs. 3-7. 1848 (iconotype).

Selected icones: Lazzari, Atl. Iconogr. 1981-1983: pl. 56. 1985 (as *Omphalina v.*); Hausknecht & Reinwald, Natur und Mensch, Jubiläumausgabe: 202. 2001 (as *Omphalina v.*);

Selected literature: Bon, Doc. mycol. Mém. hors sér. 4: 125-126. 1997; Contu, Boll. Gr. Micol. Bres. 40(2-3): 172-173. 1997; Hausknecht & Reinwald, Natur und Mensch, Jubiläumausgabe: 202-203. 2001 (as *Omphalina v.*); Ludwig, Pilzkompendium 1 (Beschreibungen): 434-435. 2001.

Description: **Pileus** 5–20 mm broad, convex to applanate with depressed centre and involute then deflexed margin, not or slightly hygrophanous, not or slightly translucently striate, slightly sulcate at margin, slightly tomentose, uniformly orange to fulvous (K&W 8D8, 8CD8). **Lamellae** thin, with lamellulae, decurrent, whitish to slightly yellowish or pale orange. **Stipe** 5–20 × 1–1.5 mm, cylindrical, slightly broadened at base, subglabrous, yellow-orange, paler than pileus, particularly in lower part. **Context** slightly elastic, whitish to pale pinkish, with indistinct **smell** and **taste**.



Pl. 50:
Contumyces vesuviana, photo
K. F. REINWALD

Spores 8.0–12 × 4.5–5.5 μm, ellipsoid to subcylindrical, thin-walled, smooth. **Basidia** 30–45 × 8.0–10.0 μm, 4-spored, clavate. **Hymenial cystidia** not frequent, 40–60 × 6.0–7.5 μm, fusoid, rostrate, acute, thin-walled. **Pileipellis** a cutis, made up of cylindrical hyphae, with incrusting pigmentation. **Pileocystidia** in form of terminal cells, adpressed to erect, similar to hymenial cystidia. **Caulocystidia** similar to hymenial cystidia. **Clamp-connections** present in all tissues.

Chemical reactions: None part of tissue or spores dextrinoid or amyloid. (according to CONTU 1997).

Ecology: Gregarious, growing on soil in grasslands and mosses.

Distribution: Known only from Italy and North Africa.

Phenology: September to December.

Notes: *Jacobia vesuviana* is characterised in having fulvous to pale orange pileus and stipe, whitish to slightly yellowish lamellae, rather small spores, large basidia and mostly lageniform to fusoid cystidia.

4.8. *XEROMPHALINA* Kühner & Maire

Xeromphalina Kühner & Maire, *Bull. Soc. Mycol. Fr.* 50: 18. 1934.

Xeromphalia Kühner & Maire in Konr. & Maubl., *Icon. Sel. Fung.* 6: 236. 1934. – *Omphalopsis* Earle, *Bull. N. Y. Bot. Garden* 5: 425. 1909, non *Omphalopsis* Grev. 1863 (Fragilariaceae, Bacillariophyceae).

Lectotype species: *Xeromphalina campanella* (Batsch: Fr.) Kühner & Maire

Selected literature: Bon, *Doc. mycol. Mém. hors sér.* 5: 75-77. 1999; Horak, *Sydowia* 32: 131-153. 1979; Johnson & Petersen, *Mycologia* 89(3): 392-399. 1997; Klán, *Čes. Mykol.* 38: 205-217. 1984; Kühner & Maire, *Bull. trimestr. Soc. Mycol. Fr.* 50: 9-24. 1934; Kühner & Romagnesi, *Fl. Anal.*: 80. 1953; Ludwig, *Pilzkompedium 1* (Beschreibungen): 702-703. 2001; Miller, *Mycologia* 60: 156-188. 1968; Redhead, *Can. J. Bot.* 66: 479-507. 1988; Singer, *Bol. Soc. Argentina Bot.* 10: 302-310. 1965; Singer, *Agar. mod. taxon.* 3: 424-426. 1986; Smith, *Pap. Mich. Acad. Sc.* 38: 73-89. 1953; Watling & Turnbull, *British Fungus Fl.* 8: 147-149. 1998; Weaver & NeLaugllin, *Occas. Pap. Bell Museum* 16: 65. 1980

Carpophores omphalioid, marasmioïd or collybioïd; pileus usually brightly coloured; lamellae broadly adnate to decurrent, never purely white; stipe usually central, less frequently eccentric, dry, with yellowish or yellowish brownish basal tomentum. Taste mild, unpleasant or bitter. Rhizomorphs usually present. Sporeprint white.

Spores ellipsoid, broadly ellipsoid, oblong, cylindrical, or slightly allantoid, thin-walled smooth, amyloid, acyanophilous, hyaline; cheilocystidia always present; pleurocystidia present or absent; pileocystidia present, often of two types: thin-walled and unbranched and thickwalled, often branched or coralloïd (circumcystidia); hyphae neither amyloid, nor dextrinoid; context of stipe sarcodimitic; clamp-connections present.

Ecology: Saprophytic; on coniferous, less frequently also on broadleaved wood, sometimes in *Sphagnum* bogs or in forest litter.

Distribution: Worldwide; known from temperate zones of both hemispheres and mountainous zone of tropical regions.

Notes: The genus *Xeromphalina* was described by Kühner & Maire in Konrad & Maublanc (*Icones Selectae Fungorum*, Vol. 6: 236. March 1934) as *Xeromphalia* without a listing of species. In August that same year, the same genus was described by the same authors (KÜHNER & MAIRE 1934) with a different orthography as *Xeromphalina*. In that latter publication, two species of the genus were mentioned: *X. campanella* (the present lectotype species) and *X. caudicinalis*. In december 1934, the genus *Xeromphalina* was also accepted by KONRAD (1934). and two years later, it figures (as *Xeromphalina*) in the iconography of Konrad & Maublanc, with two species. Since then, usually this orthographic variant was widely been used in literature for example by HORAK (1968, 1979), KÜHNER (1980), MILLER (1968), REDHEAD (1988), and SINGER (1986). The spelling *Xeromphalia* is only exceptionally used (e. g. KREISEL & al. 1987). Donk (1962) supported the use of *Xeromphalina*. Moreover, KONRAD & MAUBLANC (1937) also wrote that their original name *Xeromphalia* should be correctly read as *Xeromphalina*. ANTONÍN (2000) therefore proposed to conserve the name *Xeromphalina* against *Xeromphalia*.

In the original diagnose (KÜHNER & MAIRE 1934) the authors paid emphasis on the distinctive characters like radially arranged hyphae of pileipellis, decurrent lemellae, smooth amyloid spores, and more or less marasmioïd consistence for their new genus.

SINGER (1942) created the independent genus *Heimiomyces*, but later (SINGER 1962, 1986) ranged it as a subgenus of *Xeromphalina*. HORAK (1979) reinstalled the genus *Heimiomyces* Singer on account of the differences in attachment of the lamellae (adnexed, adnate or broadly emarginate

in *Heimiomyces*), the difference in pileal shape (conical with papillate or umbonate centre), the entirely pruinose or velvety stipe and cheilocystidia with numerous rod-like projections (compare the cheilocystidia of e.g. *X. caudicinalis*). Most authors, however, consider *Heimiomyces* a subgenus of *Xeromphalina* (REDHEAD 1988).

Mongraphic or regional treatments of *Xeromphalina* have been published by HORAK (1979, Indomalaya, Australasia), GULDEN (1992, northern Europe), MILLER (1968, U.S.A.), REDHEAD (1988, northern hemisphere), VEIKKO & HINTIKKA (1957, Finland). SINGER (1986) prepared a world compilation of the genus. Except for regional keys (MOSER 1983; KÜHNER & ROMAGNESI 1953; BON 1999b; WATLING & TURNBULL (1998) and a small monograph (KLÁN 1984), a thorough European monograph of the genus has, however, never been made.

Xeromphalina was placed in the tribe *Myceneae* by SINGER (1986) while KÜHNER (1980) placed it in the *Marasmieae*. This genus is sometimes placed in the family *Xerulaceae* (REDHEAD 1987) that is not accepted by some other mycologists (e. g. CORNER 1991). The present authors place it in the *Tricholomataceae* in the sense of SINGER (1986) near *Baeospora*, *Mycena*, and *Marasmius*.

The mating system of 12 taxa of *Xeromphalina* has been studied by JOHNSON & PETERSEN (1997), showing that all species studied were tetrapolar

Synopsis of European species:

Subgen. *Xeromphalina*

sect. *Xeromphalina*

1. *Xeromphalina campanella* (Batsch: Fr.) Kühner & Maire
2. *Xeromphalina brunneola* O.K. Mill.
3. *Xeromphalina junipericola* G. Moreno & Heykoop
4. *Xeromphalina minutissima* Esteve-Rav.

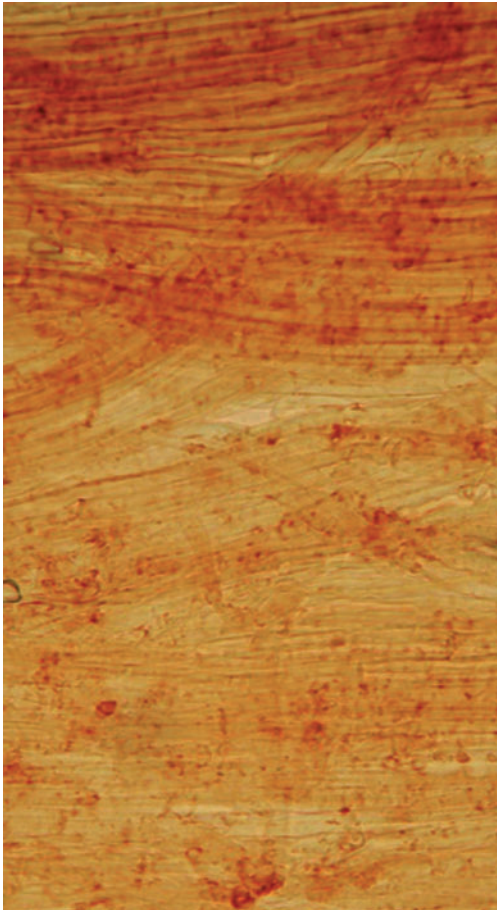
sect. *Mutabiles* (A.H. Sm.) Redhead

5. *Xeromphalina fraxinophila* A.H. Sm.
 - 5a. var. *fraxinophila*
 - 5b. var. *macrocystidiata* Antonín & Noordel.
6. *Xeromphalina caudicinalis* (Fr.) Kühner & Maire
 - 6a. var. *caudicinalis*
 - 6b. var. *subfellea* Bon
7. *Xeromphalina cornui* (Quél.) J. Favre
8. *Xeromphalina campanelloides* Redhead

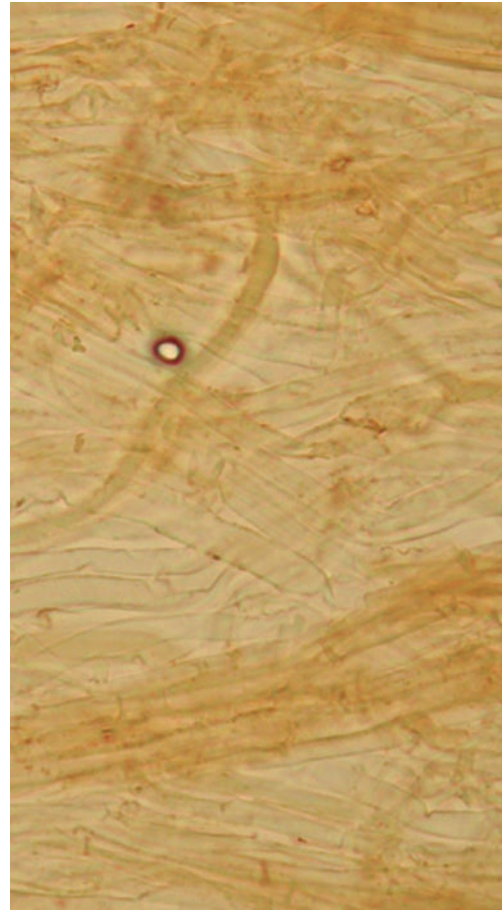
Key to European species:

- 1 Circum- and caulocystidia cylindrical, clavate, utriform or (sub)fusoid, sometimes slightly irregular (lobate) but never branched 2
- 1* Circum- and caulocystidia cylindrical, clavate, (sub)fusoid, irregular to subcoralloid, often branched or with terminal projections 6
- 2 Spores small, 3.5–5.0 × 2.0–3.0 µm 3
- 2* Spores larger, 4.5–8.0 (9.5) × 2.5–4.0 µm 4
- 3 Spores (3.7) 4.0–5.0 × (2.0) 2.2–2.5 (3.0) µm, E = 1.6–2.3, Q = 1.8, ellipsoid to cylindrical-ellipsoid; the entire carpophore with violaceous to purplish tinge, lamellae more close (L = 27–30) 3. *X. junipericola* (p. xxx)

- 3* Spores $3.5\text{--}4.5 \times 2.0\text{--}2.7 \mu\text{m}$, $E = 1.6\text{--}2.0$, $Q = 1.8$. ellipsoid; never violaceous or purplish, but pale brown to beige coloured, lamellae more distant ($L = 12\text{--}15$) **4. *X. minutissima*** (p. xxx)
- 4 Spores large, $(5.5) 6.0\text{--}8.0 (9.5) \times 2.8\text{--}4.0 \mu\text{m}$, cylindrical-ellipsoid to ellipsoid, rarely suballantoid; context of thin- to slightly thick-walled hyphae; stipe entirely finely pubescent; taste mild **1. *X. campanella*** (p. xxx)
- 4* Spores smaller, $4.5\text{--}7.0 (7.5) \times 2.5\text{--}3.5 \mu\text{m}$, cylindrical-ellipsoid to suballantoid; in context with thick-walled hyphae with refractive walls; stipe except of smooth apex tomentose to almost smooth; taste unpleasant **5**
- 5 Spores $(5.0) 5.8\text{--}7.0 (7.5) \times (2.5) 2.8\text{--}3.3 \mu\text{m}$, $E = 1.8\text{--}2.3$, $Q = 2.1$ **2. *X. brunneola* var. *brunneola*** (p. xxx)
- 5* Spores shorter, $4.5\text{--}6.0 \times 2.5\text{--}3.5 \mu\text{m}$, $E = 1.6\text{--}2.1$, $Q = 1.8$ ***X. brunneola* var. *myriadea*** (p. xxx)
6. Hyphae of stipititrama mostly distinctly incrustated, pale yellow to yellow-brown in H_2O , changing colour to orange brown in KOH (pl. 51) **7**
- 6* Hyphae of stipititrama smooth to minutely incrustated, yellow subhyaline to yellow-brown in H_2O , not changing colour in KOH (pl. 52) **8**
- 7 Carpophores collybioid, mostly in fascicles of numerous individuals; pileus small (4–12 mm broad); stipe $16\text{--}30 \times 0.7\text{--}1$ mm, mostly curved; spores small, $4.8\text{--}5.5 (6.0) \times 2.8\text{--}3.5 (4.5) \mu\text{m}$, ellipsoid to broadly ellipsoid; caulocystidia clavate, fusoid, irregular, lobate to subcoralloid, thin- to slightly thick-walled, golden yellow in KOH at apex; growing on wood of conifers .. **8. *X. campanelloides*** (p. xxx)
- 7* Carpophores omphalinoid, single or in small groups, more robust; pileus larger (8–22 mm broad); stipe $25\text{--}40 \times 1\text{--}3$ mm, mostly strict; spores larger, $5.0\text{--}7.0 \times 2.8\text{--}3.5 (4.0) \mu\text{m}$, ellipsoid; caulocystidia cylindrical to narrowly clavate, simple to coralloid, distinctly thick-walled, hyaline to brownish in KOH at apex; growing in *Sphagnum* bogs less frequently on wood of conifers, probably preferring calcareous soil in Europe **6b. *X. caudicinalis* var. *subfellea*** (p. xxx)
- 8 Taste bitter or adstringend; growing in coniferous or mixed forests **6a. *X. caudicinalis* var. *caudicinalis*** (p. xxx)
- 8* Taste mild; growing in broadleaved or coniferous woods, sometimes in *Sphagnum* **9**
- 9 Carpophores large; pileus 10–30 mm broad, stipe 2–3.5 mm wide, tomentose; caulocystidia cylindrical to clavate, irregular, forming clusters in the whole length; growing on wood of broadleaved trees **10**
- 9* Carpophores smaller; pileus up to 20 mm broad, stipe 0.5–1 mm wide, glabrescens at least at middle part of stipe; caulocystidia cylindrical to clavate, irregular to coralloid, forming clusters at apex only; growing on coniferous debris or in *Sphagnum* bogs **7. *X. cornui*** (p. xxx)
- 10 Cheilocystidia inconspicuous or less conspicuous, $(14) 18\text{--}31 (41) \times (4.0) 5.5\text{--}9.0 \mu\text{m}$, (sub)lageniform, clavate, fusoid, subutriform, rarely subcylindrical, sometimes rostrate, often slightly irregular; without preference of calcareous soils **5a. *X. fraxinophila* var. *fraxinophila*** (p. xxx)
- 10* Cheilocystidia conspicuous, $22\text{--}75 \times (3.5) 4.5\text{--}6.0 \mu\text{m}$, \pm cylindrical, branched to coralloid in upper part, sometimes septate; with preference of calcareous soils **5b. *X. fraxinophila* var. *macrocystidiata*** (p. xxx)



Pl. 51: *X. caudicinalis* var. *subfellea*; hyphae of stipititrama changing colour to orange brown in KOH



Pl. 52: *X. cornui*; hyphae of stipititrama not changing colour in KOH

1. *Xeromphalina campanella* (Batsch: Fr.) Kühner & Maire

Pl. 53, Fig. 57

Agaricus campanella Batsch, Elench. Fung. 1: 74. 1783; *Agaricus campanella* Batsch: Fr., Syst. Mycol. 1: 166. 1821; *Omphalia campanella* (Batsch: Fr.) P. Kumm., Führer Pilzk.: 107. 1871; *Omphalina campanella* (Batsch: Fr.) Quél., Enchir. Fung.: 45. 1886; *Omphalopsis campanella* (Batsch: Fr.) Earle, Bull. N. Y. Bot. Gard. 5: 425. 1909; *Xeromphalina campanella* (Batsch: Fr.) Kühner & Maire, Bull. Soc. Mycol. Fr. 50: 18. 1934. – *Agaricus fragilis* Schaeff., Fung. bavar. 4: 56, pl. 230. 1774; *Omphalia fragilis* (Schaeff.) Sacc., Fl. Ital. Crypt. Hymen. 14: 297. 1915. – *Cantharellus valentini* Velen., Čes. Houby: 85. 1920. (fide Pilát 1951) – *Valentinia cornea* Velen., Novit. Mycol.: 38. 1939 (gen et nom. nov. for *C. valentini* (see Donk 1962). – ?*Xeromphalina campanella* var. *myriadea* Kalchbr in Fr., Hymen. Eur.: 162. 1874.

Type specimen: Germany: Bayern, 10 May 1981, G.A. de Vries (Neotype, L, selected here).

Selected icones: Bol. Catal. 8: tab. 400. 1989; Breitenbach & Kränzlin, Pilze Schweiz 3: pl. 446. 1991; Courtecuisse & Duhem, Champ. Fr. Eur.: fig. 617. 1994; Freléchoux, Schw. Z. Pilzk. 73(8): 155. 1995; Gerhardt, BLV Pilzführer: 212. 1997; Hagara, Antonín & Baier, Houby: 201. 1999; Imazeki & Hongo, Fungi Japan: 135. 1988; Lange, Fl. agar. dan. 2: pl. 60A. 1936; Ludwig, Pilzkompodium 1: pl. 186, fig. 88.3. 2000; Michael, Hennig & Kreisel, Handbuch Pilzfr. 1: pl. 109. 1979.

Selected literature: Bol. Catal. 8: tab. 400. 1989; Bon, Doc. mycol. 18(69): 31-32. 1987; Bon, Doc. mycol. Mém. hors sér. 5: 76. 1999; Breitenbach & Kränzlin, Pilze Schweiz 3: 346-347. 1991; Cejp, Public. Fac. Sci. Univ. Charles 100 (Revision II): 55-58. 1929; Cejp, Atlas hub evrop. 4: 95-99. 1936; Gulden, Nordic Macromycetes 2: 192. 1992; Klán, Čes. Mykol. 38: 213-216. 1984; Krieglsteiner, Beih. Z. Mykol. 3: 131, 132. 1981 (distr. map in Germany); Ludwig, Pilzkompedium 1 (Beschreibungen): 705. 2001; Malençon & Bertault, Fl. Champ. sup. Maroc 2: 342-343. 1975; Miller, Mycologia 60: 162-163. 1968; Redhead, Can. J. Bot. 66: 484. 1988; Smith, Pap. Mich. Acad. Sci. Arts Letters 38: 80-81. 1953; Veikko & Hintikka, Karstenia 4: 6-7. 1957; Watling & Gregory, Nova Hedwigia 32: 560. 1980; Watling & Turnbull, British Fungus Fl. 8: 147-148. 1998.

Selected descriptions: Bol. Catal. 8: tab. 400. 1989; Bon, Doc. mycol. 18(69): 31-32. 1987; Bon, Doc. mycol. Mém. hors sér. 5: 76. 1999; Breitenbach & Kränzlin, Pilze Schweiz 3: 346-347. 1991; Cejp, Public. Fac. Sci. Univ. Charles 100 (Revision II): 55-58. 1929; Cejp, Atlas hub evrop. 4: 95-99. 1936; Gulden, Nordic Macromycetes 2: 192. 1992; Klán, Čes. Mykol. 38: 213-216. 1984; Krieglsteiner, Beih. Z. Mykol. 3: 131, 132. 1981 (distr. map in Germany); Malençon & Bertault, Fl. Champ. sup. Maroc 2: 342-343. 1975; Miller, Mycologia 60: 162-163. 1968; Redhead, Can. J. Bot. 66: 484. 1988; Smith, Pap. Mich. Acad. Sci. Arts Letters 38: 80-81. 1953; Veikko & Hintikka, Karstenia 4: 6-7. 1957; Watling & Gregory, Nova Hedwigia 32: 560. 1980; Watling & Turnbull, British Fungus Fl. 8: 147-148. 1998.



Pl. 53: *Xeromphalina campanella*, photo H. HUIJSER

Description: **Pileus** 4–20 (25) mm broad, at first almost hemispherical to campanulate, with applanate or slightly papillate centre and inflexed to subinvolute margin, expanding to convex with applanate to depressed centre and deflexed to straight, crenulate margin, when old convex-applanate to subinfundibuliform, with reflexed to uplifted margin, hygrophanous, translucently striate up to center, orange-brown, orange-ochraceous to ochraceous-yellow (Mu. 7.5 YR 5–7/8; K. & W. 3A3, 4A4, 5A3–4, 6–8B–C7–8), darker at centre (7.5 YR 5/6; up to 7D8), paler, almost yellowish or orange yellowish (4–5A2–6) to white towards margin; smooth, glabrous. **Lamellae** distant, L = 12–22, l = 1–3, broadly adnate to decurrent, arcuate, furcate to irregularly anastomosing, sometimes curved, intervenose, white, pale cream to pale ochraceous or orange-brown (4–5A3–4), with concolorous or paler, finely pubescent edge. **Stipe** (8) 10–30 (35) × 0.5–2 mm, cylindrical, slightly broadened above, cylindrical to slightly broadened at base, curved, whitish yellowish to yellow (2–3A2, 3A4) with orange-brown or orange-ochraceous base (4–5A5) when young, then orange-yellow (4–5A4–5) at apex, dark orange-brown to red-brown (9E–F6–8, 8D–E6–8) towards base; entirely finely whitish pubescent, with dirty yellow basal tomentum. **Context** concolorous with the surface, with indistinct fungoid **smell** and mild **taste**.

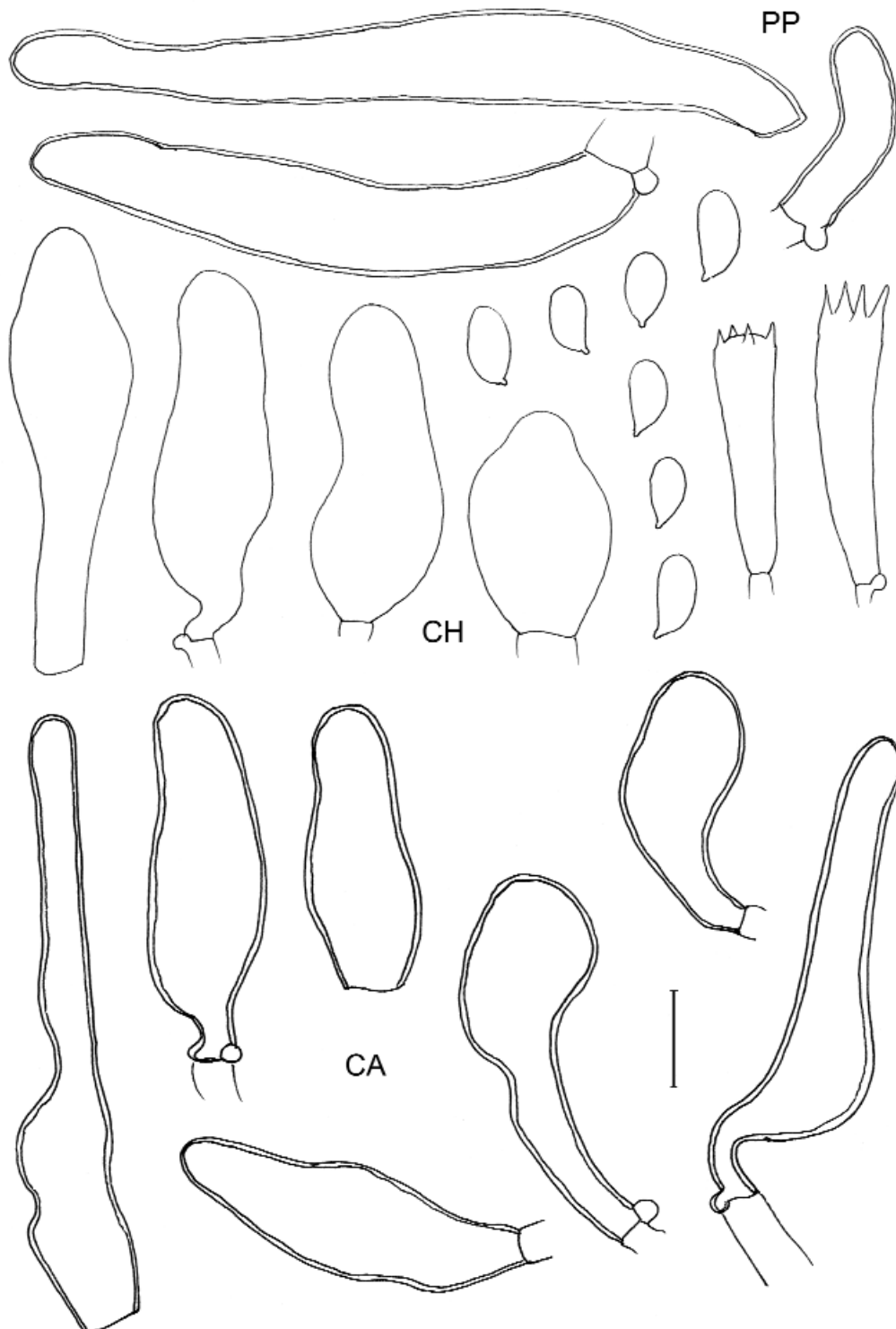


Fig. 57: *Xeromphalina campanella*

Spores (5.5) 6.2–8.0 (9.5) × 3.0–4.0 (4.5) μm, E = (1.6) 1.8–2.5, Q = 1.9–2.2, cylindrical-ellipsoid to ellipsoid, thin-walled, smooth. **Basidia** (20) 24–30 × 5.0–7.0 μm, 4-spored, clavate. **Basidioles** 12–30 × 3.0–7.0 μm, cylindrical to clavate, rarely subfusoid. **Cheilocystidia** 25–66 × (6.0) 7.0–18 μm, lageniform, fusoid, subutriform, subclavate, subcylindrical, sometimes mixed with broadly clavate or vesiculosa elements, thin- to slightly thick-walled; scattered, 13–24 × 6.5–11 μm. **Pleurocystidia** scattered, similar to cheilocystidia. **Hymenophoral trama** of cylindrical to subfusoid cells, thin- to slightly thick-walled, incrusting, up to 15 (20) μm wide. **Pileipellis** a cutis, made up of radially arranged, thin- to slightly thick-walled, up to margin coarsely incrusting, up to 3–12 μm wide hyphae with ± orange-brown walls in KOH. **Circumcystidia** scattered, up to 38.5–75 × 10.0–17 μm, appressed to erect, cylindrical, clavate to fusoid, obtuse, sometimes irregular; terminal cells at margin 10–41 × 3.0–6.0 μm, cylindrical, often irregular to coralloid. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, incrusting, up to 8 (11) μm wide hyphae with brightly orange-brown walls in KOH. **Hyphae of stipititrama** both thin- and thick-walled, often opalized, subhyaline, pale yellow to yellowish brownish in KOH. **Caulocystidia** 25–105 × 6.0–14 (17) μm, clavate, broadly clavate, lageniform, utriform, fusoid, sometimes irregular, never branched, thin- to distinctly thick-walled, subhyaline or pale to distinctly orange-brown in KOH. **Clamp-connections** present.

Chemical reactions: Spores amyloid, other tissues neither amyloid nor dextrinoid.

Ecology: Saprotrophic; in clusters or in groups, rarely solitary, on decaying coniferous wood (stumps, stems, roots), especially of *Picea abies* but also of *Abies alba*, *Larix decidua* and *Pinus sylvestris*, also found on *Picea engelmannii* (LINDSEY 1988), *Picea x lutzii* (VOLK, BURDSALL & REYNOLDS 1994) and *Pseudotsuga menziesii*. According to SINGER (1951) an indicator of decayed coniferous wood.

Distribution: Widely distributed and common through the whole northern hemisphere; but obviously confined to boreal, continental and mountainous regions, since it is lacking in the lowland of Western Europe. Known from Europe, North America, North Africa (Algeria) and Asia (India, Tibet, Japan). Probably it does not occur in the southern hemisphere. REDHEAD (1989) ranged it among circumboreal (taiga) fungi. Rather rare in lowlands, common in hilly country, submontane and montane belts (PILÁT 1951).

Phenology: (March) April to September (November).

Collections examined: **AUSTRIA:** Niederösterreich, Irnfritz, Steinplatte, 1981 leg. R. Schütz (WU 1348). – Niederösterreich, Puchberg/Schneeberg, Losenheim, Wasserfall, 22 April 1987 leg. A. Hausknecht (WU 5913). – Niederösterreich, Breitenfurt, bei Buchelbach, 19 Aug. 1979 leg. ? (WU 0979). – Niederösterreich, Maissau, Bösendürnbach, 6 April 1986 leg. A. Hausknecht (WU 5247). – Niederösterreich, Drosendorf, Unterthurnau, 12 April 1991 leg. A. Hausknecht (WU 9406). – Steiermark, Mariazell, 30 July 1995 leg. I. Krisai-Greilhuber (WU 14008). – Tirol, Achenwald, 6 Sept. 1982 leg. J. Schreurs 710 (L). – Jenbach, Sept. 1982 leg. M.E. Noordeloos (L). – Wörgl, Angerwald, 10 Sept. 1982 leg. P.B. Jansen 82345 (L). – Salzburger Land, Saalbach, 19 June 1965 leg. Ding Hou (L). – **BULGARIA:** Vezen, 29 Aug. 1974 leg. D. A. Reid and S. Vanev (K). – **CROATIA,** Djed near Hrvatska Kostajnica, 6 April 1969, M. Tortič (CNF 6/12). – **CZECH REPUBLIC:** BOHEMIA: Jizerské hory Mts., Česká, 12 June 1951 (PRM 710047). – Althrehenberg (Šluknov), 6 May 1942 leg. J. Marschner (PRM 725817). – Krkonoše Mts., Bílé Labe, 2 July 1950 leg. M. Svrček (PRM 842654). – Krkonoše Mts., Pec pod Sněžkou, Obří důl valley, 17 Aug VIII. 1964 leg. Haimišová (PRM 605536). – Krkonoše Mts., Slunečné údolí valley, 6 Sept. 2001 leg. A. Vágner (BRNM). – Krásná Lípa, Kyjov, 6 Aug. 1961 leg. M. Svrček (PRM 616995). – Hřensko, Tichá soutěska valley, 4 July 1969 leg. M. Svrček (PRM 350/69). – Hřensko, Mezní Louka, 5 Aug. 1969 leg. A. Pilát (PRM 714752). – ditto, Křídelní stěna, 3 July 1970 leg. M. Svrčková (PRM 712202). – ditto, Větrovec, 29 June 1969 leg. M. Svrček 220/69 (PRM 685481). – Mezná near Hřensko, Kouty, 9 July 1970 leg. M. Svrček 489/70 (PRM 712319). – ditto, 8 July 1969 leg. M. Svrček 451/69 (PRM 685484). – Zadní Jetřichovice near Hřensko, 3 July 1969 leg. A. Pilát (PRM 714733). – Jetřichovice, Chřibský potok valley, 7 July 1969 leg. M. Svrček 426/69 (PRM 685483). – ditto, Goliště Mt., 11 July 1969 leg. M. Svrček 499/69 (PRM 685482). – Bedřichov, Černá Niva, 18 July 1950 leg. J. Herink (PRM 609979). – Dřevčice, Čap, 17 July 1998 leg. V. Antonín 98.39 and A. Vágner (BRNM 642344). – Střezivojice, Planý důl, 16 Aug. 1998 leg. V. Antonín 98.22+25 and A. Vágner (BRNM 642335). – Kokořín, Náckova rokle, 6 May 1995 leg. M. Svrček (PRM 887879). – Těptín, 24 Aug. 1957 leg. K. Kult

(PRM 797185). – ditto, 10 Aug. 1957 leg. K. Kult (PRM 797186). – Lipovka, 12 Aug. 1934 leg. K. Kavina (PRM 710038, as *O. campanella* var. *badipus*). – Mariánské Lázně, Cisařský les, 21 June 1950 leg. A. Pilát (PRM 710041). – Konstantinovy Lázně, Česká, Domaslav, 10 July 1963 leg. A. Pilát (PRM 600793). – Kladské, Cisařský les, 30 July 1950 leg. M. Svrček (PRM 797183). – ditto, 21 June 1950 leg. A. Pilát (PRM 710046). – ditto, 29 July 1949 leg. M. Svrček (PRM 797184). – ditto, Králův kámen, 28 July 1950 leg. M. Svrček (PRM 797187). – ditto, Lysina Mt., 6 June 1950 leg. M. Svrček (PRM 797182). – Kamená near Strašice, 22 July 1922 leg. K. Kavina (PRM 710036, as *Omphalia campanella* var. *robusta* Kavina ad schedam). – Strašice, 8 Aug. 1925 leg. K. Kavina (PRM). – Hlavenec, 23 June 1948 leg. Babka (PRM 710040, as *O. campanella* f. *major* Cejp). – Praha, Davle, Medník, 15 Apr. 1934 leg. A. Pilát (PRM 25293). – ditto, 6 Apr. 1992 leg. E. Dlouhý (PRM 756731). – Libřice, 6 Apr. 1946 leg. M. Svrček 66/46 (PRM 797189). – Praha, Davle, Záhořanské údolí, 13 Apr. 1951 leg. Petrášová and Z. Pouzar (PRM 797188). – ditto, 21 Apr. 1944 leg. J. A. Herink (PRM 710042). – Záhořany, Libřické údolí, 18 Apr. 1943 leg. M. V. Svrček 47/41–43 (PRM 7100044). – Průhonice near Praha, in a public garden, 21 May 1963 leg. A. Svoboda (PRM 584903). – Brdy Mts., Teslíny near Rožmitál, 22 Apr. 1949 leg. A. Příhoda (PRM 606607). – Halouny, Halounský potok, 24 Apr. 1960 leg. M. Svrček (PRM 620671). – Dobříš, 10 Apr. 1944 leg. J. A. Herink (PRM 710048). – Semily, Chuchelna, 21 Apr. 1946 leg. J. Herink (PRM 797197). – Keblov near Dolní Kralovice, 16 Sept. 1964 leg. M. Svrček (PRM 612112). – Nové Strašecí, Ruda, 7 Sept. 1941 leg. J. A. Herink (PRM 710052). – Žloutkovice, Žloutkava stream valley, 17 March 1974 leg. E. Dlouhý (PRM 874213). – Stříbrná Skalice, Studený vrch, 24 March 1951 leg. Z. Pouzar (PRM 797191). – Poříčko, 18 Apr. 1943 leg. J. Kubička (PRM 710039). – ditto, 9. IV. 1950 leg. J. Kubička (PRM 797192). – ditto, 10 Apr. 1944 leg. J. Kubička (PRM 710045). – ditto, June 1942 leg. J. Kubička (PRM 710051). – Vyšší Brod, 12 June 1935 leg. A. Pilát (PRM 25303 + 25304). – Ledečko n. Sáz., 4 Apr. 1948 leg. V. Vašák (PRM 797195). – Mašov, Pelešany, Valdštejn, 18 July 1948 leg. J. Herink (PRM 609976). – ditto, 1 Apr. 1948 leg. J. Herink (PRM 609978). – Mašov, Radeč, 18 Apr. 1949 leg. J. Herink (PRM 609975). – ditto, 25 Sept. 1949 leg. J. Herink (PRM 609977). – Dolní Polubný, Desenský hřbet, 12 July 1947 leg. J. Herink (PRM 521535). – Trutnov, Adršpašské skály, 22 June 1950 leg. A. Příhoda (PRM 606480). – Hradec Králové, 19 Sept. 1942 leg. F. Smotlacha (PRM 710054). – Leština, 30 July 1961 leg. A. Čábera (BRNM 312760). – Vlastějovice, Fialník Mt., 9 Oct. 1967 leg. M. Svrček 797/67 (PRM 890348). – Orlovy, Buková studánka, 18 July 1964 leg. A. Čábera (BRNM 312734). – Telecí near Polička, Damašek, 29 May 1963 leg. F. Valkoun (BRNM 313494). – Třeboň, 30 July 1938 leg. J. Herink (PRM 499692). – Třeboň, Vlčí louka, Stará řeka, 20 May 1962 leg. M. Svrček 206/62 (PRM 568446). – Chlum u Třeboně, 9 Aug. 1934 leg. K. Kavina (PRM 710035, as *O. campanella* var. *badipus*). – ditto, 1 Aug. 1934 leg. K. Kavina (PRM 710037). – ditto, 4 Aug. 1935 leg. K. Kavina (PRM). – ditto, 22 Aug. 1936 leg. K. Kavina (PRM). – Chotýčany, Libochovka valley, 13 July 1962 leg. M. Svrček and J. Kubička (PRM 567948). – Hronov, Velké Poříčí, 8 Sept. 1969 leg. R. Podlahová (PRM 685667). – Černé Voděrady, 28 Apr. 1945 leg. M. V. Svrček 85/45 (PRM 710043). – Kašperské Hory, 19 Aug. 1969 leg. S. Karhan (PRM 692495). – Varvažov, Skalice valley, U mostu, 28 Aug. 1968 leg. M. Svrček (PRM 671799). – ditto, 10 Aug. 1963 leg. M. Svrček 474/63 (PRM 612900). – České Budějovice, Klef, Aug. 1934 leg. J. Herink (PRM 25300). – Nová Ves n. Lužnicí, Žofinka, 1 June 1966 leg. J. Kubička (PRM 625256). – Bechyně, Černická obora, 21 Apr. 1963 leg. Z. Pouzar (PRM 583480). – Blansko near Kaplice, Hradišská hora Mt., 20 Sept. 1970 leg. M. Svrček 1380/70 (PRM 715364). – Horní Planá, Želnavá, 5 July 1956 leg. F. Kotlaba (PRM 758280). – Zátoň, Boubín Mt., 17 Sept. 1950 leg. F. Kotlaba and Z. Pouzar (PRM 797190 + 797194). – ditto, 7 June 1979 leg. J. Kubička (BRA). – Žofín, Žofinský prales, 27 May 1967 leg. M. Svrček and J. Kubička (PRM 830863). – Šumava Mts., Ostrý, Kamenná brána, 12 July 1926 leg. K. Kavina (PRM). – Velká Střítež, Polom, 22 Aug. 2000 leg. A. Vágner (BRNM). – MORAVIA: Travná, Borůvková hora, 22 July 1962 leg. K. Kříž (BRNM 325234). – ditto, 8 Aug. 1961 leg. K. Kříž (BRNM 325232). – Jeseníky Mts., Bílá Opava valley, 17 Aug. 1958 leg. J. Kubička (PRM 884548). – Jeseníky Mts., Karlova Stdánka, Bílá Opava valley, 4 July 1971 leg. J. Kuthan (BRA). – Hradec near Opava, 7 Sept. 1969 leg. M. Svrček 1112/69 (PRM 685140). – Horní Lipová, 2 May 1965 leg. K. Kříž (BRNM 325237). – Jeseníky Mts., Rejvíz, Rejvízské rašeliniště, 30 Sept. 1969 leg. J. Kuthan (BRA). – ditto, 2 May 1965 leg. K. Kříž (BRNM 325236). – Beskydy Mts., Podolánky, 16 Aug. 1969 leg. J. Kuthan (BRA). – Velké Karlovice, 30 June 1955 leg. K. Kříž and F. Šmarda (BRNM 313507). – Staré Hamry, Huťský revír, 16 July 1963 leg. J. Veselský (BRNM 313499). – Staré Město near Bruntál, Nová Véska, 28 Apr. 1967 leg. J. Diener (BRNM 325230). – Bystřička, near Bystřička dam, 22 Sept. 1994 leg. A. Vágner (BRNM 590598). – Frýdek, 29 Apr. 1963 leg. J. Veselský (BRNM 313497). – Nové Veselí, Babín, 6 Aug. 1950 leg. O. Lázníčka (BRNM 313596 + 313506). – ditto, 17 July 1999 leg. V. Antonín 99.32 (BRNM). – Radostín, Dářko, 26 Aug. 1940 leg. F. Šmarda (BRNM 313505). – Škrdlovice, Velké Dářko, 22 June 1964 leg. J. Lazebníček (BRNM 313495). – Studnice, Kopaniny, 15 July 1999 leg. V. Antonín 99.24 (BRNM). – Zubří near Žďár n. Sáz., 7 May 1964 leg. V. Kachyňová (BRNM 325238). – Jedlová near Polička, Balda forest, 20 June 1961 leg. F. Šmarda (BRNM 313501). – Korouhvice, 1 July 1972 leg. A. Vágner (BRNM 325235). – Řehořov, Jamenský les, 30 May 1963 leg. F. Šmarda (BRNM 313493). – Třešť, Roštejn, 28 Apr. 19?? leg. J. Lazebníček (BRNM 325231). – Vilémov, 20 Apr. 1960 leg. L. Rychtera (PRM 532270). – Ostrov near Velké Meziříčí, 24 VI. 1951 leg. F. Valkoun (BRNM 313595). – Třebíč, 6 May 1956 leg. O. Lázníčka (BRNM 313503). – Černovice, Chlébský potok, 11 May 1941 leg. F. Šmarda (BRNM 313510). – Kuřim, Babí lom, 4 Nov. 1953 leg. J. Vermouzek (BRNM 313508). – Hodonín near Blansko, Údolí Hoduňky, 26 Apr. 1999 leg. V. Antonín 99.01 (BRNM). – Lomnice near Tišnov, Žleby, 30 Aug. 1940 leg. F. Šmarda (BRNM 313509). – Ořešín, 5

Apr. 1959 leg. K. Kříž (BRNM 313502). – Ochoz near Brno, Hádek, 30 Apr. 1967 leg. S. Šiška (BRNM 325238). – Vranov near Brno, Jelení skok, 24 May 1987 leg. A. Vágner (BRNM 457910). – Brno-Útěchov, Couřavá, 16 Apr. 1985 leg. A. Vágner (BRNM 457911). – Brno-Soběšice, Suchá hora, 30 July 1972 leg. A. Vágner (BRNM 325239). – ditto, 20 March 1990 leg. A. Vágner (BRNM 568787). – ditto, 19 Apr. 1992 leg. A. Vágner (BRNM 590468). – Cervenka, 31 May 1964 leg. Řihošek (BRNM 313500). – **FINLAND:** U. Sipoo, Hindsby, Hovgård Lehto, 8 Sept. 1979 leg. R. Saarenoksa 49279 (H). – ditto, 24 July 1979 leg. M. Korhonen and R. Saarenoksa 19979 (H). – ditto, Hindsby-Myras, Mosabacka, 20 May 1979 leg. R. Saarenoksa 01079 (H). – ditto, Östersundom-Hindsby, Helgrträsk, Tuorekuusi-kangas, 19 May 1979 leg. R. Saarenoksa 00979 (H). – ditto, 19 May 1979 leg. R. Saarenoksa 00879 (H). – V. Rymättylä, Raulahti, Välimäki, Lahopuunäyte, 10 Aug. 1979 leg. R. Tuomikoski (H). – ditto, 18 May 1979 leg. R. Tuomikoski (H). – ditto, 10 Aug. 1979 leg. R. Tuomikoski (H). – U. Vantaa, Tammisto, 2 Aug. 1978 leg. R. Tuomikoski (H). – V. Karjalohja, Karkali, 12 Aug. 1977 leg. M. Korhonen and R. Tuomikoski (H). – Ostrobotnia australis, Sideby (= Siippy), 27 June 1859 leg. P. A. Karsten (H, herb. P. A. Karsten No. 4592). – Tavastia australis, Tammela, Kytö, 18 Sept. 1878 leg. P. A. Karsten (H, herb. P. A. Karsten No. 4591). – Kuusamo, Juuma, Jäkälävuoma, 23 July 1969 leg. T. Ahti 26051 (H). – U. Espoo, Tapiola, Suvikumpu, Suvipuisto, 18 May 1977 leg. H. Harmaja (H). – Nylandia, Esbo, Domsby, Granskog, 9 May 1954 leg. N. Malmström (H). – **CROATIA:** Djed near Hrvatska Kostajnica, 6 April 1969 leg. M. Tortič (CNF 6/12). – **FRANCE:** Grenoble, Usiège-les-Baias, Les Sieglières, 23 Sept. 1947 leg. R. W. G. Dennis [K(M) 25771]. – Savoie, Douci Combelouvieres, Apr. 1990 leg. J. Rammeloo 9140 (BR 9904-10). – Vosges, Val de Sénennes, Basse des Chavons, Oct. 1975 leg. D. Thoen 6292 (BR 123039-43). – Vosges, Vallée de la Vologne, 8 Oct. 1975 leg. D. Thoen 6355 (BR 123002-06). – Brassus, 14. May 1937 leg. G. Métrod 694 (PC). – Jura, July 1949 leg. Robert (PC, herb. Romagnesi). – **GERMANY:** Sandhausen, Franzosenbusch, 2 Sept. 2002 leg. W. Winterhoff (herb. Winterhoff, BRNM). – Dresden, in: Rabenhorst, no. 404 (as *Agaricus campanella*). Bayern, bei Eisenstein, 25 July 1923 leg. H. Sydow, in: Sydow, Mycotheca germanica, No. 2051 (K, PRM 710049, as *Omphalia c.*). – Sächs. Schweiz, June 1914, 1915 leg. W. Krieger, in: Krieger, Fungi saxonicis, No. 2361. (BPI 757834, K, as *Agaricus (Omphalia) fragilis*). – Baden, Salem, Apr. 1874 leg. Jack, in: Rabenhorst, Fungi europaei, No. 2001 (BRA, as *Agaricus campanella* var. *myriadea*). – Bayern, 10 May 1981 leg. G. A. de Vries (Neotype, L). – **MOROCCO:** Riff Mountains, near Ketama, 24 April 1971 leg. C. Bas 5575 (L). – **NORWAY:** Odda, Haukeligrend, July 1965 leg. L.S. Wildervanck (L). – Oslo, Sognsvatn, 18 July 1985 leg. E.C. Vellinga 786 (L). – Nordalund, Rana, Storliengen, 7 Sept. 1976 leg. G. Gulden 21/76 (O 120215). – Lotensaeker, 23 May 1968 leg. R. W. G. Dennis [K(M) 68766]. – Buskerud, Ringerike, Klekken, 31 Aug. 1975 leg. D. N. Pegler 2533 [K(M) 75528]. – **POLAND:** Ustronie Forest Reserve, 17 Sept. 1995 leg. T. Hering [K(M) 31976]. – **ROMANIA:** Cluj distr., Bihar Mts., Muntele Baisoara, 26 May 1956 leg. G. Silaghi, in: Flora Romaniae exsiccata, No. 2910 (K, PRM 533829). – **SLOVAKIA:** Dobšiná, Stracená, July 1937 leg. J. Hruby (BRNM 96555). – Nízke Tatry Mts., Magurka, 4 July 1948 leg. J. Kubička (PRM 623007). – Čierny Balog, Dobročský prales, 6 Sept. 1962 (BRNM 313504). – Pribylina, Hrdovo, 4 July 1988 leg. P. Škubla (BRA). – Poprad, Kvetnica, Križová, 31 May 1946 leg. J. Kubička (PRM 521300). – Západné Tatry Mts., Juráňová dolina valley, Umrá Mt., 8 Sept. 1979 leg. L. Kubičková (PRM 821801 + 821770). – Západné Tatry Mts., Zuberec, Kopa, 5 Sept. 1979 leg. L. Kubičková (PRM 821766). – Západné Tatry Mts., Osobitá Mt., 7 Sept. 1979 leg. L. Kubičková (PRM 821807). – Vysoké Tatry Mts., Tatranské Matliare, Biela Voda valley, Malá Svišňovka Mt., 12 May 1946 leg. J. Kubička (PRM 521036). – Vysoké Tatry Mts., Starý Smokovec, July 1926 leg. A. Pilát (PRM 23874). – ditto, Hrebienok, Obrovský vodopád, 19 May 1946 leg. J. Kubička (PRM 521038). – Vysoké Tatry Mts., Lomnický štít Mt., 1 May 1946 leg. J. Kubička (PRM 521216). – Vysoké Tatry Mts., Kežmarské Žleby, Dlhý les, 15 Sept. 1989 leg. J. Kuthan (BRA). – Vysoké Tatry Mts., Tatranská Polianka, Velická dolina valley, 23 May 1997 leg. L. Varjú (BRA). – Vysoké Tatry Mts., Štrbské Pleso, 18 May 1973 leg. L. Opold (BRA). – Vysoké Tatry Mts., Východná, 6 July 1970 leg. J. Kuthan (BRA). – Vysoké Tatry Mts., Podbanské, Machy, 13 Aug. 1986 leg. J. Kuthan (BRA). – Vysoké Tatry Mts., Podbanské, Hluchanka, 7 Aug. 1989 leg. J. Kuthan (BRA). – Vysoké Tatry Mts., Tatranská Lomnica, 19 Aug. 1966 leg. J. Kollár (BRA). – Vysoké Tatry Mts., Bystrá valley, Trangoška, 9 Sept. 1960 leg. H. Romagnesi 60.216 (PC, herb. Romagnesi). – Belianské Tatry Mts., Tatranská Kotlina, Dolina siedmich prameňov, 8 Sept. 2001 leg. V. Antonín 01.246 and O. Jindřich (BRNM). – Švedlar near Mníšek n. Hnilcom, 27 July 1951 leg. J. Kubička (PRM 797193). – Bukovské vrchy Mts., Nová Sedlica, Príkry, 23 July 1967 leg. K. Kult (PRM 629213). – Bukovské vrchy Mts., Nová Sedlica, Stuzica, 18 July 1989 leg. J. Kuthan (BRA). – ditto, 17 Oct. 1989 leg. J. Kuthan (BRA). – ditto, 3 Oct. 1989 leg. J. Kuthan (BRA). – Bukovské vrchy Mts., Osadné, Udava, 18 Oct. 1989 leg. J. Kuthan (BRA). – ditto, 24 Apr. 1992 leg. J. Terray (BRA). – Bukovské vrchy Mts., Kremenec, 16 July 1969 leg. K. Kult (PRM 679158). – Dolný Kubín, 10 June 1962 leg. I. Fábry (BRA). – ditto, 15 Aug. 1963 leg. I. Fábry (BRA). – ditto, Gecalský les, 10 June 1962 leg. I. Fábry (BRA). – Oravský Podzámok, 15 Aug. 1960 leg. I. Fábry (BRA). – Čierny Balog, Ramžovský Grúň, 4 Aug. 1980 leg. P. Lizoň (BRA). – Veľká Fatra Mts., Blatnica, Plešovica, 27 Apr. 1994 leg. J. Uhlířová (BRA). – Malá Fatra Mts., Bystrička, Lazy, 29 July 1984 leg. K. Tolnay (BRA). – ditto, Hrádok, 20 June 1981 leg. L. Hagara (BRA). – Martin, Stráne, 14 Apr. 1984 leg. L. Hagara (BRA). – ditto, Jahodnícky háj, 18 June 1981 leg. L. Hagara (BRA). – Strážky, 2 May 1963 leg. E. Končeková (BRA). – Čičmany, 21 Apr. 1971 leg. J. Kuthan (BRA). – Raková, 3 June 1967 leg. J. Kuthan (BRA). – Prenčov, Sept. 1890 leg. A. Kmeť (BRA). – ditto, M. Sitno, 4 Aug. 1887 leg. A. Kmeť (BRA). – **SLOVENIA:** Celje, Šmarjeta, 26 March 1966 leg. M. Bertosi (CNF 6/4). – **SWEDEN:** Upland, Bondkyrka parish, Flottsund, 21 Aug. 1936

leg. S. Lundell, in: Lundell & Nannfeldt, Fungi exsiccati suecici, No. 331. (K, PRM 710053). – Wästmanland bor., Bjurfors, Aug. 1937 leg. T. Lagerberg (PRM 488872). – Stockholm, 16 Apr. 1894 leg. L. Romell, in: Romell, Fungi exsiccati praesentim scandinavici, No. 106 (BRA). – Dalsland, Edsleskog parish, Klovedud, 12 Sept. 1990 leg. T. Læssøe 3018 [K(M) 15507]. – Småland, Femsjö, 11 Sept. 1973 leg. H.S.C. Huijsman (L). – **SWITZERLAND:** Neuchâtel, 1874 leg. Morthier, in: de Thümen, Mycotheca universalis, No. 2 (PRM 25307, as *Agaricus Omphalia campanella*). – Prize Ducommun, March 1959 leg. H.S.C. Huijsman (L). – Rochefort, 8 April 1965, 3 May 1965, 8 July 1967 leg. H.S.C. Huijsman (L). – Montmollin, 1 May 1958 leg. H.S.C. Huijsman (L). – Bole, April 1966 leg. H.S.C. Huijsman (L). – Kanton Luzern, Schüpfheim, 12 Aug. 1955 leg. H.S.C. Huijsman (L). – Kanton Wallis, Binntal, Binn, 24 July 1965 leg. R.A. Maas Geesteranus 14745 (L). – Kanton Bern, Les Breuleux near St. Imier, 2 Oct. 1969 leg. H.S.C. Huijsman (L). – Kanton Graubünden, Filisee, 31 May 1986, A. Becker (L). – **UKRAINE:** Trebushany, 3 May 1935 leg. Deyl (PRM 25301). – ditto, Lishchenka valley, Aug. 1936 leg. A. Pilát (PRM 29066 + 29199 + 29205). – Trebushany, Berlebash valley, Aug. 1937 leg. A. Pilát (PRM 488217 + 487830 + 487939 + 488158). – Trebushany, Bílý potok valley, 4–11 Oct. 1935 leg. A. Pilát (PRM 23110 + 20502). – Německá Mokrá, July 1932 leg. A. Pilát (PRM 25294 + 25295 + 25296 + 25297). – Kobylecká Polana, Zámer, July 1929 leg. A. Pilát (PRM 25302, as *Omphalia campanella* var. *badipes*). – **UNITED KINGDOM: SCOTLAND:** Inverness-shire, Rannoch, Loch Rannoch, 2 and 5 Sept. 1966 leg. E. Kits van Waveren (L). – Coylebrigde, 18 July 1960 leg. D.A. Reid (L). – **U.S.A.:** Maryland, Takoma Park, 18 May 1898 leg. C.L. Shear (BPI 757852). – Pennsylvania, Bethlehem, Easton, Oct. 1923 leg. E.A. Rau (BPI 757 850 + 757854). – Dakota, Black Hills, June 1927 leg. J.F. Brenckle (PRM 710050). – Evaro Mont, 6 Sept. 1915 leg. C.J. Humphrey (BPI 757832).

Notes: *Xeromphalina campanella* is a very common fungus in boreal and montane regions, characterised by growing in dense clusters or groups, rather large, often cylindrical-ellipsoid spores, lageniform, clavate, or utriform, sometimes irregular but never branched cheilo- and caulocystidia, context hyphae of stipe yellowish to pale yellow-brown in KOH and mild taste.

A very similar fungus *X. kauffmanii* A.H. Sm. found in the North America (Canada, U.S.A.) and Japan till now (REDHEAD 1988) differs in having smaller spores [$5.0\text{--}7.0 \times 3.2\text{--}4.0$ (4.5) μm] and a different pigmentation of trama hyphae, and by growing on wood of broadleaved trees.

Revised American collections (BPI 757852 and 757854) showed slightly smaller spores ($5.0\text{--}7.0 \times 3.0\text{--}3.7$ μm), cheilocystidia distinctly more variable in form and very thick-walled caulocystidia (up to 4 μm).

Our description agrees with most literature records (e.g. BREITENBACH & KRÄNZLIN 1991, CEJP 1936, KLÁN 1984). Only BON (1987) described smaller spores [$5.5\text{--}6.5 \times 3.0\text{--}3.2$ (3.5) μm], smaller basidia ($15\text{--}25 \times 4\text{--}5$ μm), and narrower cheilocystidia (x 8–10 μm), MALENÇON & BERTAULT (1975) narrower cheilocystidia (x 6.5–11 μm), and Miller (1968) gave narrower basidia (x 3.5–5.5 μm) and shorter caulocystidia [25–40 (75) μm long].

Xeromphalina campanella var. *myriadea* Kalchbr probably represent the typical *X. campanella*. Some exsiccates under that name [e.g. Rabenhorst, Fungi europaei, No. 2001, herb. BRA] clearly belong to that species. According to the original diagnose it should be densely caespitose with smaller, pale fulvous basidiocarps, and pale brick lamellae (FRIES 1874: Varietas insignior est myriadea Kalchbrenner in litteris, vulgari dimidio minor, densissime caespitosa, truncis pinnum denso vellere obducens, dilute fulva, lamellis pallide testaceo-carneis). VEIKKO & HINTIKKA (1957) published a description of this *Xeromphalina campanella* var. *myriadea* from some localities in Finland. According to them, macroscopically, it resembles *X. campanella*, but has smaller basidiocarps (pileus 5–8 mm broad) which are paler coloured (pileus pale yellow-brown, slightly darker at centre), microscopically it is identical with typical variety of *X. campanella*. The authors also mentioned a different character of cultures of both varieties. A revision of the herbarium specimens showed that the var. *myriadea* sensu VEIKKO & HINTIKKA (1957) represents a small form of *X. campanella*. It could be confused, however, with the small spored form of *X. brunneola* (see below), but this species has still smaller spores.

CEJP (1936) described some other forms besides f. *myriadea*, viz f. *badipus* (Fr.), f. *papillata* (Fr.), f. *major* Cejp. All of them, however, represent only small morphological aberrations without any taxonomical status.

2. *Xeromphalina brunneola* O.K. Mill.**Fig. 58***Xeromphalina brunneola* O.K. Mill., Mycologia 60: 167. 1968.**Type specimen:** U. S. A., Idaho, Priest River, 25 Sept. 1964 leg. O.K. Miller 2866 (MICH, holotype).**Selected literature:** Antonín, Czech Mycol. 52: 238-240, 2000; Miller, Mycologia 60: 167-169. 1968; Redhead, Can. J. Bot. 66: 483-484. 1988.

Description (macrodescription according to Miller 1968, see notes): **Pileus** 6–15 mm broad, convex-depressed to nearly plano-depressed, glabrous, moist, margin opaque when moist, uniformly dull orange. **Lamellae** close, decurrent, narrow, not intervenose when young, sometimes somewhat intervenose in age, orange-buff, with even, dull edges. **Stipe** 30–60 × 1–2.5 mm, tapering somewhat towards base, nearly bulbous at base, fistulose, cartilaginous, smooth and orange-buff at apex, ochraceous pubescent, darker rusty brown downward. **Context** thin, brownish, cartilaginous, with persistently disagreeable **taste**, and at first disagreeable **smell**.

Spores (5.0) 5.5–7.0 (7.5) × 2.5–3.5 µm, E = 1.7–2.3, Q = 1.9–2.1, ellipsoid, cylindrical-ellipsoid to subamygdaliform, often subballantoid, thin-walled, hyaline, smooth. **Basidia** 21–29 × 5.0–6.5 µm, 4-spored, clavate. **Basidioles** 10.0–27 × 2.5–7.0 µm, cylindrical to clavate. **Cheilocystidia** 25–85 × (6.5) 8.0–16.5 (19) µm, lageniform, lanceolate, (sub)utriform, clavate, subfusoid, sometimes pedicellate, thin-walled, hyaline. **Trama hyphae** of cylindrical to fusoid cells, thin- to slightly thick-walled, incrustated in grains or plaques, up to 15 µm wide with yellow-brown walls in KOH; mixed with thick-walled, subhyaline, refractive, up to 20 µm wide hyphae. **Pileipellis** a cutis, made up of radially arranged, cylindrical, slightly thick-walled, incrustated, up to 8 µm wide hyphae with dark-yellow-brown walls in KOH; hyphae at pileus margin both, smooth and incrustated. **Circumcystidia** not frequent, 25–50 × 14–16 µm, clavate, broadly clavate, subfusoid, sometimes irregular, thin- to slightly thick-walled. **Pileitrama** made up of hyphae with yellow-brown walls in H₂O and in KOH. cylindrical, often irregular to subcoralloid terminal elements or lateral projections present. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, coarsely incrustated, up to 10 µm wide hyphae with brownish orange walls in KOH; thick-walled hyphae similar to pileus trama also present. **Stipititrama** made up of hyphae with yellow-brown walls in H₂O and in KOH. **Caulocystidia** (23) 30–65 × (6.0) 11–18 µm, clavate, broadly clavate, utriform, cylindrical, sometimes irregular, not branched, not coralloid, thick-walled, obtuse, yellow- to orange-brown in KOH. **Clamp-connections** present.

Chemical reactions: Spores amyloid, other tissues neither amyloid nor dextrinoid.**Ecology:** Saprotrophic; in clusters or in groups on coniferous wood, especially of *Picea*.**Distribution:** In Europe so far only known from boreal and mountainous regions (Austria, Finland, Germany, Norway, Poland, Sweden). Also known from North America (Canada, U. S. A.) and Asia (Japan).**Phenology:** July to November.

Collections examined: **AUSTRIA:** Lunz, Aug. leg. C. de Keißler, in: No. 949. (BPI 757880; PRM 5980, a short spored form – “var. *myriadea*”). – Carinthia, Turracher Hoke, 18 Aug. 1974 leg. D. A. Reid [K(M) 68765]. – Carinthia, St. Lorenzen, 13 Aug. 1974 leg. D. A. Reid [K(M) 75587]. – **FINLAND:** Etelä-Pohjanmaa, Zyteri, Rantasipi, 15 July 1983 leg. J. Stordal 22920 (O 120213). – **GERMANY:** Geutenreuth, Kreis Lichtenfels, 14 July 1985 leg. H. Engel 312 [K(M) 68759]. – **ITALY:** Varena, Aug. 1923 leg. G. Bresadola (BPI 757835). – ditto, Aug. 1921 leg. G. Bresadola (BPI 757849, a short spored form – “var. *myriadea*”). – **NORWAY:** Akershus, Ås, 18 Aug. 1978 leg. G. Gulden 891/78 (O 120170). – Vestfold, Sem, Eik, 18 Aug. 1981 leg. S. Aase (O 120214). – Hedmark, Stor-Elvdal, Sørneset, 14 July 1973 leg. G. Gulden 653/73 (O 120180). – Buskerud, Modum hd., 26 Aug. 1986 leg. J. Stordal 25063 (O 199). – Østfold, Halden, Solli kapell, 16 Sept. 1975 leg. G. Gulden 370/75 (O 120178). – Akershus Co., Eidsvoll Municipality, 13 Sept.

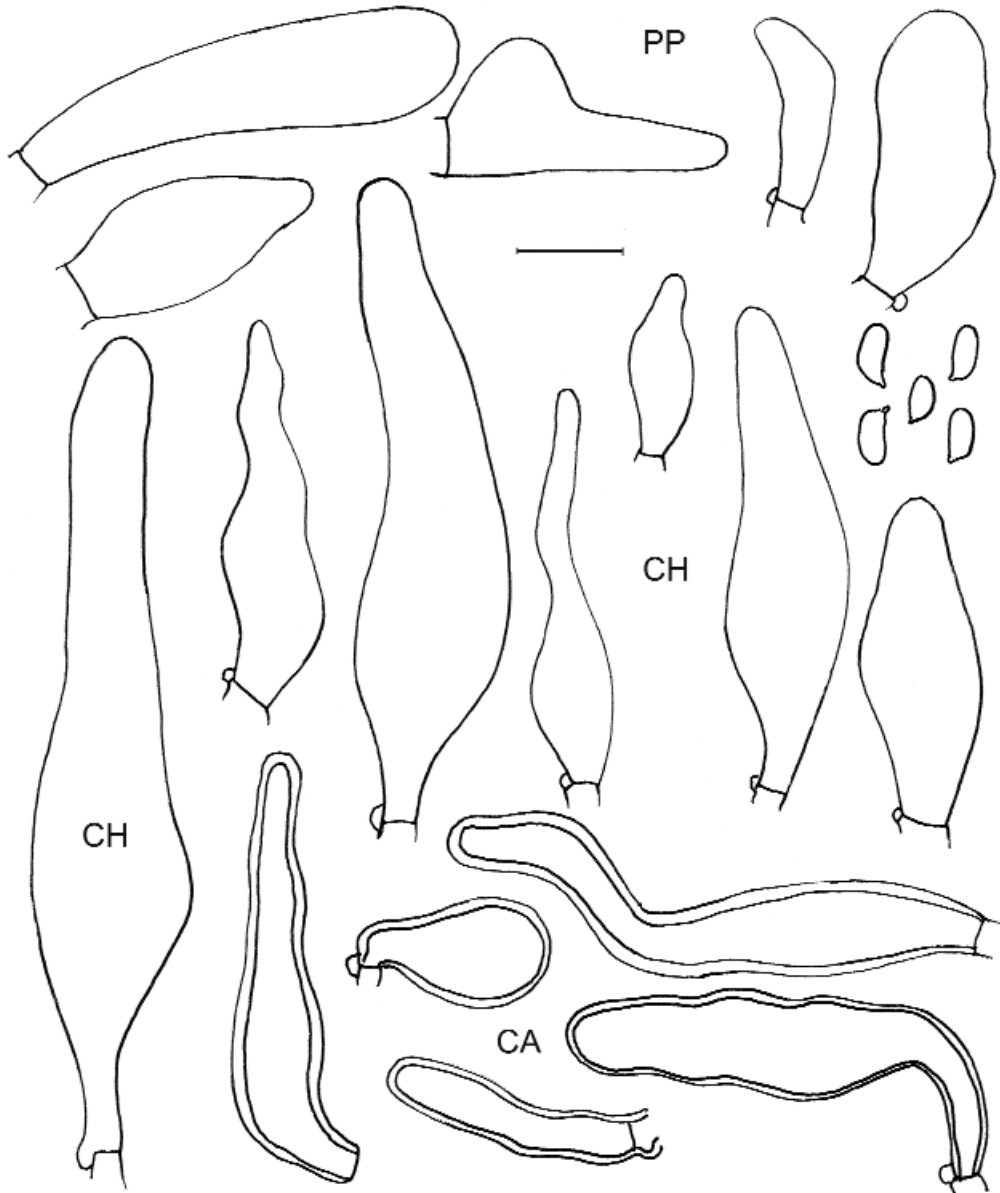


Fig. 58: *Xeromphalina brunneola*

1994 leg. B. Spooner [K(M) 31833]. – **POLAND:** Białoweza forest, 17 Oct. 1981 leg. D. N. Pegler 3400 [K(M) 68763]. – **SWEDEN:** Öland, Böda, 2 Oct. 1980 leg. M. Korhonen & R. Tuomikoski (H). – **U. S. A.:** Idaho, Priest River, 25 Sept. 1964 leg. O. K. Miller 2866 (MICH, holotype). – Pennsylvania, Butler Co., Monroe, Little Buffalo Creek, 26 Sept. 1936 leg. L. K. Henry (PRM 832209).

Notes: Unfortunately annotations of the macroscopical characters of most European records are lacking, so we had to refer to the macroscopical descriptions in literature of North American material.

Xeromphalina brunneola is very close to *X. campanella* from which it differs mainly by the small, rather dark coloured carpophores and small spores which are often suballantoid, caulocystidia which are not branched and often voluminous, and thick-walled hyphae in the tissues. It was described from North America. Redhead (1988) recorded it from Europe for the first time (a short-spored form). The first European localities of the typical form are summarised by ANTONÍN (2000).

According to MILLER (1968) it differs in having darker coloured carpophores, disagreeable taste, reddish brown pileipellis and stipitipellis at apex in KOH, pigmented caulocystidia and smaller spores. REDHEAD (1988) discussed those features and stated, that the only good characters to distinguish both species in herbarium specimens are size and shape of spores and a presence on thick-walled hyphae in tissues. Our studies supported this conclusion with one addition – the disagreeable taste is distinct also in dry carpophores.

In a comparison with literature, the original microdescription by MILLER (1968) differs in slightly smaller spores ($5.5\text{--}6.6 \times 2.5\text{--}3.0 \mu\text{m}$) and narrower cheilocystidia ($\times 5.5\text{--}8.5 \mu\text{m}$).

A short spored form of *X. brunneola* (spores $4.5\text{--}6.0 \times 2.5\text{--}3.5 \mu\text{m}$, $E = 1.6\text{--}2.1$, $Q = 1.8$) is known only from Europe from the region of Alps in Austria and Italy. This form is known only in some exsiccata from the de Keißler's Kryptogamae exsiccatae and Bresadola's collections (both as *X. campanella* var. *myriadea*).

TREU & AGERER (1990) who studied some species in pure culture, showed that in cultures of *X. brunneola* structures were found similar to those in some *Mycena* species (*M. acicula*, *M. galericulata*, *M. stylobates*).

3. *Xeromphalina junipericola* G. Moreno & Heykoop.

Fig. 59

Xeromphalina junipericola G. Moreno & Heykoop, Z. Mykol. 62: 38. 1996.

Type specimen: Spain, Guadalajara, Ermita de los Enebrales, Tamajón, 16 Nov. 1994 leg. M. Heykoop and G. Moreno (AH 17049, holotype).

Selected icones: Moreno & Heykoop, Z. Mykol. 62: 41. 1996; Moreno & al., Bol. Soc. Micol. Madrid, 26: 144. 2002.

Selected literature: Bon, Doc. mycol. Mém. hors sér. 5: 76. 1999; Moreno & Heykoop, Z. Mykol. 62: 38-39. 1996.

Description: [according to MORENO & HEYKOOP (1996)]. **Pileus** 2–6 mm broad, globose to cyathiform at maturity, brown-reddish with vinaceous to brown-purplish tinges, covered with yellowish-orange flocci which are more abundant in immature specimens. **Lamellae** distant, $L = 27\text{--}30$, $l = 1\text{--}2$, decurrent with scarce lamellulae, sometimes anastomosed, narrow, grey to grey-violaceous. **Stipe** $6\text{--}14 \times 0.5\text{--}1.5 \text{ mm}$, cylindrical, concolorous with pileus or paler, covered with a whitish powdery bloom, with floccose base formed by ochraceous-orange hyphae. **Taste** and **smell** none.

Spores (3.7) $4.0\text{--}5.0 \times (2.0) 2.2\text{--}2.5 (3.0) \mu\text{m}$, $E = 1.6\text{--}2.3$, $Q = 1.8$, ellipsoid to cylindrical-ellipsoid, smooth, thin-walled, hyaline. **Basidia** $15\text{--}23 \times 5.0\text{--}6.0 \mu\text{m}$, 4-spored, clavate. **Basidioles** $8.0\text{--}21 \times 2.0\text{--}5.0 \mu\text{m}$, cylindrical, clavate, subfusoid. **Cheilocystidia** $23\text{--}31 \times (3.5) 6.5\text{--}12.5 \mu\text{m}$, fusoid to broadly fusoid, utriform, (sub)lageniform, sometimes slightly irregular, often with (irregular) rostrum, thin-walled. **Trama hyphae** cylindrical, thin- to slightly thick-walled, mostly incrustated, up to $13 \mu\text{m}$ wide, incrustation brown in KOH. **Pileipellis** a cutis, made up of radially arranged, cylindrical, \pm slightly thick-walled, incrustated, up to $10 \mu\text{m}$ wide hyphae, pigment (dark) brown in KOH. **Circumcystidia** numerous, $16\text{--}41 (55) \times 4.0\text{--}12 \mu\text{m}$, cylindrical, clavate, fusoid, irregular to subcoralloid, slightly thick-walled, smooth, pale to dark brown in KOH. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, incrustated, brownish yellow in H_2O , yellow-brown in KOH, up to $5 \mu\text{m}$ wide.

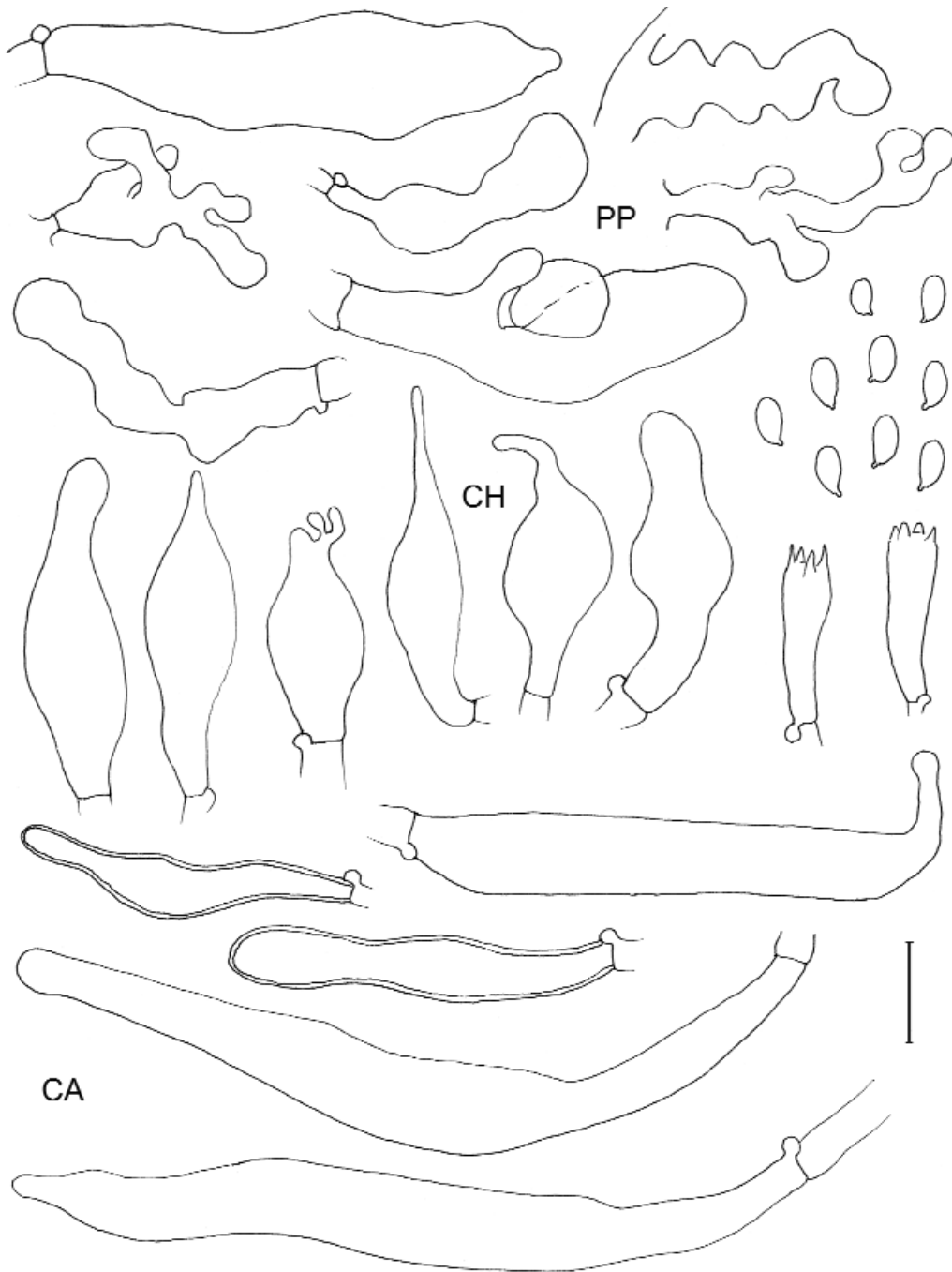


Fig. 59: *Xeromphalina junipericola*

Stipititrama made up of minutely incrustated, pale yellow in H₂O, yellow-brown in KOH, up to 10 µm wide. **Caulocystidia** 31–80 × 7.0–11 µm, cylindrical, clavate, (sub)fusoid, (sub)utriform, sometimes rostrate, slightly thick-walled, pale brown to yellow-brown in KOH. **Clamp-connections** present.

Chemical reactions: Spores amyloid, other tissues neither amyloid nor dextrinoid.

Ecology: Saprotrophic; on trunks of *Juniperus thurifera*.

Distribution: Known only from the type locality.

Phenology: November to December.

Collections examined: SPAIN: Guadalajara, Ermita de los Enebrales, Tamajón, 21 Dec. 1998 leg. M. Heykoop and G. Moreno (BRNM ex AH 19747, topotype).

Notes: *Xeromphalina junipericola* is characterised by having violaceous to purplish tinges in the pileus, lamellae and stipe, fusoid non-coralloid cheilo- and caulocystidia, and small spores. Together with *X. minutissima*, it has the smallest spores among European *Xeromphalina* species.

From other small-spored extralimital *Xeromphalina* species, *X. testacea* Horak from New Zealand differs especially by the absence of cheilocystidia and in having a different structure of pileipellis; *X. podocarp*i Horak also from New Zealand, has ochraceous to yellow-brown pileus, still smaller spores (3.0–4.0 × 1.5–2.0 µm), and different circumcystidia (never coralloid); *X. javanica* Horak from Indonesia, has yellow-brown pileus, lamellae and stipe, which turn black with age and after drying, and a different structure of pileipellis; *X. melizea* Horak from Papua New Guinea, differs in having ochraceous to honey brown pileus and stipe, yellow-brown lamellae, larger cystidia (30–65 × 12–23 µm), and a different structure of pileipellis (HORAK 1979). *Xeromphalina nubium* Redhead & Halling from Venezuela (REDHEAD & HALLING 1987) has sienna to fulvous to ochraceous pileus, ochraceous to luteous lamellae, and ochraceous to sienna coloured stipe, rare cheilocystidia, different structure of pileipellis, and broader spores (5.0–5.5 × 2.9–3.4 µm). For a comparison with *Xeromphalina minutissima*, see below.

4. *Xeromphalina minutissima* Esteve-Rav.

Fig. 60

Xeromphalina minutissima Esteve-Rav. nom. prov., Bol. Soc. Micol. Madrid 20: 314. 1995 (invalid, without a Latin diagnosis)

Original specimen: Spain, Guadalajara, Sigüenza, Barbatona, 6 Dec. 1994 leg. A. Castillo (AH16925).

Selected icones: none

Selected literature: Esteve-Raventos, Bol. Soc. Micol. Madrid 20: 314-315. 1995.

Description: [macromorphology according to ESTEVE-RAVENTOS (1995)]. **Pileus** 3 mm broad, convex, with a distinct central papilla, not hygrophanous, not translucently striate, smooth to subfibrillose at centre, furfuraceous to fibrillose towards margin, pale brown to beige. **Lamellae** distant, L = 12–15, lamellulae present, almost free, slightly decurrent with tooth, ventricose, brown, with fibrillose, slightly paler edge. **Stipe** 10 × 0.5 mm, filiform, entirely fibrillose-furfuraceous, concolorous with pileus; with dark brown to blackish rhizomorphs in a lower part. **Context** pale ochraceous. **Smell** and **taste** not mentioned.

Spores 3.5–4.5 × 2.0–2.7 µm, E = 1.6–2.0, Q = 1.8, ellipsoid, thin-walled, smooth, hyaline. **Basidia** 11.5–15 × 4.0–4.5 µm, 4-spored, clavate. **Basidioles** 9.0–16 × 3.0–4.5 µm, clavate, cylindrical. **Cheilocystidia** numerous, 23–31 × 7.5–11 µm, fusoid, rarely sublanceolate or subutriform, sometimes subrostrate, thin-walled. **Pleurocystidia** similar to cheilocystidia, scattered. **Trama hyphae**

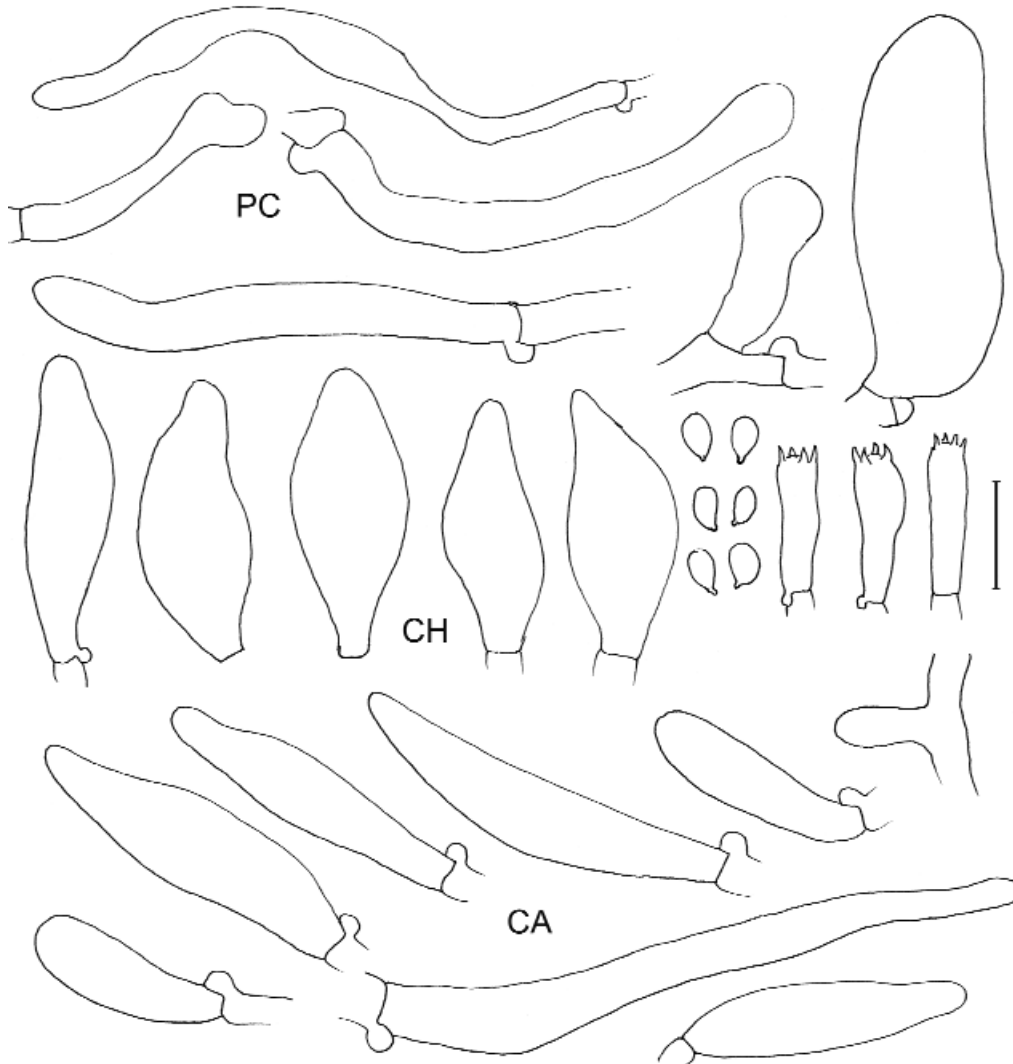


Fig. 60: *Xeromphalina minutissima*

cylindrical, \pm thin-walled, smooth or minutely incrustated, up to 10 μm wide. **Pileipellis** a (sub)trichoderm, made up of cylindrical to narrowly clavate, \pm thin-walled, obtuse cells; circumcystidia rare, 17–25 (36) \times 4.5–8.5 (13) μm , cylindrical to clavate, sometimes subcapitate, regular to irregular, never coralloid, \pm thin-walled. **Subpileipellis** a layer of \pm radially arranged, slightly thick-walled, cylindrical to ellipsoid, up to 18 μm wide hyphae. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, smooth or minutely incrustated, up to 5 μm wide hyphae, pale yellowish brownish in KOH. **Stipititrama** composed of smooth hyphae or with scattered granular incrustations, yellow-brown in KOH. **Caulocystidia** numerous, (10) 18–60 \times 4.5–8.0 μm , cylindrical clavate, fusoid, narrowly lageniform, regular or slightly irregular, never coralloid or branched, thin- to slightly thick-walled, (sub)hyaline. **Clamp-connections** present.

Chemical reactions: Spores amyloid, other tissues neither amyloid nor dextrinoid.

Ecology: Saprotrophic; on a cone of *Pinus pinaster*.

Distribution: Known only from one original locality.

Phenology: December.

Collections examined: SPAIN: Guadalajara, Sigüenza, Barbatona, 6 Dec. 1994 leg. A. Castillo (AH16925).

Notes: *Xeromphalina minutissima* is characterized in having small carpophores with papillate pale brown to beige coloured pileus, small spores, and more or less regular voluminous cystidia. The original material (AH16925) consists of the only minute carpophore. The pileus form and colour of carpophore is rather untypical for the genus *Xeromphalina*.

ESTEVE-RAVENTOS (1995) described *X. minutissima* as a provisional species with similar micro-features as *X. junipericola*, except for more or less (sub)trichodermal pileipellis with only scattered simple circumcystidia and shorter basidia (11.5–15 × 4.0–4.5 µm). Macroscopically it differs especially in having distinctly papillate pileus, more distant lamellae (L = 12–15) and brown coloured pileus and stipe. It probably represents a different species, but more material is needed.

5. *Xeromphalina fraxinophila* A. H. Sm.

5a. *Xeromphalina fraxinophila* var. *fraxinophila*

Pl. 54, Fig. 61

Xeromphalina fraxinophila A. H. Sm., Pap. Mich. Acad. Sci. Arts Lett. 38(1952): 79. 1953. – *Xeromphalina fellea* var. *fageticola* Bon, Doc. mycol. 29(115): 33. 1999.

Misapplied name: *X. caudicinalis* s. Klán, Čes. Mykol. 38: 206–209. 1984; *X. caudicinalis* var. *caudicinalis* s. Bon, Doc. mycol. Mém. hors sér. 5: 77. 1999; *X. caudicinalis* s. Lonati, Boll. Assoc. micol. ecol. Rom. 11: 9–12. 1987.

Type specimen: U. S. A., Michigan, Oakland Co., Kent L., 2 Oct. 1945 leg. A. H. Smith 20902 (MICH, holotype).

Selected icones: Lonati, Boll. Assoc. micol. ecol. Rom. 11: 11. 1987 (as *X. caudicinalis*).

Selected literature: Bon, Doc. mycol. 29(115): 33. 1999 (as *X. fellea* var. *fageticola*); Bon, Doc. mycol. Mém. hors sér. 5: 77. 1999 (as *X. fellea* var. *fageticola*); Lonati, Boll. Assoc. micol. ecol. Rom. 11: 9–12. 1987 (as *X. caudicinalis*); Miller, Mycologia 60: 179–180. 1968; Redhead, Can. J. Bot. 66: 496–497. 1988; Smith, Pap. Mich. Acad. Sci. Arts Letters 38: 79–80. 1953.

Description [macroscopy based on MILLER (1968) and REDHEAD (1988)]: **Pileus** 10–30 mm broad, broadly convex, truncate to umbilicate when young, then umbilicate, with inflexed, then spreading undulate or often crenulate margin, hygrophanous, translucently striate sometimes to subsulcate at margin when moist, dark brown, “Cinnamon brown”, sienna to dark brick at centre, ochraceous-yellow to yellow at margin, glabrous, somewhat radially rugose, pallescent and becoming silky when dry. **Lamellae** crowded, with lamellulae (l = 2), arcuate-decurrent to adnate, up to 2 mm broad, intervenose, initially ivory to pale luteous, becoming yellowish-ochraceous, with concolorous, entire edge. **Stipe** 20–70 × 1–3.5 mm, almost cylindrical, slightly broadened at apex and base, “Cinnamon brown”, chestnut to sepia when wet, darkening to dark brown from base up; entirely pubescent, with luteous to ochraceous or orange-rust-coloured floccose-strigose basal tomentum, the luteous to amber-coloured coating more prominent upon partial drying, when fully dried with a conspicuous yellowish brownish velvety coating over all. **Context** concolorous with the surface, with indistinct **smell** and **taste**.



Pl. 54:
Xeromphalina fraxinophila,
photo CH. HAHN

Spores (5.5) 6.0–7.5 (9.0) × 3.0–4.0 (4.5) μm, E = 1.6–2.2, Q = 1.7–2.0, ellipsoid, thin-walled, smooth. **Basidia** (21) 25–32 × 5.0–6.5 μm, 4-spored, clavate. **Basidioles** 12–31 × 3.0–7.5 μm, cylindrical to clavate. **Cheilocystidia** not frequent to frequent, often inconspicuous, (14) 18–31 (41) × (4.0) 5.5–9.0 μm, versiform, (sub)lageniform, clavate, fusoid, subutriform, rarely subcylindrical, sometimes rostrate, often slightly irregular, very rarely branched, thin- to slightly thick-walled, hyaline or pale yellow (-brown). **Trama** made up of cylindrical, subellipsoid or subfusoid up to 15 μm wide, thin- to slightly thick-walled, smooth or incrustated hyphae, the thick-walled hyphae branched or with lateral projections, with pale orange-brown to orange-ochraceous-brown walls in KOH. **Pileipellis** a cutis, of radially arranged, slightly thick-walled, incrustated, up to 8 μm wide hyphae with yellow-brown (in H₂O) to orange brown (in KOH) walls. **Subpileipellis** made up of hyphae with subhyaline to pale orange-brown to reddish brown walls in KOH. **Circumcystidia** (15) 20–38 × 4.0–6.0 μm, ± cylindrical, with lateral projections or coralloid, smooth, thin- to slightly thick-walled, (sub)hyaline to pale yellowish; scattered up to 25 × 8 μm, ± cylindrical, sometimes irregular to subcoralloid cystidioid elements present. **Stipitipellis** a cutis of parallel, cylindrical, thick-walled, incrustated, up to 8 μm wide hyphae with orange-brown walls in KOH. **Stipititrana** made up of thin- and slightly thick-walled hyphae with subhyaline walls in H₂O and subhyaline to pale reddish yellow(-brown) walls in KOH. **Caulocystidia** numerous, mostly forming fascicles, 10.0–120 × 2.5–15 μm, cylindrical, clavate, fusoid, awl-form, often irregular, sometimes branched, non incrustated, often ± thick-walled at obtuse apex, thick-walled (up to 3 μm at base), orange-brown in KOH. **Clamp-connections** present.

Chemical reactions: Spores amyloid, other tissues neither amyloid nor dextrinoid.

Ecology: Saprotrophic; gregarious or subcespitate, on hardwood litter and wood, found on *Alnus incana*, *Fagus*, and *Populus tremula* (Europe), *Alnus crispa*, *Fraxinus*, and *Populus tremuloides* (North America); apparently sometimes also on coniferous wood.

Distribution: Known from boreal and mountainous regions in Europe (Finland, France, Germany, Norway, Russia, Slovakia, Sweden, Switzerland) and North America (Canada, U.S.A.).

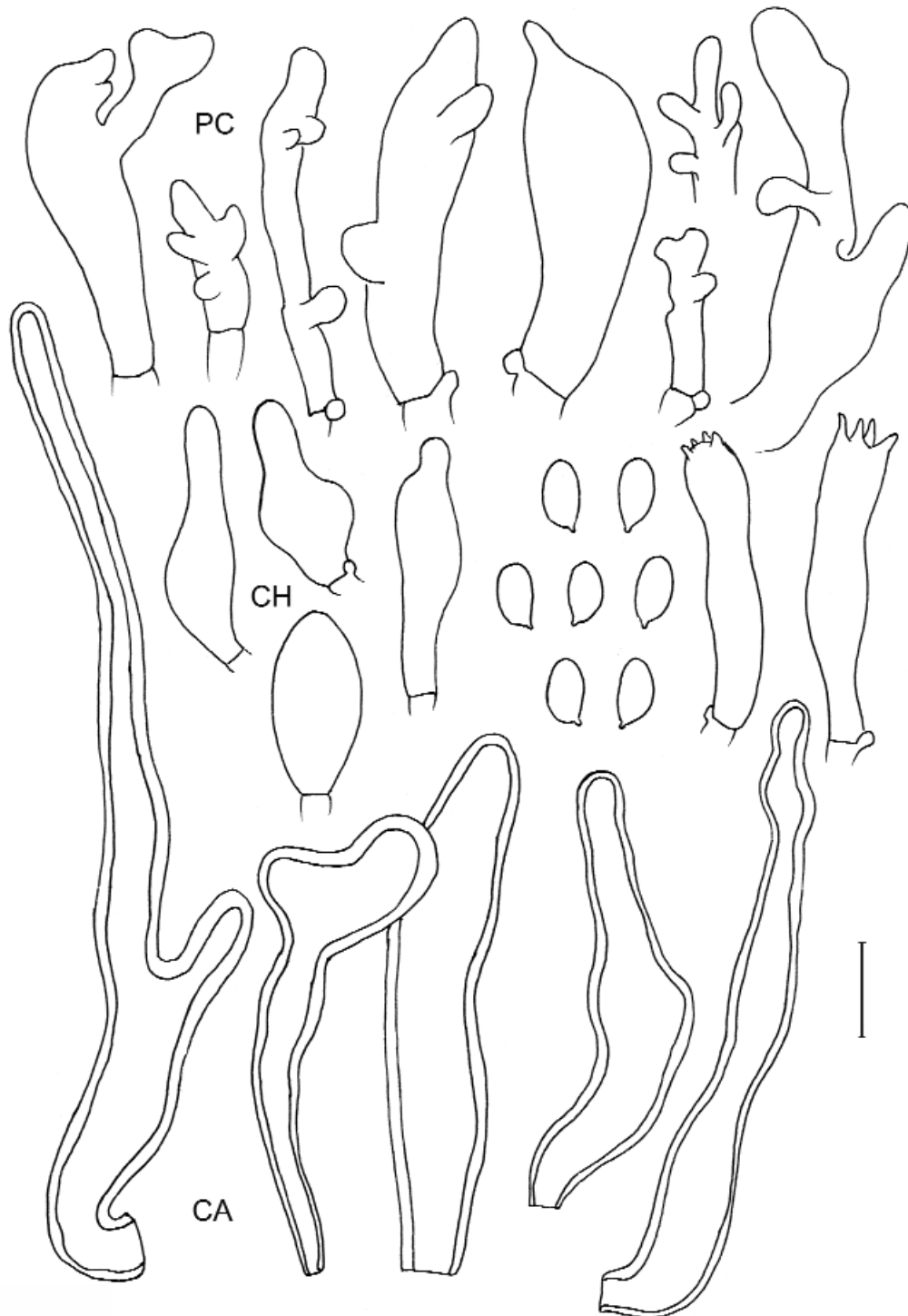


Fig. 61: *Xeromphalina fraxinophila* var. *fraxinophila*

Phenology: September to November.

Collections examined: **DENMARK:** NEJ, Høstemark Skov, 31 July 1993 leg. S. Hansen (C 20499). – **FINLAND:** Enontekiön Lappi, Enontekiö, Kilpisjärvi, Saana, 10 Sept. 1982 leg. K. Metsänheimo (PRM 838240). – Utsjoki, Tshieskuljoki, 6 Sept. 1970 leg. G. Gulden 306/70 (O 120216). – **FRANCE:** Canigou, Chalet de Mariailles, Oct. 1986 leg. M. Bon 86139 (LIP). – Alpes Maritimes, Grasse, Valberg, 1800 m alt., 7 Oct. 2000, C. Hahn 273/2000 (M). – La Preste les Bains (Pyren.-Or.), 19 Oct. 1982 leg. G. Gilles (PC, herb. Romagnesi 82.212). – Alpes Maritimes, Grasse, Valberg, 7 Oct. 2000 leg. Ch. Hahn (CH 273/2000). – **GERMANY:** Nevenstetten, 10 Oct. 1984 leg. H. Engel (LIP 84382, holotype of *X. fellea* var. *fageticola*). – **ITALY:** L'Aquila, Marsia, 12 Oct. 1986 leg. G. Lonati (herb. Lonati). – **MACEDONIA:** Pelister National Park, Begova Češma, 19 Oct. 1972 leg. M. Tortič (CNF 6/2). – **NORWAY:** Oppland, Gran v/Søsterkirkene, 30 Sept. 1984 leg. B. Braaten (O 120197). – Buskerud, Ringerike, Gullerud, sine dato, leg. L. Ryvarde 8609 (O 120189). – ditto, Hole, Vik, 15 Oct. 1967 leg. G. Gulden 686/67 (O 120192). – Hedmark, Ringsraker hd., 28 Oct. 1977 leg. J. Stordal 18984 (O 15918). – **RUSSIA:** Salardú, Sept. 1934 leg. R. Singer (MICH). – **SLOVAKIA:** Vihorlat, Zemplínske Hámre, 1 Oct. 1967 leg. K. Kříž (BRNM 325240). – **SWEDEN:** Norrbottens Län, Kiruna, 17. Aug. 1981 leg. K. Høiland (O 120210). – Medelpad, Granbodsåsen, 25 Aug. 1986 leg. S. A. Elborne (C 24932). – **SWITZERLAND:** Engadine, Lavin, 17 Sept. 1975 leg. R. L. Shaffer 7121 (MICH). – Neuchatel, Le Coudre, 26 Nov. 1958 leg. H.S.C. Huijsman (L). – **U. S. A.:** Michigan, Oakland Co., Kent L., 2 Oct. 1945 leg. A. H. Smith 20902 (MICH, holotype). – Michigan, Indian River, 20 July 1981 leg. J. Hubbard [K(M) 75582].

Notes: *Xeromphalina fraxinophila* var. *fraxinophila* is characterised by having rather robust carpophores with an entirely, distinctly pubescent stipe (very distinct also in dry specimens), fasciculate caulocystidia with often long and narrow upper part, mild taste, rather large spores, and by growing on wood and litter of broadleaved trees.

The description of the microscopical characters by REDHEAD (1988) agrees well with our observations. No cheilocystidia have been found in the collections from Canada and only occasionally in collections from the USA (and then similar to those found in *X. caudicinalis*). All collections studied by us (inclusive of the type specimen) have cheilocystidia which are rather indistinct however, often not exceeding or only slightly exceeding the hymenium. The original description by SMITH (1953) differs by smaller spores [$4.5\text{--}5.5$ (6.0) \times $2.5\text{--}3.5$ μm] and the absence of cheilocystidia. The description by Miller (1968) differs in smaller spores [$4.5\text{--}6.0$ \times $2.5\text{--}3.5$ (4.2) μm] and smaller caulocystidia [$25\text{--}65$ \times $2.5\text{--}4.5$ (9.5) μm]. Other features agree well with our observations, inclusive of the shape of the caulocystidia.

KLÁN (1984) mentioned some collections of *X. caudicinalis* in his sense (with a mild taste, see notes to that species) on wood of broadleaved trees – *Fagus* (from Slovakia and Switzerland) and *Populus tremula* (Estonia); they also represent *X. fraxinophila*.

Xeromphalina fellea var. *fageticola* Bon (BON 1999a) also perfectly fits with *X. fraxinophila*. Also specimens identified as *X. caudicinalis* by M. Bon (Bon 86139) fit well with respect to the taste and all microfeatures. However, since they have been collected on a stump of *Abies*, the habitat is rather aberrant. We have also seen a collection by J. Hubbard [K(M) 75582] from a *Pinus* forest and one by Ch. Hahn from subalpine *Larix/Picea* forest. The latter collection could have been confused with *X. cornui*, which typically grows in such habitats. That species, however, differs by having a smooth stipe over most of its length.

5b. *Xeromphalina fraxinophila* var. *macrocystidiata* Antonín & Noordel. var. **nova** Fig. 62

A varietate *fraxinophila* cheilocystidiis presentionibus et probabiliter praeferatione substrato calcareo differt.

Type specimen: Finland, Kainuu, Puolanka commune, Naulaperä, Iso Jänisjärvi, 11 Sept. 1992 leg. I. Kytövuori 92-2098 (H, holotype).

Description: This variety differs from the type variety by the presence of distinct cheilocystidia and probably also by growing on calcareous soil.

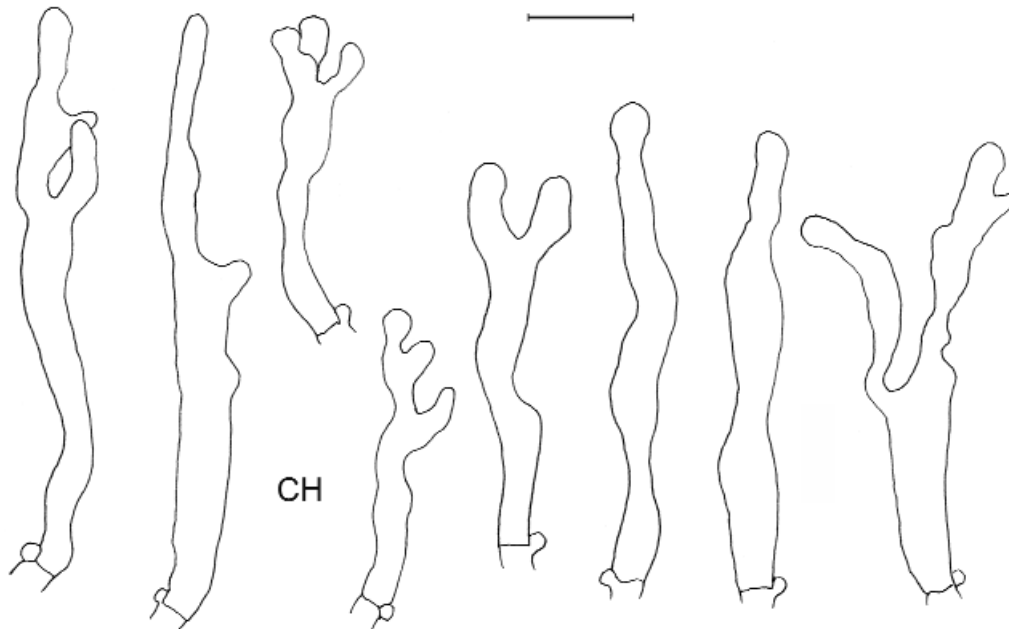


Fig. 62: *Xeromphalina fraxinophila* var. *macrocystidiata*

Spores (6.0) 6.5–8.0 (9.0) × (3.2) 3.5–4.0 (4.2) μm , $E = 1.7\text{--}2.3$, $Q = 1.9\text{--}2.0$, ellipsoid to ellipsoid-fusoid, thin-walled, smooth. **Basidia** 25–36 × 6.0–7.0 μm , 4-spored, clavate. **Basidioles** 15–40 × 3.5–7.0 μm , clavate, cylindrical, subutriform. **Cheilocystidia** scattered to numerous, always mixed with basidia and basidioles, 22–75 × (3.5) 4.5–6.0 μm , \pm cylindrical, branched to coralloid in upper part, sometimes septate, slightly thick-walled, hyaline to orange-brown in KOH. **Trama** made up of cylindrical, sometimes inflated, thin- to slightly thick-walled, up to 15 (20) μm wide, smooth or incrustated (zebred) hyphae with reddish brown to orange-brown walls in KOH. **Pileipellis** a cutis, made up of parallel, \pm cylindrical, slightly thick-walled, zebra-incrustated, up to 10 μm wide hyphae with (orange-)yellow-brown walls in KOH. **Subpileipellis** made up of incrustated hyphae with orange-brown walls in KOH. **Circumcystidia** (20) 28–48 (66) × 6.0–9.0 (11) μm , \pm cylindrical to clavate, thin- to mostly slightly thick-walled, irregular to often coralloid, orange-yellow-brown in KOH. **Pileocystidia** at pileus margin 12–20 × 3.0–6.0 μm , branched to coralloid, slightly thick-walled, pale yellow-orange in KOH. **Stipitipellis** a cutis of parallel, cylindrical, up to 7 μm wide hyphae with up to 2 μm thick walls, which are orange-brown in KOH. **Stipitetrama** made up of smooth or interruptedly incrustated hyphae with yellow(-brown) walls in KOH. **Caulocystidia** numerous, 45–145 × 6.0–11 (base) × 3.0–5.0 (apex) μm , awl-form to lageniform, broadened, often irregular or with projections at base, simple, sometimes branched, thick-walled (up to 2 μm), obtuse, orange-brown in KOH. **Clamp-connections** present.

Chemical reactions: Spores amyloid, other tissues neither amyloid nor dextrinoid.

Ecology: Saprotrophic; in mixed, mostly grassy, *Picea*, *Pinus*, *Populus*, *Betula*, *Alnus* and *Salix* forests, in mixed (coniferous and broadleaved) heath forests and pastures among them; seemingly preferring rich calcareous soils.

Distribution: It probably has a northern-boreal distribution. Known only from Finland, Norway, and Sweden.

Phenology: August – October.

Collections examined: **FINLAND:** Kainuu, Paltamo, Näsänen, 22 Sept. 1974 leg. E. and M. Ohenoja (C, L). – Kainuu, Puolanka commune, Naulaperä, Iso Jänisjärvi, 11 Sept. 1992 leg. I. Kytövuori 92-2098 (H, holotype). – Kainuu, Puolanka commune, Pihlajavaara, 12 Sept. 1992 leg. I. Kytövuori 92-2172 (H). – Pohjois-Karjala, Juankoski commune, Säyneinen, Ala-Siikajärvi, 8 Sept. 1988 leg. I. Kytövuori 88-1524 (H). – Pohjois-Karjala, Tohmajärvi commune, Kemie, 3 Sept. 1987 leg. I. Kytövuori 871102 (H). – Koillismaa, Kuusamo commune, Vuotunki, Paljakka, 2 Sept. 1992 leg. I. Kytövuori 92-1614 (H). – ditto, Paavola, 2 Sept. 1992 leg. I. Kytövuori 92-1572 (H). – Perä-Pohjanmaa, Tervola commune, Peura, Pukinselkä, 5 Sept. 1992 leg. I. Kytövuori 92-1758 (H). – Perä-Pohjanmaa, Rovaniemi rural commune, Haukitaipale, 4 Sept. 1992 leg. I. Kytövuori 92-1678 (H). – Perä-Pohjanmaa, Tornio commune, Arpela, Korkiamaa, Runteli, 6 Sept. 1992 leg. I. Kytövuori 92-1924 (H). – Inarin Lappi, Utsjoki commune, Kevo, 16 Aug. 1995 leg. I. Kytövuori 85-488 (H). – ditto, Vuolimuš Tsieskuljavri, 17 Aug. 1995 leg. I. Kytövuori 95-569 (H). – Etelä-Savo, Pertunmaa commune, Kuortti, 29 Sept. 1994 leg. I. Kytövuori 94-1059 (H). – Etelä-Savo, Mäntyharju commune, Karankamäki, 29 Sept. 1994 leg. I. Kytövuori 94-1086 (H). – Etelä-Savo, Kerimäki commune, Ruokojärvi, Louhi, 1 Oct. 1994 leg. I. Kytövuori 94-1208 (H). – Sb. Siilinjärvi, Kuuslahti, Jaakonlampi, 29 Oct. 1967 leg. A. J. Huuskonen and V. Åberg (H). – Enontekiön Lappi, Enontekiö, Kilpisjärvi, Saana, 20 Sept. 1979 leg. K. Metsänheimo (H). – Parainen, Simonby, 5 Oct. 1985 leg. I. Kytövuori 851420 (H). – Vihti, Niemenkylä-Röylä, 28 Sept. 1979 leg. I. Kytövuori 79912 (H). – Kittilän Lappi, Muonio commune, Palla-Ounas National Park, Keimiötunturi, 5 Sept. 1988 leg. I. Kytövuori 88-1421 (H). – Kiuruvesi, Niemiskylä, Pääkkölänperä, Kippolanmäki, 9 Sept. 1983 leg. I. Kytövuori 83281 (H). – Inari Layland, Ntjoki, Kevo Nat. Park, Res. Station Jesnalvaara, 16 Aug. 1995 leg. R. Walleyn 241 (BR 47425-89). – **NORWAY:** Buskerud, Ringerike, 7 Oct. 1990 leg. G. Gulden 91/90 (O 59479). – **SWEDEN:** Jämtland, Berg commune, Berg parish, Tossänen, 24 Aug. 1997 leg. P. and I. Kytövuori 97-256 (H).

Notes: *Xeromphalina fraxinophila* var. *macrocystidiata* differs from the type variety (var. *fraxinophila*) in having well-developed cheilocystidia with different size and shape and by the probable preference to calcareous soils. It seems to be a boreal fungus with Nordic distribution. Despite the numerous collections present in Finnish herbaria, no notes have been found as to the macroscopical characters of this taxon. Good, well annotated collections and photographs are therefore badly needed.

6. *Xeromphalina caudicinalis* (Fr.) Kühner & Maire

6a. *Xeromphalina caudicinalis* var. *caudicinalis*

Pl. 55, Fig. 63

Marasmius caudicinalis Fr., Epicr.: 383. 1838; *Xeromphalina caudicinalis* (Fr.) Kühner & Maire, Bull. Soc. Mycol. Fr. 50: 18. 1934. – *Marasmius fulvobulbillosus* R. Fr., Göteborgs Kungl. Vetenskaps- och vitterhetssamhälles Handlingar, Fjärde Följden, 3: 28. 1901 (nom. nov. illeg.); *Xeromphalina fulvobulbillosa* (R. Fr.) Maire, Publ. Inst. Bot. Barcelona 3(4): 68. 1937. – *Xeromphalina fellea* Maire & Malenç., in Maire, Bull. Soc. Hist. Nat. Afr. Nord 36: 36. 1945. – *Xeromphalina amara* Horak & Peter, in Horak, Schweiz. Z. Pilzk. 42: 103. 1964. – *Marasmius tomentosipes* Peck, Bull. Torrey Bot. Club 29: 71. 1902.

Type specimen: Sweden, Värmland, Dalby Parish, Långav, slope W of the parish church, 17 Sept. 1955 leg. F. Karlvall 6408, in: Lundell & Nannfeldt, Fungi exsiccati suecici, No. 2864. (UPS, isoneotype designated by Redhead 1988, as *X. fulvobulbillosa*).

Selected icones: Balara, Bolets Catalunya 13: pl. 650. 1994 (as *X. fellea*); Breitenbach & Kränzlin, Pilze Schweiz 3: pl. 447. 1991 (as *X. fellea*); Brunelli, Schw. Z. Pilzk. 64: 152. 1986 (as *X. fellea*); Cetto, Funghi Vero 4: 351. 1983 (as *X. fellea*); Courtcuisse & Duhem, Champ. Fr. Eur.: fig. 620. 1994 (as *X. fellea*); Grilli, Riv. Micol. 33(2): 101. 1990 (as *X. fellea*); Ludwig, Pilzkompodium 1: pl. 186, fig. 88.4. (as *X. caudicinalis*) and 88.5. (as *X. fellea*). 2000; Moser, Fung. rar. icon. coloratae 7: pl. 55b (as *X. caudicinalis*) and 55c (as *X. fellea*). 1978.

Selected literature: Bon, Doc. mycol. 18(69): 32. 1987 (as *X. fellea*); Bon, Doc. mycol. Mém. hors sér. 5: 77. 1999 (as *X. fellea*); Breitenbach & Kränzlin, Pilze Schweiz 3: 346. 1991 (as *X. fellea*); Horak, Schweiz. Z. Pilzk. 42: 103-105. 1964; Klán, Čes Mykol. 38: 209-213. 1984 (as *X. fellea*); Ludwig, Pilzkompodium



Pl. 55: *Xeromphalina caudicinalis*, photo M. E. NOORDELOOS

1: pl. 186, fig. 88.4. (as *X. caudicinalis*) and 88.5. (as *X. fellea*). 2000; Malençon & Bertault, Fl. Champ. sup. Maroc 2: 344-347. 1975 (as *X. fellea*); Meyer, Bull. Fed. Mycol. Dauphin Savoie 128: 18. 1993 (as *X. fellea*); Miller, Mycologia 60: 175-177. 1968; Moreno & Ayala, Bol. Soc. Micol. Madrid 21: 320-321. 1996 (as *X. fellea*); Moser, Fung. rar. icon. coloratae 7: 35-39. 1978 (as *X. caudicinalis* and *X. fellea*); Watling & Gregory, Nova Hedwigia 32: 558. 1980 (as *X. amara*); Watling & Turnbull, British Fungus Fl. 8: 148-149. 1998 (as *X. caudicinalis*).

Description: **Pileus** 10–20 (25) mm broad, convex with depressed centre when young, expanding with age, finally often infundibuliform, with involute then deflexed, finally more or less straight margin; hygrophanous, translucently striate at margin up to 2/3 of radius, yellow-brown with darker centre, more yellow towards margin, outermost margin whitish to pale yellowish (Mu. 10 YR 7–8/8, centre 5 YR 3/4); smooth, glabrous. **Lamellae** distant to moderately distant, L = 14–20 (30) l = 2 (3), broadly adnate to decurrent, yellow to yellow-brown (2.5 Y 8/8 then 10 YR 8/8), with concolorous, entire to finely pubescent edge. **Stipe** (15) 25–70 × 0.6–1.0 mm, cylindrical or compressed with groove, fistulose, slightly broadened above and at apex, at apex pallid: white to yellowish, downwards brownish yellow to brown, in basal part very dark blackish brown; entirely finely brown-yellow floccose to tomentose, at base with brownish-yellow tomentum. **Context** thin, concolorous with surface. **Taste** very bitter. **Smell** indistinct.

Spores 5.0–7.0 × 2.8–3.5 (4.0) μm, E = 1.5–2.1. Q = 1.8–1.9, ellipsoid, thin-walled, smooth, hyaline. **Basidia** 21–28 (30) × 5.0–7.0 μm, 4-spored, clavate. **Basidioles** 12–30 × 2.5–7.0 μm, cylindrical, clavate or subfusoid. **Cheilocystidia** (18) 23–45 × 3.5–8.0 (14) μm, variable in the form, cylindrical,



Fig. 63: *Xeromphalina caucinalis* var. *caucinalis*

clavate lageniform, (sub)fusoid, simple or often apically branched mostly in 2-6 projections (often coralloid), sometimes rostrate, often irregular, thin- to slightly thick-walled. **Hymenophoral trama** made up of cylindrical, thin- to slightly thick-walled, up to 15 μm wide hyphae, with walls smooth or minutely incrustated in grains or small plots, yellow-brown to reddish yellow brown in KOH. **Pileipellis** an ixocutis, made up of \pm interwoven, radially arranged, cylindrical, thin- to slightly thick-walled, mostly incrustated, slightly gelatinized, up to 10 μm wide hyphae, with pale yellow-brown walls in H_2O and KOH; with appressed to erect, cylindrical, narrowly clavate, often irregular, obtuse, 5–35 \times 2.0–5.0 (7.0) μm terminal elements. **Circumcystidia** (10) 15–50 (58) \times 4.0–8.0 (12) μm , \pm appressed to (sub)erect, irregular, diverticulate to mostly coralloid, thin- to slightly thick-walled, mostly smooth, hyaline to yellowish in KOH. **Stipitipellis** a cutis of parallel, cylindrical, slightly thick-walled, incrustated, up to 5 μm wide hyphae with distinctly orange-brown walls in KOH. **Stipititrampa** made up of hyphae with subhyaline, yellowish, ochraceous-yellow to brownish walls in KOH. **Caulocystidia** numerous, (10) 20–60 \times 4.0–8.0 (14) μm , appressed to erect, cylindrical, clavate, or fusoid, single, irregular to coralloid, often branched towards apex, thick-walled (up to 2–2.5 μm), yellow-brown to orange-brown in KOH. **Clamp-connections** present in all tissues.

Chemical reactions: Spores amyloid, other tissues neither amyloid nor dextrinoid.

Ecology: Saprophytic; terrestrial in wet coniferous forests, often on places covered by mosses and lichens; mostly under *Picea*, and *Pinus*, but also under *Abies*, *Larix*, and *Sequoia*, sometimes in mixed forests *Picea*, *Pinus*, *Quercus*, *Corylus*, *Betula*, *Populus tremula* etc.

Distribution: Widely distributed in the boreal and mountainous zones of the Northern and Southern Hemispheres; e. g. also recorded from Australia (MAY & WOOD 1997).

Phenology: (July) August to November.

Collections examined: **AUSTRIA:** Tirol, Imst, Strader Wald, 1968 leg. M. Moser (IB 68/38). – Niederösterreich, Ziersdorf, Kleinwetzdorf, 30 June 1990 leg. A. Hausknecht (WU 8700). – Niederösterreich, Bad Fischau, Kürassier, 16 Nov. 1983 leg. E. Mrazek (WU 2902). – Niederösterreich, Schönberg/Kamp, Wolfsgraben, 29 Nov. 1987 leg. A. Hausknecht (WU 6612). – Niederösterreich, Großriedenthal, Goldberg, 27 Nov. 1992 leg. A. Hausknecht (WU 11354). – Niederösterreich, Neunkirchen, St. Egyden, 15 Nov. 1986 leg. E. Mrazek (WU 5755). – Niederösterreich, Wiener Neustadt, Weiherndorf, 15 Dec. 1979 leg. A. Hausknecht (WU 0980). – Niederösterreich, Berndorf, Steinhof, 15 Nov. 1992 leg. W. Till (WU 11338). – Innsbruck, Gnadenwald, 9. Sept. 1982 leg. J. Schreurs 716 (L). – Pznanental, Ischgl, Vergr^rss, 15 July 1960 leg. R.A. Maas Geesteranus 13150 (L). – Weststeierische Hügelland, Wundschuh, 10 Sept. 2002 leg. G. Röhl, A. Hausknecht and V. Antonín 02.127 (BRNM 671024). – **BOSNIA and HERZEGOVINA:** Dugo polje area near Duvno, 30 Sept. 2000 leg. Z. Tkalčec and A. Mešić (CNF 1/1783). – **CANADA:** British Columbia, Glacier, 15 Aug. 1923 leg. E. K. Cash (BPI 757853). – **CYPRUS:** Nicosia, Ministry of Agriculture and Natural Resources, 15 Dec. 1965 leg. J. Zyngas 19 [K(M) 75585]. – **DENMARK:** Sjælland, Asserbo Plantage, 14 Nov. 1971 leg. M. Lange (C). – Blandskov, Kongelunden, 20 Sept. 1941 leg. M. Lange (C); ditto, 1942 leg. M. Lange (C). – **ESTONIA:** Nigula bog State Reserve, 27 Aug. 1989 leg. T. Læssøe (C22542). – Pärnu distr., Mäekula-Nigula, Nigula bog State Reserve, 27 Aug. 1989 leg. I. Kytövuori 82679 (H). – **FINLAND:** Tavastia australis, Valkeakoski, Sääksmäki, Rapolanharju, 9 Aug. 1987 leg. P. Salo 6494. – Etälä-Häme, Kangasala commune, Kaivanto, Vehoniemenharju, 26 Sept. 1995 leg. I. Kytövuori 95-1506 (H). – Varsinais-Suomi, Pohja commune, Pohjankuru (Skuru), Skuruberget, 30 Aug. 1990 leg. I. Kytövuori 90-918 (H). – Varsinais-Suomi, Särkisalo commune, Förby, 23 Sept. 1990 leg. I. Kytövuori 90-1915 (H). – Varsinais-Suomi, Hiittinen commune, Högsåra, 28 Sept. 1990 leg. I. Kytövuori 90-2097 (H). – Helsinki, Vuosaari, Uusimaa, 3 Oct. 1965 leg. T. Ahti 19045 (H). – **FRANCE:** Roziere, 14 Sept. 1961 leg. R. Kühner (G). – Isère, Clelles, 27 Oct. 1978 leg. M. Moser (IB 78/454). – Glaietan/Bozel, 19 Sept. 1971 leg. M. Moser (IB 71/131). – Savoie, Bozel, Forêt de la Rosière, 5 Sept. 1970 leg. H. Romagnesi 70.271 (PC, herb. Romagnesi). – **ITALY:** Trient prov., Magras, Val di Rabbi, 3 Sept. 1983 leg. F. Bellù (IB 83/439). – **MACEDONIA:** Pelister National Park, Begova Češma, 22 Sept. 1983 leg. M. Tortiç (CNF 6/3). – **NORWAY:** Hedmark, Ringsaker hd., Skjervan gård, 3 Sept. 1977 leg. J. Stordal 187/6 (O 15268). – ditto, Helgøya, 2 Oct. 1977 leg. G. Gulden 362/77 (O 120205). – ditto, 20 Sept. 1975 leg. J. Stordal 17084 (O 5393). – Oppland, Gjøvik, Bondelia, 18 Aug. 1978 leg. K. M. Jenssen (O 120202). – Oppland, Lunner, Søndre Oppdalen, 14 Nov. 1976 leg. T. E. Brandrud (O 120207). – Oppland, Dovre hd., Dombås gård, 24 Sept. 1978 leg. J.

Stordal 19655 (O 6153 and 6132). – Toten hd., Hensvollm, 7 Nov. 1976 leg. K. Jenson and J. Stordal 18117 (O 14941). – Buskerud, Drammen, Hamborgstrømskogen, 25 Sept. 1977 leg. G. Gulden 224/77 (O 120208). – Buskerud, Ringerike, Vik in Hole, 6 Sept. 1968 leg. A. Bjørnstad (O 120203). – ditto, Gol, 4 July. 1973 leg. L. Ryvarden 12085 (O 120194). – Moss, Jelöya, 24 Sept. 1975 leg. S. Soot and F. Roll-Hansen (O 120201). – Oslo fylke, Oslo, 13 Oct. 1955 leg. E. Lund (O 120185). – ditto, Sarabraten, A. Blytt (O 120188). – ditto, Østmarka, Skullerud, 30 Oct. 1966 leg. S. Sivertsen (O 120187). – ditto, Bygdöy, Kongsskogen, 11 Oct. 1955 leg. E. Lund (O 120186). – Akershus, Oppegård hd., Hvitebjörn, 30 Oct. 1955 leg. A. and L. Eftestöl (O 120174). – ditto, 13 Nov. 1955 leg. A. and L. Eftestöl (O 120184). – ditto, Bærum hd., Överland, 6 Nov. 1955 leg. A. and L. Eftestöl (O 120176). – ditto, Dröbak, 3 Oct. 1954 leg. J. Stordal (O 120169). – ditto, Ås, Mellom Breivold, 20 Sept. 1975 leg. G. Gulden 380/75 (O 120181). – Vestfold, Tjome, Engø, Furu, 12 Oct. 1996 leg. P. Marstad 255c-96 (O 83156). – Telemark, Skien, Gjerpen, 20 Sept. 1969 leg. K. Kvavik (128198). – Østfold, Kråkerøy, Femdal, 23 Oct. 1955 leg. ??? (O 120171). – ditto, Halden, Berg, 15 Sept. 1969 leg. L. Fladeby (O 120182). – Seirdalen, Geithro, 30 Aug. 1969 leg. D. A. Reid [K(M) 75583]. – **POLAND:** Mazuria, Puszcza Piska, 2 Sept. 1966, C. Bas 4650 (L). – **RUSSIA:** Sibiria, Para distr., 19 Aug. 1929 leg. Krawtzev (PRM 25298). – **SLOVAKIA:** Liptovský Hrádok, 16 Sept. 1988 leg. J. Roth; Antonín 88.114 (BRNM 489846). – Važec, Múry, 19 July 1986 leg. J. Kuthan (BRA). – **SWEDEN:** Värmland, Dalby Parish, Långav, slope W of the parish church, 17 Sept. 1955 leg. F. Karlvall 6408, in: Lundell & Nannfeldt, *Fungi exsiccati suecici*, No. 2864. (UPS, isoneotype; C, PRM 821529, as *X. fulvibulbillosa*). – Östergötland, Gryt parish, St. Kallkärr, 10 Sept. 1970 leg. J. A. Nannfeldt (C). – Östergötland, Alvastra kommun, Omberg, Stocklycke, 26 Sept. 1982 leg. I. Kytövuori 82679 (H). – Fiby Urskog near Uppsala, 8 Sept. 1994 leg. M. Moser (IB 94/214). – Linnéstigen near Junkils Socken, 4 Oct. 1959 leg. C. Bas 1819 (L). – **SWITZERLAND:** La Rausana, 28 Sept. 1967 leg. J. Peter (PRM 664939). – Flims, 24 July 1966 leg. J. Peter (PRM 664940). – Valendas-Sagens, 11 Aug. 1968 leg. J. Peter (PRM 664941). – Las Vallaines, 22 Aug. 1942 leg. J. Favre (G 14453). – Jura, Val Tavru, prés de Scarl, 27 Aug. 1949 leg. J. Favre (G 14454). – Basse-Engadin, Susch, Colline de la Fortez, 8 Sept. 1946 leg. J. Favre (G 14456). – Jura, Scarl, 1 Sept. 1952 leg. J. Favre (G 14457). – Valais, Vissoie, 6 Sept. 1992 leg. O. Röllin 92-23 (G 20614). – Valais, Briey-Vercorin, 9 Sept. 1984 leg. O. Röllin 84-19 (G 12954). – Kanton Neuchâtel, Bole, Planeyse, 17 Aug. 1965 leg. H.S. C. Huijsman (L). – **U. S. A.:** Idaho, Moscow Mts., L. F. Henderson 5243 (NYS, type of *Marasmius tomentosipes*). – California, Alameda Co., Oakland Hills, Redwood Regional Park, 14 Feb. 1960 leg. I. Tavares and J. Morrill, in: California fungi, No. 1225 (PRM 576369, PC). – Michigan, Douglas lake, The Gorge, 31 July 1947 leg. M. Lange (C 23032). – **YUGOSLAVIA:** Tara Mts., Baina Basta, Mitrovatz, 10 Oct. 1963 leg. leg. E. Horak (ZT, holotype of *X. amara*).

Notes: *Xeromphalina caudicinalis* var. *caudicinalis* is characterised in having rather large carpophores, bitter taste, rather small spores, irregular to coralloid cheilocystidia, branched to coralloid caulocystidia and hyphae of the stipitetrana with yellowish, ochraceous-yellow to brownish walls in KOH. To our experience, the smell usually is inconspicuous, but in literature also a distinct smell of flowers is recorded (MALENÇON & BERTAULT 1975: *Covallaria majalis*; MOSER 1978: like *Pyrola* or *Cyclamen europaeum*).

Agaricus caudicinalis was described by Bulliard (Herb. France, pl. 512, fig. 1. 1791). Judging from the type plate, this might be a synonym of *Crinipellis scabellus* (= *C. stipitarius*). It certainly does not stand for what we nowadays call *Xeromphalina caudicinalis*. Sowerby (1798-1799: pl. 163) depicts a fungus named *Agaricus caudicinalis* Bull. which clearly is a *Xeromphalina* species. He does not give a description, however, but only mentions the place where it was found, with the remark that this striking fungus certainly never has been recorded in England before. FRIES (1821) does not sanction the name *Agaricus caudicinalis*. However, in the *Epicrisis*, FRIES (1838) describes a fungus under the name *Marasmius caudicinalis*, which can without any doubt be identified as *Xeromphalina caudicinalis* in its current sense. In a comment Fries also states that *Agaricus caudicinalis* Bull. refers to *Agaricus stipitarius*. It is obvious, however, that the spelling with a 't' instead of an 'l' is a mistake, since Fries refers to *Agaricus caudicinalis* Bull. Most likely Fries was a bit confused when describing this species. He refers to *With. Sow. f. 164.*, which clearly is also mistaken, since Sowerby depicts *Agaricus caudicinalis* in plate 163! The reference to Withering is still more confusing, since there is no such *Agaricus caudicinalis* Withering. We failed to find this species name in the famous book *Arrangement of British Plants* by this author. Later authors copied this reference, giving rise to the present confusion.

In conclusion:

- *Agaricus caulicinalis* Bull. pl. 522, fig. 1. 1791 must be considered a synonym of *A. stipitarius*, and may well be the oldest name for the species currently named *Crinipellis scabellus* (A. & S.: Fr.) Murrill. But since that name is sanctioned in the *Systema*, it has priority.
- *Marasmius caulicinalis* sensu FRIES 1838 (orthographic error to be corrected) is nothing else than a misapplication of *A. caulicinalis* Bull., in the same sense as Sowerby (1798-1799). The correct name for this taxon is therefore *Marasmius fulvobulbillosus* R. Fr.

The concept of this species is very complicated (see discussion below). The great macromorphological similarity in this group of closely related species, make it impossible to determine which one represents the taxon originally described by Sowerby, Fries, etc. For example the distinctive bitter taste is not mentioned in these early descriptions. Some authors (e.g. GULDEN 1992; MALENÇON & BERTAULT 1975; MILLER 1968; MOSER 1978) consider the taxon with a mild taste to be the true *X. caudicinalis*. However, a specimen named *X. fulvobulbillosa* from Sweden (Lundell & Nannfeldt, *Fungi exsiccati suecici*, No. 2864) selected by REDHEAD (1988) as a neoisotype has a distinctly bitter taste. For this reason Redhead's selection is followed here to solve this problem.

Xeromphalina amara differs by more crowded lamellae (20–28, resp. 25–30), and some micro-features. It was described especially on the base of a very bitter taste (Horak mentioned in his paper, that data about the taste of *X. caudicinalis* were not published at that time). However, the type revision showed, that it microscopically fit well in the variability of *X. caudicinalis*.

MILLER (1968) also described *X. caudicinalis* with a mild taste and with a slightly different reaction of the tramal hyphae in KOH. A very similar taxon with a bitter taste was described as a var. *acida* O. K. Miller. That latter taxon is identified with a North American species *X. parvibulbosa* (Kauffman & Smith) Redhead by REDHEAD (1988). The differences of *X. caudicinalis* var. *caudicinalis* and *X. parvibulbosa* as keyed out (REDHEAD 1988) consist only in the character of pileipellis hyphae in the marginal first millimetres: smooth and subhyaline in *X. caudicinalis* and incrustated and reddish to orangish brown in *X. parvibulbosa*. Probably because of this very slight difference other authors (e.g. BIGELOW 1970) synonymized *X. parvibulbosa* with *C. caudicinalis*.

The same differences as given by MILLER (1968) between these three taxa are also used by MORENO & AYALA (1996). KLÁN (1984) distinguished three species in this group; *X. fellea* (with a synonym *X. caudicinalis* var. *acida*) with a bitter taste, *X. caudicinalis* with a mild taste, and *X. cornui* which differs by hyphae structure at pileus margin and stipe apex. GULDEN (1992) distinguished *X. caudicinalis* (as *caudicinalis*, = *X. fulvobulbillosa*) with mild taste and *X. fellea* (= *X. amara*) with a bitter taste. However, the taste of the isoneotype specimens of *X. caudicinalis* (see above) is still after 50 years distinctly sharply bitter. The same difference between *X. caudicinalis* and *X. fellea* is mentioned by MALENÇON & BERTAULT (1975). Moreover, they suppose that *X. fellea* may represent only a "taste-form".

MOSER (1978) described three taxa, *X. caudicinalis*, *X. caudicinalis* var. *acida*, and *X. fellea*. A description of the first mentioned species differed especially in having closer lamellae ($L = 20-35$) and a mild taste. However, Moser wrote that the limits among all described taxa are not completely clear. MAIRE (1937) as well as SINGER (1936) include also *Omphalia cornui* in synonymes of this species.

BON (1987) mentioned smaller spores [$4.5-5 (5.5) \times 2.5-3 (3.2) \mu\text{m}$]. Breitenbach & KRÄNZLIN (1991) described smaller spores ($4.1-6 \times 2.1-3.3 \mu\text{m}$), and very narrow basidia ($18-25 \times 4-4.5 \mu\text{m}$) and only simple, narrow cheilocystidia ($25-35 \times 3-4 \mu\text{m}$), as well as Klán (1984). They described it as *X. fellea* (= *X. amara*) but they mentioned the possible identity with *X. caudicinalis*. WATLING & TURNBULL (1998) described a fungus with a sharply bitter taste as *X. caudicinalis*, but they distinguished it from *X. fellea* by the pileus context colour in KOH.

LUDWIG (2001), in his description of *X. caudicinalis*, described its taste as mild. He included, however, taxa having distinctly bitter taste (e.g. *X. fulvibulbilloso*, *X. pubescentipes*) in this species. Moreover, he mentioned both, coniferous and broadleaved trees as substrate. For these reasons, it may well be possible that his description is a mixture of features of *X. caudicinalis* and *X. fraxinophila*.

BRESADOLA (1881, p. 39, tab. 41) described under the name *M. caudicinalis* a very similar fungus. However, he described context without special taste (absque odore et sapore speciali). LONATI (1987) also described the taste as mild and his fungus was collected in a *Fagus* forest. A revision of this specimen showed that it represents *X. fraxinophila*. SCHULMANN (1960) distinguished *X. caudicinalis* and *X. fulvobulbilloso* in his list. VEIKKO & HINTIKKA (1957) described only *X. caudicinalis* from this group in Finland. However, they did not mention the taste but cheilocystidia are irregular and branched and lamellae trama becomes reddish in KOH. Some collections in H under the name *Xeromphalina caudicinalis* refer, however, to *X. fraxinophila* var. *macrocystidiata* (see notes there).

6b. *Xeromphalina caudicinalis* var. *subfellea* Bon

Omphalia pubescentipes Peck, Bull. Torrey Bot. Club 24: 141. 1897; *Xeromphalina caudicinalis* ssp. *pubescentipes* (Peck) Redhead, Can. J. Bot. 66: 492. 1988. – *Xeromphalina caudicinalis* var. *subfellea* Bon, Doc. mycol. 29(115): 33. 1999.

Type specimen: France, Isère, Gresse en Vercors, 29 Sept. 1997 leg. M. Bon (LIP 97040, holotype).

Selected icones: none

Selected literature: Bon, Doc. mycol. 29(115): 33. 1999 (as *X. caudicinalis* var. *subfellea*); Bon, Doc. mycol. Mém. hors sér. 5: 77. 1999 (as *X. caudicinalis* var. *subfellea*); Redhead, Can. J. Bot. 66: 492. 1988.

Description: Differs from the type variety in having hyphae in the context of the stipe that become distinctly reddish in KOH.

Ecology: Saprotrophic; found in a *Pinus* and *Betula* heath forest, in *Sphagnum* bogs and on rotting wood of conifers.

Distribution: Known from Europe (Finland, Norway, Sweden), Asia (Japan), and North America (Canada, U.S.A.).

Phenology: August to November.

Collections examined: AUSTRIA: Kärnten, Völkermarkt, Sablatnikhof, 15 Sept. 1998 leg. A. Hausknecht and M. Hirschmann (WU 18486). – FINLAND: Oulun Pohjanmaa, Pudasjärvi, Ala-Livo, NW margin of Romuselkä, 120 m, 29 Aug. 1985 leg. K. Kynsilehto, E.-L. Lohvansuu and P. Tuokkola (PRM 868511, as *X. fellea*). – Kevo near Ustjoki, 7 Sept. 1970 leg. A. Pilát (PRM 714909). – Koillosmaa, Salla commune, Saija, 30 Aug. 1992 leg. I. Kytövuori 92-1369 (H). – Inarin Lappi, Inari commune, Lutto river, 14 Aug. 1995 leg. I. Kytövuori 95-373 (H). – Inarin Lappi, Utsjoki commune, Kevo, Tsieskula, 17 Aug. 1995 leg. I. Kytövuori 95-538 (H). – Etelä-Häme, Orivesi commune, Yliskylä, 29 Sept. 1995 leg. I. Kytövuori 95-1686 (H). – Nylandia, Espoo, Nuuksionpää, 15 Oct. 1995 leg. U. Nummela-Salo & P. Salo 1929 (H). – Tuusula, Rusutjärvi, Ämmähaudanmäki, 30 Sept. 1983 leg. I. Kytövuori 83586 (H). – Salla, Pyhäntunturi, 13 Sept. 1983 leg. I. Kytövuori 83409 (H). – Kevo-Station, 4 Sept. 1970 leg. M. Moser (IB 70/121). – FRANCE: Isère, Gresse en Vercors, 29 Sept. 1997 leg. M. Bon (LIP 97040, holotype of *X. caudicinalis* var. *subfellea*). – JAPAN: Sakamoto-Idonmachi, Otsu, 28 Oct. 1955 leg. ??? [K(M) 68770, ex herb. Hongo 1342]. – NORWAY: Nordland, Saltdal, Storfjord, 29 Aug. 1988 leg. A.-E. Torkelsen 285/88 (O 120211). – ditto, Voss, Prestegardsmoen, 17 Oct. 1948 leg. J. Stordal 2066 (O 120217). – ditto, Junkerdalsura, 27 Aug. 1988 leg. J. Stordal 25561 (O 4497). – Höglandet hd., Hjorten, 24 Sept. 1967 leg. J. Stordal 12487 (O 9804). – Hedmark, Hovinsholm gård, 2 Oct. 1977 leg. J. Stordal 18917 (O 15773). – ditto, Stor-Elvdal, Atnosen, 30 Aug. 1983 leg. G. Gulden 548/93 (O70710). – Oppland, Gjøvik, Jemtland, 7 Oct. 1978 leg. J. Stordal 19736 (O 6262). – ditto, Søndre Land, Trevatna, 14 Sept. 1984 leg. J. Nitare (O 120196). – ditto, Lake Trevatna, Vassenden, 14 Sept. 1984 leg. G. Gulden 336/84 (O 120195). – Aust-Agder, Åmli, Gjøvelandsneset, 28 Aug. 1985 leg. K. Høiland (O 120212). – ditto, Grimstad, Eide, 3 Oct. 1990 leg. T. H. Dahl (O 120204). – Akershus, Bærum,

Lommedalen, 12 Oct. 1969 leg. K. Kvavik (O 120183). - Oppegård hd., 24 Oct. 1955 leg. L. Eftestøl (O 120175). - ditto, Frogn hd., 9 Oct. 1955 leg. J. Stordal 10244 (O 120172). - ditto, Frogn, Nordenden, 9 Oct. 1955 leg. F.-E. Eckblad (O 120173). - Ås, Nordbyveiten v/Dylterud, 25 Sept. 1977 leg. K. H. Østmoe 254/77 (O 120206). - Buskerud, Ringerike, Vik in Hole, 5 Oct. 1969 leg. G. Gulden 868/69 (O 120190). - U. S. A.: Alabama, Lee Co., Auburn, Dec. 1896 leg. F. S. Earle (NYS, type of *Omphalia pubescentipes*).

Notes: REDHEAD (1988) considered it this taxon as a subspecies based on separated distributional areas (ssp. *cauticinalis* and *pubescentipes*) in the North America. In Europe, however, its distribution of both taxa overlaps greatly with var. *cauticinalis*. Moreover, the differences between both taxa are very small. Therefore, we treat them on varietal level.

BIGELOW (1970) and MILLER (1968) synonymized this taxon with *Xeromphalina cauticinalis*.

BON (1999c) published *X. cauticinalis* var. *subfellea* which perfectly agrees with the taxon discussed here and represents a taxonomic synonym. However, Bon's name has nomenclatural priority on varietal level.

7. *Xeromphalina cornui* Quélet.

Fig. 64

Omphalia cornui Quélet, Bull. Soc. Bot. Fr. 24: 319. 1878; *Xeromphalina cornui* (Quélet.) J. Favre, Bull. Soc. Mycol. Fr. 52: 131. 1936.

Type specimen: France, Jura, Doubs, Guinots près du Russey, 15 Aug. 1877 leg. M. Cornu (UPS, lectotype).

Selected icons: Courtecuisse & Duhem, Champ. Fr. Eur.: fig. 619. 1994; Gerhardt, BLV Pilzführer: 212. 1997; Ludwig, Pilzkompendium 1: pl. 186, fig. 88.2. 2000.

Selected literature: Bon, Doc. mycol. Mém. hors sér. 5: 76. 1999; Cejp, Public. Fac. Sci. Univ. Charles 100 (Revision II): 62. 1929; Favre, Bull. Soc. Mycol. Fr. 52: 131-134. 1936; Klán, Čes. Mykol. 38: 213. 1984; Ludwig, Pilzkompendium 1 (Beschreibungen): 704. 2001; Miller, Mycologia 60: 180-182. 1968; Redhead, Can. J. Bot. 66: 494-496; Tortiĉ, Čes. Mykol. 22: 199-200. 1968.

Description (The macroscopical description is partly based on FAVRE 1936, QUÉLET 1878 and REDHEAD 1988): **Pileus** 7–17 mm broad, subhemispherical to plano-convex with applanate to umbilicate centre, with deflexed margin, hygrophanous, translucently striate, at centre red-brown, pale yellow to yellow brown towards margin, often with a yellowish fine granulation at centre and margin finally radially rugulose, finely rimose or eroded at margin when old. **Lamellae** L = 12–14, l = 1–3, subdistant, adnate-decurrent to decurrent, sometimes intervenose, dark to pale yellow, becoming reddish brown when old, with entire, concolorous edge. **Stipe** 15–60 × 0.5–1 mm, cylindrical, slightly broadened above, fistulose, tough, at apex pale yellow, downwards brown to blackish brown at base, finely yellow to ochraceous pruinose at apex, downwards glabrous, dry, polished to finely longitudinally striate, ochraceous to red-brown tomentose at base. **Context** thin, membranaceous, concolorous with the surface. **Smell** and **taste** indistinctive.

Spores 5.5–7.5 (8.0) × 2.8–4.0 (4.2) µm, E = 1.5–2.2, Q = 1.9–2.0, ellipsoid, subamygdaliform, thin-walled, smooth. **Basidia** 20–30 × 6.5–8.0 µm, 4-spored, clavate. **Basidioles** 15–31 × 3.0–8.0 µm, cylindrical to clavate. **Cheilocystidia** rare to scattered, 21–32 × 5.0–8.0 (10.0) µm, cylindrical, narrowly clavate, (sub)fusoid, slightly thick-walled, often irregular, rostrate, with some projections above to coralloid. **Hymenophoral trama** made up of ± cylindrical to subfusoid elements, thin- to slightly thick-walled, smooth or incrustate, up to 12 µm wide. **Pileipellis** a cutis, of radially arranged, cylindrical, slightly thick-walled, smooth or incrustate, pale to distinctly yellow-brown. **Circumcystidia** 11–25 × 4.0–9.0 µm, cylindrical to clavate, irregular to coralloid, thin- to slightly thick-walled, subhyaline to hyaline; with 14–20 × 2.5–4.0 µm, cylindrical, often irregular to coralloid cystidioid elements

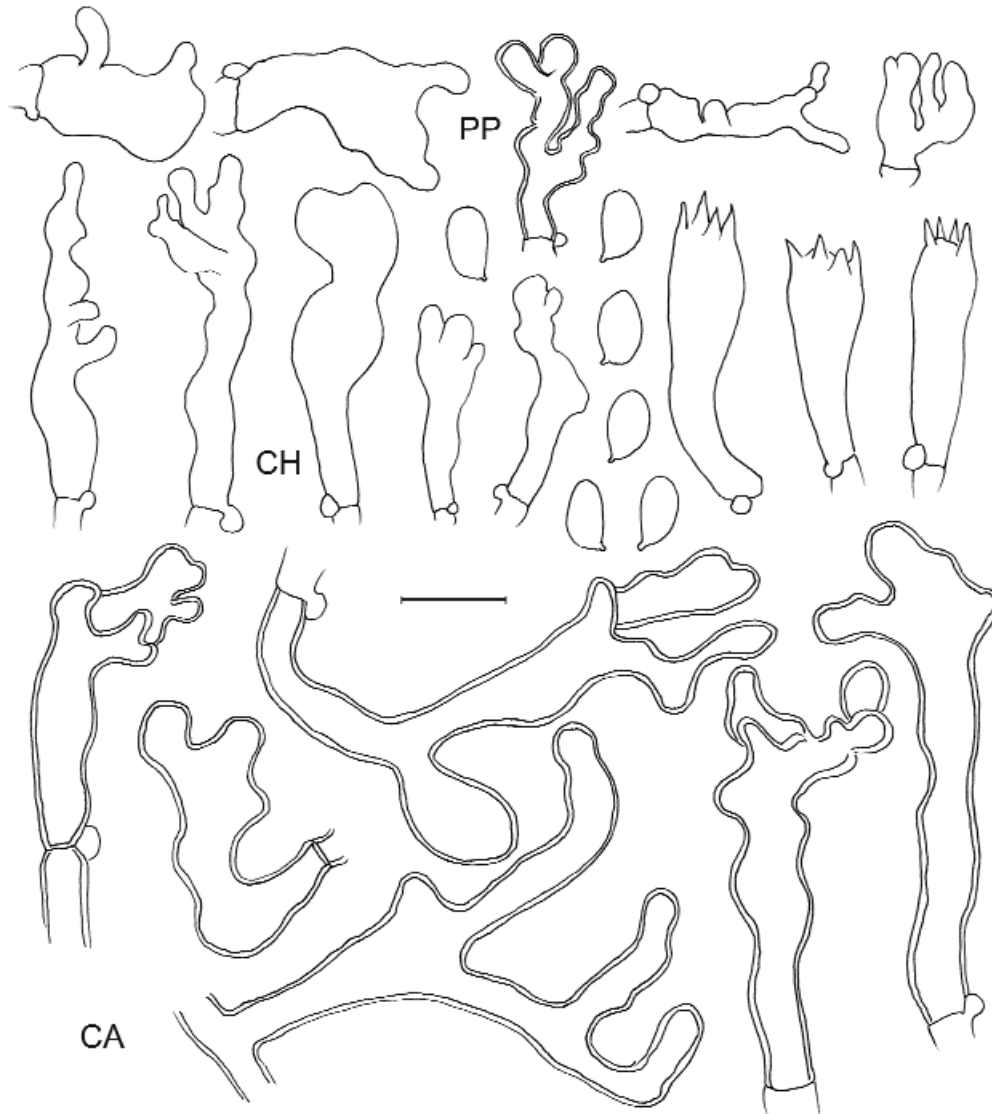


Fig. 64: *Xeromphalina cornui*

at pileus margin. **Pileus trama** made up of hyphae with hyaline to yellowish walls in H₂O and in KOH. **Stipitipellis** a cutis of parallel, cylindrical, thick-walled, incrusting, up to 6 µm wide hyphae with ± dark orange-brown walls in KOH. **Stipititrama** made up of both thin- and thick-walled hyphae with hyaline to pale ochraceous walls in KOH. **Caulocystidia** 20–51 × 5.0–8.5 µm, adpressed to erect, (sub)cylindrical to clavate, irregular to coralloid or branched above, thick-walled, dark orange-brown in KOH; rather numerous at apex, scattered around the middle of the stipe. **Clamp-connections** present.

Chemical reactions: Spores amyloid, other tissues neither amyloid nor dextrinoid.

Ecology: Saprotrophic; on litter of conifers (*Larix*, *Picea*, *Pinus*) in a coniferous or heath grassy forests, often in *Sphagnum* bogs.

Distribution: Known from Europe [Denmark, Estonia, Finland, France, Norway, Poland, Russia, Spain (LLISTOSELLA & al. 1994), Sweden, Switzerland, Yugoslavia (TORTIĆ 1968)] and North America (Canada, Mexico, U.S.A.).

Phenology: (July)August to September.

Collections examined: **DENMARK:** Dueodde, 9 Sept. 1978 leg. K. Toft (C 21423). – Hammeren, Fyrskoven, 19 Oct. 1992 leg. A. Møller (C 17543). – Falster, Bøtø Plantage, 8 Oct. 1956 leg. M. Lange (C 33157); ditto, 23 Oct. 1986 leg. S. A. Elborne (C). – Bornholm, Blykobbe Plantage, 9 Oct. 1978 leg. H. Knudsen (C). – Fårevejle, Næsskov, 3 Sept. 1992 leg. H. H. Bruun & R. Ejrnæs (C 19084). – **ESTONIA:** Lahemaa National Park, Virusoo bog, 22 Aug. 1989 leg. S. A. Elborne (C 24827). – Lahemaa National Park, Käsmu, 22 Aug. 1989 leg. I. Kytövuori 89-220 (H). – **FINLAND:** Oulun Pohjanmaa, Pudasjärvi, Ala-Livo, 30 Aug. 1987 leg. E. Ohenoja (O 120209). – Uusimaa, Tuusula commune, Satukallio-Ristinummi, 12 July 1996 leg. I. Kytövuori 96-085 (H). – Etelä-Savo, Mikkeli rural commune, Hyrylä, 24 Aug. 1987 leg. I. Kytövuori 87597 (H). – Paimio, Huso, Kalkkimäki, 6 Oct. 1985 leg. I. Kytövuori 851542 (H). – Ob. Rovaniemi, Pisavaara, 22-23 Aug. 1960 leg. R. Tuomikoski (H). – V. Rymättylä, Raulahti, Välimäki, 10-14 Aug. 1980 leg. R. Tuomikoski (H). – Etelä-Häme, Hattula commune, Nihattula, 19 Aug. 1993 leg. I. Kytövuori 93-320 (H). – Etelä-Häme, Lammi commune, Evo, Pitkäniemenkangas, 5 Aug. 1996 leg. I. Kytövuori 96-288 (H). – **FRANCE:** Jura, Doubs, Guinots près du Russey, 15 Aug. 1877 leg. M. Cornu (UPS, lectotype) – **NORWAY:** Buskerud, Ringerike, Vik i Hole, 6 Sept. 1968 leg. G. Gulden 794/68 (O 120191). – ditto, 15 Aug. 1966 leg. G. Gulden 287/66 (O 120193). – **POLAND:** Kregi, 19 Sept. 1995 leg. T. Hering [K(M) 31977]. – **RUSSIA:** Kamchatka, Dolinovka, Kamchatka River Valley, 12 Aug. 1997 leg. U. Peintner (IB 1997/1106). – Kamchatka, 5 km NE of Esso, Kozyrevsky Range, Tupinkin Klyuch, 4 Aug. 1997 leg. U. Peintner (IB 1997/1107). – **SWEDEN:** Uppland, Nacka sn., 8 Aug. 1948 leg. Haglund, Rydberg and Stordal (O 120200). – N for Askersund, 23 Aug. 1981 leg. T. Læssøe (C). – Uppland, Uppsala commune, Björklinge parish, Tåmnaren, 10 Sept. 1994 leg. P. and I. Kytövuori 94-437 (H). – Småland, Femsjö, Lindenslut, 7 Aug. 1984 leg. M. Moser (IB 84/65). – Småland, Femsjö, Slättgärdet-Idrottsplan, 15 July. 1961 leg. M. Moser (IB 61/40). – **SWITZERLAND:** Sentier du Fuorn à la Schera, 15 Oct. 1942 leg. M. S. Blumer (G 14455). – **U.S.A.:** Michigan, Hartwich Pinea, 18 July. 1961 leg. D. A. Reid [K(M) 68760].

Notes: *Xeromphalina cornui* is characterised in having a rather small pileus often with minute yellow granulation, and (apparently) glabrescent stipe, scattered, rather short cheilocystidia, rare irregular to coralloid caulocystidia around the middle of the stipe, hyphae of stipititrama turning yellow-brown in KOH, and by growing often in *Sphagnum* bogs. According to FAVRE (1936), KLÁN (1984), and TORTIĆ (1968), it represents a very rare fungus. However, to our experience it seems to have a scattered rather than rare occurrence in Europe.

Xeromphalina fraxinophila that also has a mild taste differs especially in having more robust carpophores, distinctly entirely pubescent stipe and by growing on wood of broadleaved trees.

Our description agrees with that of FAVRE (1936) except of the absence of cheilocystidia and slightly shorter spores [5.5–6.6 (7.0) µm long]. REDHEAD (1988) mentioned the presence of rare pleurocystidia, and forms with almost subglobose spores in some collections from western North America; he also mentioned ± red-brown colouration of the hyphae of the pilei- and stipititrama in KOH, which we could not confirm in specimens from America studied by us. MILLER (1968) gave smaller spores [4.5–5.0 (7) × 2.5–3.5 (4) µm], very abundant cheilocystidia, and present pleurocystidia. TORTIĆ (1968) mentioned more crowded lamellae (L = 20) and a densely pubescent stipe.

A similar fungus with the same microchemical colour reactions was collected by Jan Kuthan in Slovakia (High Tatra Mts., Važecká Polana, alt. 1000 m, 13. VIII. 1977, herb. BRA). However, it was collected on a *Fagus* stem. Unfortunately there were no notes on the macromorphology.

8. *Xeromphalina campanelloides* Redhead**Pl. 56, Fig. 65***Xeromphalina campanelloides* Redhead, Can. J. Bot. 66: 488. 1988.**Type specimen:** Canada, British Columbia, Vancouver Is., Miller Creek on Cowichan L., 26 Sept. 1979 leg. S. A. Redhead 3163 (DAOM 193576, holotype).**Selected icones:** Antonín, Österr. Z. Pilz. 9: tab. in text. 2000.**Selected literature:** Antonín, Österr. Z. Pilz. 9: 112-113. 2000; Redhead, Can. J. Bot. 66: 488-489.

Description: Pileus 3.5–12 mm broad, convex, obtuse to subumbonate, with incurved margin at first, dry, yellow-brown, fulvous to sienna or "ochraceous-tawny", sometimes with a dark brick coloured umbo and pale luteous or "maize yellow" coloured margins, frosted yellow overall, obscurely translucently striate marginally (up to 2/3). **Lamellae** moderately distant, L = 16–20, l = 1–3, narrow (1–1.5 mm broad), adnate with a short decurrent tooth or arcuate, pallid to straw coloured. **Stipe** 16–30 (40) × 0.7–1.2 mm, tapered downwards and slightly curved, finely powdered overall, densely tomentose with cinnamon-coloured mycelium at base, yellowish, fulvous to umber coloured centrally, honey to buff apically, dark brick to blackish basally; with dark brick coloured rhizomorphs in the wood. **Context** concolorous with pileus colour, with indistinct **smell** and bitter **taste**.

Spores 4.8–6.0 × 2.8–3.7 (4.5) µm, E = 1.4–2.0, Q = 1.6–1.8, ellipsoid to broadly ellipsoid, hyaline, thin-walled. **Basidia** 23–29 × 5.0–6.5 µm, 4-spored, clavate to subutriform. **Basidioles** 12–30 × 2.0–6.0 µm, clavate, cylindrical. **Cheilocystidia** 15–50 × 2.5–5.5 µm, cylindrical to narrowly clavate or subfusoid, mostly branched or coralloid in apical part, less frequently simple, hyaline, thin- to very slightly thick-walled. **Hymenophoral trama** made up of ± cylindrical, thin- and slightly thick-walled, up to 15 µm wide hyphae, usually with incrustated walls in form of grains, rarely plaques, which are red-brown in KOH. **Pileipellis** a cutis, made up of radially arranged, cylindrical, smooth or minutely incrustated, thin- to slightly thick-walled, sometimes gelatinized, up to 8 µm wide hyphae. **Subpileipellis** made up of distinctly incrustated, usually gelatinized hyphae with red-brown incrustations in KOH. **Circumcystidia** 22–64 × 3.0–5.0 (7.0) µm, adpressed, rarely suberect, cylindrical to narrowly clavate, irregular to coralloid, sometimes diverticulate, thin- to slightly thick-walled, hyaline to subhyaline in KOH. **Stipitipellis** a cutis of cylindrical, parallel, slightly thick-walled, incrustated, up to 6 µm wide hyphae with yellow- to orange-brown walls in KOH. **Caulocystidia** 32–65 (88) × (4.5) 6.0–15 µm, adpressed to erect, (sub)cylindrical, clavate, irregular to (sub)coralloid, ± thin- to slightly thick-walled, orange-yellow (golden yellow) at apex, more distinctly thick-walled and yellow-brown in KOH below. **Clamp-connections** present in all tissues.

Chemical reactions: Spores amyloid, other tissues neither amyloid nor dextrinoid.**Ecology:** Saprotrophic; on wood and on needles of conifers.**Distribution:** Known from North America (Canada, U.S.A.) and from one collection in Europe (Austria).**Phenology:** August to October.**Collections examined:** AUSTRIA: Kärnten, ober Treimischerteich bei Viktring, 20 Sept. 1966 leg. M. Moser (IB 66/211). – CANADA: British Columbia, Vancouver Is., Miller Creek on Cowichan L., 26 Sept. 1979 leg. S. A. Redhead 3163 (DAOM 193576, holotype).**Notes:** *Xeromphalina campanelloides* could be confused with young carpophores of *X. campanella*, but differs especially by having ± collybioid carpophores, bitter taste, smaller spores, incrustated hyphae turning red-brown in KOH, and differently shaped cystidia in the whole basidiocarp. *Xeromphalina*



Pl. 56: *Xeromphalina campanelloides*, photo ??? A. Hausknecht ???

cauticinalis var. *subfellea* is similar in having a bitter taste, similar cystidia and colour reaction of the incrustations in KOH. However, it has slightly larger spores, longer, not curved stipe, and differently shaped cheilocystidia which are infrequently branched at apex and more distinctly thick-walled.

To date this species has been found in Europe only once. REDHEAD (1988) notes that the Austrian collection is very similar to *X. campanelloides* but differs in having a not curved stipe, and another habitat (on litter, not on wood). However, a colour slide of this collection made by Moser showed that about a half of carpophores had curved stipes. Only small difference in habitat (litter/wood) is not a base for describing it as a new taxon (as proposed by Redhead). Therefore, we consider the Austrian collection the true *X. campanelloides* (ANTONÍN 2000b).

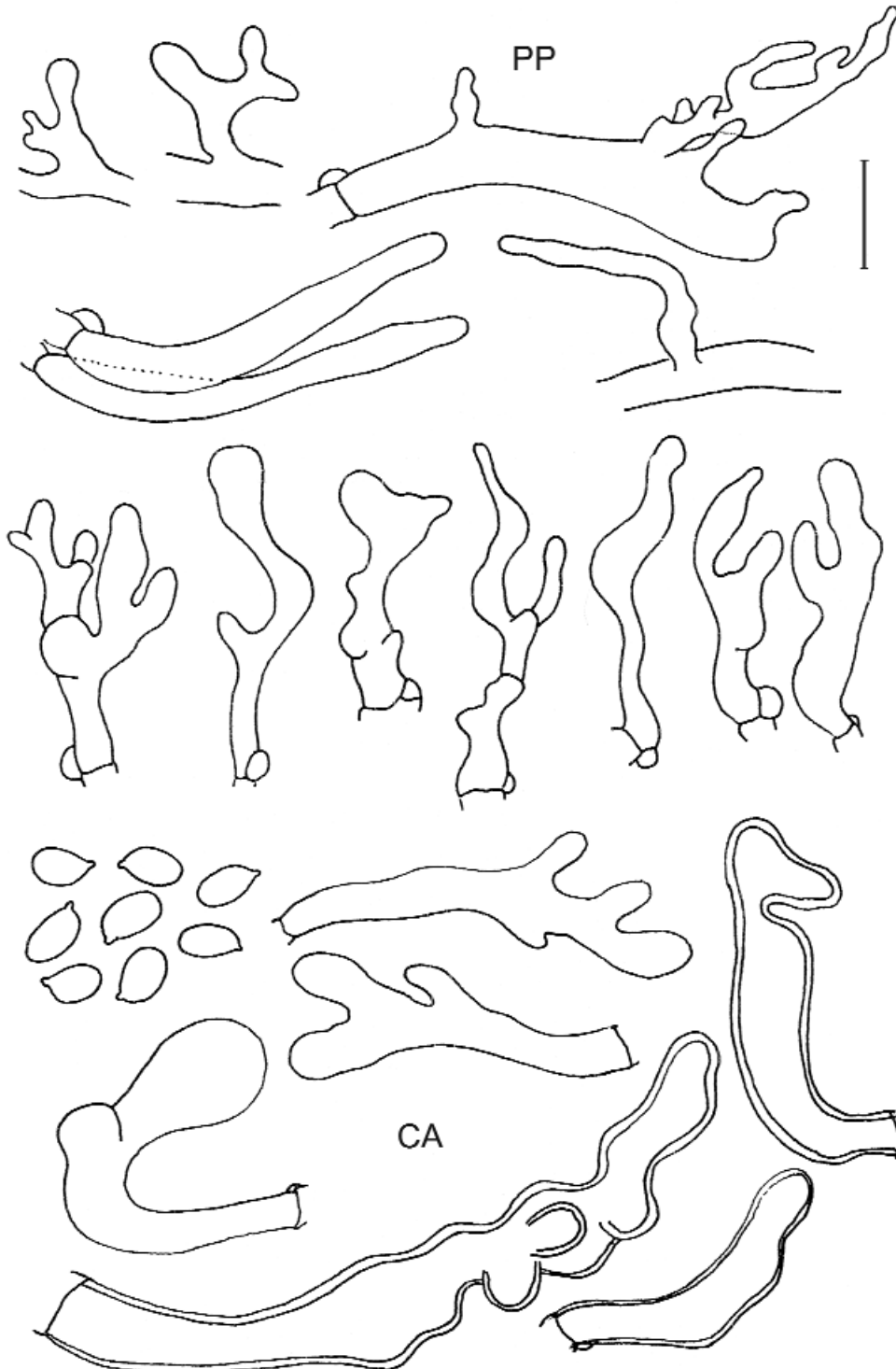


Fig. 65: *Xeromphalina campanelloides*

5. Excluded and insufficiently known taxa

ABUNDANS – *Agaricus abundans* Peck, Ann. Rep. N. Y. State Mus. 29: 38. 1878; *Clitocybula abundans* (Peck) Singer, Sydowia 15: 53. 1962; *Collybia abundans* (Peck) Sacc., Syll. Fung. 5: 241. 1887; *Fayodia abundans* (Peck) Singer, Lloydia 5: 126. 1942.

Original description: Pileus thin, convex or expanded, subumbilicate, innate-fibrillose, whitish inclining to fuscous, often a little darker and more densely fibrillose on the disk, the margin easily splitting; lamellae narrow, close, adnate, sometimes veiny, white; stem equal, smooth, hollow, easily splitting, often curved, colored like the pileus, pruinose at the top. Plant gregarious or subcaespitose, 1'-2' high, pileus 1'-1.5' broad, stem 1" thick. Decaying trunks in woods Sandlake and Greig. August and September. This fungus is not frequent, but when it does it is usually in great abundance. When drying the margin rolls inward and the color becomes darker. (According to PECK 1878)

Status: Excluded, belongs to the genus *Clitocybula* (ANTONÍN 2004; HALLING 1983).

AGROSTIDEA – *Delicatula agrostidea* Velen., Novit. Mycol. (1939): 97. 1940.

Original description: In caespitibus Agrostidis copiosa, tota nivea, gracillima, glabra, pellucida. Pil. 3–5 mm, explanatus, centro depressus, subtiliter membranaceus, leniter distanter sulcatus. St. 3plo longior, basi nuda, truncata insidens. Lam. 10–14, in venas mutatae, ante marginem desinentes, breviter decurrentes, interdum tantum 1–3 evolutae. Sp. oblongo-ellipt., basi attenuatae 5–6 × 2. Cyst. copiosa, tenuiter acicularia, acutissima. In caespitibus Agrostidis vulgaris in colle arido (occid.) pr. Menčice novemb. 1939. Ex affin. D. ludmilae. Species pulchella.

Material studied: Mnichovice, Menčice, in caespitibus Agrostis vulg., in colle arido, Nov. 1939 leg. et det. J. Velenovský, PRM 153683 (Holotype). The type specimen consists of four complete carpophores.

Status: A poorly known species of *Hemimycena* with some resemblance to *Hemimycena pseudocrispata* (Valla) Maas Geest. (2-spored basidia, clampless hyphae, spore size) but without hymenial cystidia, caulocystidia and pileocystidia. (ANTONÍN 2003)

ALAMELLOSA – *Delicatula alamellosa* Velen., Novit. Mycol. (1939): 96. 1940.

Original description: Gracillima, minima, vitreo-pellucida, pure alba, pil. 1–1,5 mm alto, obtuse conico, laevi, margine recto. St. 1–2 cm longus, capillaris (0,4 mm cr.), laevis. Lam. nullae(!), hymenium totam superficiem internam pilei obducens, summopere venae brevissimae circa insertionem stipitis 2-4nae observantur. Sp. lineares, basi oblique constrictae 4–5. Semper ad folia marcida Spinosae locis calidis insolatis pr. Mnichovice raro, autumno 1938. Fungulus mirabilis, vix conspicuus, ex affinitate D. microscopicae Fayod (conf. Cejp Mon. II., 86).

Material studied: The type specimen is not preserved.

Status: *Nomen dubium*. Either close to *Hemimycena mauretanica* or a member of *Mycena* sect. *Polyadelphia* (ANTONÍN 2003)

ARISTULATA – *Delicatula aristulata* Velen., Novit. Mycol. Novissimae: 44. 1947.

Original description: Zephirea, pellucida. Pil. 2–3 mm diam., conico-convexus, centro obscuro-fuscido depressus, sordide pallidus, ad verticem profunde sulcatus, supra aristulis fuscis, falcatis, fragilibus (30–150 × 2,5–3,5) apice et basi acutatis sparse obsitus. Stip. capillaris, praelongus, vix 0,5 mm cr., hyalinus, tremens. Lam. 8–10, crassae, distantes, angustae, cum 4-5nis brevibus ad marginem alternantes, latae, adnatae vel breviter decurrentes. Sp. subgloboso-ellipticae, 3–4, 4sterigm. Cyst. non vidi. Ad folia marcida quercina in alneto paludoso prope Mirošovice augusto 1944 legi. Species aristulis fuscis in superficie pilei statim agnoscenda. Semper copiosa sporifera.

Material studied: Mnichovice, Mirošovice, Hanzlovka, ad folia *Quercus*, 23 Aug. 1944 leg. et det. J. Velenovský, PRM 153632 (Holotype). This specimen contains one broken carpophore and one stipe part damaged by the parasitic fungus.

Status: Probably a *Mycena* species on account of the amyloid spores of the type (ANTONÍN 2003).

BARBATA – *Delicatula barbata* Velen., Novit. Mycol. Novissimae: 50. 1947.

Original description: Tota nivea, sporis globosis, cystidiis acicularibus, acutissimis, pileo 3–6 mm, non sulcato insignis. Ad Stellariam Holosteam. Omph. stellata Fr. est revera valde affinis, sed sporae ellipticae 6, ad truncum corylinum (MNICHOVICE 1940), sed itidem ad *Delicatulam* adnumeranda.

Material studied: The type specimen not preserved.

Status: *Nomen dubium*. According to the original description probably a *Mycena* species (ANTONÍN 2003).

BETULINA – *Delicatula betulina* Velen., Novit. Mycol. Novissimae: 50. 1947.

Original description: Sparsa, gracilis, nivea, vitrea, tremens. Pil. 2 mm, campanulatus, non sulcatus, laevis. St. praelongus, capillaris, vitreus, ima basi ciliis longis coronatus. Lam. latae, alternantes, arcuato-decurrentes. Sp. 5–6 × 2,5, ellipticae. Cyst. non vidi. Ad folia Betulae marcida prope Hrusice Augusto 1941. Affinis praecedenti (*D. barbata*, not. V.A.)

Material studied: The type specimen not preserved.

Status: *Nomen dubium*. According to the original description probably a *Mycena* species (ANTONÍN 2003).

BREVIPES – *Delicatula brevipes* Velen., Novit. Mycol. Novissimae: 43. 1947.

Original description: Semper dense gregaria vel caespitosa, vitreopellucida, nivea. Pil. 2–3 mm diam., obtuse convexus, margine leniter sulcatus. St. pil. diam. aequilongus, curvatus, vox 1 mm cr. Lam. distantes 10–14, angustissimae, marginem non attingentes, breviter decurrentes. Cyst. 25, copiosa, acicularia, basi crassiora. Sp. globosae 2–3,5, copiosae. Basid. 4sterigm. Ad radices caulis Lappae in frutice prope Mnichovice julio 1940. Ab omnibus vegetatione caespitosa, caule brevi, statione differt.

Material studied: Mnichovice, Tehov, ad radicem Lappae in frutice spinosae, 14 July 1940 leg. et det. J. Velenovský, PRM 153627 (Holotype). The holotype specimen consists only of some stipes without pilei.

Status: *Nomen dubium*. According to the original description probably a *Mycena* species (ANTONÍN 2003).

CAPILLIPES – *Delicatula capillipes* Velen., Novit. Mycol. (1939): 97. 1940.

Original description: Sparsa, gracillima, alba, vitrea, pil. 2–3 mm diam., plano vel paulisper convexo, albo, glabro. St. 5–10 cm longus, vix 0,5 mm cr., capillaris, laevis, profunde ex humo egrediens. Lam. distantes, sat latae, ante marginem desinentes, decurrentes. Sp. oblongae, basi oblique attenuatae 3–4. Cyst. numerosa, acicularia, recta, obtusa 15–20. In verrimentis ramis Crataegi putridis tectis in colle Plecháč pr. Mnichovice 12, 1938. Sistit transitum ad *Omphalium*.

Material studied: Mnichovice, collis Plecháč, in verrimentis Crataegi, 2 Dec. 1938 leg. et det. J. Velenovský, PRM 153640 (Holotype). The holotype specimen contains no fungi.

Status: *Nomen dubium*. According to the original description a *Mycenoid* taxon (ANTONÍN 2003).

CITRINA – *Delicatula citrina* Velen., Novit. Mycol. Novissimae: 43. 1947.

Status: See notes under *D. struthiopteris*.

CONIDINA – *Delicatula conidina* Velen., Novit. Mycol. Novissimae: 45. 1947.

Original description: Sparsa, zephirea, nivea. Pil. 1–2 mm, convexus, centro verruca instructus vel etiam depressus, non sulcatus. St. triplo longior, 0,3 mm cr., subtiliter pilosulus, dein glabrescens, basi nuda non incras. insidens. Lam. 3–5, breves, venaeformes, marginem non attingentes. Sp. paucae vel nullae, oblongo-ellipticae 4–5 × 2. Loco earum conidia copiosa globosa 1–2. Cyst. rara, acicularia, basi dilatata, 15. Ad fructus et folia marcida quercina in m. Kožený vrch prope Mnichovice junio 1940 leg. dom. Ludmila.

Material studied: Mnichovice, infra Kožený vrch, Quercus (under willow), 9 June 1940 leg. L. Hostáňová, det. J. Velenovský, PRM 153622 (Holotype). The type specimen consists of only one broken pileus and some stipe parts.

Status: The spores of the shape described by Velenovský were not found. According both, the macroscopic and microscopic features, it represents *Hemimycena mauretana* (Maire) Singer, probably var. *stenospora* (ANTONÍN 2003).

CRATAEGI – *Delicatula crataegi* Velen., Novit. Mycol. Novissimae: 47. 1947.

Original description: Sparsa, zephirea, nivea, tremens. Pil. 3–4 mm, leniter late convexus, vix umbonatus, non sulcatus, laevis. St. praelongus, vix 0,5 mm cr., laevis, basi nuda non incras. insidens. Lam. 12–18, alternantes, angustae, breviter decurrentes, marginem attingentes. Cyst. ellipsoidea, laevia, vasicaria, 25. Sp. oblongo-cylindrica 8–10 × 2,5, quadristerigmatica. Ad ramulos Crataegi inter vegetationem ad rivum loco calido, tecto, occid. prope Mnichovice junio 1941.

Material studied: Mnichovice, Potočiny, ad rivum, 9 June 1941 leg. et det. J. Velenovský, PRM 153616 (Holotype). This specimen consists of one broken carpophore.

Status: probably *Hemimycena mauretana* (Maire) Singer var. *stenospora* (ANTONÍN 2003).

CYATHEA – *Delicatula cyathea* Velen., Novit. Mycol. Novissimae: 48. 1947.

Original description: Sparsa, zephirea, vitrea, gracillima, nivea. Pil. vix 0,5 mm diam., cito anguste et profunde cyatheus, margine deorsum flexo, in stipitem sensim attenuatus. St. praelongus, capillaris, laevis, basi nuda insidens. Lam. paucae venaeformes, longe decurrentes. Sp. oblongo-cuneate 5–7. Cyst. non vidi. Ad culmos graminum minorum in junceto prope Mirošovice augusto 1941 leg. dom. Ludmila. Ad culmos Caricis remotae m. Kožený vrch 1942 legi ipse.

Material studied: Mnichovice, Mirošovice, in junceto paludosa, 2 Aug. 1941 leg. L. Hostáňová, det. J. Velenovský, PRM 153631 (Holotype?). The holotype specimens contains no carpophores.

Status: *nomen dubium*, may well represent a mycenoid agaric (ANTONÍN 2003).

CUSPIDATA – *Omphalia cuspidata* Quélet, C. R. Ass. franç. Av. Sci. 9: 602. (1880) 1881. (Champ. Jura Vosges, Suppl. 10); *Delicatula cuspidata* (Quél.) Cejp, Public. Fac. Sci. Univ. Charles 100: 85. 1929.

Original diagnosis: Blanc hyalin. Stipe filiforme, pulvérulent en haut, avec la base bulbilleuse et hérissée en soies. Chapeau membraneux, convexe (0mm002-3), surmonté d' une pointe conique, souvent excentrique, festonné, ténu, strié et finement floconneux. Lamelles très étroites, très décurrentes, ramifiées et onlitérées vers la marge. Spore pruniforme (0mm008) finement grenelée. Printemps et Été. Parmi les feuilles mortes et les brindilles (hêtre) des forêts du Jura. Voisin de *integrellus*, dont la spore est très différente amygdaliforme (0mm009) et ocellé (Pl. VIII, fig. 3).

Status: CEJP (1929, 1938), gave *Delicatula cuspidata* the following interpretation: Pileus 2–3 (5) mm broad, campanulate, translucent, finely and indistinctly striate, finely pubescent, white or brownish, often with a subacute papilla, (sometimes 1–2 mm high) at centre, with very decurrent, straight, white lamellae which are furcate at the base, and a 5–10 mm long, slightly fistulose, white stipe which is broadened (bulbose) and fibrillose at base and furfuraceous above. The spores are 9 × 3 µm, ellipsoid, amyloid spores, and basidia 4-spored, 15–20 × 7–8 µm. As such this species turns up regularly in modern literature (e.g. GRÖGER 1994, LUDWIG 2001, MEUSERS & MEUSERS 1985, MOSER 1983, SINGER 1986).

The original diagnosis and illustration, however, does not give specific information, and may stand for any white mycenoid taxon. No type specimen has been preserved. Mainly because of the records in literature we have tried to locate material that fits the current interpretation of *Delicatula cuspidata*, but so far we failed to find it in any of the studied herbaria, nor Moser and BON (in litt.) could help us in this matter. MONTAG & MÜNZMAY (1989) published a record of *D. cuspidata* from Germany. However, a revision of the material revealed that a *Mycena*-species has been involved, on account of the diverticulate hyphae in pileipellis and stipitipellis, and the absence of velar remnants on pileus and stipe surface (even in young stage).

Mycena oligophylla Aronsen & Maas GEESTERANUS (1990) appears to be very similar to the original concept *Omphalina cuspidata* Quél., but this also cannot be proved. Therefore, we consider *Delicatula cuspidata* a *nomen dubium*.

DUMETORUM – *Delicatula dumetorum* Velen., Novit. Mycol. Novissimae: 51. 1947.

Original description: Sparsa, gracilis, laevis, tremens. Pil. 3–5 mm, campanulatus, sulcatus, vertice minute umbonatus vel depressus, umbroso-fuscidulus vel ochraceus, ad marginem pallidus. St. praelongus, capillaris, vitreus, basi corona ciliarum instructus. Lam. latae, numerosae, alternantes, pure albae, breviter decurrentes. Cyst. acicularia, obtusa 15–25. Sp. late ellipticae vel fere obovato-ellipticae 8–12. In dumetis udis inter verrimenta aestate sat frequens.

Material studied: Mnichovice, in palude Hanzlovka, *Salix caprea*, 6 Oct. 1942 leg. et det. J. Velenovský, PRM 153629 (Holotype?). The type specimen contains no carpophores.

Status: *Nomen dubium*, probably a *Mycena* (ANTONÍN 2003).

FAGINEA – *Delicatula faginea* Velen., Novit. Mycol. Novissimae: 44. 1947.

Original description: Sparsa, zephirea, nivea, laevis. Pil. 1 mm diam. obtuse campanulatus, leniter sulcatus. St. capillaris, strictus, vix 0,3 mm cr., basi nuda insidens. Lam. 10–14, angustae, marginem non attingentes, breviter decurrentes. Cyst. copiosa, globosa (15–20), longe echinulata. Basid. clavata, 15, 1–2sterigm. Sp. globosae 4–5. Ad folia marcida Fagi prope Všesimý octob. 1941.

Material studied: Mnichovice, Všesimý, ad folia fagi, 9 Oct. 1941 leg. et det. J. Velenovský, PRM 153619 (Holotype). The envelope labeled as the type material contains no carpophores.

Status: *Nomen dubium*, probably a *Mycena* species (ANTONÍN 2003).

FASCIATA – *Delicatula fasciata* Velen., Novit. Mycol. (1939): 96. 1940.

Original description: Plerumque in fasciculis 2–4 cephalis, gracillima, nivea, pil. 1 mm alto, obtuse conico, dein explanato obtuse umbonato. St. capillaris, minute puberulus, p. d. 2-3plo longior. Lam. paucae (5–7), aequilongae, veniformes. Sp. 4sterigm. anguste lineares, deorsum sensim tenuissime acutatae 12–14 × 1. Ad ramulos putridos Pruni spinosae pr. Kunice (Mn.) in dumetis, 8, 1938, Omph. cuspidata Quél. secundum diagnosin mire differt.

Material studied: Mnichovice, Mirošovice, viaductus, ad ramul. Pruni spinosae, July 1940 leg. et det. J. Velenovský, PRM 153593 (Lectotype, designed by M. Svrček ad schedam). This specimen consists of three minute carpophores.

Status: *Nomen dubium*, probably *Hemimycena mauretana*, but also *Mycena* cannot be excluded (ANTONÍN 2003).

FLEXUOSA – *Delicatula flexuosa* Velen., Novit. Mycol. Novissimae: 43. 1947.

Original description: Sparsa, zephirea, pil. 2–3,5 mm diam., obtuse late conico, sordide albo, vertice fere fulvello, vix leniter sulcato. St. praelongus, flexuosus, ca 0,1 mm cr., pellucido-vitreus, luteus(!), infra subtiliter pannosus, sed non ciliatus nec incrassatus. Lam. numerosae, alternantes, postice attenuatae et decurrentes. Sp. globosae 2–3. Cyst. acicularia, acuta 25. In caespitibus Nardi et Festucae ovinae in decliv. calidis occid. pineti juvenilis Mirošovice octob. 1940 ipse legi. In contextu copia crystallorum luteorum.

Material studied: Mnichovice, Mirošovice, in caespitibus graminum, 8 Oct. 1940 leg. et det. J. Velenovský, PRM 153630 (Holotype). The type specimen consists of three partly mouldy carpophores.

Status: *Nomen dubium*, possibly belonging to the genus *Collybia* sensu stricto (ANTONÍN 2003).

GOSSYPINA – *Delicatula gossypina* Velen., Novit. Mycol. Novissimae: 47. 1947.

Original description: Sparsa, gracillima, zephirea, nivea, glabra, pil. 2 mm diam., obtuse campanulato, margine breviter sulcato. St. 10–13 mm longus, vix 0,3 mm cr., tremens, pallidus, infra gossypio albo tectus et ex hypothallo albo gossypino excedens. Lam. angustae, confertae, breviter arcuato-decurrentes, marginem attingentes. Sp. 8–10 × 2, oblongae. Cyst. non reperi. In contextu corpuscula crystallina copiosa. Ad radicem Alni glutinosae in palude silvatico prope Mnichovice aug. 1942.

Material studied: Mnichovice, Alnetum near Břečkovský pivovar brewery, ad radicem Alni glutinosae, Aug. 1942 leg. et det. J. Velenovský, PRM 153628 (Holotype). The holotype specimen consists of only one stipe part, the complete carpophores absent.

Status: *Nomen dubium*, probably a *Mycena* species (ANTONÍN 2003).

GRAMINICOLA – *Delicatula* Velen., Novit. Mycol. Novissimae: 49. 1947.

Original description: Sparsa, zephirea, nivea. Pil. permanentemente conico-tubulosus, obtusus, 1–2 mm longus, 1 mm cr., margine leniter paucisulcatus. St. praelongus, tremens, basi paulo puberula, non incrassata insidens, vix 0,2 mm crassus. Lam. venaeformes, 4–6, brevissimae, ad marginem pilei (!) tantum evolutae. Sp. sparsae, late ellipticae, 5 × 2,5. Conidia copiosa, globosa 2. Ad vaginas graminum prope Mnichovice julio 1940 legi.

Material studied: Mnichovice, Tehov, ad vaginas graminis, 3 July 1940 leg. et det. J. Velenovský, PRM 153625 (Holotype). The preserved material is very poor. The holotype specimen consists of two stipe and a part of a collapsed (decayed) pileus stuck to the envelope.

Status: *Nomen dubium*, probably a *Mycena* species (ANTONÍN 2003).

JULIANA – *Delicatula juliana* Velen., Novit. Mycol. Novissimae: 43. 1947.

Original description: Zephirea, nivea, sparsa. Pil. 2–3,5 mm, conicus, vertice depressus, margine crenulatus, sulcatus. St. capillaris, vitreus, nudus et non incrassatus. Lam. 10–15, angustatae, marginem non attingentes, arcuato-decurrentes. Cyst. sparsa, e basi latiori sensim longe attenuata, clavula terminata, 25–30. Sp. perfecte globosae, 3–5, quadristerigm. In Calluna ad marginem pineti prope Ondřejov sat frequens, julio 1940.

Material studied: Mnichovice, ad viam Ondřejov, in caespitibus Callunae in soc. Nardi, 20 July 1940 leg. et det. J. Velenovský, PRM 153596 (Holotype). It consists of two incomplete broken carpophores.

Status: *Nomen dubium*, belonging either to *Mycena* sect. Adonidae or Hemimycena. (ANTONÍN 2003).

LACERATA – *Fayodia lacerata* (Lasch) Singer, Ann. mycol. 34: 331. 1936.

Agaricus lacerata Lasch in Fr., Epicrisis: 97. 1838; *Baeospora lacerata* (Lasch) Zerova, in Zerova & Peresipkin, Vznachnik Gribiv Ukraini 5 Basidiomycetes: 203 (1979); *Clitocybula lacerata* (Lasch) Singer, Sydowia 15: 53. 1962; *Fayodia lacerata* (Lasch) Singer, Ann. mycol. 34: 331. 1936.

Original description: Pileo carnosomembranaceo campanulato subretuso udo fusco-virgato, stipite e farcto cavo firmo torto fibroso-striato apice floccoso-pruinoso demum compresso, lamellis adnexis distantibus latis crassis albo-griseis. Lasch! in litt. nec obstat Scop. p. 439. Ag. Secr. n. 758 (excl. syn. fico) – ? b. major, pileo squamul. A. microlepideus Pers. Myc. Eur. n. 348. In humo pinetorum, circa truncos etc. subcaespitos. Pileus 1 1/2 unc., fuligin., demum expallens, rimosus cum stipite 2–4 unc. long. nitidulus. Heteroclitus inter Collybias; sed A. platyphyllo affinis. (According to Fries, 1838)

Status: Excluded, belongs to the genus *Clitocybula* (ANTONÍN 2004).

LACRIMANS – *Delicatula lacrimans* Velen., Novit. Mycol. (1939): 96. 1940.

Original description: Sparsa, gracillima, pellucida, pure alba, pil. 1–2 mm, subtiliter puberulo, campanulato, dein leniter convexo, rugoso, glabro. St. capillaris, tenax, vitreus, 2–3duplo p. d. longior, 0,2 mm cr., albus, sine tubere basali, totus guttulis aquosis conspersus. Lam. 3–4 aequilongae, veniformes, valde distantes. Sp. tenuissime lineares, 3–5 × 0,2, falcatae. Basid. 15–17 × 3–4. Ad ramulos frondosos putridos in dumetis humidis, umbrosis maio, junio et julio sat frequens. Gracilitate, colore niveo, nervis 3–4nis notabilis.

Material studied: Mnichovice, in horto nostro, in trunco Pruni avii, June 1939 leg. et det. J. Velenovský, PRM 153644 (Lectotype, designed by M. Svrček ad schedam). The lectotype specimen contains no carpophores.

Status: According to the original description and scanty lectotype material this species may well be identical with *Hemimycena mauretanic* (ANTONÍN 2003).

LEUCOPHYLLA – *Fayodia leucophylla* (Gillet) M. Lange & Sivertsen, Bot. Tidskr. 62: 202. 1966; *Gamundia leucophylla* (Gillet) Bigelow, Sydowia 36: 16. 1983.

Omphalia leucophylla Gillet, Hymenomyc.: 296. 1874; *Clitocybe leucophylla* (Gillet) M. Lange, Medd. Groenl. 147: 11. 1955

Original description: Pileus almost membranaceous, infundibuliform, smooth, with translucent margin, involute, dark ash-coloured, 2 cm and more. Lamellae distant, decurrent, arcuate, white. Stipe solid, then hollow, rigid, cylindrical, smooth, concolorous with pileus but paler, about 3 cm long, 2 mm thick.

Status: *nomen dubium* (ANTONÍN 2004).

LIGUSTRINA – *Delicatula ligustrina* Velen., Novit. Mycol. Novissimae: 51. 1947.

Original description: Sparsa, zephirea, nivea, pil. tantum vertice paulo umbroso. Pil. 1,5–2,5 mm, convexus, vertice umbone solide terminatus, remote sulcatus. St. praelongus, capillaris, albus, basi ciliis brevibus coronatus. Lam. numerosae, latae, albae, breviter decurrentes. Sp. oblongo-ellipticae 6–11. Cyst. 25, columniformia, obtusa. Conidia globosa copiosa 3–4. Ad ramulos Ligustri prope Stránčice octob. 1941. Affinis praecedenti (*D. dumetorum*, not. V.A.)

Material studied: Mnichovice, Skalky near Stránčice, in dumeto ligustri, 12 Sept. 1941 leg. et det. J. Velenovský, PRM 153675 (Holotype?). The holotype specimen contains no carpophores.

Status: *Nomen dubium*, probably a *Mycena* species (ANTONÍN 2003).

LONGISPORA – *Delicatula longispora* Velen., Novit. Mycol. Novissimae: 47. 1947.

Original description: Sparsa, zephirea, pellucida, alba, tremens, nuda. Pil. 4–5 mm diam., convexo-campanulatus, apice leniter umbonatus, vix manifeste sulcatus, membranaceus. Stip. praelongus, vix 0,5 mm cr., basi nuda insidens. Lam. numerosae, alternantes, angustae, ante marginem desinentes, breviter decurrentes. Sp. rectae, cylindricae, basi sensim attenuatae, 12–14 × 2,5. Basid. 25–30, quadristerigm. Ad folia marcida quercina in palude Ulmaria obsito prope Mirošovice aug. 1944, sat frequens.

Material studied: Mnichovice, Mirošovice, in ulmeto paludoso, Aug. 1944 leg. et det. J. Velenovský, PRM 153618 (Holotype). This specimen consists of two partly broken and partly collapsed carpophores.

Status: *Nomen dubium*, probably a *Mycena* species due to the slightly amyloid spores (ANTONÍN 2003).

LUDMILAE – *Delicatula ludmilae* Velen., Novit. Mycol. (1939): 97. 1940.

Original description: Gracillima, tota glabra, alba, vitreo-pellucida pil. 3–5 mm convexo vel plano, pellucido. St. 0,5 mm cr., basi glabra, non incras., supra in pileum sensim incrassatus, hic nonnunquam compressus, pellucidus. Lam. distantes, nanae, decurrentes, aequilongae, ante marginem desinentes. Sp. anguste cylindricae, basi attenuatae 5–6. Cyst. e basi lata acuminata 25–30. Ad culmos Brachypodii silvatici pr. Mnichovice (Jidáš.) junio 1939, in comitatu Ludmilae. Aff. D. gracillimae Vél. (Omphal.).

Material studied: Mnichovice, Jidášky, Brachypodium silvaticum, 25 June 1939 leg. et det. J. Velenovský, PRM 153641 (Holotype). The type specimen consists only of one half-decayed carpophore covered by hyphae and conidia of a mould.

Status: *Nomen dubium*, see also notes with *Delicatula vernalis* (ANTONÍN 2003).

LUZULAE – *Delicatula luzulae* Velen., Novit. Mycol. Novissimae: 48. 1947.

Original description: Zephirea, vitrea, nivea. Pil. 2 mm diam., campanulatus, leniter sulcatus. St. triplo longior, 0,5 mm cr., laevis, basi nuda insidens. Lam. 8–10, angustae, breviter decurrentes. Sp. 6–8 × 2,5, cylindricae, bisterigmatae. Ad superficiem lamellarum cystidia longe elliptica, obtusa, laevia (25–35). In sporis guttula oleosa magna e membrana evanida elapsa in aqua fluit. Ad squamas basales Luzulae albidae in colle Plecháč julio 1940.

Material studied: Mnichovice, collis Plecháč, Luzula, 2 July 1940 leg. et det. J. Velenovský, PRM 153681 (Holotype). The type specimen consists of one broken carpophore.

Status: *Nomen dubium*, probably a *Mycena* species (ANTONÍN 2003).

PICEA – *Delicatula picea* Velen., Novit. Mycol. Novissimae: 47. 1947.

Original description: Sparsa, zephirea, vitrea, nivea. Pil. 2–2,5 mm, convexus, vertice umbone acuto terminatus, leniter sulcatus. St. triplo longior, 0,2 mm cr., basi nuda, non incras. insidens. Lam. 8–10, angustae, ante marginem desinentes, decurrentes. Sp. oblongae, basi acutatae, 5–6 × 2,5. Basid. 1–2sterigm. Cyst. non reperi. Ad aciculos piceos ad marginem piceti octob. 1940 prope Mnichovice.

Material studied: Mnichovice, Jidášky, ad aciculos Piceae, 16 Oct. 1940 leg. et det. J. Velenovský, PRM 153588 (Holotype). The holotype specimen consists of one carpophore with an incomplete pileus.

Status: *Nomen dubium*, probably a *Mycena* species (ANTONÍN 2003).

PICTA – *Xeromphalina picta* (Fr.: Fr.) A.H. Smith, Pap. Mich. Acad. Sci. 38: 76. 1953.

Status: Excluded: belongs to *Mycena* sect. *Pictae* (A.H. Smith) Maas Geesteranus. See MAAS GEESTERANUS (1992).

PLATYPHYLLA – *Delicatula platyphylla* Velen., Novit. Mycol. (1939): 97. 1940.

Original description: Sparsa, summopere gracilis, fragilis, pure alba, vitreo-pellucida, glabra. Pil. 1–2 mm diam., obtuse conicus, non sulcatus. St. capillaris 3plo longior, basi non incrassatus. Lam. 10–12, alternantes, decurrentes. Sp. ovato-globosae, hyalinae, basi constrictae, 3–5. Cyst. nulla. In verrimentis stratus humosi humidi inter formationem Melampyri nemorosi collis Plecháč pr. Mnichovice julio 1939 sat frequens. Sed facilliter prae-

tervidetur. Propter lamal. latas potius ad Omphaliam referenda esset, sed consistentia omnesque characteres pro *Delicatula* testantur.

Material studied: Mnichovice, collis Plecháč, ad verrimenta in formatione Melampyri, July 1939 leg. et det. J. Velenovský, PRM 153671 (Lectotype, designated by M. Svrček ad schedam). The type specimen consists of two minute carpophores.

Status: Microscopic features of the type specimen more or less agree with *Hemimycena pseudogracilis* (Kühner et Maire) Singer, except for the shorter spores. Moreover, *H. pseudogracilis* has developed distinct rhizoids at the stipe base which are neither described nor drawn by Velenovský in *D. platyphylla*. The second preserved specimen (Mnichovice, in colle saxoso, in formatione Brachipodii copiose, 20 Sept. 1940 leg. et det. J. Velenovský, PRM 153726) contains no carpophores. Therefore, it is considered a *Nomen dubium*, with some similarity to *H. pseudogracilis* (ANTONÍN 2003).

POLYPHYLLA – *Delicatula* Velen., Novit. Mycol. Novissimae: 44. 1947.

Original description: Sparsa, zephirea, nivea. Pil. 3 mm diam., convexus, vertice leniter solide umbonatus, sulcatus. St. vitreus, tremens, basi nuda insidens, capillaris. Lam. numerosae, angustissimae, marginem non attingentes, longe decurrentes. Sp. globosae et ovato-globosae, magnitudine variabili, nunc 5–6, nunc 8–11. Cyst. non reperi. Ad ramulum Salicis capreae prope Menčice in dumeto, septemb. 1941.

Material studied: Mnichovice, Menčice, Salix caprea, 10 Sept. 1941 leg. et det. J. Velenovský, PRM 153652 (Holotype). The type specimen contains no carpophores, only small twigs are present in the envelope.

Status: *Nomen dubium*, probably a *Mycenoid* species (ANTONÍN 2003).

QUERCINA – *Delicatula quercina* Velen., Novit. Mycol. Novissimae: 46. 1947.

Original description: Gregaria et sparsa, summopere gracilis, vitrea, alba, nuda. Pil. 0,5–1 mm diam., obtuse campanulatus, sulcatus, lam. 12–18, alternantes ad marginem procurrentes, breviter decurrentes. St. capillaris, vitreus, saepe flexus, praelongus. Sp. cylindricae, 3–5 × 1. Cyst. numerosa, pyriformia, dense breviter spinosula, 15–20 × 8–10. Ad folia marcida quercina locis calidis (mer.) in gramine sicco “Bílá Skála” prope Božkov. Quotannis autumnno lego statione indicata. Basin stipitis cingit annulus tenuis (non discus!). A D. polyadelpa, quae autumnno in foliis quercinis ubique vulgaris apparet statura minori, lamellis numerosis, fere confertis, sat latis parum decurrentibus, annulo basali bene differt.

Material studied: Mnichovice, Bílá Skála near Božkov, ad folia Quercus, 2 Nov. 1942 leg. et det. J. Velenovský, PRM 153661 (Holotype). The holotype specimen consist of only one stipe part.

Status: *Nomen dubium*, probably a *Mycena* species (ANTONÍN 2003).

RAMOSA – *Delicatula ramosa* Velen., Novit. Mycol. Novissimae: 45. 1947.

Original description: Sparsa, zephirea, nivea. Pil. 1–2 mm diam., convexo-conicus, tandem explanatus et centro depressus, non sulcatus. St. capillaris, praelongus, vix 0,1 mm cr., saepe ramosus, 2–3cephalus (!), basi truncata, barbata insidens. Lam. numerosae, alternantes, breviter decurrentes, angustae. Sp. ovato-ellipticae, 3–5. Cyst. non vidi. Ad terram nudam in societate Aleuriae aurantiaceae loco calido merid. inter dumeta prope Božkov septemb. 1940. Species curiosa, ad sectionem Barbatae transiens.

Material studied: Mnichovice, Bílá Skála near Božkov, 19 Sept. 1940 leg. et det. J. Velenovský, PRM 153654 (Holotype). This specimen consists of two complete minute carpophores.

Status: *Excluded*, belongs to the *Collybia* (Fr.) Staude s. str. (ANTONÍN & NOORDELOOS 1997), probably identical with *C. cirrhata* (Pers.) Quéf.

RIGIDA – *Delicatula rigida* Velen., Novit. Mycol. Novissimae: 46. 1947.

Original description: Sparsa, nivea, gracilis. Pil. 4–5 mm, convexus, membranaceo-pellucidus, glaber, non sulcatus. St. praelongus, 0,5 mm cr., strictus, rigidus, non tremens, deorsum sensim crassior, basi nuda insidens, nudus. Lam. 12–16, latae, ante marginem desinentes, longe decurrentes. Sp. ovato-ellipticae, basi attenuate, 6–8. Cyst. non reperi. Ad folia marcida et verrimenta quercina sub quercubus prope Mnichovice novemb. 1940.

Material studied: Mnichovice, Mirošovice (viaductus), in verrimentis quercinis, Nov. 1940 leg. et det. J. Velenovský, PRM 153665 (Holotype). The holotype specimen consists of two complete carpophores.

Status: *Nomen dubium*, probably a *Mycena* species (ANTONÍN 2003).

ROSTELLATA – *Delicatula rostellata* Velen., Novit. Mycol. Novissimae: 44. 1947.

Original description: Solitaria, zephirea, nivea. Pil. 2 mm altus, basi 1 mm latus, oblongo-conicus, acute rostellatus, leniter paucisulcatus. St. capillaris, laevis, basi nuda insidens. Lam. 3–4, venaeformes, breviter decurrentes. Sp. globosae, 2–2,5. Ad lignum putridum in cavitate trunci frondosi prope Božkov septemb. 1941.

Material studied: Mnichovice, Bílá Skála near Božkov, in cavitate trunci humidi sub pado, 28 Sept. 1941 leg. et det. J. Velenovský, PRM 153590 (Holotype). The holotype specimen consists only of one stipe part, complete carpophores absent.

Status: *Nomen dubium*, could well be a species of *Hemimycena* or *Mycena* (ANTONÍN 2003).

SCIRPINA – *Delicatula scirpina* Velen., Novit. Mycol. Novissimae: 44. 1947.

Original description: Sparsa, gracillima, vitrea, nivea. Pil. 3–4 mm, permanentem semiglobosus, atomatus, non sulcatus, non umbonatus. St. capillaris, praelongus, vix 0,1 mm cr., infra pileum incrassatus, flavidus, subtiliter pannosus, basi non ciliatus. Lam. 10–15, latae, marginem attingentes, longe decurrentes. Sp. perfecte globosae, 2,5–3,5. Cyst. maxima (30–50) ellipsoidea, vesicaria, nuda. Ad folia marcida Scirpi silv. in palude prope Mnichovice octob. 1940. Haec species notis additis memorabilis est.

Material studied: Mnichovice, Zíta, ad folia marcida Scirpi silv., 26 Oct. 1940 leg. et det. J. Velenovský, PRM 153598 (Holotype). The type specimen consists of two partly damaged carpophores (mould).

Status: *Nomen dubium*, probably close to *Hemimycena pseudogracilis* (ANTONÍN 2003).

SPINOSAE – *Delicatula spinosae* Velen., Novit. Mycol. Novissimae: 50. 1947.

Original description: Gracillima, zephirea, tremens, pervia, nivea, semper dense gregaria, plerumque 5–12 specimen in unico folio. Pil. leniter convexus, 1–1,5 mm, non sulcatus, subtus laevis, sine lamellis vel venis. St. praelongus, capillaris (0,1 mm), nudus, basi nuda insidens. Sp. numerosae, tenuiter lineares (8–12 × 1), rectae, supra obtusae, infra sensim acutissimae, bisterigmaticae. Cystidia et conidia non reperi. Ad folia spinosae in dumetis autumnno frequens. Ad folia marcida spinosae in ejusdem frutice in valle merid. calido infra Struhařov in copia magna octob. 1941. Apparitione sua revocat *D. polyadelpham*, sed multo minor et prorsus sine lamellis. Fungulus pulchellus, pervius.

Material studied: Mnichovice, in dumeto Pruni spinosae, ad ejus folia, 14 Oct. 1941 leg. et det. J. Velenovský, PRM 153650 (Holotype). This specimen consists of three minute carpophores.

Status: *Nomen dubium*, very similar *Hemimycena mauretanica* var. *stenospora* (ANTONÍN 2003).

STELLATUS – *Agaricus stellatus* Fr.: Fr., Syst. Mycol. 1: 163. 1821.

Original description: A. stellatus, candidus, pileo convexo galbro, lamellis distantibus, stipite basi membranulae convexae radiator innato. Fr. Obs. I, p. 85. A. buccinal, Sowerb. T. 107. excl. Syn. Gregarius. Stipes farctus, incurvus, fragilis, vix uncialis. Pileus striatus, 4 lin. Latus. Lam. Tenuis, quibus hic et sq ab. A. ericator differt. Ad truncos vetustos putrescens. Jul. Aug. (v.v.)

Status: *Nomen dubium*, since the original diagnosis is too short and may stand for several mycenoid fungi. RATHLHUBER (1980) considered it identical with *Hemimycena delectabilis*, but we see no reason to accept that.

STRUTHIOPTERIDIS – *Delicatula struthiopteridis* Velen., Novit. Mycol. (1939): 97. 1940.

Syn. *D. citrina* Velen., Novit. Mycol. Novissimae: 43. 1947.)

Original description: Sparsa, gracillima, laevis, citrina. Pil. 1–2 mm diam., conicus, leniter umbonatus, non sulcatus. St. 5–7 mm l. et 0,2 mm cr., nitens laevis, basi glabra adnatus (raro 3–4 pili breves). Lam. 4–6, distantes, angustae, decurrentes. Pili pilei sparsi, acute aciculares 15–20. Sp. globosae 2–3. Cyst. non vidi. Ad squamas strobilorum Struthiopteridis german. in nostro horto Mnichovice octobr. 1939. Cum *Omphalia struthiopteridis* vulgo non affinis nec similis.

Material studied: Mnichovice, in nostro horto, ad squamas Struthiopteridis, 4 Oct. 1939 leg. et det. J. Velenovský, PRM 153645 (Holotype). The type specimen contains no carpophores.

Status: *Excluded*, probably close to or identical with *Mycena flavoalba* (ANTONÍN 2003).

STRUTHIOPTERIDIS – *Delicatula struthiopteridis* Velen., Novit. Mycol. Novissimae: 45. 1947.

(= *Omphalia struthiopteridis* Velen., Novit. Mycol.: 94; *Delicatula vitrea* Velen. in litt.)

Original description: Gregaria, vitrea, nivea, pil. 6–11 mm, convexo, dein explanato, centro depresso, sulcato. St. duplo longior, vix 1 mm cr., in pileum dilatatus, subtiliter pilosulus, basi nuda insidens. Lam. distantes, venae-formes, nonnullae furcatae et anastomosantes. Cyst. et pili filiformes 30–45, apice clavula terminata. Sp. 6–8 × 3, cylindricae, basi attenuatae, curvatae. Ad squamas strobilorum *Struthiopteridis* Mnichovice julio, Augusto quotannis.

Material studied: Mnichovice, in nostro horto, *Struthiopteris* germ., 4 July 1940 leg. et det. J. Velenovský, PRM 153651 (Holotype).

Status: *Delicatula struthiopteridis* Velen. undoubtedly represents *Hemimycena mauretana* var. *mauretana*.

SUBLUTEOLA – *Delicatula subluteola* Velen., Novit. Mycol. Novissimae: 50. 1947.

Original description: Gracilis, vitrea, pil. 4–5 mm, niveo tinctu luteolo, convexo, non umbonato, leniter remote sulcato. St. praelongus, capillaris, tremens, vitreus. Lam. 10–12, latae, albae, breviter decurrentes. Cyst. 15–17, copiosa, crasse columniformia, obtusa vel subclavata. Sp. 8–11, late ellipticae, basi attenuatae, 1–2 guttulatae. Ad ramulos putridos *Spinosae* in frutice infra Klokočná octob. 1941. Stipes basi ciliatus.

Material studied: The type specimen not preserved.

Status: *Nomen dubium*, probably a *Mycena* species (ANTONÍN 2003).

TERRESTRIS – *Delicatula terrestris* Velen., Novit. Mycol. Novissimae: 49. 1947.

Original description: Gracilis, zephirea, nuda, pellucida, tremens. Pil. 5 mm diam., convexus, centro depresso, leniter sulcatus albus, sed tinctu mellino. St. praelongus, vix 0,2 mm cr., hyalinus. Lam. numerosae, latae, alternantes, breviter decurrentes. Sp. oblique ovato-ellipticae, 8–12 × 3–4. Cyst. 50–80, e basi lata sensim acutissima, attenuata, membranis crassis. In caespite *Dicrani stipitis* basi nuda excedens. Sistit transitum ad *Omphaliam*, sed gracilitate potius sub *Delicatula* enumeranda est.

Material studied: Mnichovice, Koloděje, in *Dicrano*, 3 Oct. 1944 leg. et det. J. Velenovský, PRM 153655 (Holotype). The type specimen consists of one complete carpophore.

Status: *Nomen dubium*, probably a *Mycena* species (ANTONÍN 2003).

TILIETI – *Fayodia tilieti* Singer, Ann. Mycol. 41: 63.1943

Clitocybula tilieti (Singer) Singer, Sydowia 8: 110. 1954 (not validly published); *Clitocybula tilieti* (Singer) Singer, Sydowia 15: 53. 1962.

Original description: Pileus grey-fuscosus or black-fuscosus, almost smooth, not viscid, hygrophanous(?), plano-infundibuliform, ± 40 mm broad, rather fleshy. Lamellae white, dirty pale greyish ochraceous when dry, not furcate, close to very close, long decurrent, narrow. Stipe concolorous with pileus, smooth, glabrous, but finely white-tomentose, solid, subcylindrical, 40 × 5–7 mm when dry. Context white. Smell indistinct. Taste mild. Hab.: on twigs of *Tilia*, in fallen leaves and detritus of *Tilia*. August to September. Rare. (According to SINGER 1943)

Status: *nomen dubium*, probably a species of *Clitocybula* (ANTONÍN 2003).

UMBONATA – *Delicatula umbonata* Velen., Novit. Mycol. Novissimae: 48. 1947.

Original description: Sparsa, gracillima, nivea. Pil. 1–2 mm diam., permanentemente campanulatus, non sulcatus, vertice umbone acuto solido terminatus. St. quadruplo longior, 0,2 mm cr., supra basin breviter, subtiliter pilosulus. Lam. 10–13, latae, marginem attingentes, decurrentes. Sp. 5–7, oblongae, basi constrictae. Cyst. acute acicularia, basi dilatata, 15–20. Ad folia marcida graminum in colle arido, insolato prope Stránčice octob. 1940.

Material studied: Mnichovice, Stránčice, hill above a gravel-pit, ad gramina, 10 Oct. 1940 leg. et det. J. Velenovský, PRM 153653 (Holotype).

Results: Basidiospores 7.5–10.0 × 2.5–3.5 µm, narrowly ellipsoid to ellipsoid-fusoid, sublacrymoid, thin-walled, smooth, non-dextrinoid. Basidia 21 × 8.0–8.5 µm, 4-spored, clavate. Basidioles up to 21 × 3.0–8.5 µm, cylindrical to clavate. Hymenial cystidia (only two found) 27–30 × 4.0–8.0 µm, lageniform, (sub)cylindrical. Tramal

hyphae of cylindrical to ellipsoid, thin- to slightly thick-walled, non-dextrinoid, up to 20 µm wide cells. Pileipellis a cutis, of radially arranged, cylindrical, ± thin-walled, diverticulate, non-dextrinoid, up to 8.0 µm wide hyphae; diverticulae up to 12 × 2.0 µm, digitate. Pileocystidia absent. Stipitipellis a cutis, of cylindrical, parallel, slightly thick-walled, smooth, non-dextrinoid, up to 6.0 µm wide hyphae. Caulocystidia absent; scattered terminal cells present. Clamp-connections present in all tissues.

Status: *Nomen dubium*, belonging to the group of *Hemimycena crispata* (ANTONÍN 2003).

VERNALIS – *Delicatula vernalis* Velen., Novit. Mycol. Novissimae: 48. 1947.

Original description: Zephirea, nivea, vitrea, sparsa. Pil. 1–2 mm, cito explanatus, centro depressus, non sulcatus, glaber. St. triplo et ultra longior, sursum in pileum sensim incrassatus, basi nuda insidens, vix 0,5 mm cr. Lam. latae, numerosae, alternantes, sensim decurrentes. Sp. oblongo-ellipticae, bisterigmatae, 5–7 × 2–3. Cystidia sparsa, e basi latiori sensim attenuata, 25. Ad relicta graminum in collibus insolatis primo vere ubique sat frequens (aprili-maio).

Material studied: Mnichovice, quarries above the mill near Menčice, May 1940 leg. et det. J. Velenovský, PRM 153649 (Holotype?). The type specimen contains no carpophores.

Status: *Nomen dubium*, probably a *Mycena* species (ANTONÍN 2003).

6. Deutsche Zusammenfassung

1. *HEMIMYCENA* Singer

Schlüssel zu den europäischen Arten

- 1 Aussehen erinnert an eine weiße *Mycena*-Art mit ± konischem bis konisch-konvexem Hut, mit gut entwickelten, engstehenden bis mäßig entferntstehenden Lamellen, welche aufsteigend, ausgerandet, selten angewachsen oder etwas herablaufend sind; Hutoberfläche mit fusoiden bis (fast) kopfigen Zystiden; Stiel nie mit langen Haaren (sect. *Hemimycena*) **Schlüssel I**
- 1* Aussehen verschieden; Lamellen weniger zahlreich, angewachsen bis tief herablaufend, gut entwickelt oder zu aderartigen Strukturen reduziert, den Hutrand nicht erreichend, in wenigen Fällen komplett fehlend **2**
- 2 Stiel mit gut differenzierten, langen und schmalen Zystiden, die oft zum Scheitel hin vermindert sind (pfriemen- oder fächerförmig); manchmal in einem kleinen, wie abgeschnittenen Köpfchen endend, manchmal leicht bis deutlich dickwandig (setiform) **Schlüssel II**
- 2* Stiel ohne solche Zystiden, aber sehr oft mit gut differenzierten Caulozystiden **3**
- 3 Sporen (fast) kugelig bis breit ellipsoid, apfelkernförmig oder fast mandelförmig, $Q < 2$ **Schlüssel III**
- 3* Sporen länglich bis zylindrisch oder stäbchenförmig, $Q > 2$ **Schlüssel IV**

Schlüssel I

- 1 Sporen ± rundlich **3. *H. rickenii*** (p. xx)
- 1* Sporen anders **2**
- 2 Lamellen sehr engstehend, $L = 29-40$, $l = 2-7$, Pileipellis eine Trichoderm von fast zylindrischen bis spindelförmigen Pileozystiden **2. *H. cucullata*** (p. xx)
- 2* Lamellen weniger an der Zahl; Pileozystiden kopfig **3**
- 3 Schnallen fehlend **3. *H. gypsella*** (p. xx)
- 3* Schnallen vorhanden **4**
- 4 Fruchtkörper gelblich cremefarben; Pileipellis ohne oder mit sehr schlecht entwickelten Ausstülpungen, mit Bildung von Blastoconidien auf Oberfläche von Hut und Stiel; bisher nur bekannt von mediterraner *Cistus*-Vegetation **5. *H. conidiogena*** (p. xx)
- 4* Fruchtkörper rein weiß oder – bei den meisten – mit leicht gelblicher Färbung im Hutzentrum; Hyphen der Pileipellis gewöhnlich deutlich ausgestülpt, keine Bildung von Blastoconidien auf der Oberfläche von Hut und Stiel; an anderen Standorten **5**
- 5 Sporen $9.0-13 (15) \times 3.0-4.0 (5.0) \mu\text{m}$ (2-sporig, **var. *lactea***) oder $(7.5) 9.0-11 (12) \times 3.0-5.0 \mu\text{m}$ (4-sporig, **var. *tetraspora***); Pleurozystiden fehlend oder spärlich vorhanden nur nahe dem Lamellenrand; Stiel mit basalen Haaren **1. *H. lactea*** (p. xx)
(wenn Fruchtkörper sehr klein, Basidien nur bis zu $18 \times 3.0-5.0 \mu\text{m}$, und Cheilocystiden nur $10-15 \times 3.5-4.5 \mu\text{m}$, dann **var. *tetraspora* f. *minor***)
- 5* Sporen $6.0-8.0 \times 2.5-3.5 \mu\text{m}$; Pleurozystiden reichlich, $30-60 \mu\text{m}$ lang; Cheilocystiden selten oder fehlend; Stiel ohne basale Haare **4. *H. pseudolactea*** (p. xx)

Schlüssel II

- 1 Basidien 2-sporig, ohne Schnallen 2
- 1* Basidien 4-sporig, mit Schnallen oder ohne Schnallen oder 2-sporig und mit Schnallen, oder 2–4-sporige Basidien untermischt vorhanden, dann zusammen mit 4-sporigen **und** mit dem Hals der Zystiden spiralig gedreht 4
- 2 Pileozystiden fehlend, Sporen $9.0\text{--}13 \times 4.2\text{--}6.5$ (7.2) μm **15. *H. crispuloides*** (p. xx)
- 2* Pileozystiden vorhanden, Sporen größer, $11\text{--}16$ (19) $\times 3.5\text{--}5.0$ μm 3
- 3 Pileozystiden borstenförmig, sehr lang (bis zu $100 \times 20\text{--}30$ μm); Lamellen stark reduziert bis fehlend, Caulozystiden borstenförmig **16. *H. subtilis*** (p. xx)
- 3* Pileozystiden dünnwandig, \pm spindelförmig, \pm flaschenförmig, zylindrisch; Lamellen vorhanden in Form einiger aderartiger Strukturen, den Hutrand nicht erreichend; Caulozystiden fingerförmig, \pm keulig, flaschenförmig, pfriemenförmig, oft mit schleimiger Haube **18. *H. tatrensis*** (p. xx)
- 4 Auf abgestorbenen Blättern von *Symphytum officinale* **20. *H. candida*** (p. xx)
- 4* Auf anderem Substrat 5
- 5 Pileozystiden fehlend oder mit nur wenigen, vereinzelt, kurzen (~ 30 μm) Pileozystiden . 6
- 5* Hut mit auffälligen Pileozystiden, die pfriemenförmig, borstenförmig oder mit kopfigem Ende sein können 8
- 6 Caulozystiden fächerförmig, in einem langen, fadenartigen, $1\text{--}2$ μm breiten Anhängsel endend, dünnwandig **23. *H. substellata*** (p. xx)
- 6* Caulozystiden nicht fächerförmig, sondern pfriemen- oder borstenförmig 7
- 7 Hut $8\text{--}12$ mm breit, nicht rein weiß, sondern mit grauer Färbung; Lamellen engstehend, bis zu 20 ganzrandige Lamellen den Hutrand erreichend; Caulozystiden etwas borstenförmig; Sporen $5.5\text{--}7.0 \times 1.5\text{--}4.0$ μm ; breit ellipsoid **24. *H. cryptomeriae*** (p. xx)
- 7* Hut $2\text{--}10$ mm, rein weiß; Lamellen reduziert, den Hutrand nicht erreichend; Caulozystiden deutlich borstenförmig; Sporen $8.0\text{--}11.5 \times (3.5) 4.0\text{--}5.5$ μm ; ellipsoid bis länglich **14. *H. pseudocrispula*** (p. xx)
- 8 Pileozystiden deutlich kopfig, manchmal mit dem Zystidenhals spiralig gedreht 9
- 8* Pileozystiden nicht kopfig, manchmal fast kopfig, aber nie mit spiralig gedrehtem Hals . 13
- 9 Pileo- und Caulozystiden mit langem Hals, deutlich kopfig 10
- 9* Pileo- und Caulozystiden mit ziemlich kurzem Hals, kopfig oder nicht; Cheilozystiden fehlend; Lamellen stark reduziert, den Hutrand nie erreichend, praktisch fehlend ***H. nebulophilum*** (bisher nicht in Europa gefunden; p. xx)
- 10 Lamellen gut entwickelt, den Hutrand erreichend 11
- 10* Lamellen reduziert, aderartig, den Hutrand nicht erreichend oder fehlend 12
- 11 Sporen $6.5\text{--}9.0 \times 4.0\text{--}5.5$ (6.0) μm , zitronenförmig oder breit mandelförmig; Hals der Zystiden nicht spiralig gedreht **5. *H. cephalotricha*** (p. xx)
- 11* Sporen (8.5) $9.0\text{--}11 \times 2.5\text{--}4.5$ μm , schmal spindelförmig oder zylindrisch, Hals der Zystiden spiralig gedreht **19. *H. tortuosa*** (p. xx)
- 12 Cheilozystiden fehlend **12c. *H. mauretana* var. *microcephala*** (p. xx)
- 12* Cheilozystiden reichlich, flaschenförmig **12b. *H. mauretana* var. *cystidiata*** (p. xx)
- 13 Lamellen gut entwickelt, gewöhnlich den Hutrand erreichend 14
- 13* Lamellen reduziert, aderartig, nie den Hutrand erreichend 15

- 14 Caulozystiden $15\text{--}65 \times 2.5\text{--}7.0 \mu\text{m}$, zylindrisch, keulig, \pm flaschen oder pfriemenförmig, oft verzweigt oder unregelmäßig (besonders an der Basis), etwas dickwandig, manchmal mit einer mukronaten Haube; Sporen (9) $10\text{--}14.5$ (15) μm lang **34. *H. subimmaculata*** (p. xx)
- 14* Caulozystiden borstenförmig, (16) $25\text{--}78 \times 3.5\text{--}8.0$ (10.0) μm , pfriemenförmig, gewöhnlich \pm verschmälert zum spitzen, selten stumpfen Scheitel, oft von unregelmäßiger Form, mit hyaliner, etwas verdickter Wand; Sporen (7.5) $8\text{--}11.5$ (12) μm lang . . **17. *H. angustispora*** (p. xx)
- 15 Cheilozystiden vorhanden **12b. *H. mauretana* var. *cystidiata*** (p. xx)
- 15* Cheilozystiden fehlend **16**
- 16 Sporen $4.0\text{--}5.5 \mu\text{m}$ breit, ellipsoid, \pm mandelförmig; Pileo- und Caulozystiden setoid bis etwas dickwandig **17**
- 16* Spores $3.0\text{--}3.5$ (4.0) μm breit, zylindrisch bis stäbchenförmig; Pileo- und Caulocystiden nie setoid oder höchstens etwas dickwandig **12a. *H. mauretana* var. *mauretana*** (p. xx)
- 17 Basidien 2-sporig **13a. *H. crispula* var. *crispula*** (p. xx)
- 17* Basidien 4-sporig **13b. *H. crispula* var. *tetraspora*** (p. xx)

Schlüssel III

- 1 Sporen zitronen- oder mandelförmig; Zystiden auf Hut, Stiel und Lamellen (fast) kopfig **5. *H. cephalotricha*** (p. xx)
- 1* Sporen verschieden oder – wenn zitronenförmig – dann Zystiden nie (fast) kopfig **2**
- 2 Fruchtkörper erinnern an eine kleine Art von *Camarophyllus* mit entferntstehenden, verdickten, dreieckigen Lamellen; Hut oft nicht rein weiß, sondern grau, braun oder gelb gefärbt **3**
- 2* Fruchtkörper anders, rein weiß **7**
- 3 Schnallen fehlend; Basidien 2-sporig; Sporen $7.5\text{--}9.0 \times 5.0\text{--}6.0 \mu\text{m}$, mandelförmig oder länglich; Cheilozystiden flaschenförmig bis tibiiiform **10. *H. juncicola*** (p. xx)
- 3* Schnallen vorhanden; Basidien 4-sporig; Sporen etwas schmaler (bis zu $5 \mu\text{m}$); Cheilozystiden keulig bis fusoid, selten fast zylindrisch **4**
- 4 Hut gleichmäßig gräulich-weiß oder ocker-gelblich bis ocker-braun; Stiel makroskopisch \pm kahl oder bereift; Sporen (5.5) $7.0\text{--}11 \times (3.0) 3.5\text{--}6.0 \mu\text{m}$; Cheilozystiden vereinzelt or fehlend . **5**
- 4* Hut oft mit auffälligem, dunklem grau-braunem zentralem Fleck; Stiel bereift; Sporen (5.5) $6.0\text{--}8.5 \times 3.0\text{--}4.5 \mu\text{m}$, ellipsoid bis länglich; Cheilozystiden gewöhnlich vorhanden, keulig mit schlankem Stiel oder etwas unregelmäßig, koralloid **9. *H. sordida*** (p. xx)
- 5 Hut ocker-gelb bis ocker-braun; assoziiert mit *Cirsium spinosissimum* in alpinen und arktischen Habitaten **6**
- 5* Hut mit gräulichen Tönen oder mit grau-braunem Zentrum; im Grasland auf Lehmboden oder auf Kalkboden **8. *H. mairei*** (p. xx)
- 6 Basidien 4-sporig; Pleurozystiden vorhanden und zahlreich **11a. *H. ochrogaleata* var. *ochrogaleata*** (p. xx)
- 6* Basidien 2-sporig; Pleurozystiden fehlend oder selten, zerstreut **11b. *H. ochrogaleata* var. *paucicystidiata*** (p. xx)
- 7 Sporen klein und schmal, $5.0\text{--}7.5 \times 2.5\text{--}4.0 \mu\text{m}$ **8**
- 7* Sporen größer und/oder breiter ($\times 4.5\text{--}6.5 \mu\text{m}$) **9**
- 8 Fruchtkörper klein, rein weiß (Hut $1.5\text{--}5.0 \text{mm}$; Stiel bis zu 25mm lang; 5–13 Lamellen); Caulozystiden mit ziemlich breitem, verdicktem basalem Teil und langem, fadenförmigem, manchmal gegabeltem Hals; Cheilozystiden fehlend **23. *H. substellata*** (p. xx)

- 8* Fruchtkörper größer; Hut grau gefärbt (Hut 8–13 mm; Stiel 15–45 mm lang; bis zu 20 Lamellen); Caulozystiden wellig-subzylindrisch; Cheilozystiden vorhanden . **24. *H. cryptomeriae*** (p. xx)
- 9 Sporen 6.0–7.5 (8.0) × 5.0–6.5 µm, kugelig bis fast kugelig; Lamellen wenig, reduziert, aderartig, nicht (immer) den Hutrand erreichend **22. *H. subglobispora*** (p. xx)
- 9* Sporen größer, fast kugelig bis ellipsoid; Lamellen gut entwickelt, L = 15–30 **10**
- 10 Kein Geruch; Pileipellis eine Schicht mit spärlichen Ausstülpungen, zahlreiche ± zylindrische Pileozystiden tragend, 30–60 × 3.0–7.0 µm; Cheilozystiden breit keulig bis kugelig-gestielt **7. *H. rickenii*** (p. xx)
- 10* Geruch nitrös; Pileipellis eine Schicht von ausgestülpten Hyphen ohne Pileozystiden; Cheilozystiden flaschenförmig oder spindelförmig, selten fast kopfig **11**
- 11 Basidien 4-sporig, mit Schnallen **12**
- 11* Basidien 2-sporig, ohne Schnallen **21b. *H. delectabilis* f. *bispora*** (p. xx)
- 12 Pleurozystiden fehlend **21a. *H. delectabilis* var. *delectabilis*** (p. xx)
- 12* Pleurozystiden vorhanden **21c. *H. delectabilis* var. *paucicystidiata*** (p. xx)

Schlüssel IV

- 1 Pileipellis eine Schicht von glatten oder schwach ausgestülpten Hyphen; Stiel kahl; Pileo-, Caulo- und Hymenialzystiden fehlend **25. *H. ignobilis*** (p. xx)
- 1* Pileipellis eine Schicht von ausgestülpten Hyphen; Stiel flaumig bis deutlich haarig, selten kahl, aber mindestens entweder Pileo- oder Caulo- oder Hymenialzystiden vorhanden **2**
- 2 Lamellen reduziert, oft aderartig und den Hutrand nicht erreichend **3**
- 2* Lamellen gut entwickelt, gewöhnlich den Hutrand erreichend **7**
- 3 Stipitipellis aus glatten Hyphen **4**
- 3* Stipitipellis aus ausgestülpten Hyphen **6**
- 4 Stielbasis ohne radiale Haare; Cheilozystiden vorhanden, unregelmäßig, koralloid ***H. crispata* ss. *Senn-Irlet*** (siehe Anmerkungen in 26, *H. crispata*)
- 4* Stielbasis mit radialen Haaren; Cheilozystiden fehlend **5**
- 5 Sporen 7.5–9.5 (10.0) × 3.0–4.0 µm; Caulozystiden wenig, 19–22 × 4.5–6.0 µm, einfach, zylindrisch-gewellt **29. *H. pseudogracilis*** (p. xx)
- 5* Sporen 8.0–12 × 2.5–4.5 µm; Caulozystiden einzeln oder in Gruppen, 10–40 × 2.0–6.0 µm, ± zylindrisch, oft wellig **27. *H. epichloe*** (p. xx)
- 6 Schnallen vorhanden; Sporen 7.0–10.0 × 3.0–4.0 µm; Geruch nitrös . **35. *H. nitriolens*** (p. xx)
- 6* Schnallen fehlend; Sporen 10–12 × 3.0–4.0 µm; ohne Geruch . . . **33. *H. pseudogibba*** (p. xxx)
- 7 Fruchtkörper omphalinoid oder mycenoid, nie rein weiß, sondern gelb, ockerfarben, grau oder gräulich braun gefärbt, an eine Art von *Camarophyllus* erinnernd **8**
- 7* Fruchtkörper verschieden, wenn omphalinoid, dann rein weiß **10**
- 8 Hut ocker-gelb bis ocker-braun; assoziiert mit *Cirsium spinosissimum* an alpinen und arktischen Standorten **9**
- 8* Hut mit grauer Färbung oder mit grau-braunem Zentrum; in Wiesen auf Ton- und Kalkböden **8. *H. mairei*** (p. xx)
- 9 Basidien 4-sporig; Pleurozystiden vorhanden und reichlich **11a. *H. ochrogaleata* var. *ochrogaleata*** (p. xx)
- 9* Basidien 2-sporig; Pleurozystiden fehlend oder selten, vereinzelt **11b. *H. ochrogaleata* var. *paucicystidiata*** (p. xx)

- 10 Basidien ausschließlich 2-sporig, ohne Schnallen 11
- 10* Basidien 4-sporig (selten gemischt mit 2-sporigen), mit Schnallen, selten ohne 12
- 11 Sporen 8.0–9.5 (11) × 2.5–3.5 µm; Pileozystiden fehlend 32. *H. pseudocrispata* (p. xx)
- 11* Sporen 10.5–12 (13) × 4.0–5.2 µm; Pileozystiden fehlend, 20–35 × 5.0–10.0 µm, angedrückt oder aufrecht, keulig, subfusoid, ± zylindrisch, unregelmäßig bis koralloid, oft mit Fortsätzen 30. *H. pithyophila* (p. xx)
- 12 Sporen 5.0–7.5 × 2.7–4.0 µm (vgl. *H. substellata* and *H. cryptomeriae*, Schlüssel III)
- 12* Sporen größer 13
- 13 Auf verfaulenden Stengeln von *Symphytum officinale* und kultivierten *Symphytum* spp.; Lamellen L = 17–22; Sporen 8.0–10.5 (11) × (3.1) 4.0–5.0 µm; Basidien 24–27 × 6.0–9.0 (10.0) µm; Cheilocystidia (19) 24–31 × 3.0–10 µm, pfriemenförmig, bis (fast) flaschenförmig; Pileozystiden vorhanden; Stipitipellis-Hyphen glatt 20. *H. candida* (p. xx)
- 13 Standort und Fruchtkörper anders 14
- 14 Sporen sehr schmal, Q = etwa 3–4 15
- 14* Sporen breiter, Q < 3 16
- 15 Pileozystiden ziemlich breit, keulig-ausgestülpt, 25–40 × 6.0–12 µm 31. *H. persimilis* (p. xx)
- 15* Pileozystiden schlanker, (fast) flaschenförmig bis ± sackförmig, 10–19 × 2.0–4.0 µm 28. *H. gracilis* (p. xx)
- 16 Pileozystiden fehlend 26. *H. crispata* (p. xx)
- 16* Pileozystiden vorhanden 17
- 17 Stiel mit dünnwandigen, verschmälerten Caulozystiden mit einer mukronaten Haube um den Scheitel; Basidien mit Schnallen 34. *H. subimmaculata* (p. xx)
- 17* Stiel mit einfachen, ± zylindrischen Caulozystiden 30. *H. pithyophila*, 4-sporige Form (p. xx)

1. *Hemimycena lactea* (Pers.: Fr.) Singer var. *lactea*

Hut 3–13 mm, konisch, sich im Alter ausbreitend; etwas hygrophan, durchscheinend gerieft wenn feucht, weiß, im Alter oft mit leicht gelber Färbung, fein bereift. **Lamellen** mäßig entferntstehend bis gedrängt, L = 11–17 (23), l = 1–3, gut entwickelt, angewachsen oder ausgerandet und leicht mit Zahn herablaufend, weiß. **Stiel** (5) 10–35 × 0.3–1.5 mm, zylindrisch, weiß, hyalin-durchscheinend, gänzlich weiß feinhaarig, mit weißen Basal-Rhizoiden. **Sporen** 9.0–13 (15) × 3.0–4.0 (5.0) µm, schmal (sub)fusoid, ellipsoid-fusoid, ± tropfenförmig. **Basidien** 2-sporig. **Hymenial-Zystiden** 21–28 (33) × 5.5–7.0 µm, flaschenförmig bis tibiiform, spindel- bis fast sackförmig, gewöhnlich mit leicht bis deutlich abgegrenztem apikalem Köpfchen, dünn bis leicht dickwandig. **Pileipellis** eine Schicht von ausgestülpten Hyphen; **Pileozystiden** 12.5–25 × 2.0–4.0 µm, kopfig. **Stipitipellis** eine Schicht von ausgestülpten Hyphen. **Caulozystiden** 12–32 (46) × (2.0) 3.0–4.0 µm, flaschenförmig, zylindrisch, ± keulig. Schnallen vorhanden.

Gesellig auf Humus und Holzresten, besonders in Nadelwäldern. Allgemein verbreitet.

Von dieser Art gibt es auch 4-sporige Formen mit kleineren Sporen.

2. *Hemimycena cucullata* (Pers.: Fr.) Singer

Hut 5–20 (30) mm, halbkugelig, dann konvex-konisch bis glockenförmig, sich ausbreitend, gewöhnlich gebuckelt, hygrophan, durchscheinend gerieft am Rand, leicht filzig, weiß, im Alter mittig mit gelblicher Färbung. **Lamellen** gedrängt, L = 29–40, l = 2–3, breit angewachsen bis ausgerandet und kurz mit Zahn herablaufend, engstehend, weiß. **Stiel** 15–45 (60) × 0.5–1.5 (2) mm, weiß, fein filzig-

haarig, basal mit Rhizoiden. **Sporen** (10) 10.5–13.5 × 3.7–5.0 (5.5) µm, fusoid bis ± tropfenförmig. Basidien 4-sporig. **Cheilozystiden** (17) 20–29 × (4.5) 5.0–8.0 µm, fusoid, flaschenförmig, keulig, manchmal fast kopfig. **Pileipellis** ein Trichoderm von zylindrischen, keuligen, flaschenförmigen oder fusoiden Elementen. **Stipitipellis** eine Schicht von glatten Hyphen. **Caulozystiden** (11) 15–35 × 4.2–6.2 (7.0) µm, flaschenförmig, fusoid, pfriemenförmig, fast zylindrisch, geschnäbelt, oft unregelmäßig, manchmal fast kopfig, abgestumpft, dünn bis etwas dickwandig. **Schnallen** vorhanden.

Einzelnen oder gesellig, auf Stämmen, Ästen und Stümpfen von Laubbäumen, manchmal auch auf Blättern. Verbreitet und gemein.

3. *Hemimycena gypsella* (Kühner) Elborne & Laessøe

Hut 2–5 mm, konvex, dann sich ausbreitend, etwas durchscheinend gerieft, weiß, bereift oder bereift-glimmerig. **Lamellen** ± gedrängt, L = 10–12, l = 1, breit angewachsen, bogig, nicht herablaufend, weiß. **Stiel** 4–8 × 0.2–0.5 mm, oft etwas exzentrisch, weiß, dicht gereift. **Sporen** 8.5–11.5 (13) × 2.5–4.0 (4.5) µm, länglich-spindelförmig mit langem, verschmälertem Ende. **Basidien** 2-, 3- und 4-sporig. **Cheilozystiden** 20–28 × 3.0–6.0 × 5.5–8.0 µm, sackförmig mit breitem, (fast) kopfigem Hals. **Pileipellis** hymeniform, aus flaschen- bis sackförmig endenden Elementen, 20–30 × 3.0–6.5 × 5.0–8.5 µm, den Cheilozystiden ähnlich. **Stipitipellis** eine Schicht von glatten oder ein wenig ausgestülpten Hyphen. **Caulozystiden** 15–24 × 2.0–4.0 × 3.5–7.5 µm, zylindrisch-wellig, kopfig. **Schnallen** fehlend.

Gesellig auf toten Wedeln von *Dryopteris filix-mas* an ± alpinen Standorten. Sehr selten.

4. *Hemimycena pseudolactea* (Kühner) Singer

Hut 5–25 mm, glockenförmig, dann konisch, sich ausbreitend, nicht hygrophan, nicht durchscheinend gerieft, weiß, fein bereift. **Lamellen** L = 16–25, l = 1–5, sehr eng angewachsen, linealisch-bogig, weiß. **Stiel** 35–50 × 1–2 mm, weiß, bereift, mit basalen Rhizoiden. **Sporen** 6.0–8.0 × 2.5–3.5 µm, länglich-ellipsoid, ein wenig apfelkernförmig. **Basidien** 4-, selten einige 2-sporig. **Cheilozystiden** und **Pleurozystiden** reichlich, 25–65 × 6–12 µm, keulig bis sackförmig mit fast kopfigem Scheitel. **Pileipellis** eine Schicht von ausgestülpten Hyphen. **Pileozystiden** reichlich, 16–28 × 3.5–7.0 µm, unregelmäßig gewellt mit kopfigem Scheitel und etwas verdickten Wänden. **Stipitipellis** eine Schicht aus beinahe glatten oder etwas ausgestülpten Hyphen. **Caulozystiden** reichlich, ähnlich den Pileozystiden. **Schnallen** vorhanden.

In kleinen Gruppen auf Nadelwald-Streu. Verbreitet in Europa, wahrscheinlich mit montaner bis subalpiner Verbreitung, aber auch beobachtet in Flachlandregionen (Niederlande).

5. *Hemimycena cephalotricha* (Joss. ex Redhead) Singer

Hut 1–7 mm, jung halbkugelig, dann konvex bis konisch-konvex, sich ausbreitend, hygrophan, weiß, oft mit leichter Creme-Färbung, radial etwas gefältelt bis beinahe glatt, etwas filzig bis filzig-feinhaarig unter der Lupe. **Lamellen** entferntstehend, L = 8–10, l = 0–1 (2), gut entwickelt, den Hutrand erreichend, breit angewachsen bis kurz herablaufend, ziemlich dick, weiß. **Stiel** 2–10 × 0.5–0.7 mm, hyalin, weiß, feinhaarig, mit abgesetztem Basal-Myzel. **Sporen** 6.5–9.2 × 4.0–5.4 (5.8) µm, breit zitronen- bis mandelförmig. **Basidien** 4-sporig. **Cheilozystiden** 27–38.5 (53) × 4.0–6.9 µm, zylindrisch-wellig mit ± kopfigem Scheitel bis ± tibiiform mit 3.5–6.0 µm breitem Köpfchen. **Pileipellis** eine Schicht von glatten bis ausgestülpten Hyphen. **Pileozystiden** 23–45 × (2.3) 3.1–5.5 µm, zylindrisch bis ± flaschenförmig, mit kopfigem, 3.8–8.5 µm breitem Scheitel, oft unregelmäßig gewellt,

± dünn- bis etwas dickwandig, manchmal basal mit fingerförmigen Ausstülpungen. **Stipitipellis** eine Schicht von glatten Hyphen. **Caulozystiden** $21-32 \times 2.3-5.0 \mu\text{m}$, ± zylindrisch bis fast flaschenförmig, oft perlschnurartig, Köpfchen mit $3.1-7.0$ (8.0) μm großem Capitulum, manchmal basal mit fingerförmigen Ausstülpungen oder ± zylindrisch, unregelmäßig, gewellt bis korallenförmig, etwas dickwandig. **Schnallen** vorhanden.

In Gruppen auf stark verfaultem Holz von *Quercus*, (*Q. ilex*, *Q. suber* und *Q. robur*), selten auf *Fagus*, einmal gefunden auf *Juniperus phoenicea* in wärmeliebenden Eichenwäldern. Verbreitet in Ost- und Süd-Europa und in Nordafrika, aber nie gemein.

6. *Hemimycena rickenii* (A. H. Sm.) Singer (= *Mycena lactea* sensu Ricken 1915)

Hut 5–8 (15) mm, stumpf konisch, sich ausbreitend, weiß, am Rand durchscheinend gerieft, zuerst bereift, dann kahl. **Lamellen** gedrängt, angewachsen, gut entwickelt, den Hutrand erreichend, weiß. **Stiel** $10-30 \times 1.5-2$ mm, weiß, dicht bereift, mit striegeliger Basis. **Sporen** (6.0) $7.0-8.0$ (9.0) $\times 4.5-5.7 \mu\text{m}$, fast kugelig bis breit ellipsoid. **Basidien** 2-sporig. **Cheilo-** und **Pleurozystiden** $28-55 \times 11-20 \mu\text{m}$, von verschiedener Form, keulig, subfusoid, ± sackförmig, dünnwandig, hyalin. **Pileipellis** eine Schicht von glatten oder selten ausgestülpten Hyphen. **Pileozystiden** $32-66 \times 5.0-9.0 \mu\text{m}$, zylindrisch bis keulig, dünn- bis etwas dickwandig. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** $35-85 \times 5.0-10.0 \mu\text{m}$, zylindrisch, keulig, subfusoid, dünnwandig. **Schnallen** fehlend.

Gesellig auf Nadeln von *Picea* und *Abies*. Selten.

7. *Hemimycena mairei* (J.-E. Gilbert) Singer

Hut 5–20 mm, glockenförmig oder halbkugelig, dann sich ausbreitend, nicht oder nur etwas hygrophan, nicht oder undeutlich durchscheinend gerieft, blass grau oder elfenbeinfarben-grau, beinahe weiß, mit etwas gefurchtem Hutrand, schmutzig, kahl. **Lamellen** entferntstehend, $L = 12-22$, $l = 1-3$, herablaufend, bogig, dicklich, manchmal gegabelt und aderig verbunden, weiß bis blass grau mit blaserer Schneide. **Stiel** $10-25 \times 1.5-3$ mm, weiß, kahl. **Sporen** (5.5) $7.0-9.5$ (10) $\times (3.0) 3.5-5.0 \mu\text{m}$, bauchig-spindelförmig, ellipsoid-fusoid. **Basidien** 4-sporig. **Cheilozystiden** fehlend oder sehr selten. **Pleurozystiden** fehlend. **Pileipellis** eine Schicht von spärlich ausgestülpten Hyphen. **Pileozystiden** fehlend. **Stipitipellis** eine Schicht von glatten oder spärlich ausgestülpten Hyphen. Caulozystiden sehr spärlich, nur an der Spitze. **Schnallen** vorhanden.

Zwischen Moos und Gras in wenig gedüngtem Grasland und Weiden. Verbreitet.

8. *Hemimycena sordida* Noordel. & Antonín

Hut 5–20 mm, zuerst halbkugelig, dann sich ausbreitend, nicht oder wenig hygrophan, nicht durchscheinend gerieft, blass grau oder blass grau-braun, glatt, kahl. **Lamellen** entferntstehend, $L = 12-20$, $l = 1-3$, angewachsen, mit Zahn herablaufend, bogig, dicklich, sehr blass grau. **Stiel** $12-40 \times 0.8-3$ mm, hyalin, weiß, zuerst fein bereift, bald kahl. **Sporen** (5.0) $5.5-8.5 \times 3.0-4.5 \mu\text{m}$, ellipsoid bis langgestreckt. **Basidien** 4-sporig. **Lamellenschneide** heterogen, mit Gruppen von Cheilozystiden, $30-55 \times 6.0-12 \mu\text{m}$, keulig mit schlankem Stiel oder ein wenig unregelmäßig, korallenförmig. **Pleurozystiden** fehlend. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** fehlend. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** $28-45 \times 3.0-8.0 \mu\text{m}$, ± zylindrisch bis korallenförmig. **Schnallen** vorhanden.

Zwischen Moosen und Gräsern. Bisher nur bekannt vom Typus-Fundort in den Niederlanden und einem Fundort in Deutschland.

9. *Hemimycena juncicola* Noordel. & Antonín

Hut 10–20 mm, glockenförmig bis konisch, sich ausbreitend, nicht hygrophan, nicht durchscheinend gerieft, blass grau mit weißer Randzone und dunklerer gräulich-bräunlicher Mitte, kahl. **Lamellen** ziemlich entferntstehend, L = 20–26, l = 1–3, herablaufend, bogig oder dreieckig, weiß. **Stiel** 10–30 × 0.8–2 mm, weiß, fein bereift, im Alter verkahlend, basal mit kurzen striegeligen Rhizoiden. **Sporen** 7.5–9.0 × 5.0–6.0 µm. **Basidien** 2-sporig. **Cheilozystiden** 20–29 × 2.5–7.0 µm, reichlich, ± zylindrisch-wellig bis flaschenförmig oder tibiiform bis spindelförmig, dünnwandig. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** fehlend. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** reichlich, 15–40 × 4.0–7.0 µm, fast zylindrisch mit rundlichem, manchmal etwas kopfigem Scheitel. **Schnallen** fehlend.

Gesellig in *Juncus effusus*-Beständen in naturnahen Wiesen auf kalkhaltigem sandigem Boden. Bisher nur bekannt von der Typus-Lokalität in Italien.

10. *Hemimycena ochrogaleata* (J. Favre) M.M. Moser

Hut 5–12 mm, halbkugelig, glockenförmig oder konvex mit oder ohne kleinem Buckel, sich ausbreitend, ein wenig hygrophan, etwas durchscheinend gerieft, ockerfarben-gelb, dann ockerfarben-bräunlich, in der Mitte manchmal dunkler braun, kahl. **Lamellen** entferntstehend oder fast entferntstehend, L = 14–26, l = 1 (3), bogig herablaufend, schmal, dicklich, weiß. **Stiel** 15–45 × 0.5–2 mm, weiß oder mit ockerfarbenem Hauch, leicht feinhaarig im oberen Teil, wenig über die gesamte Länge, kahl im unteren Teil. **Sporen** 8.0–11 × 4.5–5.5 (6.0) µm, breit spindel- bis mandelförmig. **Basidien** 4-sporig. **Cheilozystiden** 26–37 × 3.5–4.6 µm, schmal flaschenförmig bis oft unregelmäßig geformt oder fast perlschnurartig. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** fehlend. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** zahlreich, 15–42 × 3.0–6.5 µm, zylindrisch, schmal keulig, flaschenförmig mit verschmälelter Spitze, etwas pfriemenförmig, manchmal verästelt, etwas dickwandig. **Schnallen** vorhanden.

Gesellig auf *Cirsium spinosissimum* an alpinen Standorten. Weit verbreitet, aber selten in den Alpen (Schweiz und Österreich).

11. *Hemimycena mauretana* (Maire) Singer

Schlüssel zu den Varietäten von *Hemimycena mauretana*

- | | | |
|----|---|---------------------------------------|
| 1 | Basidien 2-sporig; Schnallen fehlend | 12e. var. <i>apogama</i> (p. xx) |
| 1* | Basidien 4-sporig; Schnallen vorhanden | 2 |
| 2 | Sporen 11.5–14 µm lang | 12d. var. <i>megaspora</i> (p. xx) |
| 2* | Sporen bis zu 11 µm lang | 3 |
| 3 | Caulo- und Pileozystiden 25–200 µm lang, zur Spitze hin verschmälert | 12a. var. <i>mauretana</i> (p. xx) |
| 3* | Caulo- und Pileozystiden bis zu 80 µm lang, sich zur Spitze hin verschmälend, aber in einem kleinen, abgetrennten Köpfchen endend | 4 |
| 4 | Cheilozystiden vorhanden | 12b. var. <i>cystidium</i> (p. xx) |
| 4* | Cheilozystiden fehlend | 12c. var. <i>microcephala</i> (p. xx) |

11a. *Hemimycena mauretana* var. *mauretana*

Hut bis zu 2,5 mm, glockenförmig mit abgestumpfter Mitte oder halbkugelig, sich ausbreitend, nicht hygrophan, nicht durchscheinend gerieft, weiß, winzig dicht feinhaarig bis haarig mit sich flach

ausbreitenden Haaren, manchmal tränend wenn feucht. **Lamellen** entferntstehend, $L = 6-9$, $l = 0-1$, breit angewachsen bis herablaufend, dreieckig, bogig, den Hutrand nicht erreichend, ziemlich dick, weiß. **Stiel** $1.5-7 \times 0.3-0.5$ mm, weiß, dicht feinhaarig bis haarig mit sich flach ausbreitenden Haaren, manchmal tränend wenn feucht. **Sporen** $6.5-10 \times 2.0-3.5$ (4.5) μm , zylindrisch bis stäbchenförmig, oft zum Apikulus hin verschmälert. **Basidien** 4-sporig. **Cheilozystiden** fehlend. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** $20-70 \times 2.0-6.0$ μm , pfriemen- bis borstenförmig mit dünnen oder etwas dicklichen Wänden. **Stipitipellis** eine Schicht ausgestülpter Hyphen. **Caulozystiden** $40-70 \times 4.0-6.5$ μm , pfriemen- bis borstenförmig mit dünnen oder etwas dicklichen Wänden, manchmal ausgestülpt. **Schnallen** vorhanden.

Auf Blättern und Holz von Laubbäumen, auch auf Pflanzenresten beobachtet. Verbreitet.

11b. *Hemimycena mauretana* var. *cystidiata* Antonín & Noordel. var. nov.

Unterscheidet sich von der Typus-Varietät durch die Anwesenheit von Cheilozystiden und kopfigen Haaren an Hut und Stiel. Gefunden auf den Wurzeln von *Cotoneaster*. Nur bekannt von der Typus-Lokalität in den Niederlanden und einer zusätzlichen Aufsammlung von der Tschechischen Republik.

12a. *Hemimycena crispula* (Quél.) Singer var. *crispula*

Hut 2–5 (10) mm, halbkugelig, konisch-konvex bis konvex, weiß, deutlich feinhaarig bis haarig (Lupe). **Lamellen** ziemlich engstehend, $L = 6-10$, $l = 0$, herablaufend, den Hutrand nicht erreichend, gewöhnlich faltenähnlich, bei jungen Exemplaren manchmal praktisch fehlend, weiß, mit gleichfarbig behaarter Schneide. **Stiel** $6-7$ (12) $\times 0.2-0.5$ mm, weiß, deutlich feinhaarig bis haarig (Lupe), ohne striegeligen Haaren an der Basis. **Sporen** $6.5-8.5$ (11.0) $\times 4.0-4.7$ (5.5) μm , ellipsoid, fast mandelförmig, dünnwandig, hyalin. **Basidien** 2-sporig, **Cheilozystiden** fehlend. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** (11) $35-71 \times 3.0-5.5$ μm , zylindrisch, schmal flaschenförmig, pfriemenförmig, manchmal unregelmäßig, abgestumpft, etwas dickwandig. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** zahlreich, $30-90 \times (3.5) 4.5-7.0$ μm , pfriemenförmig, \pm flaschenförmig oder zylindrisch, stumpf bis fast spitz, selten scharfrandig, borstenförmig, etwas dickwandig (0.5–1.5 μm). **Schnallen** vorhanden.

Auf Ästchen und Blättern von Laubbäumen, selten Nadelbäumen, auch auf Gras und Pflanzenresten. Verbreitet.

12b. *Hemimycena crispula* var. *tetraspora* Antonín & Noordel.

Unterscheidet sich von der Typus-Varietät nur durch die konstant 4-sporigen Basidien. Andere Merkmale passen gut zur Typus-Varietät. Auch die Ökologie gleicht der der typischen Varietät.

13. *Hemimycena pseudocrispula* (Kühner) Singer

Hut 2–10 mm, sich glockenförmig ausbreitend bis konvex oder abgeflacht, niedergedrückt, stumpf oder etwas papillös im Zentrum, mit abwärts gebogenem, dann etwas aufgebogenem, gewelltem Hutrand, weiß, trocken zum Rand hin blass gelb werdend, scheinbar beinahe kahl bis fein filzig (Lupe). **Lamellen** sehr entferntstehend, $L = 8-10$, $l = (0) 1$, herablaufend, weiß, mit gleichfarbiger, fast ganzrandiger Schneide. **Stiel** $10-35 \times 0.25-0.5$ mm, milchig-weiß, feinhaarig mit steifen Haaren (Lupe), zur Basis hin deutlicher, ohne basales Myzel. **Sporen** $8.0-11.5 \times (3.5) 4.0-5.5$ μm , ellipsoid bis länglich, \pm verschmälert zum Apikulus hin oder \pm spindelförmig, dünnwandig, hyalin. **Basidien** 4-sporig, keulig. **Cheilo-** und **Pleurozystiden** fehlend. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileo-**

zystiden fehlend oder meist vereinzelt, kurz (nur bis zu $35 \times 4.0\text{--}5.0 \mu\text{m}$), vor allem nahe dem Hutrand vorhanden. **Stipitipellis** eine Schicht glatter oder fein ausgestülpter Hyphen. **Caulozystiden** am Scheitel $7.0\text{--}50 \times 3.0\text{--}9.0$ (11) μm , pfriemen- bis fast flaschenförmig, \pm spitz (Scheitel $1.0\text{--}2.0 \mu\text{m}$ breit). **Schnallen** vorhanden.

Auf verfaulenden Blättern von Gräsern und Kräutern. Wahrscheinlich verbreitet, aber sehr selten registriert.

14. *Hemimycena crispuloides* Antonín & Noordel.

Hut 2–5 mm, glockenförmig-konvex, mit kleinem Nabel oder nur etwas niedergedrückter Mitte, mit eingeroltem, dann eingebogenen Hutrand, hygrophan, durchscheinend gerieft, fein filzig bis fast kahl, weiß. **Lamellen** entferntstehend, $L = 9\text{--}15$, $l = 1$ (2), gut entwickelt, aber manchmal den Hutrand nicht erreichend, bogig, herablaufend, weiß, mit gleichfarbiger, leicht feinhaariger Schneide. Stiel $10\text{--}17 \times 0.3\text{--}0.6$ mm, zylindrisch, zur Basis hin und am Scheitel etwas verbreitert, weiß, hyalin, gänzlich fein flaumig, zur Basis hin deutlicher, ohne Basal-Rhizoide. **Sporen** $9.0\text{--}13 \times 4.2\text{--}6.5$ (7.2) μm , breit ellipsoid, \pm fusoid, hyalin, dünnwandig. **Basidien** 2-sporig. **Cheilozystiden** vorhanden, aber vereinzelt, $14\text{--}33 \times 4.5\text{--}8.0 \mu\text{m}$, \pm zylindrisch, \pm flaschenförmig, schmal keulig, im oberen Teil meist ausgestülpt, nur selten unregelmäßig, zwischen den Basidien dünnwandige Zellen gemischt. **Pileipellis** eine Schicht ausgestülpter Hyphen. Keine **Pileozystiden**. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** zahlreich, $17\text{--}35 \times 5.5\text{--}10.0 \mu\text{m}$, flaschen- bis ein wenig pfriemenförmig, dickwandig, und größere, $22\text{--}120 \times (4.5) 8.0\text{--}12 \mu\text{m}$, borsten-, flaschen- bis pfriemenförmig, mit \pm spitzem Scheitel, dickwandig, zur Basis hin hyalin. **Schnallen** fehlend.

Auf verfaulenden Stengeln von *Petasites* in submontanem Nadelwald (*Picea*). Bisher nur aus der Tschechischen Republik und der Slowakei bekannt.

15. *Hemimycena subtilis* (Velen.) Antonín comb. nov.

Hut 0.5–5 mm, halbkugelig, dann konvex oder abgeflacht, stumpf, selten mit einer kleinen Papille, aber gewöhnlich wie abgeschnitten, oft niedergedrückt oder trichterförmig, weiß, scheinbar kahl, aber unter der Lupe fein bereift, oft gefurcht an der Rückseite der Lamellen. **Lamellen** gewöhnlich fehlend, selten sind ein paar (bis zu 6) aderartige Falten vorhanden, die auf der Hälfte des Hutes enden, nie den Stiel erreichend, weiß. **Stiel** $2\text{--}20 \times 0.1\text{--}0.4$ mm, fadenförmig, oft wellig, am Scheitel ein wenig verbreitert, weiß, gänzlich von sehr feinen, kurzen Haaren umgeben (Lupe). **Fleisch** sehr dünn. Ohne **Geruch** und **Geschmack**. **Sporen** $10\text{--}16 \times 3.5\text{--}5.0 \mu\text{m}$, spindelförmig bis keulig-spindelförmig, zum Apikulus hin verschmälert. **Basidien** 2-sporig, keulig. **Cheilo-** und **Pleurozystiden** fehlend. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** bis zu 100 μm lang, an der Basis 20–30 μm groß, borstenförmig, pfriemenförmig, verschmälert zu einem spitzen Scheitel, dickwandig. **Stipitipellis** eine Schicht ausgestülpter Hyphen. **Caulozystiden** reichlich, pfriemenförmig, borstenförmig, dickwandig, im oberen Teil des Stiels bis zu bis zu 50 μm lang, aber beträchtlich länger im basalen Teil des Stiels (bis zu 130 μm), dickwandig. **Schnallen** fehlend.

Auf Resten krautiger Pflanzen, Seggen etc. (z.B. *Carex*, *Scirpus*, *Sparganium*) an sumpfigen Orten. Verbreitet, selten.

16. *Hemimycena angustispora* (P. D. Orton) Singer

Hut (2) 5–9 (15) mm, konisch-konvex bis konvex-abgeflacht, dann sich ausbreitend, hygrophan, durchscheinend gerieft, weiß, kahl für das bloße Auge, aber deutlich flaumig unter der Lupe. **Lamellen**

mäßig engstehend bis ziemlich entferntstehend, $L = 6-12$, $l = 0-3$, gut entwickelt, den Hutrand erreichend, nie aderartig, bogig-angewachsen bis bogig-herablaufend, weiß. **Stiel** $5-25 \times 0.2-1$ mm, weiß, dann nahe der Basis blass braun oder gelb-braun getönt, gänzlich fein flaumig, zur Basis hin mit striegelligen Haaren. **Sporen** (7.5) $8.0-11.5 (12) \times 2.5-3.5$ μm , schmal zylindrisch bis spindelförmig, gewöhnlich in Tetraden erscheinend. **Basidien** 4-sporig. **Cheilo-** und **Pleurozystiden vorhanden**. **Pileipellis** eine Schicht glatter Hyphen. **Pileozystiden** $35-91 \times 4.5-8.0 (10.0)$ μm , pfriemenförmig, borstenförmig. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** (16) $25-78 \times 3.5-8.0 (10.0)$ μm , pfriemenförmig, borstenförmig. **Schnallen** vorhanden.

Auf Blättern, Cupulen oder kleinen Ästchen von *Fagus* und *Quercus*, gefunden auch auf Resten krautiger Pflanzen, in verschiedenen Vegetationstypen. In West- und Mitteleuropa überall vereinzelt.

17. *Hemimycena tatrensis* ad int.

Hut $3.5-5$ mm, niedrig konvex, mit \pm abgeflachtem Zentrum mit einer deutlichen Papille, hygrophan, nicht durchscheinend gerieft oder nur etwas am Hutrand, weiß, fein radial gefältelt, fein filzig. **Lamellen** entferntstehend, $L = 12-15$, $l = 0-1$, Zwischenlamellen manchmal aderig, bogig, herablaufend, manchmal verästelt, besonders nahe dem Hutrand, oft den Hutrand nicht erreichend, weiß, mit gleichfarbiger, fein filziger Schneide. **Stiel** $10-11 \times 0.5$ mm, weiß, hyalin, gänzlich fein flaumig, ohne basale Rhizoide. **Sporen** $12.5-15 \times (3.7) 4.0-5.0$ μm , schmal fusoid, \pm zylindrisch, hyalin. **Basidien** 2-sporig, keulig. **Cheilo-** und **Pleurozystiden** nicht gefunden. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** $18-30 \times 2.5-5.0$ μm , dünnwandig, zylindrisch bis schmal keulig, subfusoid, \pm flaschenförmig, unverzweigt, an der Spitze unregelmäßig verzweigt. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** zahlreich, an der Spitze bis zu 22×5.0 μm , fingerförmig, \pm keulig, dünnwandig, gegen Basis $32-73 \times 5.0-13$ μm , pfriemenförmig, flaschenförmig, etwas dickwandig, oft mit einer schleimigen Haube. **Schnallen** fehlend.

Auf verfaulenden Blättern von *Petasites*. Nur von der Typus-Lokalität in der Slowakei.

18. *Hemimycena tortuosa* (P. D. Orton) Redhead

Hut $0.5-8$ mm, halbkugelig, konisch-konvex oder konvex, schwach hygrophan, etwas durchscheinend gerieft, weiß, sich im Alter von elfenbeinfarben oder cremefarben zu blass-grau verfärbend, fein flaumig (Lupe), die Haare in feuchtem Zustand oft Wassertropfen haltend. **Lamellen** entferntstehend bis ziemlich engstehend, $L = 12-20$, $l = 1-3 (7)$, angewachsen, manchmal mit kleinem Zahn herablaufend oder beinahe frei, gut entwickelt, den Hutrand erreichend, schmal, bei größeren Exemplaren manchmal gekräuselt, weiß, mit gleichfarbiger, gänzlich oder fein flockig-gezählter Schneide (Lupe). **Stiel** $1-27 \times 0.1-1$ mm, weiß, gänzlich fein flaumig (Lupe), die Haare in feuchtem Zustand oft Wassertropfen haltend, manchmal mit kurzen, myzelialen Strängen an der Basis, weiß. **Sporen** (8.5) $9.0-11 \times 2.5-4.5$ μm , schmal spindelförmig bis tropfenförmig, selten subzylindrisch, dünnwandig, glatt, hyalin. **Basidien** 2- und 4-, selten 1-sporig. **Cheilo-** und **Pleurozystiden** $22-27 (31) \times 4.0-8.0$ μm , flaschenförmig, \pm spindelförmig oder keulig, selten pfriemenförmig, \pm dünnwandig, geschnäbelt, \pm spitz, Schnabel gewöhnlich etwas perlschnurartig. **Pleurozystiden** sehr selten, den Cheilozystiden ähnlich. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** $30-68 \times 4.0-8.5$ μm , zylindrisch bis \pm flaschenförmig, dünn- bis etwas dickwandig, oft kopfig, Köpfchen $5.0-10.0$ μm groß, mit oft spiralförmig gedrehtem Hals und oft ausgestülptem basalem Teil. **Schnallen** vorhanden.

Gesellig auf Rinde und liegendem, verfaulendem Holz von Laub- und Nadelbäumen, manchmal an der Unterseite; stets an sehr nassen Orten. Verbreitet, aber selten in West-Europa.

19. *Hemimycena candida* (Bres.) Singer

Hut 3–20 mm, halbkugelig bis konvex, sich ausbreitend, hygrophan, am Hutrand durchscheinend gerieft oder zur Mitte hin weiß, hyalin, sehr fein flaumig bis fast filzig (Lupe). **Lamellen** mäßig entferntstehend bis entferntstehend, L = 17–22, l = 0–2, tief herablaufend, schmal, bogig, gut entwickelt, den Hutrand erreichend, weiß, mit gleichfarbiger, fein flaumiger Schneide. **Stiel** (15) 20–48 (70) × 0.7–1.2 mm, weiß, gänzlich fein flaumig (Lupe), basal gewöhnlich mit radialen, striegeligen Haaren. **Sporen** 8.0–10.5 (11) × (3.1) 4.0–5.0 µm, spindel- oder zitronen- bis fast tropfenförmig, dünnwandig, hyalin. **Basidien** 4-sporig. **Cheilozystiden** (19) 24–31 × 3.0–10 µm, pfriemen- bis fast flaschenförmig, geschnäbelt, abgerundet, oft etwas unregelmäßig bis fast perlschnurartig, etwas dickwandig. **Pileipellis** eine Schicht schwach ausgestülpter Hyphen. **Pileozystiden** 11.5–25.5 × 2.3–3.8 µm, zylindrisch, keulig bis subfusoid, abgerundet, oft etwas unregelmäßig. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** (Spitze) 14–31 × 2.3–5.0 µm, ± flaschenförmig, ± sackförmig, pfriemenförmig, keulig oder zylindrisch, oft unregelmäßig, abgestumpft, selten verästelt, oft etwas dickwandig. **Schnallen** vorhanden.

In Gruppen auf verfaulenden Stengeln von *Symphytum officinale*. In Europa überall verbreitet.

20a. *Hemimycena delectabilis* (Peck) Singer var. *delectabilis*

Hut 4–16 mm, konisch bis glockenförmig, in der Mitte ± deutlich gebuckelt, jung mit eingebogenem bis etwas eingerolltem Hutrand, dann breit konisch oder glockenförmig, mit abgestumpftem, abgeflachtem oder etwas niedergedrücktem Zentrum, mit geradem oder etwas aufgebogenem Hutrand, der im Alter feingekerbt oder zerrissen sein kann, hygrophan, durchscheinend gerieft bis zum Zentrum, weiß, feucht mit etwas wässrig gräulicher oder gelblicher Färbung im Zentrum, fein filzig (Lupe), manchmal kahl. **Lamellen** entferntstehend, L = 12–20 (30) l = 1–2, bogig bis dreieckig, breit angewachsen bis deutlich herablaufend, gut entwickelt, gewöhnlich den Hutrand erreichend, im Alter adrig verbunden, mit gleichfarbiger, fein flaumiger Schneide. **Stiel** 15–45 × 0.5–1.5 mm, zylindrisch, etwas verbreitert am Scheitel, zylindrisch bis etwas verbreitert an der Basis, hyalin, weiß bis gelblich, gänzlich fein haarig, mit gut entwickelten Basal-Rhizoiden. **Geruch** stark, nitrös. **Geschmack** bitter. **Sporen** 7.0–9.0 (9.5) × (3.5) 4.5–5.5 (6.0) µm, ellipsoid, breit ellipsoid, ellipsoid-fusoid, dünnwandig, glatt, hyalin. 4-sporig. **Hymenialzystiden** zahlreich, (30) 37–52 (65) × 8.0–16 µm, flaschenförmig bis fusoid, mit abgerundetem, manchmal unregelmäßigem oder fast kopfigem Scheitel, dünnwandig. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** fehlend. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** 30–65 × 5.5–8.0 (10.0) µm, flaschenförmig, fusoid oder zylindrisch und kopfig, mit abgerundetem, manchmal unregelmäßigem bis fast kopfigem Schnabel, manchmal unregelmäßig, etwas dickwandig. **Schnallen** vorhanden.

Gesellig auf Resten von verschiedenen Gräsern, Pflanzen und Holz. In Europa verbreitet.

20b. *Hemimycena delectabilis* var. *bispora* (Kühner) Antonín

Unterscheidet sich vom Typus durch 2-sporige Basidien und 8.5–11.0 × 4.5–6.0 (7.0) µm große Sporen.

20c. *Hemimycena delectabilis* var. *paucicystidiata* Gulden & Jensen

Unterscheidet sich von der Typus-Varietät durch etwas größere Sporen, Hymenialzystiden mit längerem und schmalerem Schnabel, vereinzelte Caulozystiden und alpine Verbreitung. Bisher nur aus Norwegen bekannt.

21. *Hemimycena subglobispora* Aronsen

Hut 1–5 mm, halbkugelig bis konvex, sich ausbreitend, hygrophan, durchscheinend gerieft, weiß, bereift. **Lamellen** sehr entferntstehend, $L = 4–7$, $l = 0$, breit angewachsen bis herablaufend, mit konkaver Schneide, manchmal geädert, nicht immer voll entwickelt, gelegentlich ein- oder zweifach gegabelt, weiß. **Stiel** 8–11 (15) mm lang, fädig, zylindrisch, gewöhnlich etwas gebogen, weiß, im Alter manchmal gelblich von der Basis aufwärts, hyalin, teilweise flaumig im unteren Teil, ohne basale Haare. **Sporen** (5.5) 6.0–7.5 (8.0) \times 5.0–6.5 (7.0) μm , fast kugelig bis kugelig. Basidien 4-sporig. **Hymenialzystiden** 21–40 \times 6.0–9.0 (11) μm , keulig, breit keulig, blasenförmig, fusoid, fast sackförmig, dünnwandig, oft mit einem langen, dünnen, stumpfen bis fast spitzen, manchmal verästelten, bis zu 20 (25) \times 1.2 (2.0) μm großen Schnabel. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** (13) 22–40 \times 3.0–10.0 μm , ähnlich den Cheilozystiden. **Stipitipellis** eine Schicht glatter, selten ausgestülpter Hyphen. **Caulozystiden** 16–35 \times (2.5) 4.0–7.0 (11) μm , Hals bis zu 25 \times 2.0 μm , ähnlich den Hymenialzystiden. **Schnallen** vorhanden.

Auf verfaulenden, wasserdurchtränkten Stengeln von *Phragmites australis*. Bekannt nur von der Typus-Lokalität in Norwegen und einem Fund in Frankreich.

22. *Hemimycena substellata* (Kühner) Antonín & Noordel.

Hut 1.5–5 mm, abgestumpft halbkugelig, dann konvex, weiß, im Alter etwas gefurcht, dicht kurz feinhaarig (Lupe). **Lamellen** $L = 5–13$, $l = 0–1$, angewachsen bis fast herablaufend, bogig, manchmal gegabelt, nicht gefaltet, bei den meisten Exemplaren den Hutrand erreichend, rein weiß mit gleichfarbiger Schneide. **Stiel** 2–11 (14) \times 0.2–0.6 mm, weiß, dicht bereift über die ganze Länge, zur Basis hin mit längeren Haaren, aber Basis nicht deutlich striegelig. **Sporen** 5.0–7.5 \times 2.7–4.0 μm , sehr stumpf ellipsoid, manchmal kurz, dann sich mehr verlängernd, ellipsoid bis zylindrisch, manchmal fast oval. **Basidien** 4-sporig. **Lamellenrand** entweder fertil oder mit zahlreichen, sich verjüngend-peitschenförmigen Cheilozystiden mit angeschwollener Basis, 20–45 \times 10–12 \times 1.0 μm . **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** 37–50 \times 1.3–2.0 μm , dünnwandig, sich verjüngend-peitschenförmig. **Stipitipellis** eine Schicht ausgestülpter Hyphen. **Caulozystiden** peitschenförmig, 60–100 \times 4.7 \times 0.7–1.5 μm , dünnwandig, nur an der untersten Basis manchmal etwas dickwandig. **Schnallen** vorhanden.

In kleinen Gruppen auf Nadeln oder entrindetem Holz von Nadelbäumen, meist (aber nicht ausschließlich) in montanen Regionen. Sehr selten.

23. *Hemimycena cryptomeriae* Noordel. & Antonín

Hut 8–12 (13) mm, halbkugelig bis konvex, meist mit schwachem Buckel, feucht durchscheinend gerieft bis zum halben Radius, trocken undurchsichtig, nicht gänzlich weiß, sondern feucht mit sehr leicht grauer oder ockerlicher Färbung. **Lamellen** mäßig entferntstehend, $L =$ etwa 20, $l = 1–3$, am Stiel stark bogig herablaufend, weiß, mit glatter, gleichfarbiger Schneide, gut entwickelt, aber manchmal den Hutrand nicht gänzlich erreichend. **Stiel** 15–45 (30) \times 0.8–1.2 mm, zylindrisch, hyalin, gräulich weiß, überall sehr fein bereift-flockig (Lupe). **Sporen** 5.5–7.0 \times 1.5–4.0 μm , breit ellipsoid bis ellipsoid. **Basidien** 4-sporig. **Cheilo-** und **Pleurozystiden** fehlend. **Pileipellis** eine Schicht ausgestülpter Hyphen mit wenigen bis reichlich fingerartigen oder zystidioiden Auswüchsen, 3.0–15 (25) \times 1.5–3.5 μm , manchmal den Pileozystiden ähnelnd. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** 10–35 \times 7.0–10 μm , keulig bis zylindrisch, manchmal etwas inkrustiert, im unteren Drittel des Stiels sich verschmälernde Haare vorhanden, 60–90 \times 4.0–7.0 μm , mit etwas bis deutlich verdickten Wänden. **Schnallen** vorhanden.

Auf Resten von *Cryptomeria japonica* in einem Garten. Selten, nur bekannt von der Typus-Lokalität.

24. *Hemimycena ignobilis* Joss. ex Bon

Hut 3–6 mm, zuerst abgeschnitten konisch, sich ausbreitend, hygrophan, nicht durchscheinend gerieft, rein weiß, trocken, kahl, matt. **Lamellen** entferntstehend, L = etwa 10, l = 0–1, bogig tief herablaufend, gut entwickelt, den Hutrand erreichend, schmal bis ziemlich breit, etwas gegabelt und/oder anastomosierend, weiß. **Stiel** 6–16 × 0.6–1 mm, zylindrisch, gerade oder an der Basis etwas verbreitert, aber nie knollig verdickt, schlank, aber nicht fädig, oft kurz, weiß, hyalin, kahl (auch unter der Lupe), trocken. **Sporen** (8.5) 9.0–11.5 (14) × (4.0) 4.5–6.0 (6.2) µm, länglich bis breit spindelförmig. **Basidien** 4-sporig. **Cheilo-** und **Pleurozystiden** fehlend. **Pileipellis** eine Schicht glatter oder etwas ausgestülpter Hyphen. **Pileozystiden** fehlend. **Stipitipellis** eine Schicht von glatter Hyphen. **Caulozystiden** fehlend. **Schnallen** vorhanden.

Meist vereinzelt, auf nacktem Boden. Selten, verbreitet.

25. *Hemimycena crispata* (Kühner) Singer

Hut 2–13 mm, glockenförmig, sich verbreiternd bis konvex oder abgeflacht, stumpf oder mit einem stumpfen Buckel, nie genabelt, hygrophan, etwas durchscheinend gerieft, weiß, praktisch kahl. **Lamellen** entferntstehend, L = 9–15, l = 0–1, bogig-herablaufend, gut entwickelt, den Hutrand erreichend, manchmal aderig gegen die Hutunterseite, weiß, mit gleichfarbiger Schneide. **Stiel** 10–25 × 0.5–2.0 mm, weiß, kurz flaumig bis haarig (Lupe), ohne basale Haare. **Sporen** 7.5–9.0 (10) × 2.0–4.5 µm, ± zylindrisch, spindel- oder apfelkernförmig. **Basidien** 4-sporig. **Lamellenrand** heterogen, selten komplett steril. **Cheilozystiden** 20–40 × 4.0–7.0 µm, ± zylindrisch oder flaschenförmig, selten etwas korallenförmig. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** fehlend. **Stipitipellis** eine Schicht ausgestülpter Hyphen. **Caulozystiden** reichlich, 10–48 × 3.0–6.0 µm, zylindrisch-wellig, oft ausgestülpt oder fast korallenförmig. **Schnallen** vorhanden.

26. *Hemimycena epichloe* (Kühner) Singer

Hut 2–8 mm, zuerst glockenförmig, bald konvex bis abgeflacht, im Alter nabelförmig werdend, eventuell trichterförmig, rein weiß, nicht durchscheinend gerieft, kahl. **Lamellen** entferntstehend, L = 3–10, l = 0, bogig, stark herablaufend, aderartig, gewöhnlich nicht den Hutrand erreichend, manchmal den Hut nur halb erreichend, weiß. **Stiel** bis zu 20 × 0.3–0.5 mm, weiß, hyalin, überall fein bereift, an der Basis mit bis zu 0.4 mm langen, hyalinen, streigeligen Haaren. **Basidien** 4-sporig, selten gemischt mit 2-sporigen. **Cheilo-** und **Pleurozystiden** fehlend. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** fehlend. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** einzeln oder in Gruppen, 10–40 × 2.0–6.0 µm, ± zylindrisch, größere oft gewellt, mit rundem, manchmal fast kopfigem Scheitel, zur Basis hin dichter. **Schnallen** vorhanden.

Auf toten Blättern und Stengeln von Gräsern, auf Blattscheiden von *Juncus* sp. und *Scirpus lacustris*, in Rasen, Marschen etc., und auf Blättern von *Carex* und Poaceae in offenen Graslandschaften und *Caricetea*-Standorten. Verbreitet, aber Verbreitung sehr wenig bekannt.

27. *Hemimycena gracilis* (Quél.) Singer

Hut 1.5–10 (14) mm, jung halbkugelig oder glockenförmig-konisch, sich ausbreitend bis konvex, hygrophan, durchscheinend gerieft bis mindestens zum halben Radius, weiß, fein filzig, manchmal fast striegelig am Hutrand. **Lamellen** entferntstehend, L = 9–15, l = 0–2, bogig, breit angewachsen oder öfter kurz aber deutlich herablaufend, gut entwickelt, den Hutrand erreichend, im Alter etwas aderig, weiß, mit gleichfarbiger, fein bereifter Schneide. **Stiel** 15–40 (50) × 0.3–0.7 mm, hyalin, weiß,

gänzlich fein filzig-striegelig, basal mit deutlichen, bis zu 1 mm langen Rhizoiden. **Sporen** (7.0) $8.0\text{--}11$ (12) \times $2.2\text{--}3.2$ μm , zylindrisch bis zylindrisch-ellipsoid, selten fast allantoid, dünnwandig, hyalin. **Basidien** 4-sporig. **Cheilozystiden** (16) $18\text{--}23$ (27) \times $4.5\text{--}7.0$ μm , zylindrisch, keulig, subfusoid, fast sackförmig, oft unregelmäßig, etwas dickwandig. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** ziemlich häufig bis vereinzelt, $10.0\text{--}19$ \times $2.0\text{--}4.0$ μm , keulig, fast sackförmig, subzylindrisch, fast flaschenförmig, unregelmäßig, manchmal verzweigt, etwas dickwandig. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** $12\text{--}25$ \times (3.0) $3.5\text{--}5.0$ (6.0) μm , zylindrisch, keulig, unregelmäßig, manchmal perlschnurartig, etwas dickwandig. **Schnallen** vorhanden.

Gesellig, auf Nadeln von *Picea*, weniger häufig auf *Pinus* und *Abies*, selten auf Blättern (*Fagus*) oder auf Pflanzenresten, oft an feuchten Plätzen, in *Sphagnum* oder unter Birken in feuchten Nadelwäldern.

28. *Hemimycena pseudogracilis* (Kühner & Maire) Singer

Hut 4–6 mm, glockenförmig, mit kleinem Buckel, sich im Alter ausbreitend, hygrophan, feucht kaum bis deutlich durchscheinend gerieft, weiß, kahl. **Lamellen** entferntstehend, $L = 10\text{--}13$, $l = 0\text{--}1$, angewachsen-herablaufend, bogig, gut oder schwach entwickelt, aber den Hutrand nicht erreichend, weiß mit ganzer, gleichfarbiger Schneide. **Stiel** $20\text{--}35$ \times $0.5\text{--}1.5$ mm, hyalin, weiß, praktisch kahl (Lupe), an der Basis mit radialen Rhizoiden. **Sporen** $7.5\text{--}9.5$ (10.0) \times $3.0\text{--}4.0$ μm , fast zylindrisch, subfusoid, tropfenförmig, hyalin. **Basidien** 4-sporig, keulig. **Cheilo-** und **Pleurozystiden** fehlend. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** fehlend. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** vereinzelt bis selten, $18\text{--}35$ \times $4.0\text{--}7.0$ (12) μm , einfach, zylindrisch, keulig bis subfusoid, manchmal unregelmäßig, dünn- bis sehr leicht dickwandig. **Schnallen** vorhanden.

Auf Blättern, im Humus und auf kleinen Wurzeln in Laubwäldern. Selten.

29. *Hemimycena pithyophila* (Malençon ex Redhead) Antonín & Noordel.

Fruchtkörper gänzlich rein weiß, manchmal mit gelblicher Färbung. **Hut** sehr klein, 2–4 mm, zuerst kugelig, dann eiförmig bis halbkugelig, sich ausbreitend bis glockenförmig, zuletzt konvex, mit stumpfer bis etwas gebuckelter Mitte, mit eingebogenem, dann geradem, zuletzt feingekerbtem Hutrand, hygrophan, leicht durchscheinend gerieft am Hutrand, weiß, manchmal mit gelblicher Färbung, stumpf, kahl. **Lamellen** entferntstehend, $L = 4\text{--}10$, Lamelletten vorhanden, herablaufend, dreieckig, gut entwickelt, den Hutrand erreichend, weiß mit konkaver, ganzer, gleichfarbiger Schneide. **Stiel** $6\text{--}20$ \times 0.5 mm, weiß, hyalin, kurzhaarig, mit Rhizoiden an der Basis. **Sporen** $10.5\text{--}12$ (13) \times $4.0\text{--}5.2$ μm , zylindrisch, tropfenförmig, fast spindelförmig, hyalin, glatt, oft in Tetraden oder Paaren. **Basidien** 2-, selten 4-sporig. **Cheilo-** und **Pleurozystiden** fehlend. **Pileipellis** eine Schicht glatter bis ausgestülpter Hyphen. **Pileozystiden** fehlend. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** $12\text{--}36$ \times $4.0\text{--}8.0$ μm , keulig, \pm zylindrisch, oft kopfig, etwas dickwandig, hyalin, manchmal in Gruppen. **Schnallen** fehlend.

Gesellig auf Nadeln und anderen Abfällen von Nadelbäumen. Selten, Mittelmeerraum.

30. *Hemimycena persimilis* (Malençon ex Redhead) Antonín & Noordel.

Hut 3–10 mm, halbkugelig, dann konvex, mit abgestumpfter oder gebuckelter Mitte, mit eingebogenem, dann aufgebogenem, ganzem, dann feingekerbtem Hutrand, hygrophan, durchscheinend gerieft, rein weiß oder milchig weiß, radial gefurcht, fast kahl bis fein samtig unter der Lupe, mit winzig bewimpertem Hutrand. **Lamellen** $L = 10\text{--}16$, $l = (0) 1$ (2), mäßig engstehend, angewachsen oder kurz mit Zahn herablaufend, gut entwickelt, den Hutrand erreichend, weißlich cremefarben, mit

gleichfarbiger ganzer Schneide. **Stiel** 15–40 × 0.5–0.75 mm, weiß, zur Basis hin mit etwas gelber Färbung, gänzlich flaumig, mit weißen Rhizoiden an der Basis. **Sporen** 10.0–12.5 × 2.7–3.5 µm, zylindrisch, schmal tropfenförmig bis schmal keulig oder subfusoid, mit sich verjüngender und schräger Basis, schmal, hyalin. **Basidien** 4-sporig (selten auch 2- und 4-sporige gemischt). **Cheilozystiden** 12–25 × 3.0–5.0 µm, basidienartig, nicht gut voneinander abgegrenzt. **Pleurozystiden** 25–45 × 7.5–10.0 µm, zylindrisch bis subfusoid oder ± flaschenförmig, dünnwandig, oft sehr unauffällig. **Pileipellis** eine Schicht ausgestülpter Hyphen mit reichlich pileozystidioiden Endteilen, 12–40 × 3.0–7.0 (9.0) µm, von wechselnder Form, keulig, flaschenförmig, ± zylindrisch, oft unregelmäßig, manchmal mit kleinen, stumpfen Fortsätzen bis fast korallenförmig, dünnwandig. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** 15–45 × (3.0) 4.5–7.0 µm, zylindrisch, stumpf, unregelmäßig, etwas dickwandig, oft in Gruppen. **Schnallen** vorhanden.

Auf Mulm. Verbreitet, aber selten und übersehen.

31. *Hemimycena pseudocrispata* (Valla) Maas Geest.

Hut 3–10 mm, halbkugelig, glockenförmig, dann flach-konvex, meist mit einem kleinen Nabel, mit eingerolltem, dann eingebogenem Hutrand, hygrophon, durchscheinend gerieft, weiß, fein bereift-filzig. **Lamellen** entferntstehend, L = 9–15, l = 0–2, gut entwickelt, bogig, herablaufend, weiß, mit gleichfarbiger, fein flaumiger Schneide. **Stiel** 10–30 × 0.3–0.7 mm, weiß, hyalin, gänzlich fein flaumig. **Sporen** 8.0–9.5 (11) × 2.5–3.5 µm, schmal fusoid-ellipsoid, zylindrisch-ellipsoid, hyalin, dünnwandig. **Basidien** 2-sporig. **Cheilozystiden** fehlend oder undeutlich. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** fehlend. **Stipitipellis** eine Schicht glatter oder spärlich ausgestülpter Hyphen. **Caulozystiden** 11–32 × 2.5–6.0 µm, zylindrisch bis subfusoid, oft unregelmäßig bis fast korallenförmig, dünn- bis leicht dickwandig, hyalin. **Schnallen** fehlend.

Auf Blättern und Moosen (*Sphagnum*). Sehr selten.

32. *Hemimycena pseudogibba* (Valla) Antonín & Noordel.

Fruchtkörper ganz weiß, mit langem Stiel, sehr klein, fadenförmig mit sehr kleinem Hut. **Hut** 0.4–1.4 mm, breit konisch bis glockenförmig, dann halbkugelig und manchmal flach-konvex, etwas eingedrückt oder stumpf gebuckelt, weiß, matt, kahl, auch unter der Lupe. **Lamellen** fehlend oder sehr wenige (bis zu 4), reduziert zu einer aderartigen Struktur, die schon auf der Hälfte des Hutrandes verschwindet, weiß. **Stiel** 2–10 × 0.1–0.2 mm, sehr dünn, weiß, im oberen Teil bereift, oft etwas borstig im basalen Teil, ohne striegelige Haare. **Sporen** 10–12 × 3–4 µm, lang ellipsoid, mit verschmälterter Basis. **Basidien** 4-sporig oder gemischt 1-, 2- und 4-sporig. **Cheilo-** und **Pleurozystiden** fehlend. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** fehlend. **Stipitipellis** eine Schicht ausgestülpter Hyphen. **Caulozystiden** einfach, dünnwandig. **Schnallen** fehlend.

Gesellig auf Blättern von *Salix* und *Corylus*. Nur bekannt vom Typus-Standort in den französischen Alpen.

33. *Hemimycena subimmaculata* (Murrill) Elborne & Læssøe

Hut 2–8 mm, breit konisch mit spitzem Zentrum, mit eingerolltem Hutrand, dann sich ausbreitend bis konvex mit oder ohne leicht eingedrücktem Zentrum, mit abwärts gebogenem Hutrand, weiß, nicht zu deutlich durchscheinend gerieft nahe dem Zentrum, glatt oder leicht gefältelt, kahl. **Lamellen** entferntstehend, L = 10–11, l = 0–1, lang herablaufend, gut entwickelt, aber den Hutrand nicht immer erreichend, ziemlich schmal, weiß mit gleichfarbiger Schneide. **Stiel** 10–20 × 0.3–0.5 mm, weiß, kahl

erscheinend oder winzig weißlich-bereift (Lupe), ohne basale Rhizoiden. **Sporen** (9.0) 10–14.5 (15) × (3.5) 4.0–5.0 (5.5) µm, spindelförmig, fast tropfenförmig, hyalin. **Basidien** 4-sporig. **Cheilo-** und **Pleurozystiden** 21–35 × 5.0–7.0 µm, spindelförmig, ± spindelförmig, selten ± flaschenförmig oder zylindrisch, oft geschnäbelt, abgerundet bis fast spitz, manchmal mit einer mukronaten Haube, dünnwandig. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** 12–40 × 4.5–6.0 µm, keulig, zylindrisch, subfusoid, ± dünnwandig, oft mit einer mukronaten Haube. **Stipitipellis** eine Schicht glatter oder manchmal ausgestülpter Hyphen. **Caulozystiden** 15–65 × 2.5–7.0 µm, zylindrisch, keulig, fast flaschen- oder pfriemenförmig, oft verzweigt oder unregelmäßig (v.a. an der Basis), etwas dickwandig, manchmal mit einer mukronaten Haube. **Schnallen** vorhanden.

Auf abgestorbenen Blättern oder Stengeln von *Petasites*, auf herabgefallenen Blättern von *Alnus*, *Salix* und *Corylus*, und auf Farnwedeln (*Athyrium*, *Dryopteris*), in subalpinen Gebüschern von *Pinus mugo* oder an Standorten verschiedener Laubbäume (*Alnus*, *Salix* und *Corylus*). Verbreitet, selten.

34. *Hemimycena nitriolens* (Valla) Antonín & Noordel.

Fruchtkörper gänzlich weiß, nicht brüchig, mit einem Stiel, der im Vergleich zum kleinen Hut sehr lang ist. **Hut** 1–3 (4) mm, membranös, fast halbkugelig, dann breit konisch bis flach-konvex, mit eingerolltem, dann abwärts gebogenem Hutrand, immer mit einem relativ großen spitzigen Buckel, oft sehr unregelmäßig geformt, feucht durchscheinend gerieft, weiß, oft etwas runzelig bis gefurcht, unter der Lupe bereift, manchmal tränend, wie *H. mauretana*. **Lamellen** L = 0–3–5 (7), l = 0–2, stark reduziert, manchmal fehlend, gewöhnlich nur aderartig, den Hutrand nicht erreichend, selten vollständig, selten gegabelt, weiß, mit glatter Schneide. **Stiel** 4–15 × 0.2–0.5 mm, weiß, hyalin, unter der Lupe mit feinem Reif, an der Basis mit weißen bis bräunlichen Rhizoiden. **Geruch** nitros, wenn auch nicht immer sehr deutlich. **Sporen** 6.0–8.0 (10) × (1.5) 2–4 µm, schmal ellipsoid bis zylindrisch. **Basidien** 4-sporig. **Hymenialzystiden** fehlend. **Pileipellis** eine Schicht ausgestülpter Hyphen. **Pileozystiden** fehlend. **Stipitipellis** eine Schicht ausgestülpter Hyphen. **Caulozystiden** 14–25 × 5–8 µm, dünnwandig, unregelmäßig geformt, oft ± flaschenförmig, mit stumpfem Scheitel, manchmal etwas korallenförmig mit wenigen Ausstülpungen. **Schnallen** vorhanden.

Auf abgefallenen Blättern von *Betula* an subalpinen Standorten (Typus); gefunden auch auf Resten von *Fagus* und *Quercus* im Wald. Sehr selten, bisher nur bekannt aus Frankreich und Belgien.

2. *DELICATULA* Fayod

1. *Delicatula integrella* (Pers.: Fr.) Pat.

Hut 3–17 mm, halbkugelig bis halbkugelig-glockenförmig, jung mit ± abgeflachtem oder etwas papillösem Zentrum, sich ausbreitend bis breit konisch oder konvex mit leicht gebuckeltem Zentrum, zuletzt unregelmäßig konvex oder abgeflacht, hygrophan, weiß, feucht durchscheinend gerieft, trocken undurchsichtig, radial gefältelt bis fast gefurcht, fein flaumig, verkahlend. **Lamellen** entferntstehend, L = 10–16 (18), l = (0) 1–3, breit angewachsen bis leicht mit Zahn herablaufend, bogig, oft reduziert und aderartig, oft den Hutrand nicht erreichend, aderig, weiß, mit gleichfarbiger, ± glatter Schneide. **Stiel** 8–22 × 0.4–1 (1.5) mm, weiß, hyalin, fein flaumig oder flockig, besonders im oberen Teil, im Alter verkahlend, jung matt, im Alter glänzend, mit deutlichen Rhizoiden an der Basis. In jungem Stadium Hülle deutlich (Primordium), später sichtbar als feine Flocken auf Hut und Stiel junger Exemplare, bei alten Fruchtkörper oft verschwunden. **Sporen** 7.5–10.5 × (4.0) 4.5–6.0 (6.5) µm, mandelförmig, fusoid, dünnwandig, glatt. **Basidien** 4-sporig. **Hymenialzystiden** fehlend. **Pileipellis** eine Schicht glatter Hyphen, umgeben von Velumresten, 150 (200) × 15 (17) µm, fusoid, (fast) geschnä-

belt, ± zylindrisch, schmal keulig, etwas dickwandig, manchmal unregelmäßig oder geschnäbelt, abgestumpft bis fast spitzig, selten verzweigt. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** fehlend, aber Velumreste vorhanden ähnlich denen auf der Hutoberfläche, 35–75 (151) × 7.5–11 (20) µm, keulig, ± zylindrisch oder fusoid, dünn- bis etwas dickwandig, an der Basis mit ± dickwandigen, zylindrischen, abgestumpften, manchmal verzweigten Haaren, 20–155 × 1.5–4.0 µm. **Schnallen** vorhanden.

Einzel oder gesellig auf nassem verfaulem Holz und holzigem Mulm von Laubbäumen, manchmal auch auf mit Moosen bewachsenen Stämmen und Rinde lebender Bäumen, selten auf Resten von Gräsern. Verbreitet.

3 *FAYODIA* Kühner

Schlüssel zu den europäischen Arten

- 1 Fruchtkörper mycenoid; Hut klein (bis zu 10 mm), dunkel gefärbt (sehr dunkel grau-braun bis schwärzlich braun, beim Trocknen zu dunkelbraun verblassend); Sporen 6.0–8.5 × 6.0–8.2 µm; Basidien 15–26 × 6.5–10 µm; Schnallen fehlend 2
- 1* Fruchtkörper mycenoid oder omphalioid; Hut klein bis größer (10–30 mm), immer blasser gefärbt (gräulich, bräunlich, blass rußbraun); Sporen größer (8–12 × 8–12 µm); Basidien größer (25–37 × 10–12 µm); Schnallen vorhanden; nicht an Feuerstellen 3
- 2 Hut gebuckelt, abgeflacht bis leicht herabgedrückt im Zentrum; Stiel bis zu 18 × 1.5 mm; Basidien 21–26 × 7.5–10.0 µm; Cheilozystiden flaschenförmig, ± zylindrisch oder subfusoid; auf Feuerstellen **2a. *F. anthracobia* var. *anthracobia*** (p. xxx)
- 2* Hut gebuckelt; Stiel 20–30 × 0.5 mm; Basidien 15–21 × 6.5–9.0 µm; Cheilozystiden keulig, breit keulig, sackförmig, weniger häufig ± zylindrisch; auf Torfboden wachsend **2b. *F. anthracobia* var. *bisphaerigerella*** (p. xxx)
- 3 Fruchtkörper mycenoid; Hut bis zu 12 mm, weiß-bräunlich, trocken weißlich, beige-gräulich bis grau-bräunlich, Lamellen entferntstehend, L = 7–8; Stiel 30–40 × 1 mm; Sporen 8.5–12.0 × 8.5–12.0 µm **3. *F. campanella*** (p. xxx)
- 3* Fruchtkörper omphalioid oder mycenoid; Hut 10–30 (40) mm, isabellfarben-braun, gräulich-braun oder rußbraun-grau; Lamellen enger (L = 15–22); Stiel 20–50 (80) × 2–3 (5) mm; Sporen (8.5) 9.0–11.0 (12.0) × (8.0) 9.0–11.0 (12.0) µm 4
- 4 Zystiden 35–80 × (6.0) 8.5–15 µm **1a. *F. bisphaerigera* var. *bisphaerigera*** (p. xxx)
- 4* Zystiden (40) 58–140 (180) × 7.0–12 µm **1b. *F. bisphaerigera* var. *longicystis*** (p. xxx)

1a. *Fayodia bisphaerigera* (J. Lange) Singer var. *bisphaerigera*

Hut 10–30 (40) mm, jung ± halbkugelig, dann konvex bis flach-konvex, mit abgeflachtem (v.a. jung) bis leicht nabelförmigem Zentrum, hygrophan, durchscheinend gerieft bis zu $\frac{3}{4}$ Ø, glatt, kahl oder fein radial faserig, isabellfarben-braun oder gräulich-braun, beim Trocknen verblassend. **Lamellen** fast entferntstehend, L = 15–25, l = 1–3 (7), breit angewachsen bis fast herablaufend, blass isabellfarben-braun oder gräulich. **Stiel** 20–50 (60) × 2–3 (5) mm, am Scheitel weiß, gleichfarbig mit dem Hut darunter, winzig ausgefranst, fast flockig bis deutlich kleiig an der Spitze, sonst glatt und kahl, glänzend. **Sporen** (8.0) 9.0–11.0 (12.0) × (8.0) 9.0–11.0 (12.0) µm, kugelig bis fast kugelig, deutlich zweischichtig, feinwarzig-stacheliges Epispore und glattes Perispore, Warzen bis zu 0.8 (1.0) µm hoch, hyalin in KOH. **Basidien** 2-sporig. **Cheilo-** und **Pleurozystiden** 35–80 (90) × (6.0) 8.5–17 µm,

keulig, sackförmig, ± flaschenförmig, ± zylindrisch, subfusoid, selten fast kopfig. **Pileipellis** eine Schicht dünn- bis leicht dickwandiger, inkrustierter, bis zu 7 µm breiter Hyphen mit schwärzlichen, gelblich-grauen oder gräulich-braunen Inkrustationen in KOH, mit angedrückten bis fast aufrechten, keuligen bis schmal fusoiden Endelementen. **Stipitipellis** eine Schicht glatter bis winzig inkrustierter Hyphen. **Caulozystiden** (an der Spitze) 69–140 × 11–15 µm, zylindrisch, schmal keulig, fast flaschenförmig, ± dünnwandig. **Schnallen** vorhanden.

Vereinzelt oder gesellig auf Nadel- und Blattabfällen von Nadel- und Laubbäumen. Verbreitet, selten.

1b. *Fayodia bisphaerigera* (J. Lange) Singer var. *longicystis* J. Favre

Unterscheidet sich von der Typus-Varietät durch einen blasser gefärbten, ± mycenoiden Hut, im Alter langsam gelblich werdende Fruchtkörper und längere Zystiden.

2a. *Fayodia anthracobia* (J. Favre) Knudsen var. *anthracobia*

Hut 2–12 (15) mm, glockenförmig-halbkugelig, mit stumpf gebuckeltem, abeflachtetem bis etwas eingedrücktem Zentrum, etwas hygrophan, feucht etwas durchscheinend gerieft, sehr dunkel grau-braun bis schwärzlich-braun, beim Trocknen zu Dunkelbraun verblassend, kahl, feinwarzig und etwas feinkörnig im Zentrum (unter der Lupe), etwas fibrillös zum Hutrand hin. **Lamellen** entferntstehend, L = 14–16, l = 1–3, breit angewachsen bis mit Zahn herablaufend, breit, dicklich, etwas adrig, manchmal verästelt, blass grau, mit feinhaariger, gleichfarbiger Schneide. **Stiel** bis zu 18 × 1.5 mm, jung fibrillös-gerieft, bald kahl, weiß-flockig an der Spitze, darüber weißlich, dunkel braun bis schwärzlich braun darunter. **Sporen** 6.5–8.5 × 6.5–8.2 µm, ± kugelig, deutlich zweischichtig mit feinwarzig-stacheligem Epispor und glattem Perispor, Warzen 1.0–1.2 (1.5) µm hoch, hyalin in KOH, sich leicht schälend. **Basidien** 2-sporig. **Cheilozystiden** 40–91 × 11–23 µm, flaschenförmig, ± zylindrisch oder subfusoid, ± dünnwandig. **Pileipellis** eine Schicht glatter oder winzig inkrustierter Hyphen. **Stipitipellis** eine Schicht etwas inkrustierter Hyphen. **Caulozystiden** fehlend. **Schnallen** fehlend.

Terrestrisch auf Feuerstellen, selten auch auf Torfboden. Selten.

2b. *Fayodia anthracobia* var. *bisphaerigerella* (M. Lange) Antonín & Noordel.

Unterscheidet sich durch einen blässeren Hut mit ± genabeltem Zentrum, längeren und schmälere Stiel (20–30 × 0.5 mm), konstant kleinere Basidien (16–21 × 6.5–9.0 µm), häufiger vorhandene (breit) keulige Cheilozystiden und das Vorkommen auf torfigem Boden. Sehr selten.

3. *Fayodia campanella* Horak

Hut 8–10 (12) mm, glockenförmig, stumpf papillös, unregelmäßig gezähnt am Hutrand, etwas durchscheinend gerieft, glatt, kahl, weißlich-bräunlich, trocken weißlich, beige-gräulich bis grau-bräunlich. **Lamellen** ziemlich entferntstehend, L = 7–8, l = 1, breit angewachsen bis etwas mit Zahn herablaufend, weißlich-gräulich, mit glatter, scharfer Schneide. **Stiel** 30–40 × 1 mm, zylindrisch, gebogen, voll, kahl, nur an der Spitze weißlich haarig (Lupe), weiß-bräunlich, an der Basis braun. **Sporen** 8.5–12.0 × 8.5–12.0 µm, ± kugelig, deutlich zweischichtig, feinwarzig-stacheliges Epispor und glattes Perispor, Warzen 0.7–1 µm hoch, hyalin in KOH. **Basidien** 2-sporig. **Zystiden** selten, 35–80 (92) × 4.0–16 (21) µm, zylindrisch, keulig, subfusoid, selten mit einem seitlichen Fortsatz, dünnwandig, hyalin in KOH. **Pileipellis** eine Schicht glatter oder winzig inkrustierter Hyphen. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** fehlend. **Schnallen** fehlend.

Terrestrisch in Nadelwäldern. Sehr selten, bekannt nur von Norwegen und der Schweiz.

4. *GAMUNDIA* Raithelh.

Schlüssel zu den europäischen Arten

- 1 Hut dunkel gefärbt (dunkel braun oder schwärzlich braun), nicht hygrophan, nicht gerieft oder am äußersten Hutrand sehr undeutlich durchscheinend gerieft; Sporen ziemlich groß, 6.0–7.0 (8.0) × 4.5–5.5 (6.0) µm; an arktischen und alpinen Standorten **3. *G. arctica*** (S. 150)
- 1* Hut blasser gefärbt (rußbraun, gelb-braun, gelblich grau-braun, manchmal mit dunkel braunem Zentrum), hygrophan, deutlich durchscheinend gerieft; Sporen genauso groß oder kleiner; an anderen Standorten **2**
- 2 Cheilozystiden breit (9.0–20 µm breit), breit keulig, fast blasenförmig . . . **4. *G. lonatii*** (S. 153)
- 2* Cheilozystiden schmaler (bis zu 16 µm breit), variabel in der Form, flaschenförmig, keulig, fusoid, sackförmig **3**
- 3 Hut klein, 5–10 (12) mm, honigfarben mit gut abgegrenztem braunem Zentrum; wenige Lamellen (L = 13–16); Stiel 10–20 × 1–1.5 mm; Cheilozystiden 42–60 µm lang; Sporen in SEM mit deutlichen Warzen **2. *G. hygrocyboides*** (S. 148)
- 3* blass gelblich grau-braun, rußbraun gelblich, rußbraun, beige-isabellafarben, braun gräulich, zu blass grau-braun verblassend, gräulich oder gelblich grau, gewöhnlich ohne gut abgegrenztem dunkel gefärbtem Zentrum; Lamellen zahlreicher (L = 15–36); Stiel (10) 15–55 × 1–8 mm; Cheilozystiden 34–90 µm lang; Sporen in SEM mit kleinen Warzen . . . **1. *G. striatula*** (S. 143)

1. *Gamundia striatula* (Kühner) Raithelh.

Hut (5) 10–45 (50) mm, halbkugelig oder konvex, sich ausbreitend, hygrophan, durchscheinend gerieft, manchmal nur am Hutrand etwas gerieft, blass braun, mit grauer oder gelber Färbung, beim Trocknen verblassend, kahl, glatt. **Lamellen** mäßig bis ziemlich entferntstehend, L = 15–36, l = 3–7, fast horizontal, breit angewachsen oder etwas mit Zahn herablaufend, weiß oder grau oder braun getönt. **Stiel** (10) 20–55 × 1–8 mm, blass grau-braun, beinahe glatt und glänzend. **Sporen** 6.0–8.5(9.0) × (4.0) 4.5–5.0 (6.0) µm, (breit) ellipsoid, selten fast mandelförmig, deutlich winzig warzig-stachelig. **Basidien** 4-sporig, manchmal gemischt mit 2-sporigen. **Cheilo- und Pleurozystiden** 36–92 × 9.0–15 (20) µm, (fast) zylindrisch, keulig, subfusoid, ± sackförmig, ± flaschenförmig, manchmal dünn gestielt, stumpf, manchmal fast geschnäbelt, manchmal unregelmäßig. **Pileipellis** eine etwas gelatinierte bis deutlich klebrige Schicht glatter oder winzig inkrustierter Hyphen, manchmal (fast) ausgestülpt oder mit seitlichen Fortsätzen. **Stipitipellis** eine Schicht glatter, selten fast ausgestülpter Hyphen. **Caulozystiden** vereinzelt nur an der Spitze, (15) 20–85 × (3.0) 5.0–14 µm, (fast) zylindrisch, schmal keulig, keulig, subfusoid, ± flaschenförmig, ± sackförmig, oft unregelmäßig oder mit Fortsätzen bis fast korallenförmig, ± dünnwandig, hyalin. **Schnallen** vorhanden.

Einzeln oder gesellig, in Nadel- und Mischwäldern. Verbreitet, aber scheinbar ziemlich selten.

2. *Gamundia hygrocyboides* (Lonati) Bon

Hut 5–10 (12) mm, konvex-halbkugelig, sich ausbreitend, feucht durchscheinend gerieft, honigfarben mit gut abgegrenztem braunem Zentrum, kahl. **Lamellen** entferntstehend, L = 13–16, l = 1–3, angewachsen, etwas ausgerandet bis breit angewachsen, weiß. **Stiel** 10–20 × 1–1.5 mm, gleichfarbig mit dem Hut, zur Basis hin etwas dunkler, winzig flockig darüber, darunter verkahlend. **Sporen** (6.5) 7.0–8.0 × 4.5–5.7 µm, breit ellipsoid, selten fast fusoid-ellipsoid, deutlich winzig scharf stachelig. **Basidien** 4-sporig. **Cheilozystiden** selten, 40–62 (80) × 8.5–15 µm, keulig, fast zylindrisch, fast sackförmig, ± flaschenförmig, manchmal (fast) geschnäbelt, oft dünn gestielt. **Pleurozystiden** vereinzelt.

ähnlich den Cheilozystiden. **Pileipellis** eine klebrige Schicht glatter bis winzig inkrustierter Hyphen. **Stipitipellis** eine Schicht glatter bis winzig inkrustierter Hyphen. **Caulozystiden** 50–97 × 7.0–12 µm, (fast) zylindrisch bis keulig, unregelmäßig bis korallenförmig, manchmal (fast) geschnäbelt, manchmal verästelt oder mit Fortsätzen, hyalin. **Schnallen** vorhanden.

Zwischen Moosen im Nadelwald. Nur von der Typus-Lokalität in Italien bekannt.

3. *Gamundia arctica* (Gulden) Ludwig

Hut 13–35 mm, konvex-abgeflacht bis abgeflacht, im Zentrum niedergedrückt, nicht hygrophan, undurchsichtig oder feucht am äußersten Hutrand sehr undeutlich durchscheinend gerieft, dunkel braun oder schwärzlich braun, eingewachsen fibrillös, glatt. **Lamellen** mäßig engstehend, etwas herablaufend, weißlich, blass bräunlich oder gräulich werdend. **Stiel** 14–50 × 2–3.5 mm, gleichfarbig mit dem Hut, blasser braun werdend, kahl, glatt. **Sporen** 6.0–7.0 (8.0) × 4.5–5.5 (6.0) µm, ellipsoid, breit ellipsoid, manchmal fast kugelig, winzig stachelig. **Basidien** 4-sporig. **Cheilo-** und **Pleurozystiden** vereinzelt, 42–80 (98) × 6.5–13 µm, (fast) zylindrisch, keulig, ± sackförmig, oft dünn gestielt, dünnwandig, hyalin. **Pileipellis** eine Schicht von inkrustierten Hyphen. **Stipitipellis** eine Schicht glatten Hyphen. **Caulozystiden** (am Scheitel) zahlreich, 14–70 × 4.5–8.0 µm, keulig, (fast) zylindrisch, dünnwandig, ± hyalin. **Schnallen** vorhanden.

Einzeln oder gesellig zwischen Laubmoosen und Flechten in arktischen und alpinen Standorten mit *Dryas*, *Salix* spp. auf Kalkboden. Sehr selten, bekannt nur aus Norwegen (Svalbard) und Frankreich.

4. *Gamundia lonatii* Bon & Röllin

Hut 15–40 mm, fast halbkugelig bis konvex-abgeflacht, tief genabelt, nicht hygrophan, nicht durchscheinend gerieft, leuchtend dunkel braun, mit rot-braunem Zentrum, kahl. **Lamellen** ziemlich engstehend, L = 20–35, l = 3–5, mit Zahn angewachsen, weißlich, bald blass gräulich bräunlich. **Stiel** 25–35 × 2–5 mm, am Scheitel weißlich, dunkel braun zur Basis hin, gänzlich oder zumindest am Scheitel fein mehlig flockig. **Sporen** 6.0–8.0 × 4.2–5.0 (5.5) µm, ellipsoid bis breit ellipsoid, dünn- bis etwas dickwandig (0.5 µm), fein stachelig. **Basidien** 4-, selten 2-sporig. **Cheilo-** und **Pleurozystiden** 30–50 (60) × 9.0–20 µm, keulig, breit keulig, fast blasenförmig, lanzettlich, ± zylindrisch oder subfusoid, oft dünn gestielt. **Pileipellis** eine Schicht inkrustierter Hyphen. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** 20–120 × 4.5–9.0 µm, fusoid oder zylindrisch, manchmal mit kleinen seitlichen Fortsätzen. **Schnallen** vorhanden.

Zwischen Moosen und Nadeln im Nadelwald. Nur bekannt von der Typus-Lokalität in Italien.

5. *MYXOMPHALIA* Hora

Schlüssel zu den europäischen Arten

- 1 Sporen 5.0–7.0 × (3.5) 4.0–5.0 (6.0) µm, glatt (auch in SEM); Hymenialzystiden von veränderlicher Form, keulig, ± zylindrisch, ± flaschenförmig, ± sackförmig oder (sub)fusoid; Pileipellis und Stipitipellis eine gut entwickelte Ixokutis; Hut bei feuchtem Wetter schleimig bis klebrig; Lamellen beige bis gräulich (*M. maura*) 2
- 1* Sporen 5.0–6.0 (7.0) × 3.5–5.3 µm, E = 5.7 × 4.4 µm, winzig feinwarzig in SEM; Hymenialzystiden von ziemlich gleichmäßiger Form, ± fusoid, mit ± vorstehenden Pusteln; Pileipellis und Stipitipellis nur leicht gelatiniert; Hut relativ trocken; Lamellen weiß 2. *M. agloea* (p. xxx)
- 2 Fruchtkörper weiß 1a. *M. maura* f. *alba* (p. xxx)
- 2* Fruchtkörper pigmentiert 1b. *M. maura* f. *maura* (p. xxx)

1. *Myxomphalia maura* (Fr.) Hora

Hut 10–40 mm, zuerst halbkugelig bis konvex mit deutlich genabeltem Zentrum, sich ausbreitend bis flach-konvex, dunkel grau-braun bis beinahe schwarz, manchmal etwas blasser im Zentrum, beim Trocknen zu blass grau-braun verblassend (komplett weiß bei f. *alba*), hygrophan, deutlich oder undeutlich durchscheinend gerieft, bei feuchtem Wetter schleimig bis klebrig, sonst fettig bei Berühren, fein fibrillös, trocken stark seidig glänzend. **Lamellen** mäßig engstehend bis engstehend, $L = 20\text{--}35$, $l = 3$, breit angewachsen, herablaufend bis tief herablaufend, manchmal etwas wellenförmig, ziemlich breit (bis zu 9 mm), weiß bis blass sepia, grau oder grau-braun, sich stark abhebend vom dunklen Hut, mit gleichfarbiger, völlig oder etwas flaumiger Schneide. **Stiel** 18–45 × 1.5–5.0 mm, an der Spitze blass, gleichfarbig mit dem Hut oder dunkler grau-braun darunter, an der Spitze etwas flockig, feucht etwas klebrig, fein längs gerieft bis gerippt. **Sporen** 5.5–7.0 × 4.0–5.3 (6.0) μm , breit ellipsoid, etwas dickwandig, glatt. **Basidien** 4-, selten 2-sporig, keulig. **Cheilo- und Pleurozystiden** 21–90 × 7.5–23 μm , keulig, \pm flaschenförmig, \pm sackförmig, fusoid, fast zylindrisch, abgestumpft. **Pileipellis** eine klebrige Schicht glatter Hyphen mit reichlich unregelmäßigen bis korallenförmigen Endteilen. **Stipitipellis** eine klebrige Schicht glatter Hyphen. **Caulozystiden** 15–50 × 4.5–10 μm , zylindrisch bis keulig, meist unregelmäßig bis koralloid, stumpf, manchmal verzweigt. **Schnallen** vorhanden.

Gesellig auf mineralhaltigem Boden, verbranntem Boden und auf Feuerstellen. In Europa, Nordafrika und Nordamerika ziemlich verbreitet.

2. *Myxomphalia agloea* (Singer & Passauer) Antonín

Hut bis zu 12 mm, jung konvex mit eingerolltem Hutrand, im Zentrum gebuckelt, feucht durchscheinend gerieft, hygrophan, grau-braun, schmutzig grau-braun, beim Trocknen verblassend, trocken. **Lamellen** herablaufend, weiß. **Stiel** 40 × 1.5–2 mm, schmutzig braun, am Scheitel bereift. **Sporen** 5.0–6.0 (7.0) × 3.5–5.3 μm , breit ellipsoid, etwas dickwandig, \pm glatt im Lichtmikroskop, winzig feinwarzig in SEM, amyloid. **Basidien** 4-sporig. **Cheilo- und Pleurozystiden** zahlreich, 22–48 × 9.0–15 μm , fusoid oder subfusoid, oft geschnäbelt, selten keulig, \pm dünnwandig. **Pileipellis** eine klebrige Schicht glatter Hyphen mit angedrückten bis fast aufrechten, einfachen bis koralloiden, seitlichen Fortsätzen oder Endelementen. **Stipitipellis** eine (klebrige) Schicht glatter Hyphen. **Caulozystiden** (an der Spitze) zylindrisch, keulig, fusoid, oft geschnäbelt, \pm dünnwandig. **Schnallen** vorhanden.

Auf sandigem Boden in Höhlen. Nur bekannt von der Typus-Lokalität in Österreich.

6. *RESINOMYCENA* Redhead & Singer

1. *Resinomycena saccharifera* (Berk. & Br.) Redhead

Hut 2–3 mm, glockenförmig, dann konvex, manchmal etwas genabelt, radial gefältelt, nicht hygrophan, nicht durchscheinend gerieft, weiß, im Zentrum manchmal braun gefärbt, stumpf, gänzlich bereift. **Lamellen** entferntstehend, $L = 7\text{--}12$, $l = 1\text{--}3$, angewachsen-herablaufend, manchmal sich vom Stiel lösend einen Scheinkragen bildend, segmentförmig, blass rosa. **Stiel** 2–5 × 0.3 mm, zylindrisch, gebogen, cremefarben, an der Basis bräuner, gänzlich weiß bereift, weiß striegelig an der Basis mit weißen radialen Haaren. **Sporen** 11–16.5 × 4.5–6.5 μm , ellipsoid bis tropfenförmig. **Basidien** 4-, selten 2-sporig. **Cheilo- und Pleurozystiden** 22.5–50 × 5.0–11 μm , von unterschiedlicher Form von zylindrisch-kopfig bis unregelmäßig korallenförmig mit fingerartigen Fortsätzen oder einer oder mehr blasenartigen Schwellungen an der Spitze. **Pleurozystiden** fehlend. **Pileipellis** eine Schicht verdickter Hyphen mit koralloiden bis ausgestülpten Enden, gemischt mit pileozystidioiden kopfigen

Elementen, $21.5\text{--}53 \times 3.5\text{--}12 \mu\text{m}$ breit. **Stipitipellis** eine Schicht ausgestülpter Hyphen. **Caulozystiden** $20\text{--}48 \times 2.0\text{--}8.0$ (10) μm , zylindrisch und kopfig oder korallenförmig bis ausgestülpt. **Schnallen** reichlich.

Vorwiegend auf Kräuterstengeln. Verbreitet, aber leicht übersehen wegen der kleinen Fruchtkörper.

7. RICKENELLA Raitelh. (incl. CONTUMYCES Redhead)

Schlüssel zu den europäischen Arten

- 1 Hut zart rosa, besonders wenn frisch **6. C. rosella** (p. xxx)
- 1* Hut andersfarbig **2**
- 2 Fruchtkörper mit purpur-violetter Färbung, besonders im Hutzentrum und auch im unteren Teil des Stiels; Hut dunkelbraun, schwarz-braun, schwarz, purpur-braun bis purpur-schwarz im Zentrum, deutlich blasser, manchmal beinahe weißlich zum Hutrand hin; Stiel mit violetten, purpur-braunen oder braun-purpurnen Färbungen am Scheitel **3**
- 2* Fruchtkörper ohne purpur-violette Färbungen; Hut orange, gelb-orange, gelb-braun, braun, honig-braun **5**
- 3 Sporen $8.5\text{--}14$ (16) $\times 4.0\text{--}6.0 \mu\text{m}$; Hut ziemlich blass ocker-braun mit lilafarbener Färbung, in xerophilen Rasen **5. R. brunneolilacina** (p. xxx)
- 3* Sporen viel kleiner, $4.5\text{--}7.0 \mu\text{m}$ lang; an feuchten Plätzen in Wäldern und Wiesen **4**
- 4 Hut purpur-braun bis purpur-schwarz, zum Hutrand hin blasser ockerfarben gelb bis beinahe weißlich, konvex, glockenförmig oder breit stumpf konisch, ohne Papille; Stiel purpur-braun oder braun-purpurn am Scheitel; Sporen $5.0\text{--}7.0 \times 2.5\text{--}3.2$ (3.7) μm ; Basidien nur 4-sporig; Cheilozystiden $32\text{--}52 \times 8.0\text{--}19 \mu\text{m}$; Pileozystiden $48\text{--}115 \times 10\text{--}23$ (32) μm ; in Nadelwäldern (selten unter Laubbäumen), in nassen Wiesen und Weiden . . **2a. R. swartzii f. swartzii** (p. xxx)
- 4* Hut gelb-braun, ockerfarben, zum Hutrand hin blasser, dann dunkelbraun, schwarz-braun bis schwarz im Zentrum, gelbbraun, braun-orange mit permanent schwarzem Zentrum beim Trocknen (ohne purpurrötliche Färbung), konvex-glockenförmig bis konvex-gebuckelt, mit einer deutlichen Papille; Stiel zuerst gelb-bräunlich und dunkler am Scheitel, dann grau-braun, grau-schwärzlich mit violetter oder grau-violetter Färbung nahe den Lamellenansatzstellen, Sporen $4.5\text{--}6.0$ (6.5) $\times 2.5\text{--}3.0 \mu\text{m}$; Basidien 2- und 4-sporig; Cheilozystiden $35\text{--}70 \times 9.5\text{--}14 \mu\text{m}$; Pileozystiden $45\text{--}70 \times 8.0\text{--}14 \mu\text{m}$; unter *Alnus viridis* in der subalpinen Zone . **2b. R. swartzii f. alnobetulae** (p. xxx)
- 5 Hut ziemlich blass: gelblich-braun gefärbt, olivfarben-braun oder rötlich braun, trocken verblässend; Hymenialzystiden oft keulig oder blasenförmig **6**
- 5* Hut leuchtender gefärbt: orange-gelb, rötlich gelb, orange-braun, rötlich baun; Hymenialzystiden gewöhnlich spindelförmig, flaschenförmig, selten auch keulig **7**
- 6 Hymenialzystiden keulig oder blasenförmig, $12\text{--}21$ (35) μm breit; auf dem Lebermoos *Blasia* in arktisch-alpinen Regionen; Sporen (6.0) $6.5\text{--}8.5$ (9.0) $\times 3.2\text{--}5.0$ (5.5) μm , $E = 1.7\text{--}2.3$, $Q = 2.1$ **4. R. pseudogrisella** (p. xxx)
- 6* Hymenialzystiden mit variabler Form: von spindelförmig, flaschenförmig bis keulig oder breit keulig, $7.0\text{--}11 \mu\text{m}$; Sporen schmaler, $2.7\text{--}4.0 \mu\text{m}$ breit; gebunden an Moose, gewöhnlich *Bryum* **3. R. mellea** (p. xxx)
- 7 Sporen groß, $8\text{--}12 \times 4.5\text{--}5.5 \mu\text{m}$; Pigment in der Pileipellis inkrustiert . **7. C. vesuviana** (p. xxx)
- 7* Sporen viel kleiner, meist $5.5\text{--}8.0 \mu\text{m}$ lang; Pigment membranal, nicht inkrustiert **1. R. fibula** (p. xxx)

1. *Rickenella fibula* (Bull.: Fr.) Raithelh.

Hut 3–15 mm, konvex mit abgeflachter bis etwas papillöser Mitte, sich ausbreitend bis flach-konvex mit niedergedrückter oder genabelter Mitte, zuletzt oft trichterförmig, hygrophan, durchscheinend, leuchtend orange, gelb-orange oder rötlich braun im Zentrum, beim Trocknen stark verblassend. **Lamellen** entferntstehend, L = (12) 14–20, l = 1–2 (3), bogig, herablaufend, manchmal gabelig, alt etwas aderig verbunden, weiß bis blass cremefarben, im Alter dunkler werdend. **Stiel** 10–50 × 0.5–1.0 (2.0) mm, orange bis blass orange-gelb, überall fein bereift. **Sporen** 5.5–7.0 (8.0) × 2.0–3.0 (3.5) µm, zylindrisch, ellipsoid-zylindrisch. **Basidien** 4-sporig. **Cheilo-** und **Pleurozystiden** 30–57 × 6.5–13 µm, fusoid, ± flaschenförmig, geschnäbelt, selten keulig, meist (fast) kopfig. **Pileipellis** eine Schicht glatter bis vereinzelt ausgestülpter Hyphen. **Pileozystiden** 38–80 × 10.0–16(-18) µm, flaschenförmig, pfriemenförmig, (sub)fusoid, meist kopfig, etwas dickwandig. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** 30–100 × 8.0–17 µm, flaschen-, pfriemen- bis spindelförmig, gewöhnlich kopfig. **Schnallen** vorhanden.

Einzel oder in Gruppen zwischen Moosen und Gräsern an feuchten Plätzen. Verbreitet und sehr gemein.

Eine robuste Form mit stark gegabelten Lamellen wurde als var. *pseudocantharellus* beschrieben, und eine dünnfleischige als var. *hydrina*. Beide verdienen keinen formellen Status.

2. *Rickenella swartzii* (Fr.: Fr.) Kuyper

Hut 4–13 mm, konvex, glockenförmig oder breit abgestumpft konisch, sich im Alter ausbreitend, hygrophan, beinahe bis zum Zentrum durchscheinend gerieft, dunkel purpurrötlich, purpur-braun bis purpur-schwarz im Zentrum, blasser, violett grau-braun, ockerfarben gelb zum Hutrand hin, beim Trocknen verblassend, fein flaumig (Lupe). **Lamellen** entferntstehend, L = 14–20, l = (1) 2, breit angewachsen bis herablaufend, bogig, etwas aderartig, weißlich bis blass cremefarben. **Stiel** 20–45 × 0.5–1.0 (1.5) mm, purpurrötlich grau-braun an der Spitze, blass gelb-braun oder ockerfarben, gelb darunter, manchmal beinahe weiß im basalen Teil, gänzlich weiß feinhaarig. **Sporen** 5.0–7.0 × 2.5–3.2 (3.7) µm, ellipsoid, zylindrisch-ellipsoid. **Basidien** 4-sporig. **Cheilo-** und **Pleurozystiden** 32–52 × 8.0–19 µm, fusoid, ± flaschenförmig, (±) sackförmig, mit zylindrischem bis meist fast kopfigem, stumpfem Schnabel. **Pileipellis** eine Schicht glatter Hyphen mit vereinzelt seitlichen Fortsätzen. **Pileozystiden** 48–115 × 10–23 (32) µm, ähnlich den Cheilozystiden, aber größer und kräftiger. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** 53–100 × 10–18 µm, ähnlich den Pileozystiden. **Schnallen** vorhanden.

Einzel oder in Gruppen, wahrscheinlich parasitisch auf Moosen an feuchten Plätzen. Sehr verbreitet in der nördlichen Hemisphäre.

Die Form *alnobetulae* unterscheidet sich von der typischen Form besonders durch mehr leuchtend gefärbte Fruchtkörper, konvex-papillösen Hut, gemischt 4- und 2-sporige Basidien, kleinere Sporen bei den 4-sporigen Basidien, kleinere Pileozystiden, und den Standort (*Alnetum-viridis*-Gebüsch).

3. *Rickenella mellea* (Singer & Cléménçon) Lamoure

Hut 4.5–6 mm, konvex mit Papille, etwas hygrophan, etwas durchscheinend gerieft, blass gelb bis gelb-braun mit dunklerem Zentrum, verblassend. **Lamellen** entferntstehend bis sehr entferntstehend, bogig-herablaufend, sehr blass strohfarben, beinahe weiß. **Stiel** 8–15 × 0.8–1.2 mm, blass gelblich, glatt, scheinbar kahl, aber unter der Lupe fein flaumig. **Sporen** 6.5–9.0 (10.0) × 2.7–4.0 µm, zylindrisch, zylindrisch-ellipsoid, ellipsoid, selten eiförmig, manchmal etwas allantoid. **Basidien** 4-spo-

rig. **Cheilo-** und **Pleurozystiden** 25–46 × 7.0–11 µm, flaschenförmig, fusoid, weniger häufig keulig, meist oder fast kopfig. **Pileipellis** eine Schicht glatter Hyphen. **Pileozystiden** 25–65 × 7.0–15 µm, keulig, breit keulig, zylindrisch, flaschenförmig, subfusoid, selten geschnäbelt. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** 23–58 × 5.0–8.5 µm, flaschenförmig, konisch, fusoid, oft (fast) kopfig. **Schnallen** vorhanden.

Einzeln oder in Gruppen, wahrscheinlich parasitisch, zwischen Moosen (*Bryum capillare*, *Philonotis* sp.) an sonnigen und feuchten Plätzen in arktisch-alpinen Gebieten.

4. *Rickenella pseudogrisella* (A. H. Sm.) Gulden

Hut 2–9 mm, konvex bis abgeflacht-konvex, sich ausbreitend, hygrophan, durchscheinend gerieft, honigfarben bis oliv falb, manchmal falb bis weißlich am Hutrand, trocken verblässend, kahl, im Alter radial gefältelt. **Lamellen** mäßig entferntstehend, L = ca. 10, l = 2, angewachsen bis mit Zahn herablaufend, mäßig breit, weißlich mit blass olivfarbener Färbung. **Stiel** 6–16 × 0.5–1.5 mm, etwas blasser als der Hut, etwas flaumig am Scheitel, abwärts glatt. **Sporen** (6.0) 6.5–8.5 (9.0) × 3.2–5.0 (5.5) µm, ellipsoid, zylindrisch-ellipsoid, zylindrisch. **Basidien** 4-sporig. **Cheilo-** und **Pleurozystiden** 39–68 × 12–21 (35) µm, keulig, breit keulig, sackförmig, selten blasenförmig. **Pileipellis** eine Schicht glatter oder selten ausgestülpter Hyphen. **Pileozystiden** 23–47 × 8.0–17 µm, keulig, (±) sackförmig, blasenförmig, selten unregelmäßig, dünn- oder leicht dickwandig. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** 32–85 × 8.0–17 µm, keulig, (±) zylindrisch, selten fast flaschenförmig. **Schnallen** vorhanden.

Einzeln oder in Gruppen, wahrscheinlich parasitisch, immer auf Lebermoosen (*Blasia pusilla*), auf exponierten Sandbänken an kleinen Flüsschen. Selten, in alpinen und arktischen Regionen.

5. *Contumyces brunneolilacina* (Contu, Bon & Curelli) Redhead & al.

Hut (5) 10–15 (20) mm, abgeflacht, am Zentrum niedergedrückt, mit gefurchtem Hutrand, hygrophan, etwas durchscheinend gerieft oder nicht, ockerfarben-braun bis weißlich, mit deutlicher lilafarbener oder violetter Färbung, besonders im Zentrum, fein filzig bis flaumig. **Lamellen** entferntstehend, L = 16–18, deutlich herablaufend, blass lila-rosa. **Stiel** 15–20 × 1–2 mm, gleichfarbig mit dem Hut oder etwas blasser, glatt, kahl. **Sporen** 8.5–14(16) × 4.0–6.0 (7.0) µm, ellipsoid, fusoid-ellipsoid, eiförmig, tropfenförmig. **Basidien** 4-, selten 2-sporig. **Cheilo-** und **Pleurozystiden** 23–36 × 5.0–10.0 µm, flaschenförmig, fusoid, geschnäbelt, stumpf, selten fast kopfig. **Pileipellis** eine Schicht glatter, selten etwas ausgestülpter Hyphen. **Pileozystiden** 28–60 × 5.0–15 µm, fusoid, flaschenförmig, weniger häufig keulig, meist geschnäbelt, stumpf, manchmal fast kopfig, ± dünn- bis etwas dickwandig. **Stipitipellis** eine Schicht glatter Hyphen. **Caulozystiden** 26–38 × (4.0) 8.0–11 µm, flaschenförmig, fusoid, weniger häufig ± zylindrisch, oft geschnäbelt, stumpf, manchmal fast kopfig. **Schnallen** vorhanden.

Gesellig, xerophil, auf Silikatböden im Grasland und entlang von Straßen wachsend. Selten, in mediterranen Regionen.

6. *Contumyces rosella* (Moser ex Redhead) Readhead et al.

Hut 5–20 mm, flach-konvex, leicht bis tief genabelt, hygrophan, nicht durchscheinend gerieft, rosa oder rosa-lila, beim Trocknen etwas verblässend zu cremefarben grau, winzig angedrückt fibrillös bis filzig. **Lamellen** entferntstehend, L = 4–11, l = 0–3, bogig-herablaufend, etwas aderig, rosa, mit ganzer, gleichfarbiger Schneide. **Stiel** 10–30 × 1–2 mm, weiß oder hyalin rosa, sehr fein bereift (Lupe). **Sporen** (7.0) 8.5–10.5 (11.0) × 4.0–6.0 µm, ellipsoid bis länglich oder tropfenförmig. **Basidien** 2- und

4-sporig. **Cheilozystiden** 30–50 × 4.0–10 µm, flaschenförmig. **Pileipellis** eine Schicht mit Übergängen zu einem Trichoderm aus 4.0–12 µm breiten Hyphen mit keuligen bis flaschenförmigen Pileozystiden, 40–65 × 8.0–11 µm. **Schnallen** vorhanden.

Terrestrisch in Wiesen mit Moosen auf nährstoffarmen Böden. Sehr selten, wahrscheinlich übersehen, Europa und Nordafrika.

7. *Contumyces vesuviana* (Brig.) Redhead & al.

Hut 5–20 mm, konvex bis abgflacht mit herabgedrücktem Zentrum und eingerolltem, dann herabgebogenem Hutrand, nicht oder etwas hygrophan, nicht oder leicht durchscheinend gerieft, am Hutrand etwas gefurcht, etwas filzig, gleichmäßig orange bis gelbbraun. **Lamellen** dünn, mit Zwischenlamellen, herablaufend, weißlich bis leicht gelblich oder blass orange. **Stiel** 5–20 × 1–1.5 mm, gelb-orange, blasser als der Hut, besonders im unteren Teil, beinahe kahl. **Sporen** 8.0–12 × 4.5–5.5 µm, ellipsoid bis fast zylindrisch. **Basidien** 4-sporig. **Cheilo-** und **Pleurozystiden** selten, 40–60 × 6.0–7.5 µm, fusoid, geschnäbelt, spitz, dünnwandig. **Pileipellis** eine Schicht inkruzierter Hyphen. **Pileozystiden** und **Caulozystiden** ähnlich den Hymenialzystiden. **Schnallen** vorhanden.

Gesellig, im Grasland und zwischen Moosen wachsend. Sehr selten, nur bekannt aus Italien, Portugal und Nordafrika.

8. *XEROMPHALINA* Kühner & Maire

Schlüssel zu den europäischen Arten

- 1 Circum- und Caulozystiden zylindrisch, keulig, sackförmig oder (sub)fusoid, manchmal etwas unregelmäßig (gelappt), aber nie verzweigt 2
- 1* Circum- und Caulozystiden zylindrisch, keulig, (sub)fusoid, unregelmäßig bis koralloid, oft verzweigt oder mit Endfortsätzen 6
- 2 Sporen klein, 3.5–5.0 × 2.0–3.0 µm 3
- 2* Sporen größer, 4.5–8.0 (9.5) × 2.5–4.0 µm 4
- 3 Sporen (3.7) 4.0–5.0 × (2.0) 2.2–2.5 (3.0) µm, E = 1.6–2.3, Q = 1.8, ellipsoid bis zylindrisch-ellipsoid; der ganze Fruchtkörper mit violetter bis purpurrötlicher Färbung, Lamellen näher stehend (L = 27–30) **3. *X. junipericola*** (p. xxx)
- 3* Sporen 3.5–4.5 × 2.0–2.7 µm, E = 1.6–2.0, Q = 1.8. ellipsoid; ellipsoid; nie violett oder purpurn, sondern blass braun bis beige, Lamellen entfernter stehend (L = 12–15) **4. *X. minutissima*** (p. xxx)
- 4 Sporen größer, (5.5) 6.0–8.0 (9.5) × 2.8–4.0 µm, zylindrisch-ellipsoid bis ellipsoid, selten fast allantoid, Trama aus dünn- bis leicht dickwandigen Hyphen; Stiel gänzlich fein flaumig; Geschmack mild **1. *X. campanella*** (p. xxx)
- 4* Sporen kleiner, 4.5–7.0 (7.5) × 2.5–3.5 µm, zylindrisch-ellipsoid bis fast allantoid, in Trama aus dickwandigen Hyphen mit Refraktionswänden; Stiel mit Ausnahme der Spitze filzig bis beinahe glatt; Geschmack unangenehm 5
- 5 Sporen (5.0) 5.8–7.0 (7.5) × (2.5) 2.8–3.3 µm, E = 1.8–2.3, Q = 2.1 **2. *X. brunneola* var. *brunneola*** (p. xxx)
- 5* Sporen kürzer, 4.5–6.0 × 2.5–3.5 µm, E = 1.6–2.1, Q = 1.8 ***X. brunneola* var. *myriadea*** (p. xxx)

6. Hyphen der Stipititrama meist deutlich inkrustiert, blass gelb bis gelb-braun in H₂O, in KOH die Farbe zu orange braun wechselnd (pl. 51) 7
- 6* Hyphen der Stipititrama glatt bis winzig inkrustiert, gelb fast hyalin bis gelb-braun in H₂O, in KOH sich nicht verändernd (pl. 52) 8
- 7 Fruchtkörper collybioid, meist in üppigen Büscheln; Hut klein (4–12 mm breit), Stiel 16–30 × 0,7–1 mm, meist gebogen; Sporen klein, 4,8–5,5 (6,0) × 2,8–3,5 (4,5) µm, ellipsoid bis breit ellipsoid; Caulozystiden keulig, fusoid, unregelmäßig, gelappt bis fast koralloid, dünn- bis etwas dickwandig, goldgelb in KOH am Scheitel; auf Holz von Nadelbäumen wachsend 8. *X. campanelloides* (p. xxx)
- 7* Fruchtkörper omphalinoid, einzeln oder in kleinen Gruppen, kräftiger; Hut größer (8–22 mm breit); Stiel 25–40 × 1–3 mm, meist gerade; Sporen größer, 5,0–7,0 × 2,8–3,5 (4,0) µm, ellipsoid; Caulozystiden zylindrisch, nie schmal keulig, einfach bis koralloid, deutlich dickwandig, in KOH hyalin bis bräunlich am Scheitel; in *Sphagnum*-Bulten, weniger häufig auf Holz von Nadelbäumen, wahrscheinlich Kalk in Europa bevorzugend 6b. *X. caudinalis* var. *subfellea* (p. xxx)
- 8 Geschmack bitter oder adstringierend; in Nadel- oder Mischwäldern wachsend 6a. *X. caudinalis* var. *caudinalis* (p. xxx)
- 8* Geschmack mild; in Laub- oder Nadelwäldern wachsend, manchmal im *Sphagnum* 9
- 9 Fruchtkörper groß; Hut 10–30 mm; Stiel 2–3,5 mm breit, filzig; Caulozystiden zylindrisch bis keulig, unregelmäßig, auf der ganzen Länge Gruppen bildend; auf Laubholz wachsend .. 10
- 9* Fruchtkörper kleiner; Hut bis zu 20 mm; Stiel 0,5–1 mm breit, zumindest am mittleren Teil des Stiels verkahlend; Caulozystiden zylindrisch bis keulig, unregelmäßig bis koralloid, nur am Scheitel Gruppen bildend; auf Nadelmulm oder in *Sphagnum*-Bulten wachsend .. 7. *X. cornui* (p. xxx)
- 10 Cheilozystiden unauffällig oder wenig auffällig, (14) 18–31 (41) × (4,0) 5,5–9,0 µm, ± flaschenförmig, keulig, fusoid, ± sackförmig, selten ± zylindrisch, manchmal geschnäbelt, oft etwas unregelmäßig; ohne Bevorzugung kalkhaltiger Böden 5a. *X. fraxinophila* var. *fraxinophila* (p. xxx)
- 10* Cheilozystiden auffällig, 22–75 × (3,5) 4,5–6,0 µm, ± zylindrisch, verzweigt bis koralloid im oberen Teil, manchmal septiert; mit Bevorzugung kalkhaltiger Böden 5b. *X. fraxinophila* var. *macrocystidiata* (p. xxx)

1. *Xeromphalina campanella* (Batsch: Fr.) Kühner & Maire

Hut 4–20 (35) mm, halbkugelig bis glockenförmig, sich ausbreitend bis konvex oder abgeflacht, oft etwas papillös hygrophan, bis zur Mitte durchscheinend gerieft, orange-braun, orange-ockerfarben bis ockerfarben-gelb, zum Hutrand hin viel blasser, verblassend, glatt, kahl. **Lamellen** entferntstehend, L = 12–22, l = 1–3, breit angewachsen bis herablaufend, bogig, gegabelt, nie unregelmäßig anastomosierend, manchmal gebogen, aderig, weiß, blass cremefarben bis blass ockerfarben oder orangebraun. **Stiel** (8) 10–30 (35) × 0,5–2 mm, weißlich bis gelb mit orange-brauner oder orange-ockerfarbener Basis, dann gänzlich orange-gelb bis dunkel orange- oder rot-braun, gänzlich fein weißlich flaumig, mit schmutzig gelbem basalem Filz. **Sporen** (5,5) 6,2–8,0 (9,5) × 3,0–4,0 (4,5) µm, zylindrisch-ellipsoid bis ellipsoid. **Basidien** 4-sporig, keulig. **Cheilozystiden** 25–66 × (6,0) 7,0–18 µm, flaschenförmig, fusoid, ± sackförmig, ± keulig, ± zylindrisch, manchmal geschnäbelt, dünn- bis etwas dickwandig. **Pleurozystiden** vereinzelt, ähnlich den Cheilozystiden. **Pileipellis** eine Schicht inkrustierter Hyphen, Circumzystiden vereinzelt, bis zu 38,5–75 × 10,0–17 µm, angedrückt bis aufrecht, zylindrisch, keulig bis fusoid, abgeflacht, manchmal unregelmäßig. **Stipitipellis** eine Schicht inkrustierter

Hyphen. **Caulozystiden** 25–105 × 6.0–14 (17) µm, keulig, breit keulig, flaschenförmig, sackförmig, fusoid, manchmal unregelmäßig, nie verzweigt, dünn- bis deutlich dickwandig. **Schnallen** vorhanden.

In Gruppen, selten einzeln, auf verfaulem Nadelholz (Stümpfen, Stämmen, Wurzeln), besonders von *Picea abies* aber auch auf anderen Nadelbäumen. Verbreitet und lokal gemein in Nord- und Mitteleuropa.

2. *Xeromphalina brunneola* O. K. Mill.

Hut 6–15 mm, konvex-niedergedrückt bis fast abgeflacht, gleichmäßig orange-braun, kahl. **Lamellen** engstehend, herablaufend, schmal, orange-falb. **Stiel** 30–60 × 1–2.5 mm, glatt und orang-falb am Scheitel, darunter ockerfarben flaumig, dunkler rostbraun. **Sporen** (5.0) 5.5–7.0 (7.5) × 2.5–3.5 µm, ellipsoid, zylindrisch-ellipsoid bis fast mandelförmig, oft fast allantoid. **Basidien** 4-sporig. **Cheilozystiden** 25–85 × (6.5) 8.0–16.5 (19) µm, flaschenförmig, lanzettlich, (fast) sackförmig, keulig, subfusoid. **Pleurozystiden** fehlend. **Pileipellis** eine Schicht inkrustierter Hyphen, Circumzystiden nicht häufig, 25–50 × 14–16 µm, keulig, breit keulig, fast fusoid, manchmal unregelmäßig, dünn- bis etwas dickwandig, zylindrisch, oft unregelmäßige bis fast korallenförmige Endteile oder seitliche Fortsätze vorhanden. **Stipitipellis** eine Schicht inkrustierter Hyphen. **Caulozystiden** (23) 30–65 × (6.0) 11–18 µm, keulig, breit keulig, sackförmig, zylindrisch, manchmal unregelmäßig, nicht verzweigt, nicht korallloid, dickwandig. **Schnallen** vorhanden.

In Gruppen auf Nadelholz, besonders von *Picea*. Selten, nur bekannt von nördlichen und montanen Gebieten Europas.

3. *Xeromphalina junipericola* G. Moreno & Heykoop

Hut 2–6 mm, kugelig bis becherförmig, baun-rötlich mit weinroten bis braun-purpurrötlichen Färbungen, bedeckt mit gelb-orangen Flocken, welche bei unreifen Exemplaren zahlreicher sind. **Lamellen** entferntstehend, L = 27–30, l = 1–2, herablaufend, grau bis grau-violett. **Stiel** 6–14 × 0.5–1.5 mm, gleichfarbig mit dem Hut oder blasser, mit einem weißlich puderigem Flaum bedeckt, mit flockiger Basis, gebildet aus ockerfarben-orangen Hyphen. **Sporen** (3.7) 4.0–5.0 × (2.0) 2.2–2.5 (3.0) µm, ellipsoid bis zylindrisch-ellipsoid, glatt, dünnwandig, hyalin. **Basidien** 4-sporig. **Cheilozystiden** 23–31 × (3.5) 6.5–12.5 µm, fusoid bis breit fusoid, sackförmig, (fast) flaschenförmig, manchmal etwas unregelmäßig, oft mit (unregelmäßigem) Schnabel. **Pileipellis** eine Schicht inkrustierter Hyphen, Circumzystiden zahlreich, 16–41 (55) × 4.0–12 µm, zylindrisch, keulig, fusoid, unregelmäßig bis fast korallloid, etwas dickwandig, glatt, blass bis dunkel braun in KOH. **Stipitipellis** eine Schicht inkrustierter Hyphen. **Caulozystiden** 31–80 × 7.0–11 µm, zylindrisch, keulig (sub)fusoid, ± sackförmig, manchmal geschnäbelt, etwas dickwandig. **Schnallen** vorhanden.

Auf Stämmen von *Juniperus thurifera*. Selten, nur bekannt von der Typus-Lokalität in Spanien.

4. *Xeromphalina minutissima* Esteve-Rav.

Hut 3 mm, konvex, mit einer deutlichen zentralen Papille, nicht hygrophan, nicht durchscheinend gerieft, glatt bis fast fibrillös im Zentrum, mehlig flockig bis fibrillös zum Hutrand hin, blass braun bis beige. **Lamellen** entferntstehend, L = 12–15, beinahe frei, leicht mit Zahn herablaufend, bauchig, braun. **Stiel** 10 × 0.5 mm, gleichfarbig mit dem Hut, gänzlich fibrillös-mehlig, mit dunkel braunen bis schwärzlichen Rhizomorphen im unteren Teil. **Sporen** 3.5–4.5 × 2.0–2.7 µm, ellipsoid, dünnwandig, glatt, hyalin. **Basidien** 4-sporig. **Cheilozystiden** zahlreich, 23–31 × 7.5–11 µm, fusoid, selten ± lanzettlich oder ± sackförmig, manchmal fast geschäbelt, dünnwandig. **Pleurozystiden** ähnlich den Cheilozystiden,

vereinzelt. **Pileipellis** ein (Sub)Trichoderm aus zylindrischen bis schmal keuligen, \pm dünnwandigen, stumpfen Elementen, Circumzystiden selten, $17\text{--}25$ (36) \times $4.5\text{--}8.5$ (13) μm , zylindrisch bis keulig, manchmal fast kopfig, regelmäßig bis unregelmäßig, nie koralloid, \pm dünnwandig. **Stipitipellis** eine Schicht glatter oder winzig inkrustierter Hyphen. **Caulozystiden** zahlreich, (10) $18\text{--}60$ \times $4.5\text{--}8.0$ μm , zylindrisch, keulig, fusoid, schmal flaschenförmig, regelmäßig oder etwas unregelmäßig, nie koralloid oder verzweigt, dünn- bis etwas dickwandig, (fast) hyalin. **Schnallen** vorhanden.

Auf Zapfen von *Pinus pinaster*.

5. *Xeromphalina fraxinophila* A. H. Sm. var. *fraxinophila*

Hut $10\text{--}30$ mm, breit konvex, jung truncat bis genabelt, dann genabelt, mit eingebogenem, dann sich ausbreitendem hygrophanem, ockerfarben-gelbem bis gelbem Hutrand, durchscheinend dunkel (rot-) braun im Zentrum, kahl, etwas radial gerunzelt, trocken verblassend und seidig werdend. **Lamellen** engstehend, mit Zwischenlamellen ($l = 2$), bogig-herablaufend bis angewachsen, bis zu 2 mm, aderig, anfangs elfenbeinfarben bis blass dottergelb, gelblich-ockerfarben werdend. **Stiel** $20\text{--}70$ \times $1\text{--}3.5$ mm, dunkel braun, oft mit rötlicher Färbung, gänzlich flaumig, mit dottergelbem bis ockerfarbenem oder orange-rostfarbenem, flockig-striegeligem basalem Filzbelag. **Sporen** (5.5) $6.0\text{--}7.5$ (9.0) \times $3.0\text{--}4.0$ (4.5) μm , ellipsoid, dünnwandig, glatt. **Basidien** 4-sporig. **Cheilozystiden** oft unauffällig, (14) $18\text{--}31$ (41) \times (4.0) $5.5\text{--}9.0$ μm , von verschiedener Form, flaschenförmig, keulig, fusoid, \pm sackförmig, selten \pm zylindrisch, manchmal geschnäbelt, oft etwas unregelmäßig, sehr selten verzweigt, dünn- bis etwas dickwandig, hyalin oder blass gelb(-braun). **Pleurozystiden** fehlend. **Pileipellis** eine Schicht inkrustierter Hyphen, Circumzystiden (15) $20\text{--}38$ \times $4.0\text{--}6.0$ μm , \pm zylindrisch, mit seitlichen Fortsätzen oder koralloid, glatt, dünn- bis etwas dickwandig, (fast) hyalin bis blass gelblich. **Stipitipellis** eine Schicht inkrustierter Hyphen. **Caulozystiden** zahlreich, $10.0\text{--}120$ \times $2.5\text{--}15$ μm , zylindrisch, keulig, fusoid, pfriemenförmig, oft unregelmäßig, manchmal verzweigt, nicht inkrustiert, oft \pm dickwandig am stumpfen Ende, dickwandig (bis zu 3 μm an der Basis). **Schnallen** vorhanden.

Gesellig oder fast rasenbildend, auf Holz und Abfällen von Laubbäumen. Selten, verbreitet in nördlichen und montanen Gebieten.

5b. *Xeromphalina fraxinophila* var. *macrocystidiata* Antonín & Noordel.

Unterscheidet sich von der Typus-Varietät durch deutliche Cheilozystiden und wahrscheinlich auch durch das Vorkommen auf Kalkboden.

6a. *Xeromphalina caudicinalis* (Fr.) Kühner & Maire var. *caudicinalis*

Hut $10\text{--}20$ (25) mm, konvex mit herabgedrücktem Zentrum, sich im Alter ausbreitend, hygrophan, am Hutrand bis zu $\frac{2}{3}$ des Radius durchscheinend gerieft, gelb-braun mit dunklerem Zentrum, glatt, kahl. **Lamellen** entferntstehend bis mäßig entferntstehend, $L = 14\text{--}20$ (30) $l = 2$ (3), breit angewachsen bis herablaufend, glb bis gelb-braun. **Stiel** (15) $25\text{--}70$ \times $0.6\text{--}1.0$ mm, weiß bis gelblich am Scheitel, darunter bräunlich gelb bis braun, im basalen Teil sehr dunkel schwärzlich braun, gänzlich fein braun-gelb flockig bis filzig, an der Basis mit bräunlich-gelbem Filzbelag. **Sporen** $5.0\text{--}7.0$ \times $2.8\text{--}3.5$ (4.0) μm , ellipsoid. **Basidien** 4-sporig. **Cheilozystiden** (18) $23\text{--}45$ \times $3.5\text{--}8.0$ (14) μm , von verschiedener Form, zylindrisch, keulig flaschenförmig, (sub) fusoid, einfach oder apikal verzweigt, meist mit $2\text{--}6$ Fortsätzen (oft koralloid), manchmal geschnäbelt, oft unregelmäßig, dünn- bis etwas dickwandig. **Pileipellis** eine klebrige Schicht meist inkrustierter Hyphen, Circumzystiden (10) $15\text{--}50$ (58) \times $4.0\text{--}8.0$ (12) μm , \pm angedrückt bis (fast) aufrecht, unregelmäßig, ausgestülpt bis meist koralloid, dünn-

bis etwas dickwandig. **Stipitipellis** eine Schicht inkrustierter Hyphen. **Caulozystiden** zahlreich, (10) $20\text{--}60 \times 4.0\text{--}8.0$ (14) μm , angedrückt bis aufrecht, zylindrisch, keulig oder fusoid, gelb-braun bis orange-braun in KOH. **Schnallen** vorhanden.

In nassen Nadelwäldern. Verbreitet in nördlichen und montanen Regionen.

6b. *Xeromphalina caudicinalis* var. *subfellea* Bon

Unterscheidet sich von der Typus-Varietät durch Hyphen in der Stiel-Trama, die in KOH deutlich rötlich werden.

7. *Xeromphalina cornui* Quél.

Hut 7–17 mm, zuerst halbkugelig, sich im Alter ausbreitend, hygrophan, durchscheinend gerieft, rotbraun im Zentrum, blass gelb bis gelb braun zum Hutrand hin, oft mit einer gelblichen feinen Körnelung im Zentrum und am Hutrand, zuletzt radial gefältelet, im Alter fein radial-rissig oder eingerissen am Hutrand. **Lamellen** fast entferntstehend, $L = 12\text{--}14$, $l = 1\text{--}3$, angewachsen-herablaufend bis herablaufend, manchmal aderartig, dunkel bis blass gelb, im Alter rötlich braun werdend. **Stiel** $15\text{--}60 \times 0.5\text{--}1$ mm, blass gelb, abwärts braun bis schwärzlich braun an der Basis, am Scheitel fein gelb bis ockerfarben bereift, abwärts kahl, trocken, glänzend bis fein längs gerieft, an der Basis ockerfarben bis rotbraun filzig. **Sporen** $5.5\text{--}7.5$ (8.0) \times $2.8\text{--}4.0$ (4.2) μm , ellipsoid, fast mandelförmig. **Basidien** 4-sporig. **Cheilozystiden** selten bis vereinzelt, $21\text{--}32 \times 5.0\text{--}8.0$ (10.0) μm , zylindrisch, schmal keulig, (sub)fusoid, etwas dickwandig, oft unregelmäßig, geschnäbelt. **Pileipellis** eine Schicht glatter oder inkrustierter Hyphen, Circumzystiden $11\text{--}25 \times 4.0\text{--}9.0$ μm , zylindrisch bis keulig, unregelmäßig bis koralloid, dünn- bis etwas dickwandig, fast hyalin bis hyalin. **Stipitipellis** eine Schicht von inkrustierten Hyphen. **Caulozystiden** $20\text{--}51 \times 5.0\text{--}8.5$ μm , angedrückt bis aufrecht, (fast) zylindrisch bis keulig, darunter unregelmäßig bis koralloid oder verzweigt, dickwandig. **Schnallen** vorhanden.

Auf Resten von Nadelbäumen, oft in *Sphagnum*-Mooren. Selten, aber verbreitet in Nord- und Mitteleuropa.

8. *Xeromphalina campanelloides* Redhead

Hut 3.5–12 mm, konvex, stumpf bis fast gebuckelt, hygrophan, etwas durchscheinend geriet, rotbraun im Zentrum, zum Hutrand hin mehr gelb-braun, überall gelb bereift. **Lamellen** mäßig entferntstehend, $L = 16\text{--}20$, $l = 1\text{--}3$, schmal (1–1.5 mm breit), angewachsen mit kurzem Zahn herablaufend bis bogig, weißlich bis blass gelb. **Stiel** $16\text{--}30$ (40) \times $0.7\text{--}1.2$ mm, an der Spitze gelblich, in der Mitte orange-braun, zu Basis hin dunkler, beinahe schwarz, gänzlich gelb bereift, mit dunkel rot-braunen Rhizomorphen auf dem Substrat wachsend. **Sporen** $4.8\text{--}6.0 \times 2.8\text{--}3.7$ (4.5) μm , ellipsoid bis breit ellipsoid. **Basidien** 4-sporig. **Cheilozystiden** $15\text{--}50 \times 2.5\text{--}5.5$ μm , zylindrisch bis schmal keulig oder subfusoid, im apikalen Teil meist verzweigt oder koralloid. **Pileipellis** eine Schicht glatter oder winzig inkrustierter Hyphen, Circumzystiden $22\text{--}64 \times 3.0\text{--}5.0$ (7.0) μm , angedrückt, selten fast aufrecht, zylindrisch bis schmal keulig, unregelmäßig bis koralloid, manchmal ausgestülpt. **Stipitipellis** eine Schicht von inkrustierten Hyphen. **Caulozystiden** $32\text{--}65$ (88) \times (4.5) $6.0\text{--}15$ μm , \pm zylindrisch, keulig, unregelmäßig bis (fast) koralloid, \pm dünn- bis etwas dickwandig, orange-gelb (goldgelb) am Scheitel. **Schnallen** vorhanden.

Auf Nadelholz und -resten. Sehr selten, nur bekannt von einem Fundort in Europa (Österreich).

7. REFERENCES

- ANTONÍN V. (1989): Einige interessante Makromyzetenfunde aus Rumänien. – Acta Mus. Moraviae, Sci. nat., **74**: 135-149.
- ANTONÍN V. (1999): Notes on the genus *Fayodia* s. l. (Tricholomataceae) – I. Type studies of European *Myxomphalia* species. – Mycotaxon **73**: 325-334.
- ANTONÍN V. (2000a): *Xeromphalina brunneola* (Tricholomataceae), a new member of the European mycoflora. – Czech Mycol. **52(3)**: 237-242.
- ANTONÍN V. (2000b): The first European record of *Xeromphalina campanelloides* (Tricholomataceae) from Austria. – Österr. Z. Pilzk. **9**: 111-114.
- ANTONÍN V. (2000c): Proposal to conserve the name *Xeromphalina* Kühner & Maire (Basidiomycetes: Tricholomataceae) with that spelling. – Taxon **49**: 285-286.
- ANTONÍN V. (2002): *Retocybe* Velen. (Basidiomycotina, Tricholomataceae): type revisions of species described by J. Velenovský with notes on status of the genus. – Acta Mus. Moraviae, Sci. biol. **87**: 201-207.
- ANTONÍN V. (2002) Notes on the genus *Fayodia* s.l. (Tricholomataceae) II. Type studies of European species described in the genera *Fayodia* and *Gamundia*. – Persoonia **18** (in press)
- ANTONÍN V. (2003): A revision of the type specimens of new species of *Delicatula* (Agaricales, Tricholomataceae) described by Josef Velenovský. – Czech Mycol. **54(3/4)**: 205-233.
- ANTONÍN V. (2004): Notes on the genus *Fayodia* s.l. (Tricholomataceae), II. Type studies of European species described in the genera *Fayodia* and *Gamundia*. – Persoonia **18** (in press).
- ANTONÍN V. & NOORDELOOS M.E. (1993): A monograph of *Marasmius*, *Collybia*, and related genera in Europe I. *Marasmius*, *Setulipes*, and *Marasmiellus*. Libri bot. **8**. IHW Verlag, Eching.
- ANTONÍN V. & NOORDELOOS M.E. (1997): A monograph of *Marasmius*, *Collybia*, and related genera in Europe II. *Collybia*, *Gymnopus*, *Rhodocollybia*, *Crinipellis*, *Chaetocalathus*, and additions to *Marasmiellus*. Libri bot. **17**. IHW Verlag, Eching.
- ANTONÍN V. & ŠKUBLA P. (2000): Interesting macromycetes found in the Czech and Slovak Republics. – Fungi non delineati **11**: 1-46.
- ARNOLDS E. (1982): Ecology and coenology of macrofungi in grasslands and moist heatlands in Drenthe, the Netherlands. Part 2. Autecology, Part 3. Taxonomy. – Bibl. mycol. **90**: 1-501, J. Cramer, Vaduz.
- ARNOLDS E. (1985): Notes on *Hygrophorus* – IV. – Persoonia **12**: 475-478.
- ARNOLDS E., KUYPER TH. W. & NOORDELOOS M. E. (1995): Overzicht van de paddestoelen in Nederland. – Den Haag.
- ARONSEN A. (1992): *Hemimycena subglobispora*, spec. nov., and *Arrhenia acerosa* var. *tenella*, comb. nov., from wetlands in southern Norway. – Persoonia **14(4)**: 425-429.
- ARONSEN A. & MAAS GEESTERANUS R. A. (1990): *Mycena oligophylla*, another new species from southern Norway. – Persoonia **14(2)**: 183-188.
- BAÑARES BAUDET A., BELTRÁN TEJERA E. & RODRIGUEZ ARMAS J. L. (1994): Estudio micológico de la reserva de la biosfera „El Canal y los Tiles“ (La Palma, Islas Canarias) III. Agaricomycetidae (2ª parte). – Cryptog., Mycol. **15**: 1-20.
- BAÑARES A., BELTRÁN E. & WILDPRET W. (1986): Contribución al estudio micológico de los pinares de Tamadaba (Gran Canaria). IV. Agaricales. II. – Bol. Soc. micol. Madrid **11**: 59-83.
- BAS C. & KUYPER Th. W. (1995): Artificial key to the genera of the Tricholomataceae as occurring in and around the Netherlands. – In: BAS C. et al. (eds.), Flora Agar. Nederland., Vol. **3**, p. 23-30.
- BELTRÁN TEJERA E. et al. (1989): Contribucion al estudio de la flora micologica del Monte de Aguas y Pasos (Los Silos, Tenerife). III. – Doc. mycol. **19(76)**: 41-58.
- BENKERT D. (1980): Seltene Basidiomyceten aus dem NSG Fresdorfer Moor (Kreis Potsdam). – Boletus **4(3)**: 41-51.
- BESSON M. A. (1969): La paroi sporique de *Fayodia bisphaerigera* (Lange) Kühner en microscopie électronique et photonique. – C. R. Acad. Sci. Paris, 268, Ser. D: 3167-3169. (not seen)
- BESSON M. A. (1972): Contribution a la connaissance de l'infrastructure de la paroi sporique des Hyménomycètes. – Thèse. L'Universite Claud Bernard de Lyon. (not seen)
- BIGELOW H. E. (1959): Notes on fungi from northern Canada. IV. Tricholomataceae. – Canad. J. Bot. **37**: 769-779.

- BIGELOW H. E. (1970): *Omphalina* in North Amerika. – *Mycologia* **62(1)**: 1-32.
- BIGELOW H. E. (1975): Studies in the Tricholomataceae: *Hygrophoropsis*, *Cantharellula*, *Myxomphalia*, *Omphaliaster*. – *Nova Hedwigia*, Beih. **51**: 61-77.
- BIGELOW H. E. (1979): Notes on *Fayodia* ss. lato. – *Mycotaxon* **9(1)**: 38-47.
- BIGELOW H. E. (1983): Spore ornamentation in the Tricholomataceae. II. – *Sydowia* **36**: 11-18.
- BOLLMANN A., GMINDER A. & REIL P. (1996): Abbildungsverzeichnis mitteleuropäischer Großpilze. – *Jahrbuch Schwarzwälder Pilzlehre* **2**: 1-213 + obsah 1-32.
- BON M. (1983a): Rare and interesting species (Agaricales) found in Norway. – *Agarica* **4(8)**: 72-79.
- BON M. (1983b): Validations de taxons et combinaisons nouvelles. – *Doc. mycol.* **13(49)**: 38 and 56.
- BON M. (1987): Basidiomycetes intéressants ou nouveaux étudiés au stage “Dunes et pelouses” à St-Valery-sur-Somme, nov. 1983. – *Doc. Mycol.* **17(67)**: 1-10.
- BON M. (1987): Agaricomycetes étudiés au symposium de Val di Rabbi (Italie) (Septembre 1983). – *Doc. mycol.* **18(69)**: 26-34.
- BON M. (1993): *Myxomphalia maura* (Fr.: Fr.) Hora. – *Doc. mycol.* **23(91)**: 35-36.
- BON M. (1996): Novitates. – *Doc. mycol.* **102**: 17-20.
- BON M. (1997): Clitocybes, omphales et ressemblants. – *Fl. mycol. Eur.* **4**, *Doc. mycol. Mém. hors sér.* **4**: 1-181.
- BON M. (1999a): Tricholomatales (Marasmiaceae, Lyophyllaceae et Dermolomataceae). – *Doc. mycol.* **29(115)**: 33-34.
- BON M. (1999b): Les Collybio-Marasmioides et ressemblants. – *Fl. mycol. Eur.* **5**, *Doc. mycol. Mém. hors sér.* **5**: 1-171.
- BON M. (1999): Miscellanees. – *Doc. Mycol.* **29(115)**: 36.
- BON M. & CHEVASSUT G. (1989): Agaricomycetes de la région Languedoc-Cevennes (4ème partie). – *Doc. mycol.* **19(75)**: 25-48.
- BON M. & RÖLLIN O. (1999): Notes sur le genre *Gamundia* Raith. – *Doc. Mycol.* **29(114)**: 7-11.
- BREITENBACH J. & KRÄNZLIN F. (1991): Fungi of Switzerland. Vol. 3. Boletes and Agarics. 1st part. – Luzern.
- BRESADOLA J. (1881): Fungi Tridentini. I. – Tridenti.
- BRESADOLA J. (1892): Fungi Tridentini. II. – Tridenti.
- BRESINSKY A. & STANGL J. (1974): Beiträge zur Revision M. Britzelmayrs „Hymenomyceten aus Südbayern“ 12. Weitere Tricholomataceen aus der Umgebung von Augsburg. – *Z. Pilzk.* **40**: 69-104.
- BRUNNER I. & HORAK E. (1988): Zur Ökologie und Dynamik praticoler Agaricales in Mesobrometen der Nordschweiz. – *Mycol. Helvetica* **3(1)**: 1-26.
- BUJAKIEWICZ A. (1994): Macrofungi in the alder forests of the Białowieża National Park. – *Mycol. Helvetica* **6(2)**: 57-76.
- CEJP K. (1929): Revise středoevropských druhů skupiny *Omphalia-Mycena* se zvláštním zřetelem k druhům m československým, díl II., část 1. *Omphalia*, *Delicatula*. – *Sp. Přírod. Fak. K.U.* **100**: 1-95.
- CEJP K. (1930): Revise středoevropských druhů skupiny *Omphalia-Mycena* se zvláštním zřetelem k druhům m československým, díl II., část 2. *Mycena*, *Pseudomycena*. – *Sp. Přírod. Fak. K.U.* **104**: 1-162.
- CEJP K. (1936): *Omphalia* (Fr.) Quél. – kalichovka. – In: KAVINA K. & PILÁT A. (eds.), *Atlas hub evropských*, Sv. **4**. Praha.
- CEJP K. (1938): *Delicatula* Fayod – žebematka. – In: KAVINA K. & PILÁT A. (eds.), *Atlas hub evropských*, Vol. **4b**. Praha.
- CLÉMENÇON H. (1982): *Camarophyllus*. – Beih. *Zeitschr. Mykologie* **4**: 39-56.
- CLÉMENÇON H. (1982): Kompendium der Blätterpilze. Europäische omphalinoide Tricholomataceae. – *Z. Mykol.* **48(2)**: 195-237.
- CLÉMENÇON H. (1997): Anatomie der Hymenomyceten. – Wabern-Bern.
- COLUCCI E. (1999): Un insolito habitus di *Fayodia gracilipes* (Britz.) Bresinsky & Stangl: semplice variante ecologica. – *Rev. micol.* **41(1)**: 3-9.
- CONTU M. (1997): *Jacobia*, un nuovo genere di Tricholomataceae omfalinoidei. – *Boll. Gruppo Micol. G. Bres.* **40(2-3)**: 169-173.
- CONTU M., BON M. & CURRELI L. (1989): *Rickenella brunneolilacina* sp. nov. noc note sul genere *Rickenella* in Sardegna. – *Micol. Veget. Mediterr.* **4(1)**: 57-62.
- CORNER E. J. H. (1966): A monograph of cantharelloid fungi. – *Ann. Bot. Mem.* **2**: 1-255.

- CORNER E. J. H. (1991): *Trogia* (Basidiomycetes). – Gard. Bull. Suppl. **2**: 1-100.
- COURTECUISSÉ R. (1985): Interesting, rare or new macrofungi. III. Some species of *Mycena*, *Hemimycena* and *Mycenella* (Basidiomycetes, Tricholomataceae) rare in North of France. – *Agarica* **6(12)**: 108-123.
- COURTECUISSÉ R. (1986): Macromycetes intéressants, rares ou nouveaux IV. Tricholomataceae. – *Doc. Mycol.* **16(62)**: 23-46.
- COURTECUISSÉ R. & DUHEM B. (1994): Guide des champignons de France et d'Europe. – Paris.
- DENNIS R. W. G., ORTON P. D. & HORA F. B. (1960): New check list of british agarics and boleti. – *Trans. Brit. mycol. Soc.* **43(Suppl.)**: 1-224.
- DESJARDIN D. E. (1991): A new species of *Hemimycena* (Agaricales, Tricholomataceae) from Anza Borrego Desert of Southern California. – *Mycotaxon* **42**: 187-192.
- DONK M. A. (1962): The generic names proposed for Agaricaceae. – *Nova Hedw. Beih.* **5**: 1-319.
- EINHELLINGER A. (1977): Die Pilze in primären und sekundären Pflanzengesellschaften oberbayerischer Moore. – *Ber. Bayer. Bot. Ges.* **48**: 61-146.
- ELBORNE S. A., LÆSSØE T. & ØSTMØE K. H. (1992): *Hemimycena*. – In: HANSEN L. & KNUDSEN H. (eds.), *Nordic Macromycetes*, Vol. 2. Polyporales, Boletales, Agaricales, Russulales, Copenhagen, p. 124-126.
- EMMET E. E. (1993): British *Mycena* species – 6. Some *Mycena* „look-alikes“. – *Mycologist* **7(4)**: 176-180.
- ESTEVE-RAVENTÓS F. (1995): *Xeromphalina minutissima* nom. prov., una nueva especie a Ser Validada. – *Bol. Soc. Micol. Madrid* **20**: 313-316.
- FAVRE J. (1936): Champignons rares ou peu connus des hauts-marais jurassiens. – *Bull. trimestr. Soc. Mycol. Fr.* **52**: 129-146.
- FAVRE J. (1948): Les associations fongiques des hauts-marais jurassiens. – *Mater. Fl. Cryptog. Suisse* **10(3)**: 1-228.
- FAVRE J. (1955): Les champignons supérieurs de la zone alpine du Parc national Suisse. – *Ergebn. wissenschaft. Untersuchung. schweiz. Nationalparks* **5(33)**: 1-212.
- FAVRE J. (1960): Catalogue descriptif des champignons supérieurs de la zone aubalpine du Parc National Suisse. – *Ergebn. wissenschaft. Untersuchung. schweiz. Nationalparks* **6(42)**: 1-610.
- FAYOD V. (1889): Prodrome d'une histoire naturelle des Agaricinées. – *Ann. Sci. Nat. Bot.* **7(9)**: 181-411.
- FLISINSKA Z. (1997): Macromycetes of the Jastkowice Forest reserve. – *Acta Mycol.* **32**: 303-313.
- FRIEDRICH S. (1997): Macromycetes of the proposed nature reserve Wilcze Uroczysko-Olszanka in the Odra estuary. – *Acta Mycol.* **32**: 239-255.
- FRIES E. M. (1818): *Observationes mycologicae*. Vol. **2**. – Hafniae.
- FRIES E. M. (1857): *Monographia hymenomycetum sueciae*. – Uppsala.
- FRIES E. M. (1881): *Systema mycologicum*. Vol. **1**. – Gryphiswaldiae.
- GERHARDT E. (1997): *Der große BLV Pilzführer für unterwegs*. – München.
- GILBERT M. E. (1926): *Bribes mycologiques*. – *Bull. Soc. mycol. Fr.* **42(1-2)**: 62-72.
- GILLET C. C. (1874): *Les Hyménomycètes*. – Paris.
- GRILLI E. (1999): *Gamundia striatula*. – In: LANZONI G. et al. (eds.), *Fungi non delineati* **7**: 28-31.
- GRÖGER F. (1983): Bestimmungsschlüssel für Blätterpilze, Teil 2. – *Mykol. Mitt.-Bl.* **26(2)**: 29-58.
- GRÖGER F. (1984): Beiträge zur Pilzflora Thüringens III. – *Mykol. Mitt.-Bl.* **27(1)**: 2-10.
- GRÖGER F. (1989): *Hemimycena cucullata* – Gipsweißer Scheinhelmling – im Süden der DDR. – *Boletus* **12(2)**: 59-61. „1988“.
- GRÖGER F. (1994): Kleine bis winzige weiße Scheinhelmlinge, Helmlinge, Aderlinge und diesen ähnliche Arten. – *Boletus* **18(3)**: 85-101.
- GRÖGER F. (1997): Zur Ökologie von *Hemimycena mairei*, dem Rasen-Scheinhelmling. – *Boletus* **21**: 21.
- GULDEN G. (1992): *Xeromphalina*. – In: HANSEN L. & KNUDSEN H. (eds.), *Nordic Macromycetes*, Vol. **2**. Polyporales, Boletales, Agaricales, Russulales, Copenhagen, p. 192.
- GULDEN G., BAS C. & KUYPER Th. W. (1984): Proposal to conserve *Hemimycena* (Tricholomataceae, Agaricales). – *Taxon* **33(2)**: 331-333.
- GULDEN G. & JENSEN K. M. (1982): *Mycena* and related genera in alpine habitats of south Norway. – *Arct. Alp. Fungi* **1**: 164-197.
- GULDEN G. & TORKELSEN A.-E. (1996): Fungi I. Basidiomycota: Agaricales, Gasteromycetales, Aphyllophorales, Exobasidiales, Dacrymycetales and Tremellales. – In: ELVEBALL A. & PRESTRUD P. (eds.), *A catalogue of Svalbard plants, fungi, algae and cyanobacteria*. Part 3, Norsk Polarinstitutt Skrifter **198**: 173-206.

- HARMAJA H. (1979): *Mycena picta* n. comb., an agaric new to Finland. – *Karstenia* **19**: 52-53.
- HAUSKNECHT A. & REINWALD K. F. (2001): Interessante Pilzfunde aus dem südlichen Portugal. – *Natur und Mensch, Jubiläumausgabe*: 181-212.
- HIBETT, D.S. & THORN, R.G. (2001) Basidiomycota: Homobasidiomycetes. – *The Mycota VII part B Systematics and Evolution*. McLaughlin & Lemke. – Springer Verlag, Berlin.
- HOLMGREN P.K. & KEUKEN W. (1974): *Index herbariorum*. Ed. **6**. – Utrecht.
- HONRUBIA M. & LLIMONA X. (1983): Aportación al conocimiento de los hongos del SE. de España. X. Boletales, Agaricales, Russulales. – *Publ. Anales Universidad Murcia* **42(1-4)**: 137-200.
- HORA F. B. (1960): New check-list of British Agarics and Boleti. Part. IV. Validations, new species and critical notes. – *Tr. Brit. mycol. Soc.* **43(2)**: 440-459.
- HORAK E. (1962): *Fragmenta mycologica I*. Beiträge zur Kenntnis der Gattungen *Fayodia* Kühn., *Cystoderma* Fay., *Rhodophyllus* Quéél. und *Coprinus* (Pers. ex Fr.) S. F. Gray. – *Z. Pilzk.* **28(1)**: 14-20.
- HORAK E. (1964): *Fragmenta mycologica V*. Beiträge zur Kenntnis der Gattungen *Lyophyllum* Karst., *Xeromphalina* Kühner & Mre., *Lentinellus* Karst. und *Crepidotus* Kummer. – *Schweiz. Z. Pilzk.* **42**: 101-108.
- HORAK E. (1968): *Synopsis generum Agaricalium* (Die Gattungstypen der Agaricales). – *Beitr. Kryptogamenfl. Schweiz* **13**: 1-741.
- HORAK E. (1979): *Xeromphalina* and *Heimiomyces* in Indomalaya and Australasia. – *Sydowia* **32**: 131-153.
- HRADÍLEK Z., LIZOŇ P. & TLUSTÁK V. (1992): *Index herbariorum Českoslovacorum*. – Olomouc.
- JAMONI P. G. (1997): *Rickenella swartzii* fo. *alnobetulae* fo. nov.: una nuova entità dell'Alnetum viridis. – *Boll. Gruppo micol. Bres.* **40(2-3)**: 267-271.
- JINDŘICH O. (1998): Hořovice. – *Mykol. Sborník* **75(1)**: 31.
- JOHNSON J. E. & PETERSEN R. H. (1997): Mating systems in *Xeromphalina* species. – *Mycologia* **89(3)**: 392-399.
- JOSSERAND M. (1937): Description de quelques omphales blanches. – *Ann. Soc. Linn. Lyon* **80(1936)**: 77-96.
- JOSSERAND M. (1937): Notes critiques sur quelques champignons de la Région lyonnaise (2^o série.) – *Bull. Soc. Mycol. Fr.* **53**: 173-230.
- JOSSERAND M. (1948): Notes critiques sur Quelques champignons de la région Lyonnaise (1). – *Bull. Soc. mycol. Fr.* **64(1-2)**: 1-30.
- JOSSERAND M. & KONRAD P. (1931): Note sur deux "Collybia" du groupe "clusilis". Une espèce nouvelle: "C. pseudo-clusilis". – *Bull. Soc. Linn. Lyon* **10(3)**: 19-23.
- KALAMEES K. (1989): New and interesting agarics and bolets from East-Europe and Asia. – *Opera Bot.* **100**: 135-145.
- KARSTEN P. A. (1876): Bidrag till kännedom af Finlands natur och folk. – *Mycol. Fennica* **3**.
- KARSTEN P. A. (1879): Rysslands, Finlands och Skandinaviska halföns hattsvampar. – *Bidr. Känn. Finlands Natur Folk* **32**.
- KLÁN J. (1981): *Fayodia gracilipes* – kalichovka dvouvýtrusná - v Československu. – *Mykol. Listy no.* **4**: 2-4.
- KLÁN J. (1984): The genus *Xeromphalina* (Tricholomataceae) in Europe. – *Čes. Mykol.* **38**: 205-217.
- KNUDSEN H. (1992): *Fayodia*. – In: HANSEN L. & KNUDSEN H. (eds.), *Nordic Macromycetes*, Vol. 2. Polyporales, Boletales, Agaricales, Russulales, Copenhagen, p. 121-122.
- KOMOROWSKA H. (1990): Problemy taksonomii grzybów z rodziny Tricholomataceae (Agaricales). – *Acta Mycol.* **26(1)**: 85-98.
- KONRAD P. (1934): Le genre en mycologie. – *Schw. Z. Pilzk.* **12**: 175-178.
- KORF R. P. (1988): Report (N. S. 1) of the Committee for fungi and lichens on proposals to conserve and/or reject names. – *Taxon* **37**: 450
- KOST G. (1984): Moosbewohnende Basidiomyceten I. Morphologie, Anatomie und Ökologie von Arten der Gattung *Rickenella* Raithel.: *Rickenella fibula* (Bull.: Fr.) Raithel., *R. aulacomniophila* nov. spec., *R. swartzii* (Fr.: Fr.) Kuyper. – *Z. Mykol.* **50(2)**: 215-240.
- KOTLABA F. et al. 1995: Červená kniha ohrozených a vzácných druhov rastlín a živočíchov SR a ČR. Vol. **4**. Sinice a riasy, huby, lišajníky, machorasty. – Bratislava, 220 pp.
- KREISEL H. (1972): Bemerkenswerte Pilzfunde in Mecklenburg (III). – *Mykol. Mitt.-Bl.* **16(3)**: 73-88.
- KREISEL H. (1974): Bemerkenswerte Pilzfunde in Mecklenburg (IV). – *Mykol. Mitt.-Bl.* **18(1/2)**: 1-9.
- KREISEL H. (1987, ed.): *Pilzflora der Deutschen Demokratischen Republik*. Basidiomycetes (Gallert-, Hut- und Bauchpilze). – Gustav Fischer Verlag, Jena.

- KRIEGLSTEINER G.J. (1980): Über einige neue, seltene, kritische Makromyzeten in der Bundesrepublik Deutschland. – Z. Mykol. **46**: 59-80.
- KRIEGLSTEINER G. J. (1991): Über neue, seltene, kritische Makromyzeten in Westdeutschland (ehemalige BR Deutschland, Mitteleuropa). XII. Röhrlinge und Blätterpilze. – Beitr. Kenntnis Pilze Mitteleur. **7**: 61-79.
- KUBIČKA J. (1957): Žebernatka bezkolencová – *Delicatula quisquiliaris* (Joss.) Cejp na slatinách Třeboňska. – Čes. Mykol. **11**: 102-104.
- KUBIČKA J. (1958): Houby okolí Třeboně I. – Čes. Mykol. **12**: 240-243.
- KÜHNER R. (1926): Contribution à l'étude des Hyménomycètes et spécialement de Agaricacés. – Botaniste **7**: 1-215.
- KÜHNER R. (1928): Une nouvelle espèce de "*Rhodocybe*" R. Maire. – Bull. Soc. Linn. Lyon **7(17)**: 139-141.
- KÜHNER R. (1938): Le genre *Mycena* (Fries). – Encyclopédie Mycologique **10**: 1-710. Paris.
- KÜHNER R. (1980): Les Hyménomycètes agaricoïdes. – Bull. Soc. Linn. Lyon, Num. spéc., **49**: 1-1027.
- KÜHNER R. & MAIRE R. (1934): Etude de la réaction de la membrane sporique à l'iode dans les divers genres d'Agarics leucosporés. – Bull. trimestr. Soc. Mycol. Fr. **50**: 9-24.
- KÜHNER R. & ROMAGNESI H. (1953): Flore analytique des champignons supérieurs. – Paris.
- KÜHNER R. & VALLA G. (1972): Contribution la connaissance des espèces blanches à spores non amyloïdes du genre *Mycena* (Fries) S. F. Gray (Basidiomycètes, Agaricales). – Trav. Labor. „La Jaysinia“ **4**: 25-71.
- KUYPER T. W. (1984): Notulae ad floram agaricinam neerlandicam – VI-VII. *Rickenella* and *Omphalina*. – Persoonia **12(2)**: 1984.
- KUYPER T. W. (1985): Generic delimitation in European omphalinoid Tricholomataceae. – La Famiglia delle Tricholomataceae: 83-104.
- KUYPER T. W. (1988): Specific and infraspecific delimitation. – In BAS et al., Flora agaricina neerlandica, vol. **1**: 30-37.
- KUYPER T. W. (1995): *Fayodia* Kühner. – In: BAS C. et al. (eds.), Flora Agar. Neerland., Vol. **3**: 153-155.
- KUYPER T.W. (1995): *Gamundia* Raithehl. – In: BAS C. et al. (eds.), Flora Agar. Neerland., Vol. **3**: 155-156.
- KUYPER T. W. (1995): *Myxomphalia* Hora. – In: BAS C. et al. (eds.), Flora Agar. Neerland., Vol. **3**: 156-157.
- KUYPER T. W. (1995d): *Rickenella* Raithehl. – In: BAS C. et al. (eds.), Flora Agar. Neerland., Vol. **3**: 157-158.
- LAMOURE D. (1974): Agaricales de la zone alpine. *Mycena ochrogaleata* Favre. – Botaniste **56**: 55-58.
- LAMOURE D. (1979): Caractères morphologiques, caryologiques et culturaux des mycéliums de trois espèces de *Rickenella* (Agaricales). – Sydowia, Beih. **8**: 251-254.
- LANGE J. E. (1930): Studies in the Agarics of Denmark. Part VIII. *Omphalia*, *Pleurotus*, *Clitocybe*. – Dansk Bot. Arkiv **6(5)**: 1-64.
- LANGE J. E. (1936): Flora agaricina Danica. Vol. **2**. – Copenhagen.
- LANGE M. (1946): Mykologiske jagttagelser i Danmark 1943-1945. – Friesia **3**: 201-211.
- LANGE M. & SIVERTSEN S. (1966): Some species of *Lyophyllum*, *Rhodocybe*, and *Fayodia* with rough spores. Nomenclature and taxonomic position. – Bot. Tidsskr. **62**: 197-211.
- LINDSEY J. P. (1988): Annotated check-list with host data and decay characteristics for Colorado wood rotting Basidiomycotina. – Mycotaxon **33**: 265-278.
- LLISTOSELLA J., MARTI O., AGUASCA M. & MARTIN M. P. (1994): Aportacio a la flora micologica del Parc Nacional d'Ordesa i Monte Perdido (Pirineus centrals). – Bull. Soc. Catalana Micol. **16-17**: 99-118.
- LOCQUIN M. (1943): Une nouvelle technique d'étude des périspores amyloïdes: application au développement des spores de: *Fayodia bisphaerigera* (Lange) Kühner. – Bull. mens. Soc. linn. Lyon **12(7-8)**: 110-112 and 122-128.
- LOHMEYER T. R., CHRISTAN J. & GRUBER O. (1993): *Clitocybe puberula* Kuyper, *Lentaria albovinacea* Pilát und andere Pilze auf Sägemehl-lagerungen bei Burghausen/Oberbayern. – Z. Mykol. **59(2)**: 193-214.
- LONATI G. (1987): Funghi ... non conformisti. *Leucocortinarius bulbiger* (Alb. et Schw.: Fr.) Singer, *Xeromphalina caulicinalis* (With.: Fr.) Kühner et Maire. – Boll. Assoc. micol. ecol. Romana **4(11)**: 8-12.
- LONATI G. (1988): Note su due miceti rari morfologicamente molto simili: *Pseudoomphalina clusiliformis* (Kühner & Romagnesi) Bon, *Fayodia pseudoclusilis* (Josserand & Konrad) Singer. – Micol. Veget. Mediter. **3(2)**: 75-80.
- LONATI G. (1988): Funghi rari o poco conosciuti: *Fayodia xerophila* e *Fayodia hygrocoides*. – Micol. Veget. Mediter. **11(1)**: 15-20.

- LONATI G. (1989): Funghi rari o poco conosciuti: *Fayodia gracilipes* (Britz.) Bresinski et Stangl. – Bol. A. M. E. R. **16**: 23-25.
- LONATI G. (1989): Funghi rari o poco conosciuti. *Hemimycena pithyophila* Malençon. – Boll. Assoc. micol. ecol. Romana **18**: 14-17.
- LONATI G. (1994): Funghi rari o poco conosciuti. *Hemimycena cephalotricha* (Josserand) Singer, *Hemimycena mauretana* (Maire) Singer. – Boll. Assoc. micol. ecol. Romana **33**: 36-41.
- LONATI G. (1994): Funghi rari o poco conosciuti: *Fayodia leucophylla* (Gill.) Lange & Siversten. – Bol. AMER **10-11(30-31)**: 3-7.
- LUDWIG E. (2001): Pilzkompodium. Bd. 1. Beschreibungen. – IHW-Verlag, Eching.
- LUSZCZY DSKI J. (1997): Interesting macromycetes found in the Kielce town (Central Poland). – Acta Mycol. **32**: 207-228.
- LUTHI R. & PLOMB O. (1973): Une nouvelle espèce hivernale: *Fayodia* (*Heterosporula* Sing.) xerophila nov. spec. – Bull. trim. Soc. Mycol. Fr. **88**: 171-174.
- MAAS GEESTERANUS R. A. (1980a): Studies in Mycenas 1-4. – Proc. Kon. Ned. Akad. v. Wetensch., **C83(2)**: 167-174.
- MAAS GEESTERANUS R. A. (1980b): Studies in Mycenas 9-14. – Proc. Kon. Ned. Akad. v. Wetensch., **C83(4)**: 403-416.
- MAAS GEESTERANUS R. A. (1982): Studies in Mycenas 59. – Proc. Kon. Ned. Akad. v. Wetensch., **C85(2)**: 273-285.
- MAAS GEESTERANUS R. A. (1990): Conspectus of the Mycenas of the Northern Hemisphere - 14. – Proc. Kon. Ned. Akad. v. Wetensch. **C93(2)**: 163-186.
- MAAS GEESTERANUS R. A. (1991): Conspectus of the Mycenas of the Northern Hemisphere - 15. – Proc. Kon. Ned. Akad. v. Wetensch. **C94(1)**: 81-102.
- MAAS GEESTERANUS R.A. (1992): Mycenas of the Northern Hemisphere I & II. – Kon. Ned. Acad. Wet. Verh., afd. Natuurkunde, II reeks, **90**.
- MAIRE R. (1928): Diagnoses des champignons inédits de l'Afrique du Nord. – Bull. Soc. mycol. Fr. **44(1)**: 37-56.
- MAIRE R. (1937): Fungi Catalaunici. Series altera. – Treb. Inst. Botan. **3(4)**: 1-128.
- MAIRE R. (1945): Etudes mycologiques. Fascicule 5. – Bull. Soc. Hist. Nat. Afr. Nord **36**: 24-42.
- MALENCON G. & BERTAULT R. (1975): Flore des chapignons superieurs du Maroc. Vol. II. – Trav. Inst. Scient. Cherif. Fac. Sci. Rabat **33**: 1-540.
- MARTIN, G. (1993): *Hemimycena cucullata*. – Bull. trimest. Soc. mycol. Fr. 109, Atlas pl. 278.
- MAY T. W. & WOOD A. E. (1997): Catalogue and bibliography of Australian macrofungi 1. Basidiomycota p.p. Fungi of Australia. Vol 2A. – Australian Biological Resource Study, p. 1-348, Canberra.
- MEUSERS M. & MEUSERS S. (1985): Bestimmungsschlüssel für ± weisse Arten der Gattungen *Mycena*, *Hemimycena*, *Delicatula* und *Gloiocephala*. – Mittbl. Arbeitsgem. Pilzkunde Niederrhein **3**: 66-105.
- MILLER O. K. (1968): A revision of the genus *Xeromphalina*. – Mycologia **60**: 156-188.
- MONCALVO, et al. (2002): One Hundred and Seventeen Clades of Euagarics. – Molecular Phylogeny and Evolution **23**: 357-400.
- MONTHOUX O. (1986): Présentation d'une série d'aquarelles de Jeanne Favre. – Schweiz. Zeitschr. Pilzk. **64**: 29-36.
- MOREAU, P.-A., LLISTOSELLA, J.: *Hemimycena conidiogena*, a new cistophilous species producing blastoconidia. – Mycotaxon (in press).
- MONTAG K. & MÜNZMAY T. (1989): Kleinfrüchtige Fallaub- und Pflanzenreste-besiedelnde, weiss-sporige Blätterpilze aus der Familie der Tricholomataceae (Ritterlingsartige). – Faun. Flor. Notizen Saarland **21(3/4)**: 37-68.
- MORENO G. & AYALA N. (1996): Agaricales sensu lato de Baja California (México). I. – Bol. Soc. Micol. Madrid **21**: 305-323.
- MORENO G. & HEYKOOP M. (1996): *Xeromphalina junipericola* sp. nov. (Tricholomataceae, Agaricales) from Spain. – Z. Mykol. **62(1)**: 37-41.
- MORENO G. et al. (2002): Adiciones al catálogo micológico de la zona centro Peninsular. I. – Bol. Soc. Micol. Madrid **26**: 131-145.
- MOSER M. (1978): Fungorum rariorum icones coloratae. Pars VII. – Vaduz.
- MOSER M. (1983): Die Röhrlinge und Blätterpilze. – In: Kleine Krypt.-Fl., 2b/2, Jena.

- MURRILL (1916): *Prunulus*. In North Amer. Fl. **9**: 318-344.
- NOORDELOOS M. E. (1995): *Marasmiellus* Murrill - In: BAS C. et al. (eds.), Flora Agar. Neerland., Vol. **3**, p.123-129.
- ORTEGA et al. (1996). Aportación al Catálogo de los Macromycetops der Área Potencial del Abies pinsapo en España. – Bol. Soc. micol. Madrid **21**: 219-249.
- ORTEGA A., ESTEVE-RAVENTÓS F., GÓMEZ J. & DE DIOS REYES J. (2000): Contributo allo studio della micoflora dell'Andalusia (Spagna). XIV. Agaricales VII. – Boll. Gruppo Micol. Bres. **43(1)**: 45-57.
- ORTON P.D. (1960): New check list of british Agarics and Boleti. – Trans. Brit. Mycol. Soc. **43**: 159-439.
- ØSTMOE K. H. (1992): *Delicatula*. – In: HANSEN L. & KNUDSEN H. (eds.), Nordic Macromycetes, Vol. **2**. Polyporales, Boletales, Agaricales, Russulales, Copenhagen, p. 120.
- PEGLER D. N. (1977): A preliminary agaric flora of east Africa. – Kew Bull. Addit. Ser. **6**: 1-615.
- PEGLER D. N. (1983): Agaric flora of the Lesser Antilles. – Kew Bull. Addit. Ser. **9**: 1-668.
- PEGLER D. N. (1986): Agaric flora of Sri Lanka. – Kew Bull. Addit. Ser. **12**: 1-519.
- PEGLER D. N. & YOUNG T. W. K. (1971): Basidiospore morphology in the Agaricales. – Beih. Nova Hedwigia **1**-210.
- PÉREZ-DE-GREGORIO M. A. & VIDAL J. M. (1994): Aportació al coneixement dels macromicets de L'illa de Mallorca. I. – Bull. Soc. Catalana Micol. **16-17**: 145-164.
- PILÁT A. (1951): Klíč k určování našich hub hřibovitých a bedlovitých. – Praha.
- QUÉLET, M.L.(1873) Champignons du Jura et des Vosges I: **342** (Mém. Soc. Ěmul. Montbéliard , ser. II (5).
- QUÉLET L. M. (1878): Quelques especes de champignons nouvellement observées dans le Jura, dans les Vosges et aux environs de Paris. – Bull. Soc. Bot. Fr. **24(1877)**: 317-332.
- QUÉLET L. (1886): Enchiridion fungorum. – Lutetiae.
- RAITHELHUBER (1980) Descrip. Fungi nov. vel cons. nov., nom. val. – Metrodiana **9**: 47.
- RAITHELHUBER (1995): *Hemimycena* Sing. – Metrodiana **22(1)**: 45-48.
- REDHEAD R. A. (1980): Fungi canadensis 177.
- REDHEAD S. A. (1982): The application of *Helotium* to agarics. Part I. Nomenclature. Part II. Notes on selected species from Canada. – Can. J. Bot. **60**: 1998-2013.
- REDHEAD S. A. (1987): The Xerulaceae (Basidiomycetes), a family with sarcodimitic tissues. – Can. J. Bot. **65**: 1551-1562.
- REDHEAD S. A. (1988): Notes on the genus *Xeromphalina* (Agaricales, Xerulaceae) in Canada: biogeography, nomenclature, taxonomy. – Can. J. Bot. **66**: 479-507.
- REDHEAD S. A. (1989): A biogeographical overview of the Canadian mushroom flora. – Can. J. Bot. **67**: 3003-3062.
- REDHEAD S. A. & HALLING R. E. (1987): *Xeromphalina nubium* sp. nov. (Basidiomycetes) from Cerro de la Neblina, Venezuela. – Mycologia **79(3)**: 383-386.
- REDHEAD SCOTT A., MONCALVO J.M., VILGALYS R. & LUTZONI F. (2002): Phylogeny of Agarics: Partial Systematic Solutions for Bryophilous Omphalinoïd Agarics Outside of the Agaricales (Euagarics). – Mycotaxon **82**: 151-168. 2002.
- REDHEAD S. A. & SINGER R. (1981). *Resinomycena* gen. nov. (Agaricales), an ally of *Hydropus*, *Mycena*, and *Baeospora*. – Mycotaxon **13**: 150-170.
- RICEK E. W. (1989): Die Pilzflora des Attergaues, Hausruck- und Kobernausserwaldes. – Abhandl. Zool.-Bot. Gesel. Österr. **23**: 1-439.
- RICKEN A. (1915): Die Blätterpilze (Agaricales) Deutschlands und der angrenzenden Länder, besonders Oesterreichs und der Schweiz. – Leipzig.
- ROBICH G. (2003) *Mycena* in Europa. – Assoc. Micol. Bres., Trento.
- ROCABRUNA A., TABARÉS M., BALLARA J. & VILA J. (1994): Primera aportació al coneixement de la micoflora dels Pirineus i pre-Pirineus de catalunya. – Bull. Soc. Catalana Micol. **16-17**: 47-85.
- ROMAGNESI H. (1978): Quelques espèces rares ou nouvelles de macromycètes. V. – Agarics leucosporés. – Bull. Soc. mycol. Fr. **94(1)**: 73-85.
- ROMAGNESI H. (1992): Prodrômes a une flore analytique des Agaricomycetes. Les *Mycena* à spores non amyloïdes. Sous-genre *Hemimycena* Singer. – Bull. Soc. Mycol. Fr. **108**: 1-15.
- SANCLEMENTE M. S. & LLIMONA X. (1987): Aportacion al conocimiento de las Tricholomatacea de Cataluña. – Bull. Soc. Catalana Micol. **11**: 29-72.

- SCHULMANN O. von (1960): Zur Kenntnis der Basidiomyceten Finnlands. – *Karstenia* **5**: 5-99.
- SCHULMANN O. von (1963): Zur Kenntnis der Basidiomyceten Finnlands. – *Karstenia* **6-7**: 5-34.
- SENN-IRLET B. (1993): The mycoflora of Alpine mire communities rich in *Salix*. – *Arctic alp. Mycol.* **150**: 235-249.
- SENN-IRLET B. (1999): *Fayodia bisphaerigera* – der Gestreifte Rußnabeling. – *Z. Mykol., Beih.* **9**: 45-48.
- SENN-IRLET B., JENSEN K. M. & GULDEN G. (1990): Arctic and alpine fungi – **3**. Oslo.
- SINGER R. (1936): Das System der Agaricales. – *Ann. Mycol.* **34**: 286-378.
- SINGER R. (1936b): Bemerkungen über einige Basidiomyceten. – *Ann. Mycol.* **34**: 423-434.
- SINGER R. (1943): Das System der Agaricales. III. – *Ann. Mycol.* **41**: 1-189.
- SINGER R. (1951): The „Agaricales“ (mushrooms) in modern taxonomy. – *Lilloa* **22(1949)**: 1-832.
- SINGER R. (1961): Type studies on Basidiomycetes. X. – *Persoonia* **2(1)**: 1-62.
- SINGER R. (1962): Agaricales in Modern Taxonomy, 2nd ed. J. Cramer, Vaduz.
- SINGER R. (1962): Diagnoses fungorum novorum agaricalium II. – *Sydowia* **15(1961)**: 45-83.
- SINGER R. (1964): Die Gattung *Gerronema*. – *Nova Hedwigia* **7**: 53-92.
- SINGER R. (1965): Monographs of South American basidiomycetes especially those of the east slope of the Andes and Brazil. X. - *Xeromphalina*. – *Bol. Soc. Argentina Bot.* **10**: 302-310.
- SINGER R. (1969): Mycoflora australis. – *Nova Hedwigia, Beih.* **29**: 1-405.
- SINGER R. (1984): Agaricales in Modern Taxonomy, 4.ed. Cramer, Vaduz.
- SINGER R. (1986): The Agaricales in modern taxonomy. Ed. 4. – Koenigstein.
- SINGER R. & Clémençon H. (1971): Neue Arten von Agaricales. – *Schw. Z. Pilzk.* **49**: 118-128.
- SINGER R. & Passauer U. (1979): Höhlenbewohnende Agaricales. – *Sydowia* **32**: 299-304.
- SMITH A. H. (1937): Notes on agarics from the western United States. – *Bull. Torrey Bot. Club* **64**: 477-484.
- SMITH A. H. (1947): North American species of *Mycena*. – Ann Arbor – London.
- SMITH A. H. (1949): Mushrooms in their natural habitats. – Portland.
- SMITH A. H. (1953): New and rare agarics from the Douglas Lake region and Tahquamenon Falls State Park, Michigan, and an account of the North American species of *Xeromphalina*. – *Pap. Mich. Acad. Sci. Arts Lett.* **38(1952)**: 53-87.
- SVRČEK M. (1966a): A revision of some genera of Agaricales described by J. Velenovský. – *Čes. Mykol.* **20**: 69-74.
- SVRČEK M. (1966b): Agaricales aus Böhmen. II. – *Čes. Mykol.* **20**: 141-150.
- SVRČEK M. (1990): A report on mycological trips to Krkonoše Mts. (Giant Mts.), Bohemia, in the years 1986-1989. – *Čes. Mykol.* **44**: 77-91.
- TABARÉS CARRIEDO M. & ROCABRUNA I LLAVANERA A. (1987): Aportación al conocimiento de los hongos de la „Serra de Collcerola“ (Catalunya). – *Bull. Soc. Catalana Micol.* **11**: 83-
- TORTIĆ M. (1968): Fungus collections in the *Pinus peuce* forests in the Pelister National Park (Macedonia, Jugoslavia). – *Čes. Mykol.* **22**: 189-201.
- TREU R. & AGERER R. (1990): Culture characteristics of some *Mycena* species. – *Mycotaxon* **38**: 279-309.
- VEIKKO E. & HINTIKKA K. (1957): Über die finnischen Arten und Varietäten der Gattung *Xeromphalina* Kühner & Maire. – *Karstenia* **4**: 5-9.
- VELENOVSKÝ J. (1947): *Novitates mycologicae novissimae*. – Pragae.
- VOLK T. J., BURDSALL JR. H. H. & REYNOLDS K. (1994): Checklist and host index of wood-inhabiting fungi of Alaska. – *Mycotaxon* **52**: 1-46.
- WATLING R. (1998): New combinations in the xeruloid Tricholomataceae. – *Edinb. J. Bot.* **55(1)**: 157.
- WATLING R. & TURNBULL E. (1998): Cantharellaceae, Gomphaceae and amyloid-spored and xeruloid members of Tricholomataceae (excl. *Mycena*). – *British Fungus Fl.* **8**: 1-189. Edinburgh.
- WEHOLT O. (1988): A study of *Myxomphalia* with relation to European species and collects of *Myxomphalia* Hora found in Norwegian herbaria. – *Agarica* **9(17)**: 71-101.
- ZEA M. & ORTEGA A. (1991): Sobre el género *Mycena* s. l., en Andalucía. – *Bol. Soc. micol. Madrid* **15**: 123-138.