NOTULAE AD FLORAM AGARICINAM NEERLANDICAM—XV
Marasmius, Marasmiellus, Micromphale, and Hohenbuehelia

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The present paper gives descriptions and notes on various white-spored agarics. Two species are new to science, viz.: Marasmius cornelii and Marasmiellus ornatissimus. Micromphale bisporigera is provisionally described as new. The following new combinations are made: Marasmius setosus (Sow.) Noordel. to replace M. recubans Quéll., and M. bulliardii forma acicola (Lundell) Noordel. to replace M. wettsteinii sensu auct. eur. Hohenbuehelia culmicola is described as new to the mycoflora of the Netherlands. Type-studies are made of Marasmius pruinatus Rea and M. suaveolens Rea. A key is given to the European species of Marasmius sect. Gloiocephala and sect. Epiphylli. Some critical species, viz. Marasmius saccharinus, M. siccus, M. anomalus, M. buxi, M. hudsonii, Marasmiellus tricolor, and Marasmiellus rosellus, are fully described and illustrated.

I. MARASMIUS

Section Gloiocephala

1. Marasmius cornelii Laessöe & Noordel., spec. nov.—Figs. 1–5


Description & illustration.—Bas in Persoonia 2: 86–87, figs. 26–30. 1962.

Basidiocarps very small. Pileus 1–2.5 (–4) mm broad, relatively robust, tough, convex to applanate, white to cream colour, turning brown at margin, discolouring reddish brown on drying several hours after collecting, sometimes wrinkled, with scattered short hairs all over. Lamellae absent. Hymenium smooth, in some specimens wavy to grooved, pale gray white. Stipe up to 4 × 0.3 mm, lateral or excentrical, rarely almost central, white at apex, reddish brown below to blackish brown at base, entirely white pubescent hairy, at base with some hairs attached to substrate. Smell absent.

Spores 12.5–18 × 3.5–6.5 μm, average 15 × 5 μm, Q = 2.3–3.4, average Q = 2.75, slenderly ellipsoid to lacrymoid, thin-walled, colourless, inamyloid. Basidia 35–52 × 10–12.5 μm, 4-spored, slenderly clavate, clamped. Hymenial cystidia 20–35 × 11–30 μm, slenderly clavate to broadly vesiculose or lageniform, thin-walled, very scarce and most frequently found near margin of pileus. Pileipellis a hymeniderm of clavate to vesiculose elements, 22–50 × 11–30 μm with thickened, colourless or yellow walls. Pileocystidia 55–90 (–110) × 7–15 μm at base and 2–4.5 μm at apex, numerous, slenderly lageniform, thin-walled, colourless. Pileitrama distinctly gelatinized, made up of more or less radially orientated, 2.5–7 μm wide cylindrical to inflated hyphae. Stipitispellis a cutis. Caulocystidia very abundant, of two types, one 25–60 × 8–20 μm, clavate to vesiculose, thick-walled with yellowish walls, the other type 60–120 × 3–10 μm at base and 1.5–5 μm at apex, with thin or slightly thickened walls, colourless or pale yellow. Clamp-connections abundant in all tissues.

Habitat & distribution.—On rotten leaf sheets of Cladium mariscus in marshes, just above the water line. United Kingdom and Denmark. Rare.


Marasmius cornelii is named after Dr. Cornelis Bas, curator of Agaricales at the Rijks-herbarium, Leiden for his great stimulance of Agaricology, and for being the nestor of many young Dutch Mycologists.

Bas (1962) in his excellent monograph of the genus Gloiocephala in Europe, described an unnamed species on account of manuscript notes and drawings by Corner, who recorded the species for the first time (Corner, 1934) under the misapplied name Marasmius menieri. Bas (1.c.) suggested that Corner's species most likely represented a taxon new to science, but since dried material was lacking, it was impossible to give a formal description of the species.

During a collecting-trip of some Danish mycologists to the island of Langeland in the late autumn of 1984, Thomas Laessøe and Steen Elborne collected a fairly great number of small basidiocarps of Corner's species on Cladium mariscus in a marsh, a habitat quite comparable with that of Corner. They sent it to the Rijksherbarium for confirmation, where it came under the present author's attention. It was decided to name the new species after C. Bas, and in accordance with the author's view on the status of the genus Gloiocephala (Noordeloos, 1981), it was placed in the genus Marasmius section Gloiocephala.

Marasmius cornelii is distinguished from the other species in sect. Gloiocephala by the rather long, narrow pileo- and caulocystidia (see also the key below). The species of sect. Gloiocephala show a strong resemblance with those of sect. Epiphylli, from which they mainly differ by having reduced basidiocarps with excentric, lateral, or absent stipe and vein-like or wanting lamellae.
Section Epiphylli

2. Marasmius saccharinus (Batsch: Fr.) Fr.—Figs. 6–9


Pileus 9 mm broad, expanded slightly umboinate, white, pellucidly striate at margin when moist, dull, opaque on drying. Lamellae distant, free, subventricose, rather thick, white with entire, concolorous edge. Stipe up to 9×1.5 mm, slightly swollen above base, white above, pale tawny rusty at base, scattered white pruinose under lens, fistulose. Context concolorous with surface, rusty tawny in stipe base. Smell slightly acrid.

Spores 6.0–7.5×(3.0—)3.5—4 μm, average 6.5×3.5 μm, Q = 1.6—2.0, ellipsoid to somewhat lacrymoid in side view. Basidia 4-spored, clamped. Lamella edge almost sterile. Cheilocystidia 15—35×5—10 μm, irregularly clavate with one or more finger- or bladder-like excrescences at the top. Pileipellis a hymeniderm, made up of clavate, vesiculose or semiglobose elements, 10—30×7.5—16 μm with colourless, hyaline, sometimes thickened walls. Pileocystidia not found. Stipitispellis a cutis with transitions to a trichoderm with clustered caulocystidia. Caulocystidia 10—50×2—10 μm, irregularly coralloid, colourless. Clamp-connections numerous in all tissues.

Chemical reactions.—No part of basidiocarp amyloid nor dextrinoid in Melzer's reagent.

Habitat & distribution.—In forest on Fagus leaves. Europe. Very rare.


Marasmius saccharinus has often been cited in literature, but poorly known until recently. Orton (1960) gave a redescription of this taxon, but on account of this description I was unable to place this tiny white Marasmius in one of the sections of the genus.
Therefore the collection was asked on loan for closer study. On account of the white pileus, hymeniform pileipellis with smooth, hyaline elements, insititious stipe, and chemical reactions Marasmius saccharinus has to be placed in sect. Epiphylli subsect. Epiphylli. The small spores and size and shape of cheilocystidia distinguish it from all other species of that section in Europe: M. epiphyllus and M. tremulae. Macroscopically M. saccharinus resembles M. setosus (= M. recubans), that grows also on leaves of Fagus, but that species clearly differs in having long hairs on the stipe and by the larger spores.

The distribution of M. saccharinus in Europe is not well known. Besides the recent find in England it was listed by Clémençon (1982), who did not give information on distribution. It will probably be clear in future that M. saccharinus is a rare, but overlooked species.

3. Marasmius setosus (Sow.) Noordel., *comb. nov.*


Characteristics. — Fruitbodies small, growing on dead leaves of Fagus; pileus purely white, lamellae well developed; stipe with long, hyaline hairs; pileipellis with smooth elements.

While looking for old names for Mycenoid fungi, Dr. Maas Geesteranus, emeritus staff-member of the Rijksherbarium, drew my attention to the plate and description of *Agaricus setosus* Sow. He definitively felt that Sowerby’s fungus had to be excluded from the genus *Mycena*, and asked me to give my opinion. Considering the habit with long hyaline hairs on the stipe, and the habitat on leaves of *Fagus sylvatica*, I have no doubt that Sowerby depicted a *Marasmius* that long has been known as *M. recubans* in European literature. Since Sowerby’s name is older, it has priority, and the new combination has been made.

**KEY TO THE SPECIES OF MARASMIUS SECTIONS GLOIOCEPHALA AND EPYPHYLLI IN EUROPE**

1. Pileus white or almost white.
2. Basidia 2-spored.
Section Marasmius

4. Marasmius bulliardii Quél. forma acicola (Lundell) Noordel.,

comb. nov.—Figs. 10–13


Pileus 1–6 mm broad, convex or hemispherical, usually umbilicate, sometimes with small papilla within umbilicus, radially grooved to sulcate on back of the lamellae, dark beige or brown (10 YR 6/6–7/4) with slightly to distinctly darker (blackish) brown centre, slightly granulose under lens. Lamellae (L = 12–20, l = 0) with wide, distinct collarium, pale cream almost white (10 YR 8/4) with concolorous or white, entire edge. Stipe 20–60 × 0.2–0.5(–1) mm, filiform, white or pale brown at apex, downwards via dark red-brown to blackish brown (7.5 YR 3/2 to 10 YR 2/1), polished, shining, smooth, with fine longitudinal grooves lengthwise. Smell none.

Spores 6.5–10.0(–11.5) × (2.5–)3.5–5.5(–6.5) μm, average 7.2–8.6 × 4.0–4.5 μm, Q = 1.4–2.2, average Q = 1.7–2.0, ellipsoid to lacrymoid, thin-walled, hyaline, inamyloid. Basidia 24–35 × 6–9 μm, 4-spored, clamped. Lamella edge sterile. Cheilo-
cystidia 15–35 × 5–20 µm, clavate with numerous 1–3 µm long wart-like projections in apical part ('en brosse'). Hymenophoral trama irregular, made up of 2.5–6 µm wide, inflated hyphae. Pileipellis hymeniform, made up of clavate elements, 10–30 × 5–17 µm, with 1–4 µm long brown wart-like projections ('en brosse'). Clamp-connections numerous in all tissues.

Habitat.—On needles of *Picea*, rarely *Pinus* in oligotrophic to mesotrophic coniferous or mixed coniferous-deciduous forest.

Distribution.—Wide spread in boreal and montane/subalpine regions in Europe.


Favre (1952) described a small *Marasmius* from the rotula group growing on *Picea* needles as *M. wettsteinii*. I have seen this taxon in abundance in Scandinavia, and studied in addition some collections from central Europe, and come to the conclusion that Favre's taxon is very similar to *M. bulliardii*. The only differences found are the absence of sterile side-branches on the stipe and the substrate. *Marasmius bulliardii* forma *bulliardii* grows on leaves of deciduous trees, mainly *Fagus*, and has almost always small side-
branches bearing a sterile pileus at the end. Consequently I came to the conclusion, like Moser (1983), that M. wettsteinii sensu Favre is a synonym of M. bulliardii. I prefer, however, to give Favre's taxon the rank of forma. Lundell (1957) considered the same taxon as a form of Marasmius rotula.

The identity of Marasmius wettsteinii is a bit obscure: it was described by Saccardo & Sydow (1899) to replace Marasmius tenerrimus Wettstein (non M. tenerrimus Berk. & Curt.). The original diagnosis clearly indicates that Wettstein's taxon belongs to section Marasmius:

'Pileus membranaceous, convex or almost hemispherical, 2—4 mm broad, umbilicate, plicate, glabrous, whitish-ochraceous; lamellae few (10—16), broad, distant, united in a collarium, concolorous with pileus; stipe straight, with black rhizomorphs, 16—35 mm long, tough, glabrous, brown-black, apex whitish; spores globose or ellipsoid, 5—7 μm diameter, hyaline, smooth. On cones of Abies pectinata in Austria. M. rotula and M. graminis affinis.'

The small, globose spores make clear that, if Wettstein's observations were right, his fungus is not identical with ours and remains doubtful until it has been rediscovered.

Section Sicci

5. Marasmius siccus (Schwein.) Fr.—Figs. 14—22


Pileus 5—25 mm broad, campanulate, conical or hemispherical, expanding with age to plano-convex, with slightly truncate, papillate or depressed centre, with deflexed or straight often crenate margin, rather strongly radially sulcate from margin almost up to centre, vividly orange to ochraceous or yellowish ochraceous (centre 5 YR 5/8, rest 7.5 YR 6—7/8, when old more like 7.5 YR—10 YR 8/4—6), minutely pruinose all over (sub lente). Lamellae (L = 10—20, l = 0—1(3)) distant, almost free, thickish, narrowly ventricose, white to cream colour (10 YR 8/6), sometimes with brownish edge, particularly in dried specimens. Stipe 15—70 × 0.2—1 mm, cylindrical, tough, pale yellow at apex, below via red brown to blackish brown at base, smooth, glabrous, shining. Context white in pileus, brown in stipe. Smell none. Taste mild.

Spores 15—23 × 4—5 μm, average 16—18.5 × 4—5 μm, Q = 2.4—5, average Q = 3—5, fusiform, thin-walled. Basidia 20—30 × 5—6 μm, 4-spored, clamped. Lamella edge sterile. Cheilocystidia 8—20 × 3—10 μm, clavate to vesciculose, en brosse with numerous, 3.5—6 μm long, yellow brown excrescences. Hymenial cystidia 25—70 × 5—10 μm, clavate to

6. Marasmius anomalus Lasch—Fig. 23–27


Pileus 4.5–10 (–15) mm broad, broadly hemispherical or conical at first then convex, usually with distinct papilla, finally plano-convex with small papilla; translucently striate and grooved to sulcate on back of lamellae from centre to margin, pale orange, ochraceous or brown with darker centre (7.5 YR 6/6–6/8), pallescent with age (10 YR 8/3), glabrous or subpruinose (lens). Lamellae (L = 10–20, I = 0(1)) equal, rarely 1 or 2 lamellulae per fruitbody, distant, free or narrowly adnexed, broadly ventricose, usually extending under pileus, pale cream to pale brown with distinctly darker brown, granulose edge. Stipe 15–30 × 0.2–0.5 (–1.0) mm, filiform, cylindrical, tough, at apex pale cream to lemon yellow, then passing through yellow or orange to red-brown or blackish brown towards base (base 5 YR 3/2), glabrous, shining, finely grooved lengthwise, attached to substrate with red-brown, hairy disc. Context thin, concolorous with surface in cortex of pileus and stipe, pallid in inner part of pileus. Smell none. Taste mild. Spore print white.

Spores 12.0–19.5 (–22.0) × 4.0–6.5 (–7.0) μm, average 15–17.5 × 4.9–5.4 μm, Q = 2.7–4.0, average Q = 2.9–3.5, ellipsoid to fusiform with long apiculus, thin-walled, colourless, hyaline, inamyloid. Basidia 25–36 × 8.5–10 μm, 4-spored, clavate. Lamella edge sterile. Cheilocystidia 15–30 × 5–10 μm, clavate to broadly clavate or obpyriform,
with numerous warts and finger-like protuberances at apex, with brown, often thickened wall, especially in upper part, warts massif, brown. Pleurocystidia 40–60 × 12–14 μm, fusiform to clavate, often constricted or moliniform at apex, with colourless, granular content, rare to frequent. Subhymenium ramose, made up of 2.5–5 μm wide hyphae. Hymenophoral trama subregular, made up of inflated, often anastomosing or branched hyphae, 3–12 μm wide. Pileipellis a hymeniderm, made up of broomcells, 6–15 × 5–10 μm, with thin or thickened, brown walls and warts. Pileitrama compact in upper layer, made up of rather thick-walled, brownish hyphae, 2–8 μm wide, in lower part irregular, made up of inflated, hyaline, colourless, 3–10 μm wide hyphae. Stipitispellis a cutis of narrow, brown, thick-walled hyphae, 3–6 μm wide, at apex with some patent 5–10 μm wide, hyaline, colourless terminal elements. Stipitistrama regular, made up of cylindrical to slightly inflated hyphae, 5–12 μm wide. Clamp-connections abundant in most tissues, but rare in stipitistrama.

Chemical reactions.—Walls of hyphae in stipe strongly dextrinoid and metachromatic. All other parts inamylid, not metachromatic.

Habitat.—On grass and grass debris, sometimes also on roots, frequently found on rabbit dung, in rather dry, open vegetations like dune-grasslands, xerophytic grasslands, sometimes in rather saline habitats, often gregarious, sometimes caespitose.


*Marasmius anomalus* belongs to a group of rather closely related species that are widely distributed in boreal and temperate regions of Europe and North America. Gilliam (1975) described a number of new species in this group, mainly based on microscopical differences, such as thick- or thin-walled elements in pileipellis and presence or absence of coloured pleurocystidia. In Europe at least two species are known, viz. *M. siccus* and *M. anomalus*, that are very closely related, and distinguished mainly on habit and habitat characters: *Marasmius anomalus* is the smallest of the two with well developed lamellae, growing on grasses, and *M. siccus* is usually more luxurious, has less broad, sometimes slightly reduced lamellae, and grows on forest litter. Some more species appear in the European literature, viz. *Marasmius epodius* Bres., *M. littoralis* Quél., and *M. ventallonii* Sing. The latter seems to be well characterized by the green tinges in the stipe and habitat on needles of *Pinus pinaster* in Mediterranean areas. *Marasmius littoralis* is usually considered as a synonym of *M. anomalus*, but the original diagnosis of Quéllet is somewhat aberrant, since it describes a fungus with a pale, almost white pileus and red-brown stipe, growing on sticks. Without Quéllet’s notice of large spores (15—20 μm), it could easily have been *Marasmius epiphyllus*. *Marasmius epodius* Bres. remains somewhat doubtful. Jacobsson (1985) studied some original collections of Bresadola’s species in the Stockholm herbarium, and reports spores 14—20 × 3—4 μm, and pleurocystidia similar to those of *M. siccus*.

Section Globularini

7. *Marasmius suaveolens* (Rea) Rea.—Figs. 28—30


Pileus 45—60 mm broad, convex then applanate or depressed, flesh colour becoming paler on drying, striate at margin. Lamellae crowded, adnexed, separating, 6—8 mm broad, ventricose, pallid then fuscous. Stipe 60—70 × 2—3 mm, cylindrical, twisted, reddish, paler at apex, covered with a white tomentose pruina. Context tough. Smell pleasant, like that of *Marasmius oreades*.

Spores 6.5—7.5 (—8.5) × 3.5—6.0 μm, average 7 × 4 μm, Q = 1.4—1.7, ellipsoid to pip-shaped, colourless, inamyloid. Basidia 4-spored with clamp. Lamella edge hetero-

Chemical reactions.—No part of basidiocarp amyloid of dextrinoid in Melzer's reagens; stipitistrama metachromatical in cresyl-blue.

Habitat.—On leaves of Fagus in deciduous forest.


Rea (l.c.) described the spores as 'globose, 3–4 μm across', but I found larger, ellipsoid spores in the holotype. On account of this, all other microscopical characters, and the type-plate at Kew, I am convinced that Marasmius suaveolens is a later synonym of the well-known and wide-spread M. wynnei Berk. & Br. (= M. globularis (Quél.) Kühn. & Romagn.

Section Hygrometrici

8. Marasmius buxi Fr.—Figs. 31–37

Pileus 0.5—4 mm broad, convex with straight margin, not hygrophanous, not translucently striate, dark red brown at centre (7.5 YR 4/4), almost white at margin, minutely pruinose or rugulose under lens. Lamellae \((L = 3–7, L = 0–1)\) distant, adnate to adnexed, well developed, sometimes anastomosing, white with entire, concolorous edge. Stipe \(2–15(–20) \times 0.1–0.2\) mm, filiform, white at apex, rest blackish brown, finely hairy at first, glabrescent, finally polished. Smell none, even when crushed. Taste mild.

Spores \(7.0–12.5(–13.0) \times 3.5–4.0(–4.5) \mu m\) (incl. apiculus), average \(9.5 \times 4.0 \mu m, Q = 1.8–3, Q = 2.2\), narrowly ellipsoid to almost cylindrical with long apiculus, thin-walled, colourless. Basidia \(20–30 \times 6–9 \mu m\), 2- and 4-spored, clamped. Lamella edge heterogeneous. Cheilocystidia \(10–35 \times 3–10 \mu m\), lageniform, rarely more or less tibiiform, fairly abundant but mixed with basidia. Pleurocystidia none. Hymenophoral trama subregular to irregular, made up of \(2–15 \mu m\) wide, cylindrical hyphae. Pileipellis a hymeniderm, made up of clavate to globose broom-cells, \(10–35 \times 5–25 \mu m\) with thin, colourless and thick, brown walls and brown warts. Pileocystidia scattered, and usually only present near margin of pileus, similar to cheilocystidia. Pileitrama similar to hymenophoral trama. Clamp-connections abundant.

Habitat.—On dead leaves of *Buxus sempervirens* (also recorded from *B. balearica* in Maroc) (Malençon & Bertault, l.c.).
Distribution.—Wide-spread but apparently very rare in the natural distribution-area of its host in middle and southern Europe. The northernmost limit of *Buxus* reaches southern Belgium. *Marasmius buxi* has never been found on cultivated *Buxus* north of this limit.


*Marasmius buxi* is a nice little *Marasmius*, that can easily be recognized with its reddish pileus and habitat on *Buxus* leaves. Although I have been looking for this mushroom during the last 15 years, I never succeeded in collecting it on cultivated *Buxus* in the Netherlands. The locality in Belgium mentioned above probably is the northernmost place where natural *Buxus* occurs. During the forays of the Netherlands' Mycological Society in 1984 and 1986 *Marasmius buxi* was found in abundancy on dead leaves that still were on the *Buxus* bushes.

Our collection agrees well with the description of Favre (I.c.), except for the well-developed lamellae. Favre described a form with more reduced, vein-like lamellae or even a smooth hymenium.

9. *Marasmius hudsonii* (Pers.: Fr.) Fr.—Figs. 38–43


Pileus 1–6 mm broad, convex, with involute or deflexed margin, sometimes weakly translucent-striate, membranaceous, white then flesh coloured, densely hairy to strigose with up to 1 mm long, brown-purple hairs. Lamellae distant, venose, not well-developed, often anastomosing and/or forked, absent in small specimens, white, with entire, concolorous edge. Stipe 115–45 × 0.1–0.5 mm, filiform, white at first then red-brown from base upwards, apex remaining white, finely pruinose all over, lower part with long, setose, red-brown hairs like those on pileus. Context very thin, concolorous with surface. Smell and taste inconspicuous.

Spores 7.5–13.0 × 5.0–6.5 μm, average 9.7 × 5.7 μm, Q = 1.35–2.0, average Q 1.75, broadly to narrowly ellipsoid, sometimes pip-shaped, thin-walled, colourless. Basidia 22–30 × 5–9 μm, 4-spored, clamped. Lamella edge heterogeneous. Cheilocystidia 30–50 × 5–12 μm, lageniform to slenderly tibiform, thin-walled, colourless, sometimes with hyaline slime-cap on top, scattered among basidia. Pileipellis hymeniform, made up of globose to clavate broom-cells, 12–30 × 5–12 μm with 0.5–2 μm long finger-like excrescences. Pileocystidia 20–50 × 4–14 μm, lageniform to slenderly tibiform, more or less similar to cheilocystidia, fairly abundant. Hairs on pileus and stipe 150–750 × 5–20 (base) × 2–6 μm (apex), setiform with thick, red-brown walls. Clamp-connections abundant.

Habitat.—On dead leaves of *Ilex aquifolium* in deciduous forest.

Distribution.—Wide-spread, extremely rare in the Netherlands, seemingly common in England.

Marasmius hudsonii has been recorded once from the Netherlands by Lütjeharms (Warmond, 8 Nov. 1930, on dead leaves of Ilex aquifolium) and depicted in the Flora Batava, pl. 2228. No material is left of this collection. Since then it has been impossible to detect this little Marasmius again. While studying the collections at Kew I came across a fairly large number of records of Marasmius hudsonii from England where it occurs frequently.

II. MARASMIELLUS

10. Marasmiellus ornatissimus Noordel. & Barkman, spec. nov.—Figs. 44—49


Basidiocarps small, dwarfish. Pileus 2—3 mm broad, campanulate then convex, sometimes slightly umbilicate, radially plicate, not hygrophanous, not translucent-striate, white at centre sometimes tinged brown, dull, entirely pruinose. Lamellae (L = 7—12, l = 1—3) distant, adnate-decurrent, sometimes loosening from stipe forming a pseudo-collarium, segmentiform, pale pink. Stipe 2—5 x 0.3 mm, cylindrically, 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.

Sporae 11—13 x 4.5—6.5 μm, average 11.7 x 5.5 μm, Q = 2—2.4, average Q = 2.1, ellipsoid to lacrymoid, thin-walled, colourless, inamyloid. Basidia 27—40 x 9—12.5 μm, 4-, rarely 2-spored, clavate, clamped. Lamella edge sterile. Cheilocystidia 25—50 x 5—11 μm, versiform from cylindrical capitate to irregularly coralloid with finger-like excrescences or one or more bladder-like heads at apex. Pleurocystidia absent. Hymenophoral trama regular, made up of inflated hyphae, elements 30—90 x 8—20(25) μm, intermixed with 4—10 μm wide cylindrical hyphae. Pileipellis a cutis of 4—12(18) μm wide, inflated hyphae with coralloid to diverticate endings, mixed with pileocystidioid capitate elements, 2—10 μm wide. Pileitrama regular, made up of inflated hyphae, similar to hymenophoral trama. Stipitispellis a cutis with numerous cylindrical and capitate or coralloid to diverticate caulocystidia, 20—45 x 2—8 μm. Clamp-connections abundant in all tissues.

Habitat & distribution.—On branchlets of Calluna vulgaris in open Betula forest on dry, peaty soil. Only known from the type locality.

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Marasmiellus ornatissimus keys out in sect. Tricolores Sing. on account of the distinctly coralloid to diverticulate hyphae of the pileipellis ('ramealis-structure'), and the large spores (Singer, 1973). In this section only a few species are known from Europe. Marasmiellus tricolor comes very close, especially with regard to the pink lamellae, but the microscopical characters, e.g. the structure of the covering layers, are completely different, as is the habitat. Marasmius pruinatus Rea shows superficial resemblance with its pruinose, white basidiocarps, but that species differs in a number of characters (see type-study below). The tropical members of sect. Tricolores, viz. M. caesioater, M. berkeleyi, and M. cubensis, all differ in a considerable number of characters such as colour of pileus and stipe, structure of pileipellis, size and shape of spores.

11. Marasmius pruinatus Rea—Figs. 50–51


Pileus 5–10 mm broad, obtusely convex or obsoletely papillate with thin, encurved margin, white becoming tinged with yellow, fleshy horny, pruinose. Lamellae decurrent, subdistant, very narrow, 1 mm broad, shining, white. Stipe 15–30 x 1–2 mm, equal, rigid, white, pruinose base white villose.

Spores 9.0–11.5 x 3.5–5.5 μm, average 10.4 x 4.9 μm, Q = 2.0–2.4, average Q = 2.2, ellipsoid, slightly broader at apex. No intact basidia nor cystidia seen. Pileipellis a cutis with transitions to a trichoderm, made up of radially arranged cylindrical hyphae with strongly developed ramealis structure. Clamp-connections not seen with certainty.

Chemical reactions.—No part of basidiocarps amyloid or dextrinoid in Melzer's reagent.


According to Orton (1960) and Singer (1973) Marasmius pruinatus is a synonym of Marasmiellus tricolor (Alb. & Schwein.: Fr.) Sing. My observations on the holotype of
Marasmius pruinatus show slightly different spores. Furthermore the basidiocarps of M. pruinatus are entirely white, whereas those of M. tricolor have a dark coloured stipe and pinkish lamellae. For those reasons I do not believe that Marasmius pruinatus Rea is a synonym of M. tricolor but a species in its own right, that should be placed, however, in the genus Marasmiellus. Because of the base state of the holotype, however, M. pruinatus is considered a nomen dubium.

12. Marasmiellus tricolor (Alb. & Schwein.: Fr.) Sing.—Figs. 52–57


Excluded: Marasmius languidus sensu Kühn. & Romagn., Fl. anal. Champ. sup.: 86. 1953 (= M. vaillantii).

Selected description & illustration.—Kühner in Botaniste 25: 89. 1933.

Pileus 2–11 mm broad, convex, usually with small, conical papilla, expanding with age to plano-convex or applanate, with enrolled margin, not hygrophanous, not translucent-striate, white or cream-coloured, minutely pruinose under lens, later sometimes more or less tomentose. Lamellae (L = 10–17, I = 0–2) distant, broadly adnate to deeply decurrent, triangular, or arcuate, white or cream-coloured, often turning flesh-pink with age or when dried, with entire, concolorous edge. Stipe 8–20 × 0.5–1.0 mm, cylindrical, sometimes broadened towards base or apex, sometimes tapering towards base, white to cream at apex, brown to black towards base, pruinose to tomentose all over. Context thin, concolorous with surface. Smell and taste inconspicuous.

Spores (8.5–)9.0–13.5 × 3.5–6.0 (–6.5) μm, average 10.0–11.2 × 5.0–5.6 μm, Q = 1.5–2.5, average Q 1.8–2.2, ellipsoid to narrowly ellipsoid, or pip-shaped, thin-walled, colourless. Basidia 25–40 × 8–11 μm, 4- and 2-spored, clamped. Lamella edge fertile or heterogeneous. Cheilocystidia absent or present, then very sparse, cylindrical to sub-lageniform, 20–35 × 4–10 μm. Pileipellis a cutis of inflated hyphae, 2–15 μm wide with strongly developed ramealis-structure, viz. ascending, inflated terminal elements with numerous finger- and bladder-like excrescences, with pale yellow not encrusted walls. Caulocystidia numerous along whole length of stipe, about 40–120 × 4–15 μm with ramealis-structure. Clamp-connections abundant in all tissues.

Habitat.—On roots of grass and grass-debris in grasslands of grassy spots.

Distribution.—Rare and wide-spread in Europe. Summer—Autumn.


Marasmiellus tricolor is a very rare, and probably also overlooked species. The only ‘modern’ description of European material is that of Kühner (1933), and since I recently got two well-preserved and annotated collections from Norway and the Netherlands, I decided to give a full description and illustration of this species. A character that always has been considered important, viz. the pink lamellae, is not always very clear. Cheilocystidia are usually absent, rarely present, but then very sparse. This is a good character, together with the size and shape of the spores, and the growth on grasses, to distinguish Marasmiellus tricolor from M. trabutii and M. candidus. Marasmiellus ornatissimus comes also close, but grows on Calluna, has well-developed cheilocystidia and different structure of the covering layers of pileus and stipe.

13. Marasmiellus rosellus (J. Lange → Mos.) Kuyper & Noordeloos. — Figs. 58–61


Characteristics.—Pileus about 10 mm broad, plano-convex, umbilicate, shortly translucently striate or not, pink or pinkish lilacinous, somewhat tomentose. Lamellae arcuate-decurrent, pinkish like pileus. Stipe 10–30 × 1–2 mm, cylindrical, white or with pink tinge. Spores 8–11 × 4–6 µm, ellipsoid or lacrymoid, thin-walled, colourless, inamyloid. Basidia 2- and 4-spored, clamped. Cheilocystidia present, lageniform, 30–50 × 4–10 µm. Pileipellis a cutis with transitions to a trichoderm, of repent and ascending hyphae with modified terminal elements (pileocystidia), 30–70 × 5–15 (–20) µm, somewhat lageniform or clavate. Pigment membranal and encrusting in pileipellis and upper pileitrama. Clamp-connections abundant.


Marasmiellus rosellus is placed in the genus Marasmiellus on account of the pileipellis that shows strong resemblance to that of M. vaillantii and M. candidus, and the well-differentiated cheilocystidia.

III. MICROMPHALE

14. Micromphale bisporigera, ad int.—Figs. 62–67

Basidiocarps small. Pileus 6–8 mm broad, irregularly convex to plano-convex with only the outermost margin inflexed, not distinctly hygrophanous, when moist dark yellowish brown (Muns. 10 YR 5/6), slightly paler towards margin (10 YR 6/6) and slightly darker at centre (10 YR 4/4 to 4/6), slightly translucently striate at margin (up to 1/3 of radius), colliculose at centre, glabrous, making a greyish impression. Lamellae (L = about 17, 1 = 1–3) rather crowded, free or very narrowly adnate, adnexed, mod-
erately broad (up to 1.2 mm), sometimes tending to form anastomoses, pale cream-buff to yellowish buff (2.5 Y 8/4 to 10 YR 7/4 but slightly more yellow), with entire, concolorous edge. Stipe \(5 \times 1.3-1.5\) mm, cylindrical slightly tapering towards base, yellow-brown (10 YR 6/8–6/6), slightly more red at base, very minutely granular or pruinose in same colour, fistulose. Context pale yellow-brown with darker zone under pileipellis. Smell not remarkable. Taste not tried.

Spores \(7.0-8.5 \times 4.0-5.0 \mu m\), broadly ellipsoid, thin-walled, inamyloid. Basidia \(29-39 \times 5-65 \mu m\), 2-, rarely 1- or 3-spored, clampless. Lamella edge heterogeneous. Cheilocystidia \(15-25 \times 5-6 \mu m\), clavate, rare and scattered. Subhymenium ramose, probably not gelatinized. Hymenophoral trama strictly interwoven in upper part near pileus becoming more irregular downwards to perfectly regular near lamella edge. Pileipellis a 20–40 \(\mu m\) thick ixocutis of 5–12 \(\mu m\) wide, nodulose, thin-walled hyphae embedded in a gelatinous matrix, subpellis made up of inflated hyphae, up to 25 \(\mu m\) wide. Stipitpellis a cutis with dense clusters of caulocystidia. Caulocystidia \(20-40 \times 4-8 \mu m\), cylindrical to clavate. Stipitistrama regular, made up of cylindrical elements up to \(160 \times 10 \mu m\), not constricted at septae. Clamp-connections absent.

Habitat & distribution.—On bark of deciduous tree, only known from one locality in the Netherlands.

The tiny basidiocarps, gelatinized pileipellis with nodulose hyphae, and clampless, 2-spored basidia make this taxon a good species of *Micromphale*. The material is too scanty for designation of a holotype and therefore no formal description of a new species has been made.

**IV. HOHENBUEHELIA**

15. Hohenbuchelia culmicola Bon—Figs. 68–71


Selected description & illustration.—Bon in Docum. mycol. 11(41): 51–53, fig. 3. 1980.

Pileus 9–25 mm broad, spatulate to reniform or convex with involute margin and irregularly lobed, undulating marginal zone, usually depressed at centre, not hygrophanous, not translucent-striate, densely villose all over with grey hairs on grey-black
background (Muns. 10 YR 3/1—2, K & W 6E4), pallescent (10 YR 4/1—2) and sulcate on drying. Lamellae (L up to 50, l = 1—5) moderately crowded, decurrent, narrowly segmentiform, creamish white when young then greyish to brownish (10 YR 6/4) with brown, more or less entire edges. Stipe 8—20 x 3—4 mm, central or slightly excentrical, cylindrical, sometimes broadened towards base, concolorous or paler and more brown than pileus, covered in grey villose surface. Context pallid in pileus and stipe, with darker gelatinous layer under surface of pileus. Smell somewhat sourish fungoid. Taste mild.

Spores 9.0—11.0 x 5.5—7.0 μm, average 9.5—6.5 μm, Q = 1.35—1.7, average Q = 1.5, ellipsoid, thin-walled, inamyloid. Basidia 22—40 x 7—11 μm, 4-spored, clamped. Lamella edge sterile or heterogeneous. Cheilocystidia 15—40 x 8—25 μm, very irregular in shape, basal form usually clavate to lageniform, but apex often moliniform/capitate or with two or three apical, moniliform appendages, thin-walled, colourless. Pleurocystidia 35—70 x 5—15 μm (wall up to 4 μm thick), numerous, clavate to fusiform, thick-walled, metuloid, often with mucous mass covering the apex. Pileipellis a trichoderm of dense fascicles of 2.5—8 μm wide, cylindrical hyphae with yellow, thin or thick, often encrusted walls. Clamp-connections very numerous in all tissues.

Habitat.—Close to the ground on culms and leaf-sheats of Leymus arenarius in the outermost zone of coastal sand-dunes.

Distribution.—Known from France and two localities in the Netherlands. Nov.

*Hohenbuehelia culmicola* is a very remarkable member of the genus *Hohenbuehelia* because of the habit, habitat and substratum. Most species of *Hohenbuehelia* grow on wood in deciduous or coniferous forest. It comes close to *H. atrocoerulea*, but that species never has a well-developed stipe, and the ecology is completely different.

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