

NOTULAE AD FLORAM AGARICINAM NEERLANDICAM — I-III  
Marasmiellus, Macrocystidia and Rhodocybe

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Keys to and critical notes on the European species of the genera *Marasmiellus* and *Rhodocybe* are given. The nomenclature of *Macrocystidia* is elucidated. Two rare species, viz. *Rhodocybe melleopallens* and *R. fallax* are fully described and illustrated. *Rhodocybe mundula* is reduced to the synonymy of *R. popinalis*. *Rhodocybe nauseodulcis* is transferred to *Omphaliaster*. The new combinations *Rhodocybe microsporum* (Velen.) Noordel., *Marasmiellus omphaliformis* (Kühn.) Noordel., *Omphaliaster nauseodulcis* (Horak) Noordel. and *O. kyrtosporus* (Horak) Noordel. are made.

I. *Marasmiellus* Murr.

In the present paper Singer's concept of the genus *Marasmiellus* is fully accepted (Singer, 1973). For details on the generic limits and infrageneric taxonomy the reader is referred to the cited publication. Although the European flora is comparatively poor in species, only 8 species being known so far, I am sure that an increasing interest in little whitish mushrooms on various debris of woody plants and herbs will lead to interesting discoveries. In two previous publications (Noordeloos, 1975, 1977) extensive descriptions are given of *Marasmiellus trabutii* and *M. pachycraspedum*. In the present paper a key to all European species is given, followed by a checklist with critical notes on nomenclature, taxonomic position and chorology. Full descriptions of the species occurring in the Netherlands, viz. *Marasmiellus ramealis*, *M. vaillantii*, *M. trabutii*, *M. tricolor*, *M. pachycraspedum*, and *M. candidus* will appear in the first part of the Flora agaricina neerlandica. Two extralimital species, *Marasmiellus humillimus* and *M. omphaliformis* are characterised by a summary of their most important characters.

KEY TO THE SPECIES OF MARASMIELLUS IN EUROPE

1. Most of the spores longer than 11.5  $\mu\text{m}$  . . . . . 2
1. Most of the spores shorter than 11.5  $\mu\text{m}$  . . . . . 3
2. Cheilocystidia 30–50  $\times$  5–9  $\mu\text{m}$ , irregularly cylindrical-coralloid or clavate-coralloid (Fig. 2); pileipellis with well-developed ramealis-structure (Fig. 11); pileitrama gelatinised; on dead leaf-sheaths of *Juncus maritimus* in salt-marshes . . . . . 1. *M. trabutii*

2. Cheilocystidia 45–90 × 6–12.5 (at base) × 3–5 (at apex)  $\mu\text{m}$ , filiform to slenderly lageniform with swollen basal part and long, slightly tapering neck (Fig. 4); pileipellis made up of c. smooth hyphae and long dermatocystidia (Fig. 12); pileitrama not gelatinised; on twigs, branchlets and other debris of woody plants in deciduous forest . . . . . 2. *M. candidus*
3. Cheilocystidia absent . . . . . 4
3. Cheilocystidia present . . . . . 5
4. Pileipellis with strongly developed ramealis-structure (Fig. 6); on grasses . . . . . 3. *M. tricolor*
4. Pileipellis a trichoderm of long, tapering, brown, setulose hairs (Fig. 10) without ramealis-structure . . . . . 4. *M. omphaliformis*
5. Cheilocystidia clavate of broom-cell type (Fig. 1) with finger-like excrescences in upper half . . . . . 6
5. Cheilocystidia different . . . . . 7
6. Basidiocarps minute; pileus 1.5–3.5 mm broad, white or creamy; spores 7–10 × 2.5–3  $\mu\text{m}$ , subfusiform to subcylindrical; stipitepellis with non-encrusted, cylindrical hairs; on grass  
*S. M. humillimus*
6. Basidiocarps larger; pileus 2–20 mm broad, creamy pink to yellowish brown; spores 7.8–11 × 2.5–4  $\mu\text{m}$ , subcylindrical to bean-shaped; stipitepellis with encrusted, coralloid hairs; on various debris of woody plants, rarely on herbaceous plants . . . . . 6. *M. ramealis*
7. Cheilocystidia clavate, usually encrusted (Fig. 5); lamellae with thickened edge; pileipellis with weakly developed ramealis-structure (Fig. 8); terrestrial among mosses . . . . . 7. *M. pachycraspedum*
7. Cheilocystidia coralloid with one or more bladder-like projections (Fig. 3); lamellae with normally thick edge; pileipellis without or with poorly developed ramealis-structure (Fig. 9); on grasses, sedges or branchlets of trees (*Alnus*, *Fraxinus*, *Corylus*, etc.) . . . . . 8. *M. vaillantii*

#### ANNOTATED CHECKLIST

1. *Marasmiellus trabutii* (Maire) Sing. in Lilloa 22: 300. 1951. — *Marasmius trabutii* Maire in Bull. Soc. bot. Fr. 57: 278–279. 1909. — Figs. 2, 11.

*Clitocybe caespitosa* Pat. in C. r. Congr. Socs sav. Paris, Sect. Sci.: 248. 1909, non Peck 1888. — *Marasmiellus caespitosus* (Pat.) Sing. in Pap. Mich. Acad. Sci. 32: 129. 1949.

Selected description and illustrations. — Noordeloos in Persoonia 8: 223–226 (as *M. caespitosus*). 1975.

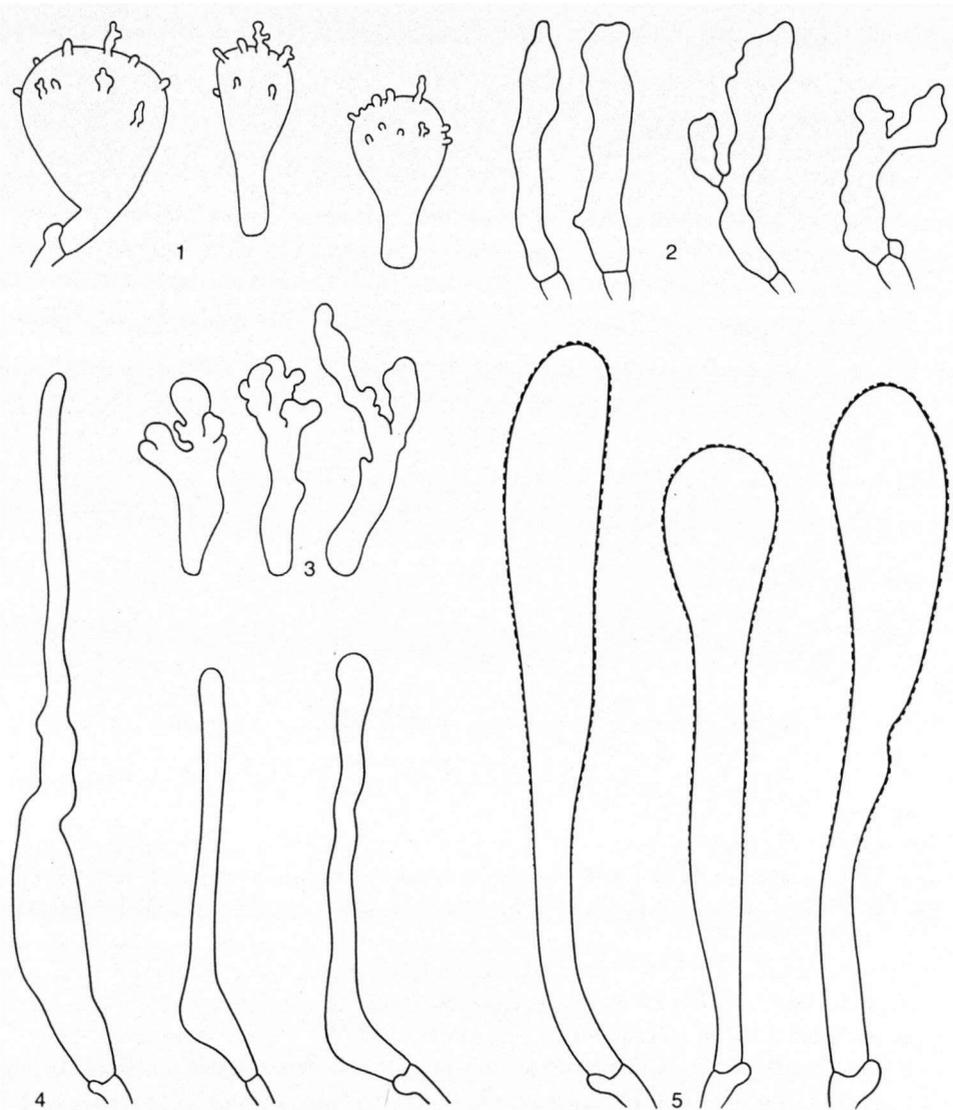
When I published a description of the Netherlands' rediscovery of *Marasmiellus caespitosus* (Pat.) Sing. I was not aware of the fact that *Clitocybe caespitosa* Pat. is an illegitimate name, being a later homonym of *Clitocybe caespitosa* Peck 1888 in Rep. N.Y. State Mus. 41: 61. Thus *Marasmius trabutii* is the oldest valid and legitimate name for *Clitocybe caespitosa* Pat. As a consequence the binomial *Marasmiellus trabutii* (R. Maire) Sing. has priority over *Marasmiellus caespitosus* (Pat.) Sing.

2. *Marasmiellus candidus* (Bolt.) Sing. in Pap. Mich. Acad. Sci. 32: 129. 1948. — *Agaricus candidus* Bolt., Hist. Fung. Halifax 1: 39. 1788. — *Marasmius candidus* (Bolt.) Fr., Epicr.: 381. 1838. — Figs. 4, 12.

*Agaricus albus-corticis* Secr., Mycogr. Suisse 2: 229. 1833 (not val. publ.). — *Marasmiellus albus-corticis* (Secr.) Sing. in Lilloa 22: 300. 1951 (not val. publ.).

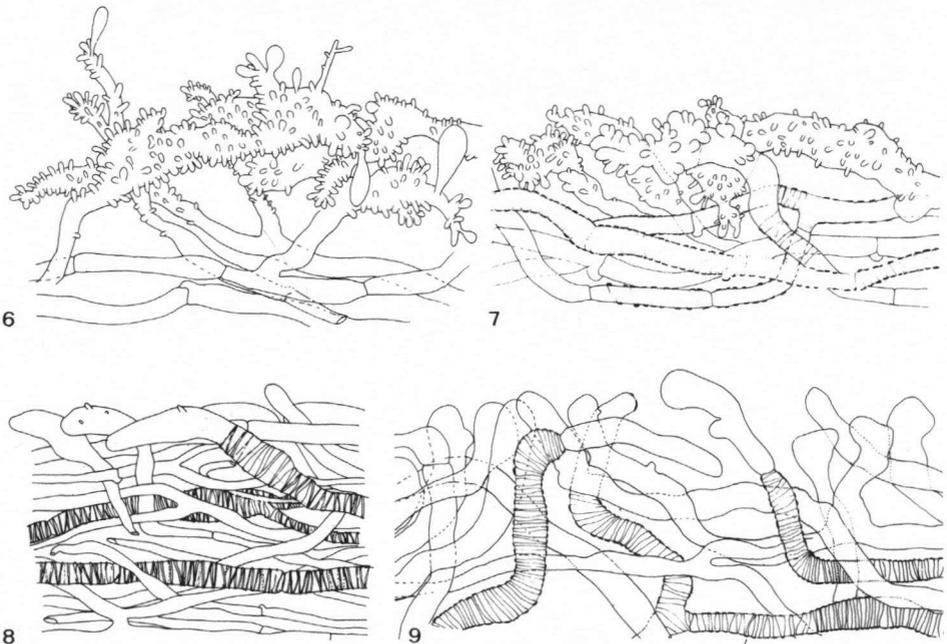
*Marasmius magnisporus* Murr. in Mycologia 4: 166. 1912.

Selected descriptions and illustrations. — Kühner, Botaniste 25: 109–111. 1933. — Malençon & Bertault, Fl. Champ. Maroc. 2: 354–356. 1975. — Phillips, R., Mushrooms and other fungi: 67. 1982.



Figs. 1–5. Types of cheilocystidia in *Marasmiellus*. — 1. *M. ramealis*. — 2. *M. trabutii*. — 3. *M. vaillantii*. — 4. *M. candidus*. — 5. *M. pachycraspedum* (all figs. 1000 ×).

According to the International Code of Botanical Nomenclature (1978, art. 23.6 (c)), none of the names published by Secretan (1833) is considered validly published because Secretan did not consistently use the Linnaean system of binary nomenclature. As Singer did not supply a latin diagnosis, also the recombination *Marasmiellus albus-corticis* (Secr.) Sing. is invalid.

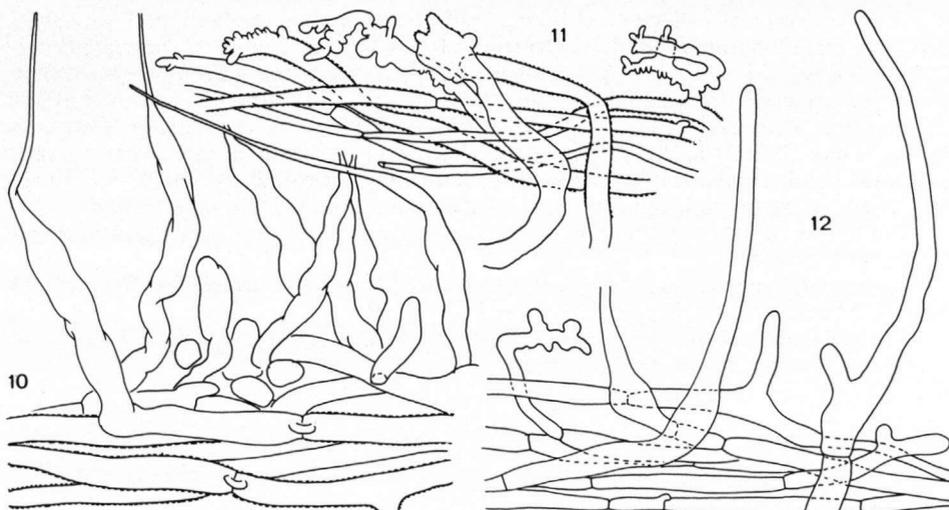


Figs. 6–9. Types of pileipellis in *Marasmiellus*. — 6. *M. tricolor*. — 7. *M. ramealis*. — 8. *M. pachycraspedum*. — 9. *M. vaillantii* (all figs. 670 ×).

In his monograph of the genus *Marasmiellus*, Singer (1973: 30) used the binomial *Marasmiellus albus-corticis* instead of *Marasmiellus candidus* (Bolt. ex Fr.) Sing., because according to him the latter name was preoccupied by the binomial *Marasmiellus candidus* (Bres.) Sing. 1951 in *Lilloa* 22: 298, a name now considered to belong to a species of the genus *Hemimycena*. If one accepts Singer's view and the decision of the 'Code' on Secretan's names, neither the binomial *Marasmiellus candidus* nor *M. albus-corticis* can be used for the well-known species concerned. Then the only other validly published name available for it is, according to Singer (1973: 30), *Marasmius magnisporus* Murr.

I disagree, however, with Singer on the priority of *Marasmiellus candidus* (Bres.) Sing. (1951) over *Marasmiellus candidus* (Bolt. ex Fr.) Sing., because in my opinion the latter combination has been published already in 1948.

Singer (1948: 128–130) published a note on some species intermediate between *Marasmius* and *Marasmiellus* in which he transferred *Marasmius* sect. *Rameales* Kühn. to the genus *Marasmiellus*. Simultaneously he explicitly transferred a number of species from *Marasmius* to *Marasmiellus*, proposing the following new combinations: *Marasmiellus trabutii*; *M. caespitosus*; *M. ramealis*; *M. anthocephalus*; *M. rugulosus*, and *M. nigripes*. *Marasmius candidus* (Bolt. ex Fr.) Fr. was not transferred in the same explicit way, but it was mentioned as follows: 'In view of the transitional character of certain tropical species such as *Marasmiellus semiustus* (Berk. & Curt.) Sing. and of certain European (*M. candidus* (Bolt. ex Fr.) Sing.) and Asiatic (*M. pseudoconidiophorus* Sing.) species



Figs. 10–12. Types of pileipellis in *Marasmiellus*. — 10. *M. omphaliformis*. — 11. *M. trabutii*. — 12. *M. candidus* (all figs. 670 ×).

between *Marasmius*, *Rameales* and *Marasmiellus* (= *Hemimycena*), I prefer to transfer the section *Rameales* to the genus *Marasmiellus*. Because Singer cites the author's names (Bolt. ex Fr.) Sing. the only conclusion that can be drawn is that he meant *Marasmiellus* with 'M.' and not *Marasmius*, since in that case the author citation should have been (Bolt. ex Fr.) Fr. Singer (1962: 321) himself confirmed my theory while ranging as a synonym of *Marasmiellus albus-corticus* the following name: '*Marasmiellus candidus*' (Bolt. ex Fr.) Sing. 1948 non (Bres.) Sing. 1951'. Therefore I consider the binomial *Marasmiellus candidus* (Bolt.: Fr.) Sing. the correct name for the present species (according to the International Code of Botanical Nomenclature, art. 33.1, a new combination is considered to be definitely indicated when there is a typographic device which indicates that an epithet is associated with a particular generic name). Thus a widely used and undisputed epithet is saved. According to recent changes of the 'Code' the correct citation is: *Marasmiellus candidus* (Bolt.) Sing.

3. *Marasmiellus tricolor* (Alb. & Schw.: Fr.) Sing. in Pap. Mich. Acad. Sci. 32: 128. 1948. — *Agaricus tricolor* Alb. & Schw., *Conspect. fung.*: 228. 1805. — *Agaricus tricolor* Alb. & Schw.: Fr., *Syst. mycol.* 1: 166. 1821. — *Marasmius tricolor* (Alb. & Schw.: Fr.) Kühn. in *Botaniste* 25: 89. 1933. — *Marasmiellus tricolor* (Alb. & Schw.: Fr.) Sing. in Pap. Mich. Acad. Sci. 32: 128. 1948. — Fig. 6.

*Agaricus languidus* Lasch in *Linnaea* 3: 385. 1828. — *Marasmius languidus* (Lasch) Fr., *Epicr.*: 379. 1838 (non sensu Kühn. & Romagn. 1953 = *M. vaillantii*). — *Marasmiellus languidus* (Lasch) Sing. in *Lilloa* 22: 300. 1951. (See type-study by Singer (1973: 315)).

Selected descriptions & illustrations. — Kühner in *Botaniste* 25: 89. 1933.

4. *Marasmiellus omphaliformis* (Kühn.) Noordel., *comb. nov.* — Basionym: *Marasmius omphaliformis* Kühn. in *Bull. Soc. Nat. Oyonnax* 8: 111. 1954. — Fig. 10.

**Characteristics.**—Pileus 7–19 mm broad, convex-umbilicate, beige-pinkish, pubescent to granulose-subsquamulose; lamellae  $L = 15-18$ ,  $l = 0-1$ , arcuate-decurrent, white; stipe 8–14 × 0.7–1 mm, white at apex, brown to blackish below, entirely pruinose, attached to substratum with radiating mycelial strands. Spores 8–10 × 3.5–4.5  $\mu\text{m}$ , ellipsoid; basidia 4-spored; cheilocystidia absent, occasionally in old specimens some filiform hairs present on lamellar edge; pileipellis a trichoderm of long, flexuose-cylindrical hairs attenuate towards apex, with brown walls; pileitrama brown-encrusted, metachromatic in Cresyl blue; clamp-connections present in all tissues.

**Habitat & distribution.**—On branches and other debris of woody plants; mediterranean. France, Maroc.

**Collections examined.**—France, Charente Maritime, Corniche de Nauzan près Royan, 2 Sept. 1935, R. Kühner (fragm. in PC).

**Descriptions & illustrations.**—Kühner, 1954, l.c. 86.—Malençon & Bertault, Fl. Champ. Maroc. 2: 373, fig. 79, 1975.

Within the genus *Marasmiellus* this is a remarkable species because of the trichodermal pileipellis with almost setiform hairs. In Singer's monograph (1973) *Marasmiellus omphaliformis* keys out in section *Stenophylloides* because of the presence of this type of pileipellis. Considering the European species it comes closest to *M. candidus*, which however widely differs in size and shape of spores, colour of the pileus, structure of the pileipellis, etc. Very peculiar is the metachromatic reaction of the trama in Cresyl blue, which I have never observed in other species of the genus.

5. *Marasmiellus humillimus* (Quél.) Sing. in Beih. Nova Hedwigia 44: 308. 1974.—*Collybia humillima* Quél., in C. r. Ass. fr. Av. Sc. (La Rochelle, 1882) 11: 389. 1883.—*Marasmius humillimus* (Quél.) Quél., Fl. mycol.: 316. 1888.

*Marasmius flosculus* Quél. in Bull. Soc. bot. Fr. 25: 289. 1879 (non Berk. 1842).

*Marasmius anthocephalus* Sacc., Syll. fung. 9: 69. 1891.—*Marasmiellus anthocephalus* (Sacc.) Sing. in Pap. Mich. Acad. Sci. 32: 130. 1948.

*Marasmius flosculusinus* Bataille in Bull. Soc. Hist. nat. Doubs 30: 80. 1919.

**Characteristics.**—Pileus 1.5–3.5 mm broad, convex or slightly umbilicate, white or slightly tinged cream, radially grooved-sulcate, not translucent, smooth; lamellae  $L = 2-11$ ,  $l = (0-1)$ , adnate, white with flocculose, concolorous edge; stipe 1.5–3.5 × 0.1–0.16 mm, fauve to brownish, becoming blackish brown in lower part, pale and apex, entirely white pruinose; spores 7.2–10 × (2.5–)2.7–3  $\mu\text{m}$ , subcylindrical to subfusiform; basidia 4-spored, cheilocystidia clavate, 6.5–11.5  $\mu\text{m}$  wide, with numerous filiform appendices at apex (broom-cells); pileipellis filamentous, hyphae 2–10  $\mu\text{m}$  wide with strongly developed ramealis-structure; stipitepellis with smooth, cylindrical hairs.

**Habitat & distribution.**—On grasses, sedges etc., rare (overlooked?); France, Italy, Czechoslovakya.

*Marasmiellus humillimus* is one of the smallest European species of the genus and comes close to *M. ramealis* and *M. tricolor* in having a strongly developed ramealis-structure in the pileipellis. It differs from both species in size, colour, smaller, narrower spores and stipe-covering.

6. *Marasmiellus ramealis* (Bull.: Fr.) Sing. in Pap. Mich. Acad. Sci. 32: 130. 1948. — *Agaricus ramealis* Bull., Herb. Fr., pl. 336. 1786. — *Agaricus ramealis* Bull.: Fr., Syst. mycol. 1: 135. — *Gymnopus ramealis* (Bull.: Fr.) S.F. Gray, Nat. Arr. Br. Plants.: 611. 1821. — *Marasmius ramealis* (Bull.: Fr.) Fr., Epicr.: 381. 1838. — Figs. 1, 7.

*Agaricus amadelphus* Bull., Herb. Fr., pl. 550, fig. 3. 1791. — *Agaricus amadelphus* Bull.: Fr., Syst. mycol. 1: 135. 1821. — *Marasmius amadelphus* (Bull.: Fr.) Fr., Epicr.: 380. 1838. — *Marasmiellus amadelphus* (Bull.: Fr.) Mos., Kl. KryptogFl., 2. Aufl., 2b/2: 118. 1967.

Selected descriptions & illustrations. — Cooke, Ill. Br. Fungi, pl. 1082a (1127); 1082b (1127) (as *M. amadelphus*) 1889. — Lange, J., Fl. ag. dan. 2, pl. 48a, 1936. — Phillips, Mushrooms and other fungi: 67. 1982.

7. *Marasmiellus pachycraspedum* Noordel. in Persoonia 9: 275. 1977. — Figs. 5, 8.

Selected description & illustrations. — Noordel., 1977, l.c.

8. *Marasmiellus vaillantii* (Pers.: Fr.) Sing. in Beih. Nova Hedwigia 44: 313. 1973. — *Agaricus ericetorum*  $\beta$  *vaillantii* Pers., Synopsis: 472. 1801. — *Agaricus vaillantii* Pers.: Fr., Syst. mycol. 1: 136. 1821. — *Marasmius vaillantii* (Pers.: Fr.) Fr., Epicr.: 380. 1838. — *Marasmiellus vaillantii* (Pers.: Fr.) Sing. in Beih. Nova Hedwigia 44: 313. 1973. — Figs. 3, 9.

Misapplied names. — *Marasmius languidus* (Lasch) Fr. sensu Kühn. & Romagn., Fl. anal.: 86. 1953. — *Marasmius calopus* (Pers.: Fr.) Fr. sensu P.D. Orton in Trans. Br. mycol. Soc. 43: 303. 1960. — *Marasmius candidus* (Bolt.: Fr.) Fr. sensu J. Lange, Fl. agar. dan. 2: 25. 1936. — *Marasmius insititius* Fr. sensu P.D. Orton in Trans. Br. mycol. Soc. 43: 303. 1960.

Selected descriptions & illustrations. — Bresadola, Icon. mycol. 505–1. 1929. — Lange, J., Fl. agar. dan. 2: 47c. 1936 (as *M. candidus*). — Nathorst-Windahl in Acta Horti Gotoburg. 22: 78. 1958 (as *M. languidus*). — Singer in Beih. Nova Hedwigia 44: 313. 1973.

The binomial *Marasmiellus vaillantii* is used here in accordance with Singer (1973: 313), and the use of '*Marasmius calopus*' as proposed by P.D. Orton (1960: 303) is rejected. In my opinion, which also agrees with that of Gilliam (1975: 31), *Agaricus calopus* Pers.: Fr. represents a small, pale, odourless form of *Marasmius scorodoni* which I collected several times during my studies in *Marasmius*. Furthermore, Persoon and Fries described *Agaricus calopus* as a fungus with a smooth, red-brown stipe, which excludes the possibility that it could be identical with *M. vaillantii*. *Marasmius languidus* (Lasch) Fr. sensu Kühner & Romagnesi (1953: 86) must be rejected as a misinterpretation. The diagnosis of Lasch and the type-study of Singer (1973, l.c.) clearly show that *Agaricus languidus* Lasch is conspecific with *Agaricus tricolor* Alb. & Schw. *Marasmius candidus* sensu J. Lange (1936, l.c.) is definitely identical with *Marasmiellus vaillantii*, and Lange's plate is an excellent and representative illustration of it. But the true *Agaricus candidus* is another species (see above). Two other synonyms suggested by Orton (1960, l.c.), viz. *Marasmius insititius* Fr., and *Agaricus angulatus* Batsch are also rejected. The first name stands for a doubtful species, which moreover is published much later than *Agaricus vaillantii*, and *Agaricus angulatus* Batsch in its original sense is a tiny white fungus which probably is a species of *Mycena* or *Hemimycena*. Batsch mentioned a plate of Micheli (1729: 146, tab. 74, fig. 4) in the protologue, which I consider now the lectotype of *Agaricus angulatus* Batsch., and it is clear that *Marasmiellus vaillantii*

has nothing to do with Micheli's and Batsch' fungus. Therefore I consider *Agaricus angulatus* a nomen dubium. Singer (1961: 6) proved that *Agaricus angulatus* sensu Persoon belongs to the genus *Psilocybe*. According to the recent change of the starting-point rules in the International Code of Botanical Nomenclature the combination '*Psilocybe angulata* (Batsch ex Pers.) Sing.' is no longer legitimate, as it is based on Persoons' misinterpretation of Batsch's species.

## II. *Macrocystidia* Joss.

According to Donk (1962: 181) the generic name *Macrocystidia* should be attributed to Josserand, because that author was the first who used this name in print. Heim (1931: 71) originally published the genus *Macrocystis* to accommodate '*Naucoria cucumis* Fr. Soon this name appeared to be a later homonym of *Macrocystis* Agardh 1824 and Heim started to use the new name *Macrocystidia* for it, for the first time in print, however, some months after the publication of Josserand, viz. Heim (1934: 127). The correct synonymy is given below:

*Macrocystidia* Joss. in Bull. Soc. mycol. Fr. 49: 376. 1934. Name change for *Macrocystis* Heim, Genre Inocybe: 71. 1931 (non *Macrocystis* Agardh 1824).

*Agaricus* subgen. *Hypomnema* Britz. in Ber. naturh. Ver. Augsburg 27: 196. 1883.

Also the transfer of the only European species of this genus to *Macrocystidia* has to be attributed to Josserand:

*Macrocystidia cucumis* (Pers.: Fr.) Joss. in Bull. Soc. mycol. Fr. 49: 373. 1934.

## III. *Rhodocybe* Maire

*Rhodocybe* is one of the smaller genera in the *Entolomataceae* and characterised by a very variable habit: pleurotoid, omphalioid, clitocyboid, mycenoid or tricholomatoid. It is distinguished from *Entoloma* and *Clitopilus* by the spores which are angular-pustulate in polar view and almost smooth to nodulose, undulate or pustulate in side-view (see also Noordeloos, 1981: 122). Recently Baroni (1981) monographed the genus, while Horak (1979) added much to the knowledge of *Rhodocybe* from the Southern Hemisphere. Nevertheless, while preparing keys and descriptions for the Flora agaricina neerlandica I was confronted with so much additional information on European taxa not included in Baroni's monograph, that an annotated key and a checklist to the European species seem useful.

### KEY TO THE SPECIES OF RHODOCYBE IN EUROPE

- |  |   |
|--|---|
| 1. Hymenial pseudocystidia present . . . . . | 2 |
| 1. Hymenial pseudocystidia absent . . . . .  | 4 |

2. Spores  $6.8-9 \times (5.7-6.2-7.5 \mu\text{m})$ , broadly ellipsoid in outline; pseudocystidia with colourless contents when mounted in 5% KOH . . . . . 1. *R. finnmarchiae*
2. Spores distinctly narrower ( $3.5-5.5 \mu\text{m}$ ) and more slenderly ellipsoid; pseudocystidia with yellowish-orange to yellowish grey contents when mounted in 5% KOH . . . . . 3
3. Smell and taste unpleasant, farinaceous or like rotten fish; pileus argillaceous to pale brown; spores  $7.5-10 \times 4.5-5.5 \mu\text{m}$  . . . . . 2. *R. obtusatula*
3. Smell none; taste none or slightly bitterish; pileus grey to greyish brown, usually fairly dark; spores  $(5.5-6-9 \times (3-3.5-4(-4.5) \mu\text{m})$  . . . . . 3. *R. caelata*
4. Basidiocarp small, more or less collybioid; pileus and stipe with yellow, orange or reddish tinges; clamp-connections present . . . . . 5
4. Basidiocarp usually omphalioid, clitocyboid or tricholomatoid, white or grey to greyish brown; if reddish then basidiocarps robust and tricholomatoid; clamp-connections absent . . . . . 6
5. Basidiocarp yellowish brown to honey-coloured; spores  $(4-4.5-7 \times 3-4(-4.7) \mu\text{m})$   
4. *R. melleopallens*
5. Basidiocarp orange-brown to red-brown; spores  $7-10 \times 5-5.5 \mu\text{m}$  . . . . . 5. *R. nitellina*
6. Pileus and stipe white, occasionally with cream-coloured or ochraceous central spot on pileus in old specimens . . . . . 6. *R. fallax*
6. Pileus and stipe slightly to distinctly coloured . . . . . 7
7. Pileus flesh-coloured brown to reddish; stipe white or flesh-coloured . . . . . 7. *R. truncata*
7. Pileus and stipe greyish brown or lead grey . . . . . 8
8. Basidiocarp small, omphalioid; pileus up to 20 mm broad; septate cheilocystidia present; spores  $5.5-7.5(-8) \times 4-5.5(-6) \mu\text{m}$ , almost smooth when seen with the light-microscope  
8. *R. hirneola*
8. Basidiocarp medium-sized to large, clitocyboid to tricholomatoid; pileus 20-110 mm broad; cheilocystidia, if present, not septate; spores appearing minutely warty in the light-microscope . . . . . 9
9. Cheilocystidia present, filamentous,  $24-60 \times 3-7$ ; pileus very dark greyish brown  
9. *R. obscura*
9. Cheilocystidia absent . . . . . 10
10. Smell none; taste mild; spores  $5.3-6.4 \times 3.5-4.7 \mu\text{m}$ ,  $Q = 1.25-1.4-1.7$  . . . . . 10. *R. parilis*
10. Smell farinaceous; taste bitter; spores  $(4.7-5.0-7.0(-8.0) \times (3.5)4-5.5(-6) \mu\text{m}$ ,  $Q = 1.1-1.2-1.4$  . . . . . 11. *R. popinalis*

## ANNOTATED CHECKLIST

1. *Rhodocybe finnmarchiae* Noordel. in Norw. J. Bot. 26: 277-278. 1979.

Only known from the type-locality in Lapland.

2. *R. obtusatula* Horak in Sydowia 31: 74. 1979 ('1978').

For description see Horak, 1979 l.c. Only known from the type-locality in Switzerland.

3. *Rhodocybe caelata* (Fr.) Maire in Bull. Soc. mycol. Fr. 40: 298. (1924) 1929. — *Agaricus caelatus* Fr., Epicr.: 42. 1838. — *Tricholoma caelatum* (Fr.) Gill., Hymen. Fr.: 114. 1874. — *Clitopilus caelatus* (Fr.) Kühn. & Romagn., Fl. anal.: 173. 1953. (not val. publ., no full refer. to basionym).  
*Rhodocybe dubia* Favre in Erg. wiss. Unters. schweiz. Nationalpark 6: 587. 1960.  
*Rhodocybe australis* Sing. in Beih. Nova Hedwigia 29: 335. 1969.

*Agaricus retustus* var. *arenicolus* Fr., Icon. sel. Hymen.: 78. 1874. — *Omphalina arenicola* (Fr.) P.A. Karst., Hattsv. 1: 131. 1879. — *Rhodocybe arenicola* (Fr.) M. Lange & Sivertsen in Bot. Tidskr. 62: 198. 1966.

Habitat & distribution. — Usually in grassland, forest, *Juniperus*-shrubs etc., wide-spread, cosmopolitan.

Selected descriptions & illustrations. — Baroni in Beih. Nova Hedwigia 67: 47–49, figs. 11–14, 64, 65, 113, 115, 118 and 148. 1981. — Lange & Sivertsen, l.c. (as *R. arenicola*). — Kühner & Lamoure in Bull. Soc. mycol. Fr. 87: 15–23. 1971.

4. *Rhodocybe melleopallens* P.D. Orton in Trans. Br. mycol. Soc. 43: 380. 1960. — Figs. 14–16. *Collybia nitellina* forma minor Dössing in Friesia 6: 340. 1961 (not val. publ., no Latin diagn.).

Pileus 11–30 mm broad, conico-convex then expanding to almost flattened, with or without small papilla, with straight margin, strongly hygrophanous, when moist vividly orange-ochraceous to orange-brown or yellowish brown (at centre 7.5 YR 4/4, 4/6, 5/6 or 6/8, towards margin 7.5 YR 5/6, 5/8, 6/6, 6/8, 7/8; 10 YR 6/6, 6/8) translucently striate up to 2/3 of radius, pallescent on drying to pale yellowish brown (10 YR 7/6, 7/8, 8/6 or 7.5 YR 6/8, 7/8), smooth, dull, sometimes slightly radially fibrillose-subfelted. Lamellae L = 20–30, l = 1–5(–7), moderately distant, (broadly) adnate, sometimes with decurrent tooth, segmentiform to subventricose, brownish yellow (10 YR 7/4, 7/6, 7/8, 6/4 or 7.5 YR 6/8, 7/8) with entire, concolorous edge. Stipe 20–40 × 1.5–3(–5) mm, cylindrical or often tapering towards base, straight or flexuose, concolorous with pileus or slightly darker at upper part, occasionally slightly paler than pileus in lower part, smooth, shining as if polished, with more or less undulating surface. Flesh concolorous with surface. Smell farinaceous, especially when cut. Taste strongly oily-rancid, very nasty. Spore-print pinkish-brownish.

Spores (4–)4.5–7 × 3–4(–4.5)  $\mu\text{m}$ , shortly ellipsoid to pip-shaped with weakly nodulose-angular outline. Basidia 20–30 × 7–9.5  $\mu\text{m}$ , (2–)4-spored, with clamp. Cystidia none. Hymenophoral trama with numerous cuboid crystals, regular, made up of cylindrical cells, 50–85 × 8–17  $\mu\text{m}$ . Pileipellis a cutis made up of thin-walled, cylindrical, 4.5–9  $\mu\text{m}$  wide hyphae with membranal pigment; subpellis regular, made up of short, inflated cells gradually passing into pileitrama with yellow-brown encrusting pigment. Pileitrama regular, made up of short, inflated cells. Clamp-connections present in hymenium and on most septa of narrowest hyphae in pileipellis.

Habitat & distribution. — In deciduous and mixed deciduous-coniferous forest, usually on more or less calcareous, sandy soil, once found on old fire-place; known to occur in Great Britain, Netherlands, and Denmark.

Collections examined. — GREAT BRITAIN, Surrey, Mickleham, Norbury park, 13 Oct. 1958, P.D. Orton (holotype, K). — NETHERLANDS, prov. Zeeland, Zeeuws Vlaanderen, 26 Oct. & 3 Nov. 1981, A. de Meyer (L); prov. Zuid-Holland, Isl. Voorne, Oostvoorne, near Weeversduin, 4 Nov. 1981, C. Bas 7863 (L). — DENMARK, Isl. of Falster, Systofte skov, 20 Oct. 1960, L. Dössing (C); Southern Jutland, Kjelstrup plantage, 30 Sept. 1978, L. Dössing (C).

So far *Rhodocybe melleopallens* was only known from its type-locality and a few additional places in Great Britain. Recently the species was found abundantly in the southwestern part of the Netherlands, and during a recent visit to the Botanical Museum at Copenhagen, the occurrence of this species was also established for Denmark. Therefore I am able to give an emended description of the species. *Rhodocybe melleopallens*

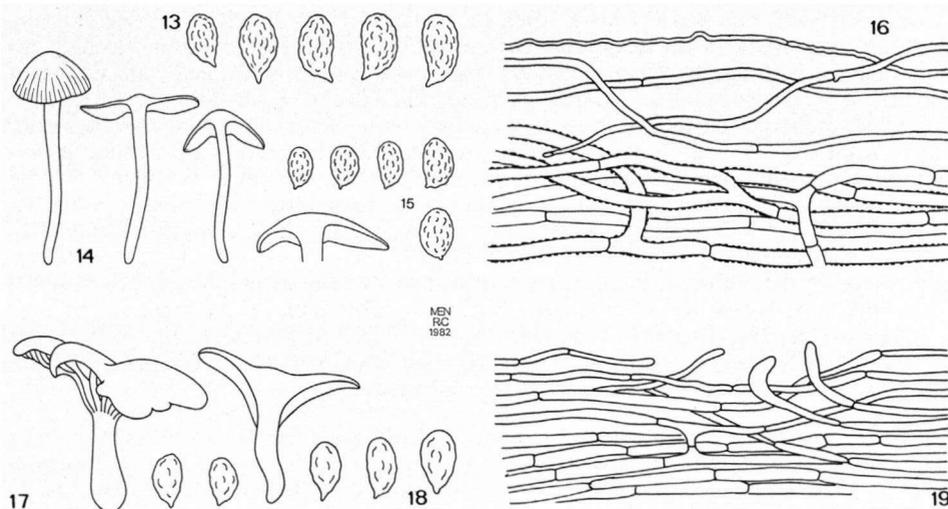


Fig. 13. *Rhodocybe nitellina* — Spores ( $\times 1000$ ).

Figs. 14–16. *Rhodocybe melleopallens*. — Habit ( $\times 1$ ), spores ( $\times 1000$ ), and pileipellis ( $\times 670$ ). (all figs. from A. de Meijer, 3 nov. 1981).

Figs. 17–19. *Rhodocybe fallax*. — Habit ( $\times 1$ ), spores ( $\times 1000$ ), and pileipellis ( $\times 670$ ). (all figs. from A. de Meijer 320).

can easily be distinguished from *R. nitellina* by its smaller spores, and also by the slightly paler, more yellowish colour.

5. *Rhodocybe nitellina* (Fr.) Sing. in *Mycologia* 38: 687. 1946. — *Agaricus nitellinus* Fr., *Epicr.*: 80. 1838. — *Collybia nitellina* (Fr.) Quél. in *Mém. Soc. Emul. Montbéliard*, sér. 2(5): 434. 1875. — *Rhodopaxillus nitellinus* (Fr.) Sing. in *Annls mycol.* 34: 332. 1936. — Fig. 13.

*Collybia cuprea* Favre in *Erg. wiss. Unters. Schweiz. Nat. Park* 42: 401. 1960. — *Rhodocybe cuprea* (Favre) Horak in *Sydowia* 31: 73. ('1978') 1979.

On account of the type-study by Horak (1979, l.c.) of *Collybia cuprea*, combined with Favre's description of the macroscopical characters of this species I have no doubt that the name *C. cuprea* is a later synonym of *Rhodocybe nitellina*, as both the colour of the basidiocarp and the size and shape of the spores are perfectly within the range of the variability of *R. nitellina*.

6. *Rhodocybe fallax* (Quél.) Sing. in *Farlowia* 2: 549. 1946. — *Omphalia fallax* Quél. in *C. r. Ass. fr. Av. Sci.* 24: 617. 1895. — *Clitocybe fallax* (Quél.) Sacc. & Trott., *Syll. fung.* 21: 42. 1912. — *Rhodopaxillus fallax* (Quél.) Maire in *Bull. mens. Soc. linn. Lyon* 6: 19. 1927. — *Paxillioopsis fallax* (Quél.) J. Lange, *Fl. agar. dan.* 5: VI. 1940. — *Clitopilopsis fallax* (Quél.) Kühn. ex Konr. & M., *Agaricales* 1: 380. 1948. — *Clitopilus fallax* (Quél.) Kühn. & Romagn., *Fl. anal.*: 173. 1953. — Figs. 17–19.

Pileus 10–40 mm broad, convex then flattened, often shallowly depressed, with or without weak umbo, with margin involute to reflexed, with marginal zone strongly undulate-lobed with age, not hygrophanous, not striate, white, occasionally tinged cream or yellow at centre, dull c. smooth, glabrous. Lamellae L = 50–70, l = 1–3, fairly crowded, arcuate-decurrent, pale then yellowish flesh-colour, with concolorous, entire edge. Stipe 10–50 × 2–7 mm, cylindrical usually tapering, rarely broadening downwards, white, subtomentose all over or pruinose-flocculose at apex and then fibrillose downwards. Flesh solid, white. Smell not distinctive. Taste bitter.

Spores 5–8.3 × 3.5–4.7(–5)  $\mu\text{m}$ , Q = 1.4–1.7–2.0(–2.3), ellipsoid or amygdali-form, weakly nodulose in side-view, thin-walled. Basidia 18–31 × 7–11  $\mu\text{m}$ , 4-spored, clampless. Cystidia absent. Pileipellis a cutis of narrow cylindrical hyphae, 2.5–6.5(–9)  $\mu\text{m}$  wide, smooth or with very minutely encrusted walls. Clamp-connections absent.

Habitat & distribution.—In deciduous and mixed forest, in the Netherlands preferably on calcareous sandy soils near the coast, also in grassland, e.g. in *Corynephorum* in coastal dunes (Denmark), wide-spread but rare.

Collections examined.—DENMARK, North Jutland, dunes near Febbersted, 20 Oct. 1980, J. Howalt (C).—NETHERLANDS, prov. Noord Holland: Castricum, 24 Aug. 1954, G. D. Swanenburg de Veye (L), idem, 8 Sept. 1954, R. A. Maas Geesteranus 10146 (L); Ankeveen, Looijdijk, 26 Sept. 1956, J. Daams (L); prov. Zeeland, Zeeuws Vlaanderen, Sas van Gent, Braakmanpolder, bos van Calon, 29 June 1981, A. de Meyer 320 (L).

*Rhodocybe fallax* is easily distinguished from all other *Rhodocybe* by its white basidiocarp. It can be confused with small specimens of *R. popinalis*, but that species has smaller, more ellipsoid spores and turns red with KOH in dried specimens. The spores *R. fallax* are very thin-walled and only slightly pustulate. Therefore it is very important to stain them very well, e.g. in Cotton blue, to recognize the angular pustulate nature of the spores. Baroni (1981: 102) gives only a short description of the species, mainly compiled from literature. Therefore a more extensive description of this rare species is given here.

7. *Rhodocybe truncata* (Schaeff.: Fr.) Sing. in *Mycologia* 38: 687. (Full synonymy in Baroni 1981: 79–80).

Selected descriptions & illustrations.—Baroni, 1981, l.c.: 79–84, figs. 34, 52, 110, 130 and 146.—Gulden in Norw. J. Bot. 22: 5–6. 1975.—Maire in Bull. Soc. mycol. Fr. 40: 296–298, pl. 18 figs. 4–12. 1924.

*Rhodocybe truncata* is a very variable species. Several infraspecific taxa have been described, which seem to be only the extremes of long chains of intermediate forms. I have not been able to differentiate any in the Netherlands' collections, and therefore I accept the species in a wide concept.

8. *Rhodocybe hirneola* (Fr.) P. D. Orton in Trans. Br. mycol. Soc. 43: 181. 1960.

(Full synonymy, description and illustration in Baroni, T.J. in Beih. Nova Hedwigia 67: 110, figs. 42, 43, 79, 80, 112, 118 and 120. 1981.)

9. *Rhodocybe obscura* (Pilát) Moser in Gams, Kl. KryptogFl. 3. Aufl., 2 b/2: 151. 1967.—*Rhodopaxillus obscurus* Pilát Sb. nar. Mus. Praha 9B(2): 67. 1953.

Selected descriptions & illustrations.—Baroni in Beih. Nova Hedwigia 67: 95–96, figs. 40, 84, 85. 1981.—Enderle in Mitt. Ver. Naturw. Math. Ulm 31: 30–32. 1981.

*Rhodocybe obscura* can be distinguished from dark pigmented *R. popinalis* by its filamentous cheilocystidia. So far it is only known from Czechoslovakia, German Federal Republic and Sweden.

10. *Rhodocybe parilis* (Fr.) Sing. in Agaric. mod. taxon., 2nd. Ed.: 678. 1962.—*Agaricus parilis* Fr., Syst. mycol. 1: 168. 1821.

Description.—Arnolds in Bibl. mycol. 90: 452. ('1982') 1983.

*Rhodocybe parilis* comes close to *R. popinalis*, from which it differs mainly in size, smell and taste, and size and shape of the spores.

11. *Rhodocybe popinalis* (Fr.) Sing. in Lilloa 22: 609. 1951.—*Agaricus popinalis* Fr., Syst. mycol. 1: 194. 1821.—*Clitopilus popinalis* (Fr.) Kumm., Führ. Pilzk.: 97. 1871.—*Paxillus popinalis* (Fr.) Rick., Blätterp. 94. 1911.—*Clitocybe popinalis* (Fr.) Bres., Icon. mycol. 4: 160. 1928.—*Paxillopsis popinalis* (Fr.) J. Lange, Fl. agar. dan. 5: VI. 1940.—*Rhodopaxillus popinalis* (Fr.) Konr. & M., Rév. Hymén. Fr.: 327. 1937.—*Clitopilopsis popinalis* (Fr.) Konr. & M., Agaricales: 379. 1948.

*Agaricus mundulus* Lasch in Linnaea 4: 527. 1829.—*Clitopilus mundulus* (Lasch) Kumm., Führ. Pilzk.: 97. 1871.—*Rhodopaxillus mundulus* (Lasch) Konr. & M., Icon. sel. fung. 8, pl. 278. 1934.—*Paxillopsis mundulus* (Lasch) J. Lange, Fl. agar. dan. 5: VI. 1940.—*Clitopilopsis mundulus* (Lasch) Kühn. ex Konr. & M., Agaricales: 379. 1948.—*Clitocybe mundula* (Lasch) Pearson & Dennis in Trans. Br. mycol. Soc. 31: 153. 1948.—*Rhodocybe mundula* (Lasch) Sing. in Lilloa 22: 609. 1951.

*Agaricus noveboracensis* Peck in Rep. N. Y. State Cab. 23: 89. 1872.—*Clitopilus noveboracensis* (Peck) Sacc. Syll. 5: 702. 1887.—*Pleuropus noveboracensis* (Peck) Murr., N. Amer. Fl. 10(2): 702. 1887.—*Rhodocybe noveboracensis* (Peck) Sing. in Lilloa 22: 609. 1951.

*Clitopilus noveboracensis* var. *tomentosipes* Peck in N. Y. State Mus. Bull. 2: 27. 1887.

*Clitopilus noveboracensis* var. *subviolaceus* Peck, Ann. Rep. N. Y. State Mus. 54: 165. 1901.

*Clitopilus noveboracensis* var. *umbilicatus* Peck., Ann. Rep. N. Y. State Mus. 54: 165. 1901.

*Clitocybe himantiigena* Speg. in Bol. Acad. Cienc. Cordoba 23: 373. 1919.—*Rhodocybe himantiigena* (Speg.) Sing. in Lilloa 22: 227. 1951.

*Clitocybe alachuana* Murr., Proc. Florida Acad. Sci. 7: 217. 1944.—*Armillariella alachuana* (Murr.) Sing., Lilloa 22: 217. 1951.—*Lulesia alachuana* (Murr.) Sing., Fl. Neotrop. 3: 17. 1970.

*Hygrophorus meyendelli* Boetje v. Ruyven in Levende Natuur 39: 324. 1935 (not val. publ., no Latin diagn.).

Selected descriptions & illustrations.—Baroni: in Beih. Nova Hedwigia 67: 97–102, figs. 82, 83, 86–99, 119, 128. 1981.

Pileus 25–60(–90) mm broad, hemispherical at first then conico-convex to convex, finally flattened, usually with broad, low umbo, occasionally slightly depressed at centre, with margin enrolled when young, with marginal zone often irregularly lobed-undulating with age, very variable in colour from dingy white to cream, greyish, brownish or fairly dark grey-brown, sometimes with violaceous-lilaceous tinge, not striate, dull, more or less glabrous or minutely pruinose to subtomentose, often zonated, frequently with concentric rings of irregular, dark, smooth spots ('wasserfleckig'), often cracking with age, glabrescent with age, sometimes blackening when handled or from exposure, distinctly changing colour when water-soaked, slightly pallescent on drying. Lamellae L = 40–80,

1 = 3–7, crowded, adnate-subdecurrent when young, then arcuate-decurrent, narrow, 3–5 mm broad, greyish white, then yellowish brown or ochraceous grey, sometimes staining blackish when bruised, with concolorous entire edge. Stipe 15–60 × 4–17 mm, cylindrical, tapering downwards or subbulbous at base, sordid white then brownish grey, always paler than pileus, smooth or pruinose-fibrillose, at base felted-tomentose, sometimes entire basal half felted-tomentose, sometimes blackening when handled. Smell strongly farinaceous. Taste bitter.

Spores (4.7–)5.0–7.0(–8.0) × (3.5)4–5.5(–6)  $\mu\text{m}$ , Q = 1.1–1.2–1.4, subglobose to broadly ellipsoid, in outline with up to 12 facets in side-view. Basidia 20–40 × 6–9  $\mu\text{m}$ , 4-spored. Cystidia absent. Hymenophoral trama irregular, made up of 3–8  $\mu\text{m}$  wide hyphae with colourless or brownish walls. Pileipellis a cutis made up of 2–8  $\mu\text{m}$  wide cylindrical hyphae sometimes with tufts of erect terminal cells. Pileitrama irregular, made up of closely packed, 2–9  $\mu\text{m}$  wide, more or less cylindrical hyphae. Pigment membranous or slightly encrusting in upper layer of pileus. Clamp-connections absent.

Habitat & distribution.—In deciduous and coniferous forests, grassland, and in coastal dunes with *Salix repens*. Wide-spread, Europe, America.

Collections examined.—NETHERLANDS, prov. Friesland: Isl. of Terschelling, Noordsvaarder, 27 Oct. 1982, M.E. Noordeloos 1831.—Isl. Schiermonnikoog, Johannes-polder, 2 Nov. 1975, C. Bas 6717.—prov. Noord-Holland, Vogelenzang, Dunes of Amsterdam Water Supply, 9 Oct. 1956, C. Bas 1088.—Usselmeerpolders: S. Flevoland, near harbour of Noorderdauw, 24 Nov. 1978, F. Tjallingii & G. Tjallingii-Beukers; N. Flevoland, Revebos, 16 Oct. 1978, F. Tjallingii & G. Tjallingii-Beukers; idem, de Abbert, 31 June 1979, 30 June 1979, F. Tjallingii & G. Tjallingii-Beukers; Spijk, 30 June 1979, 17 July 1980 and 5 Oct. 1981, F. Tjallingii & G. Tjallingii-Beukers (all collections in L).

*Agaricus mundula* Lasch has always been considered to be closely related to *A. popinalis* Fr. Fries (1838: 149, 1857: 280, and 1874: 198) distinguished *A. mundula* from *A. popinalis* by the thin-fleshed, pale, slightly villose, blackening pileus in the first species versus the more fleshy, grey, smooth, not blackening pileus of *A. popinalis*. Furthermore the habitat was said to be different and *A. mundula* was said to be inodorous. Both species were accepted by later mycologists with about the same differences. However, both 'species' are far more variable than suggested by Fries, and many mycologists found it difficult to distinguish the two with certainty.

Kühner & Romagnesi (1953: 173) and Moser (1982: 189) consider the blackening of the surface and flesh of *Rhodocybe mundula* as the most important character to distinguish it from *R. popinalis*, since colour of the carpophores varies too much and both species have about the same microscopical characters. The blackening of the basidiocarps when very old or bruised, however, is a very variable character, and may be distinct or not in different basidiocarps from the same mycelium. Baroni (1981: 97) in his excellent world-monograph of the genus *Rhodocybe*, admits that both macroscopically and microscopically *R. popinalis* and *R. mundula* are very similar. It appears almost impossible to distinguish them on account of colour or surface of the pileus. According to him it is possible to distinguish the two on account of the habitat (cf. Fries, l.c.!) and a slight difference in spore-size. Studying the collections of *R. popinalis* and *R. mundula* available, I was unable to select any of the characters mentioned above as a good one to distinguish these taxa on specific level. Even the differences mentioned by Baroni could

not be used. Habitat-characters could not be combined with other characteristics, and though a slight difference in spore-size was found between some *mundula*-like collections and *popinalis*-like ones, this was not valid for all collections studied. In a very large collection made in the coastal dunes of the isl. Terschelling in Oct. 1982 (Noordeloos 1831), which apparently originated from one mycelium, since the basidiocarps were growing in a large fairy-ring around a small *Salix repens* shrub, I found specimens responding to typical *R. popinalis* with grey-brown, cracked cap, as well as typical *R. mundula* with pallid, blackening, villose pileus, as well as intermediates. Specimens growing on sheltered places under the branches of *Salix repens* showed the typical *R. mundula* habit, whereas those growing on more exposed spots were more like *R. popinalis*. No significant difference in spore-size was found between both types. On account of the observations described, I decided to reduce *Rhodocybe mundula* to the synonymy of *R. popinalis*.

#### EXCLUDED AND/OR DOUBTFUL TAXA

**asterospora.**—*Rhodocybe asterospora* (J. Lange) M. Lange & Sivertsen in Bot. Tidskr. 62: 201. 1966.—Belongs to the genus *Omphaliaster* (Lamouré, 1971: 282).

**borealis.**—*Rhodocybe borealis* M. Lange & Skifte in Acta Borealia, A. Scientia, 23: 45. 1967.—Belongs to the genus *Omphaliaster* (Lamouré, 1971: 281).

**griseospora.**—*Rhodocybe griseospora* (Pearson) P.D. Orton in Trans Br. mycol. Soc. 43: 181. 1960.—*Collybia griseospora* Pearson in Trans. Br. mycol. Soc. 35: 102. 1952.

Doubtfull species, close to or identical with *R. nitellina*. It was said to have a grey spore-print. Awaits rediscovery.

**lutetiana.**—*Rhodocybe lutetiana* (E.J. Gibb) Bon apud Bon & Chevassut in Docum. mycol. 3(11): 7. 1973.—*Rhodopaxillus lutetianus* E.J. Gilb. in Bull. Soc. mycol. Fr. 42: 66. 1926.

This is most probably one of the forms of *Rhodocybe popinalis*. I do not attach much value to the slightly tomentose pileal surface, contrary to Baroni (1981: 72) who created even the new section *Tomentosi* for this taxon. I observed in *R. popinalis* all transitions from a smooth to a subtomentose pileal surface, due to infraspecific variation, even within one population.

**microsporum.**—*Rhodocybe microsporum* (Velen.) Noordel., *comb. nov.* —basionym: *Entoloma microsporum* Velen., Novitates mycologicae: 140. 1939.

Pileus 10–20 mm broad, expanded-convex, slightly umbonate, at centre dark brown, at limb and margin grey with violaceous tinge; lamellae not crowded, broadly triangular, white then pink; stipe 20–40 × 2–3 mm, cylindrical, white, entirely granulose; smell

none; spores  $4.7-7.0 \times 3.5-4.7 \mu\text{m}$ , ellipsoid, minutely warty; basidia  $20-26 \times 5-7 \mu\text{m}$ , 4-spored; clamps seen at base of basidia; cystidia absent.

In *Prunus spinosa* thicket; Bohemia.

The description above is based upon the original macroscopic notes by Velenovsky and my study of the holotype (Noordeloos, 1980: 82). *Rhodocybe microsporum* clearly belongs to section *Rhodophana* on account of its stature and clamped hyphae. It comes close to *R. nitellina* from which it differs in colour. Needs rediscovery.

**nauseodulcis.** — *Rhodocybe nauseodulcis* Horak in Sydowia 31: 76. 1979.

This curious species, excellently described by Horak, has strongly nodulose spores, rather unlike those found in other species of the genus *Rhodocybe*. When he created this species Horak was aware of that, and pointed at similarities to the genera *Ripartites* and *Hygroaster*. Through courtesy of Dr. Horak I was able to study the holotype of this very intriguing species. Light microscopic and scanning electron microscopic studies revealed that the spores are not cyanophilic and show a strong resemblance to those of *Omphaliaster asterospora* and *Tephrocybe ambusta*, but considerably less resemblance to *Ripartites* (compare Plate 1). I checked also the siderophily of *Rhodocybe nauseodulcis*, but could not demonstrate a clearly positive reaction. Dr. C. Bas and Dr. H. Clemençon (Lausanne) kindly confirmed the non-siderophilous nature of the basidia. This excluded the possibility of ranging *Rhodocybe nauseodulcis* among the nodulose species of *Tephrocybe*.

*Hygroaster* is also excluded, although Singer (1962) and Horak (1966) used this generic name in connection with the epithet *asterospora* J. Lange. Lamoure (1971) clearly showed that *Hygroaster* is a genus of the *Hygrophoraceae*, characterized, besides by nodulose spores, by long basidia and intracellular pigment. Therefore Lamoure (l.c.) created the genus *Omphaliaster* to accommodate *Omphaliaster asterospora* and *O. borealis*. *Rhodocybe nauseodulcis* easily fits in *Omphaliaster* on account of a number of characters such as spore-ornamentation, structure and pigmentation of the pileipellis, and general habit. The only difference that seems to be important is the presence of clamp-connections in *Rhodocybe nauseodulcis*. Recently Baroni (1982: 869) emended the concept of *Omphaliaster* by including *O. ianthinocystis* (Sing.) Baroni. This species has many features in common with *O. asterospora* and *O. borealis*, but differs also in having clamped hyphae. The spores of *O. ianthinocystis* show strong resemblance with those of '*Rhodocybe*' *nauseodulcis*. Both clamped species cannot be placed in the genus *Mycenella*, among other things because of the lack of a true ramealis-structure in the pileipellis.

Therefore I accept Baroni's view and emended concept of the genus *Omphaliaster* and consequently introduce the following new combination: ***Omphaliaster nauseodulcis*** (Horak) Noordel., *comb. nov.* — basionym: *Rhodocybe nauseodulcis* Horak in Sydowia 31: 76. 1979. Another species which comes close to *Omphaliaster nauseodulcis* has been described by Horak from the Austrian Alps as a species of *Hygroaster*, viz. *H. kyrto-sporus*. This species has spores with only 2-5 conical projections, but in all other cha-

acters it strongly reminds of *Omphaliaster nauseodulcis*, and *O. asterospora*. Therefore I do not hesitate to transfer it to the genus *Omphaliaster*: *Omphaliaster kyrtosporus* (Horak) Noordel., *comb. nov.* — basionym: *Hygroaster kyrtosporus* Horak in Schweiz. Z. Pilzk. 44: 91. 1966.

*stangliana*. — *Rhodocybe stangliana* (Bresinsky & Pfaff) Rioussset & Joss. apud Rioussset & al. in Bull. mens. Soc. linn. Lyon 46: 125. 1977. — *Squamanita stangliana* Bresinsky & Pfaff in Z. Pilzk. 34: 169. 1968.

Moser (1982: 189) in the fifth edition of his *Kleine Kryptogamenflora* places *Squamanita stangliana* in the genus *Rhodocybe*, following Rioussset & al. (1977). I agree that undoubtedly the spores of this highly peculiar agaric are similar to the spores of *Rhodocybe*, but other characters, inclusive of the endocarpic development suggest that '*Squamanita*' *stangliana* should not be placed in *Rhodocybe*, nor in *Squamanita*, but on a place of its own right in the *Agaricales*. A final decision will be taken by Dr. C. Bas, specialist in *Squamanita*, in a future paper.

#### ACKNOWLEDGEMENTS

Dr. C. Bas is kindly thanked for critically reading the text of this paper. I owe also thanks to him and Drs. Thomas Kuyper, for interesting discussions on nomenclature. Dr. J. J. Barkman and Dr. E. Arnolds, Biological station, Wijster, the Netherlands, are greatly thanked for the loan of specimens and descriptions of critical species of *Rhodocybe*. I am also indebted to Henning Knudsen, Copenhagen for his hospitality during my stay at Copenhagen in spring 1982, where I studied many interesting species of *Rhodocybe*.

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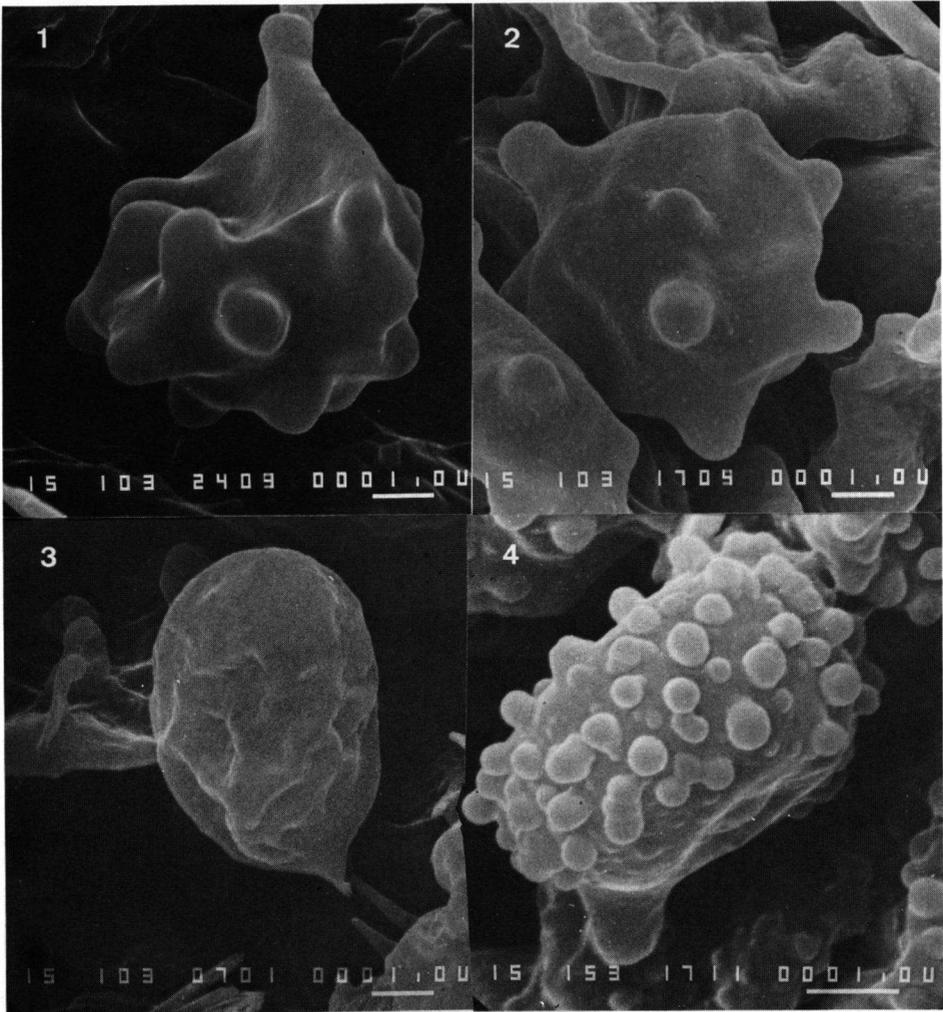


Plate 1. S.E.M.-photographs of spores. — 1. *Omphaliaster nauseodulcis*. — 2. *Omphaliaster asterosporus*. — 3. *Rhodocybe nitellina*. — 4. *Ripartites tricholoma*. (The bar represents 1  $\mu$ m.)