

NOTULAE AD FLORAM AGARICINAM NEERLANDICAM—IV-V
Clitopilus and Leucopaxillus

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A neotype is designed for *Clitopilus scyphoides* (Fr.) Sing., an older synonym of *C. cretatus* (Berk. & Br.) Sacc. *Clitopilus intermedius* Romagn. is reduced to a variety and *C. omphaliformis* Joss. to a form of *C. scyphoides*. One new forma is described, viz. *Clitopilus scyphoides* f. *reductus*. Two new species of *Clitopilus*, viz. *C. fasciculatus* and *C. daamsii* are described, and an account is given of *Clitopilus hobsonii* and its synonyms and misapplications. A new species of *Leucopaxillus*, *L. cutefractus*, is described from the coastal dunes of the Netherlands.

IV. *Clitopilus*

Clitopilus Kumm., Führ. Pilzk.: 23, 96. 1871.

Agaricus tribus *Mouceron* Fr., Syst. mycol. 1: 193. 1821. — Lectotype (Donk, 1949): *Agaricus prunulus* Scop.: Fr.

Agaricus tribus *Clitopilus* Fr., Epicr.: 148. 1838 (not val. publ.); non *Agaricus* tribus *Clitopilus* Fr. 1821, Syst. mycol. 1: 194. 1821. — *Agaricus* subgenus *Clitopilus* (Fr.) Rabenh. Deutschl. Krypt.Fl.: 507. 1844 (illegitimate, later homonym of *Agaricus* subg. *Clitopilus* (Fr., 1821) Loud. 1829). — Lectotype (Donk, 1949): *C. prunulus* (Scop.: Fr.) Kumm.

The epithet *Clitopilus* has been introduced for the first time by Fries (1821: 194) for a tribus within the genus *Agaricus* characterized by a clitocybeoid habit and a pinkish spore-deposit. Fries divided this tribus into two subtribus, viz. *Rhodopolii* and *Plutei*. In accordance with the International Code of Botanical Nomenclature (I.C.B.N.) art. 22.4 these subtribus are to be typified with *Agaricus rhodopolius* and *A. pluteus* respectively. Consequently a lectotype for tribus *Clitopilus* must be chosen from these two species, and, when raised to generic rank, *Clitopilus* (Fr.: 1821) becomes a synonym of *Entoloma* resp. *Pluteus*.

Donk (1949) defended the thesis that Fries introduced the name *Clitopilus* a second time for a different tribus when Fries (1838) transferred most of the species of his first tribus *Clitopilus* (1821) to the tribus *Entoloma* and *Pluteus* and in the meantime replaced the old tribus name *Mouceron* by *Clitopilus*. Apparently Fries considered the name *Clitopilus* available again for a new group of species. According to the I.C.B.N. art. 48.1 the name *Agaricus* tribus *Clitopilus* Fr. 1838 must be considered a later homonym of *Agaricus* tribus *Clitopilus* Fr. 1821. Furthermore the name *Agaricus* tribus *Clitopilus* Fr. 1838 is not validly published, according the I.C.B.N. art. 33.4, as 'tribus' is a misplaced term for an infraspecific taxon.¹

¹ By way of exception, however, Fries' tribus names in *Systema mycologicum* are to be considered validly published (I.C.B.N. art. 33.5).

Kummer (1871) created the genus *Clitopilus*, which agrees with *Clitopilus* Fr. 1838, and consequently with *Agaricus* tribus *Mouceron* Fr. 1821. As a consequence of the invalid status of the name *Agaricus* tribus *Clitopilus* Fr. 1838, Kummer must be considered the author of the generic name *Clitopilus*. According to I.C.B.N. art. 72 (esp. note 1) *Clitopilus* Kumm. must be considered as a new name and has to be cited as *Clitopilus* Kumm. without reference to the invalidly published name *Agaricus* tribus *Clitopilus* Fr. 1838. *Clitopilus* Kumm. is lectotypified (Donk, 1949) by the type of its nomenclatorial ancestor *Agaricus* tribus *Mouceron* Fr. 1821, viz. *Agaricus prunulus* Scop.: Fr.

Clitopilus scyphoides (Fr.) Sing.

Agaricus scyphoides Fr., Syst., mycol. 1: 163. 1821. — *Omphalia scyphoides* (Fr.) Kumm., Führ. Pilzk.: 106. 1871. — *Omphalina scyphoides* (Fr.) Quél., Enchir. fung.: 42. 1886. — *Clitocybe scyphoides* (Fr.) P. D. Orton in Trans. Br. mycol. Soc. 43: 174. 1960. — *Clitopilus scyphoides* (Fr.) Sing. in Farlowia 2: 554. 1946.

Agaricus cretatus Berk. & Br. in Annls Mag. nat. Hist., Sér. 3, 7: 373. 1861. — *Clitopilus cretatus* (Berk. & Br.) Sacc., Syll. fung. 5: 702. 1887.

Cantharellus hrbanovi Velen. in Mykologia 3: 77. 1926. — *Clitopilus hrbanovi* (Velen.) Sing. in Sydowia 31: 237. 1979.

Clitopilus omphaliformis Joss. in Bull. mens. Soc. linn. Lyon 10: 10. 1941. — *Clitopilus giovanel-lae* var. *omphaliformis* (Joss.) Joss. in Bull. mens. Soc. linn. Lyon 13: 162. 1943.

Clitopilus omphaliformis f. *calathinoides* Locq. in Bull. mens. Soc. linn. Lyon 13: 107. 1943 (nom. nud.).

Clitopilus intermedius Romagnesi in Bull. Soc. Nat. Oyonnax 8: 74. 1954.

Misapplied names. — *Pleurotus mutilus* (Fr.) Gill. sensu Gill., Hyménom. Fr.: 344. 1876; J. Lange, Fl. agar. dan. 2: 71–72, pl. 79 C. 1936.

Clitopilus scyphoides f. *mutilus* sensu Sing. in Farlowia 2: 555. 1946.

Excluded names. — *Clitocybe scyphoides* sensu P. D. Orton in Trans. Br. mycol. Soc. 43: 174. 1960 (= *Clitocybe* spec.); *Omphalia scyphoides* sensu J. Lange, Fl. agar. dan. 2: 57, pl. 59A. 1936 (= *Clitocybe* spec.).

Neotype-study of *Clitopilus scyphoides* (Fig. 1).—

Fungi Exsiccati Suecici 707, Upland, Upsala, Slottsbacken, 22 July 1938, *Seth Lundell*. On bare soil, in sparse lawn amongst *Trifolium repens* etc. under frondose trees (Neotype, design. mihi, C.).

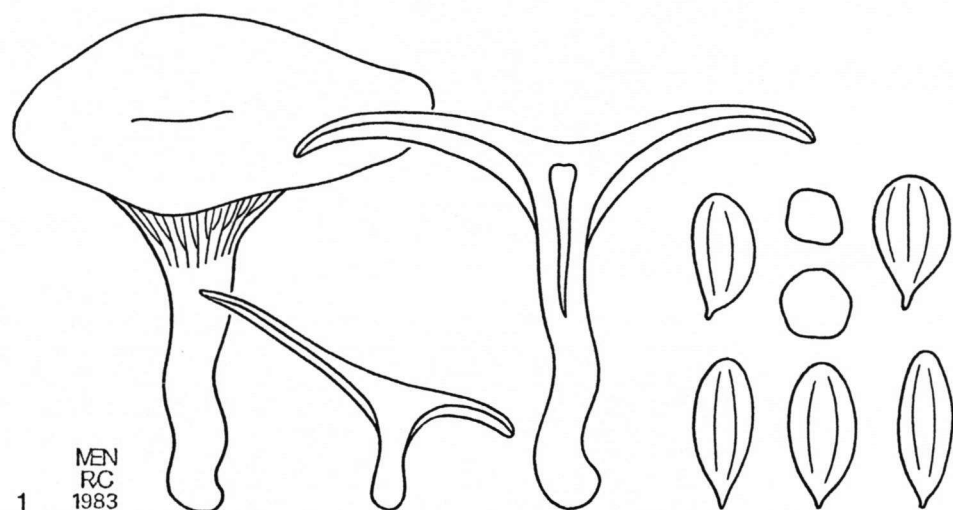
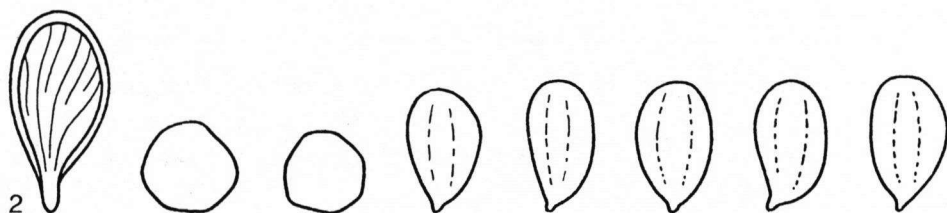
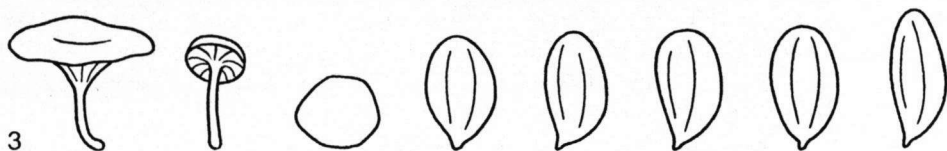
Spores 6–8.1 × 3.2–4.2 μm, ellipsoid in outline with 6–9 ribs. Basidia 18–32 × 7–9.5 μm, 4-spored. Cystidia not seen. Pileipellis a cutis of narrow, cylindrical, 2–5 μm wide hyphae. Clamp-connections absent.

Type-study of *Agaricus cretatus*.—

Herbarium Mycologicum Berkeleyanum 850, Aug. 20, 1860, *Kevii Cliff* (K).

Spores 6–8.5 × 3.2–4.5 μm, ellipsoid in outline with 5–8 distinct ribs. Intact basidia not found.

The holotype of *Agaricus cretatus* is in rather poor state, and consist of about 8 specimens with omphalinoid habit, glued to a piece of paper. The spores, however, agree perfectly with the common interpretation of *Clitopilus cretatus* of modern authors. In the preparations also rounded, rough spores, 6–8 μm in diameter were found, most pro-



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Fig. 1. *Clitopilus scyphoides* f. *scyphoides*. — Habit ($\times 3$) and spores ($\times 2100$). (Habit from Exc. N.M.V. 29 Sept. 1974; spores from neotype).

Fig. 2. *Clitopilus scyphoides* f. *reductus*. — Habit ($\times 3$) and spores ($\times 2100$). (All figs. from holotype).

Fig. 3. *Clitopilus scyphoides* f. *omphaliformis*. — Habit ($\times 3$) and spores ($\times 2100$). (All figs. from *C. Bas 1515*).

bably from a mould. It is almost certain that Masseé (1893: 245) saw these spores when he studied the type of *Agaricus cretatus*.

I agree with Singer (1946: 554) that *Agaricus scyphoides* most probably represents the same fungus as *Agaricus cretatus*. The descriptions of Fries (1821, 1874, and espe-

cially the plate of Fries (1867) leave no doubt that *Agaricus scyphoides* has a pink sporeprint. For that reason I select Fungi Exsiccati Suecici no. 707 as neotype.

Orton (1960) and J. Lange (1936) have another concept of *Agaricus scyphoides* Fr., viz. a species of *Clitocybe* sect. *Candicans* unknown to me.

The use of the epithet *mutilus* Fr. for a species of *Clitopilus* is rejected as according to Th. Kuyper (1984; in prep.) and myself, this name applies to a species of *Omphalina*.

KEY TO THE INFRASPECIFIC TAXA OF CLITOPILUS SCYPHOIDES

1. Habit omphalinoid; stipe generally central, rarely excentric, but always well-developed 2
1. Habit crepidotoid; stipe excentric to lateral or lacking var. *scyphoides* forma *reductus*
2. Smell and taste mealy; spores $6.6-8.5 \times 3.5-4.8(-5.2) \mu\text{m}$, average $7.3 \times 4.2 \mu\text{m}$ 3
2. Smell fruit-like, spores $7-10 \times 3.5-5.3 \mu\text{m}$, average $8 \times 4.5 \mu\text{m}$ var. *intermedius*
3. Pileus 5–25 mm broad; stipe up to $20 \times 0.5-1.5(-2)$ mm; spores $6.6-8.5 \times 3.5-4.8(-5.2) \mu\text{m}$
var. *scyphoides* f. *scyphoides*
3. Pileus 3–7 mm broad; stipe $5-8 \times 0.5-0.8$ mm; spores $6.2-7.3 \times 3.5-4.2(-5.3) \mu\text{m}$
var. *scyphoides* f. *omphaliformis*

Clitopilus scyphoides (Fr.) Sing. var. *intermedius*

(Romagn.) Noordel., *comb. nov.* — Fig. 4

Basionym: *Clitopilus intermedius* Romagn. in Bull. Soc. Nat. Oyonnax 8: 74. 1954.

Basidiocarps small to medium-sized. Pileus 9–22 mm broad, irregularly convex to plano-convex, sometimes reniform, slightly depressed to infundibuliform, with involute margin, pure white, not striate, minutely felty under lens. Lamellae $L = 22-35$, $l = 5-7$, very crowded, arcuate-decurrent, narrow, white then pink with entire, concolorous edge. Stipe $5-12 \times 1-2$ mm, central or slightly excentric, cylindrical or slightly tapering downwards, white, subpruinose all over. Flesh thin, white. Smell spontaneously faintly to distinctly fruity and pleasant, like some species of *Clitocybe*, not farinaceous. Taste soap-like to subfarinaceous.

Spores $7-10 \times 3.5-5.3 \mu\text{m}$, average $8 \times 4.5 \mu\text{m}$, broadly ellipsoid in outline, $Q = 1.55-1.75-2$, with (3–)4–8 ribs. Basidia $17-27 \times 6-8 \mu\text{m}$, 4-spored. Cystidia none. Pileipellis a thin, poorly developed cutis of $2-9 \mu\text{m}$ wide, interwoven hyphae, gradually passing into pileitrama. Pigment absent. Clamp-connections absent.

Habitat & distribution. — Terrestrial in (coniferous) forest on rich, calcareous or loamy soil, rare. Known to occur in France and Belgium.

Collection examined. — BELGIUM, prov. Namur, near Rochefort, 7 Oct. 1982, *H. Tichelman-Beckman* (L).

Clitopilus scyphoides var. *intermedius* differs from the type-variety mainly in the fruity smell and slightly larger spores, which in my opinion does not justify distinction on species level. It seems to be much more rare than the type-variety; most probably it prefers richer soils.

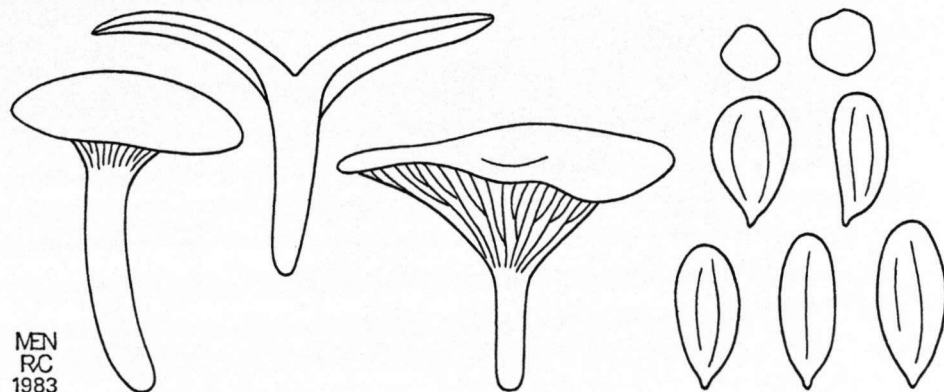


Fig. 4. *Clitopilus scyphoides* var. *intermedius*. — Habit ($\times 3$) and spores ($\times 2100$). (All figs. from H. Tichelman-Beckman, 7 Oct. 1982.)

Clitopilus scyphoides forma *omphaliformis* (Joss.) Noordel., *comb. nov.* — Fig. 3

Basionym: *Clitopilus omphaliformis* Joss. in Bull. mens. Soc. linn. Lyon 10: 10.1941.

Clitopilus scyphoides f. *omphaliformis* differs from the type-forma only in having very small basidiocarps and perhaps slightly smaller spores, differences without much taxonomic value.

Clitopilus scyphoides forma *reductus* Noordel., *forma nova.* — Fig. 2

Clitopilus omphaliformis forma *calathinoides* Locq. in Bull. mens. Soc. linn. Lyon 13: 107. 1943 (nom. nud., no lat. diagn.).

A forma typica differt in basidiomata reducta, stipite excentrica vel lateralibus, interdum absentes. — Holotypus: *C. Bas* 5582, 4 Aug. 1971, 'Appellaantje near Wulpenhorst, Zeist, prov. Utrecht, Netherlands' (L).

Pileus up to 10 mm broad, circular when very young soon excentric conchiform, often with slightly depressed centre, pure white, subpubescent to subfelted under lens. Lamellae fairly crowded, decurrent, fairly broad, white to pale isabella with entire, concolorous edge. Stipe not more than 1.5 \times 1 mm, centric when young soon excentric to lateral, sometimes lacking, white. Smell unknown. Sporeprint fairly dark flesh-pink.

Spores 6–7(–8.1) \times 3.5–4.2 μm , $Q = 1.4$ –1.7–2.0, ellipsoid in side-view, 6–8-angled in polar view. Basidia 16–26 \times 4.5–8 μm , 4-spored. Cystidia none. Pileipellis a cutis of loosely arranged, 2–4 μm wide hyphae. Pigment absent. Clamp-connections absent.

Habitat & distribution.—Terrestrial in (deciduous) forest, rare. Known to occur in France and the Netherlands.

Collections examined.—NETHERLANDS, prov. Utrecht, Zeist, Appellaantje near Wulpenhorst, 4 Aug. 1971, *C. Bas* 5582 (holotype, L).



Fig. 5. *Clitopilus fasciculatus*. — Habit ($\times 1.5$) and spores ($\times 2100$). (All figs from holotype).

Clitopilus scyphoides forma *reductus* differs from the type forma in having, small reduced basidiocarps. It can be distinguished from *Clitopilus hobsonii* in having narrower spores.

***Clitopilus fasciculatus* Noordel., spec. nov. — Figs. 5, 10**

Basidiomata fasciculata; fasciculæ usque ad 70 mm latae; pileus ad 24 mm longus et 20 mm latus; tubuliformus demum irregulariter flabellatus, margine inflexus, pallide brunneus, albido pubescentus vel albido-arachnoideus; lamellæ confertissimæ, angustæ, ad 1 mm latae, interdum furcæ fere meruloidæ, pallide cremeæ demum brunneo-incarnatæ; stipes desunt; odore saporeque acidulo-fungoidea. Sporæ 4.7–6.3 \times 3.0–3.5(–4) μ m, ellipsoideæ, paulisper 3–6 costatæ; basidia 4-sporigera; cystidia nulla; pileipellis cutis vel ixocutis, hyphæ cylindræ, 2–4 μ m latae; hyphæ tramarum cylindræ, ad 4 μ m latae, fibulæ desunt.

Ad lectum agaricinum cultivatum. — Holotypus: 'A. v. Zaayen, 15-V-1979, Mushroom growing Experimental Station, Horst, prov. Limburg, the Netherlands' (L).

Basidiocarps fasciculate; fascicules up to 70 mm broad; individual pileus up to 24 mm long and 20 mm broad, when young more or less tubular, then fan-shaped with inflexed margin, pale brown (buff) covered with white pruinose-arachnoid covering; lamellæ very crowded, very narrow, up to 1 mm broad, strongly undulating near the base giving an almost meruloid impression, very pale buffy cream near pileus, lower part more brownish-incarnate (2.5 Y 8/4, then 10 YR 8/3–7/4); stipe lacking; flesh thin, up to 0.7 mm thick, somewhat glassy; smell acrid-fungoid when crushed; taste somewhat acrid-fungoid.

Spores 4.7–6.3 \times 3.0–3.5(–4) μ m, ellipsoid with 3–6 weak ribs, basidia 4-spored; cystidia absent; pileipellis a cutis with some uplifted hyphæ with transitions to an ixocutis, made up of 2–4 μ m wide, cylindrical hyphæ; pileitrama densely interwoven with radial tendency, made up of 2–4 μ m wide, cylindrical hyphæ; pigment not seen; clamp-connections absent.

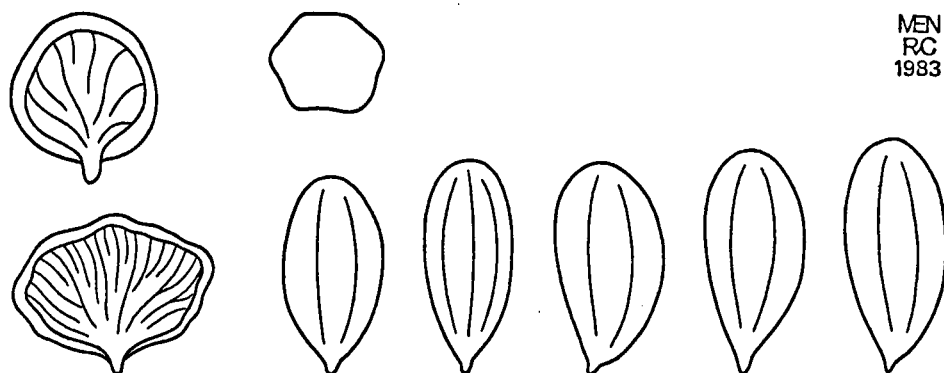
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Fig. 6. *Clitopilus fasciculatus*. — Habit ($\times 3$) and spores ($\times 2100$). (All figs from holotype).

Habitat & distribution.— On beds of cultivated mushrooms (*Agaricus* spp.). So far only known from the Netherlands.

Collections examined.— NETHERLANDS: prov. Limburg, Mook, June 1955, anon. (L); idem, Heyen, Franzman-firm, July 1978, A. van Zaayen (L); idem, cultivated 15 May 1979, A. van Zaayen (Holotype, L).

Clitopilus fasciculatus has a very remarkable growth-form, as it forms large cauliflower-like fascicules on growing-beds of cultivated mushrooms (*Agaricus* spp.). By this growth-form and the very small spores it can be distinguished from *Clitopilus passeckerianum* (Pilát) Sing., another *Clitopilus* from mushroom-beds. The spores of *Clitopilus fasciculatus* are the smallest recorded so far from the genus *Clitopilus*.

***Clitopilus daamsii* Noordel., spec. nov.** — Fig. 6

Speciem nomine *Clitopilus hobsonii* sumulans sed sporis majoribus, (7–)8.1–11.5(–12.7) \times 4.5–6.6(–7.0) μm . — Holotypus: J. Daams s.n., XI-1966; 'Ankeveen, prov. Noord-Holland, Netherlands' (L).

Basidiocarps small, 2–8 mm broad, initially centrally or laterally stipitate then without stipe and sessile. Pileus convex to irregularly flattened with involute to inflexed margin, white, densely woolly-tomentose. Lamellae distant, L = (4–)6–15, accidentally forked or anastomosing and slightly reduced, white then pink or flesh-colour with concolorous, entire edge. Stipe, if present, very short, up to $1.5 \times 1 \mu\text{m}$ white, pruinose. Smell not known.

Spores (7–)8–11.5(–12.7) \times 4.8–6.6(–7) μm , average $9.5 \times 5.7 \mu\text{m}$, Q = 1.4–1.75–2.0, ellipsoid in side-view with 6–9 ribs. Basidia 17–25 \times 6–9 μm , 2- and 4-spored, more or less equally distributed in hymenium, or all 4-spored. Cheilocystidia absent but frequently tramal hyphae protruding from hymenium, especially in old specimens, forming 2–3 μm wide cylindrical hairs along the edge. Hymenophoral trama very thin, more or less regular, made up of 2–4 μm wide, cylindrical hyphae. Pigment absent.

Habitat & distribution.— On wood and other fungi (eg. *Hymenochaete tabacina*). So far known from Denmark and the Netherlands.

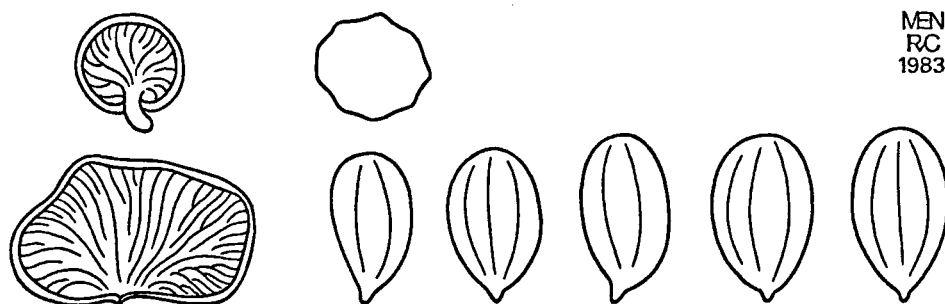

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Fig. 7. *Clitopilus hobsonii*. — Habit ($\times 3$) and spores ($\times 2100$). (Habit from *M. E. Noordeloos 1701*, spores from holotype).

Collections examined. — NETHERLANDS, prov. Noord-Holland, Ankeveen, Nov. 1966, *J. Daams s.n.* (holotype, L); Vogelenzang, Vogelenzangse bos, 5 Oct. 1961, *C. Bas 2574* (L); prov. Noord-Brabant, Drimmelen, 28 Dec. 1958, *P. B. Jansen* (L); Breda, Emer, 5 Dec. 1970, *P. B. Jansen* (L). — DENMARK, Julland, Jaegerspris, 5 Dec. 1982, *S. Elborne 754* (C).

Clitopilus daamsii resembles *C. hobsonii* very much in having a strongly reduced often sessile basidiocarp, but differs microscopically in having much larger spores. Some collections have mixed 2- and 4-spored basidia, others exclusively 4-spored basidia, but even in the latter the spores are distinctly larger than in *C. hobsonii*. For this reason I consider it a taxon with the rank of species, and not a mere variety of *C. hobsonii*.

I have named this tiny *Clitopilus* after Jasper Daams, former president and present honorary member of the Netherlands' Mycological Society, to honour his great stimulating influence on Netherlands mycology over almost 50 years.

Clitopilus hobsonii (Berk.) P. D. Orton. — Fig. 7

Agaricus hobsonii Berk., Outl. Brit. Fung. 138. 1860. — *Pleurotus hobsonii* (Berk.) Sacc., Syll. fung. 5: 382. 1887. — *Clitopilus hobsonii* (Berk.) P. D. Orton in Trans. Br. mycol. Soc. 43: 174. 1960.

Octojuga pleurotelloides Kühn. in Botaniste 17: 158. 1926. — *Clitopilus pleurotelloides* (Kühn.) Joss. in Bull. mens. Soc. linn. Lyon 10: 1941.

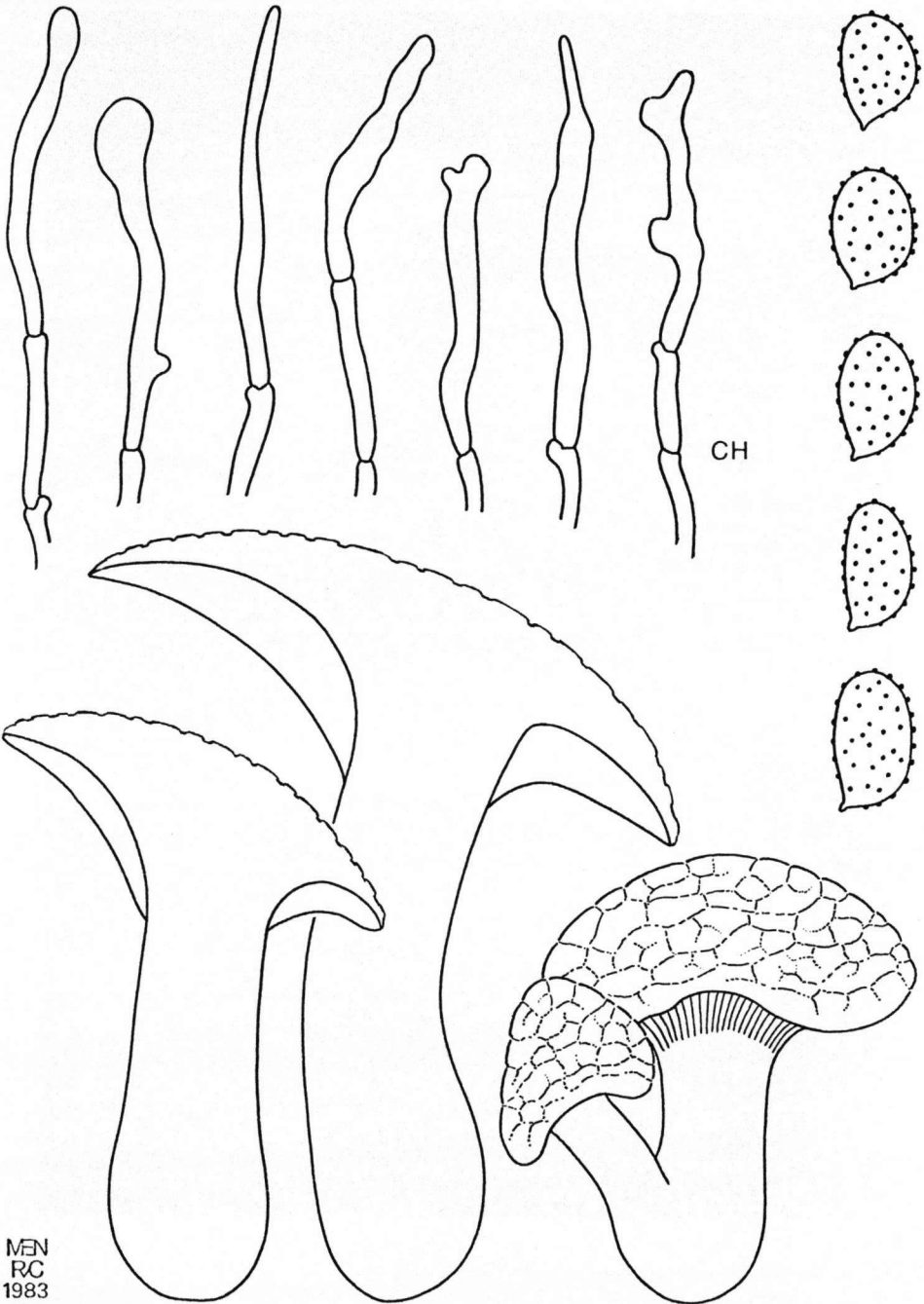
Octojuga fayodii Konr. & Maubl., Icon. sel. fung. 6: 234. 1934.

Misapplied names. — *Claudopus variabilis* sensu Fayod, Ann. Sci. Nat., Sér. 7, 9: 390. 1889, non all (= *Octojuga fayodii*). — *Clitopilus pinsitus* sensu Joss. in Bull. Soc. mycol. Fr. 53: 210. 1937 non Fr. — *Clitopilus septioides* sensu Sing. in Lilloa 22: 606. 1951.

Study of the holotype of *Clitopilus hobsonii*. —

Spores $6.0\text{--}9.0 \times 4.0\text{--}5.5 \mu\text{m}$, ellipsoid in outline, with 7–10 indistinct ribs. Material too poor for the interpretation of other microscopical characters.

Fig. 8. *Leucopaxillus cutefractus*. — Habit ($\times 1.5$), spores ($\times 2100$) and cheilocystidia ($\times 1400$). (All figs. from holotype).



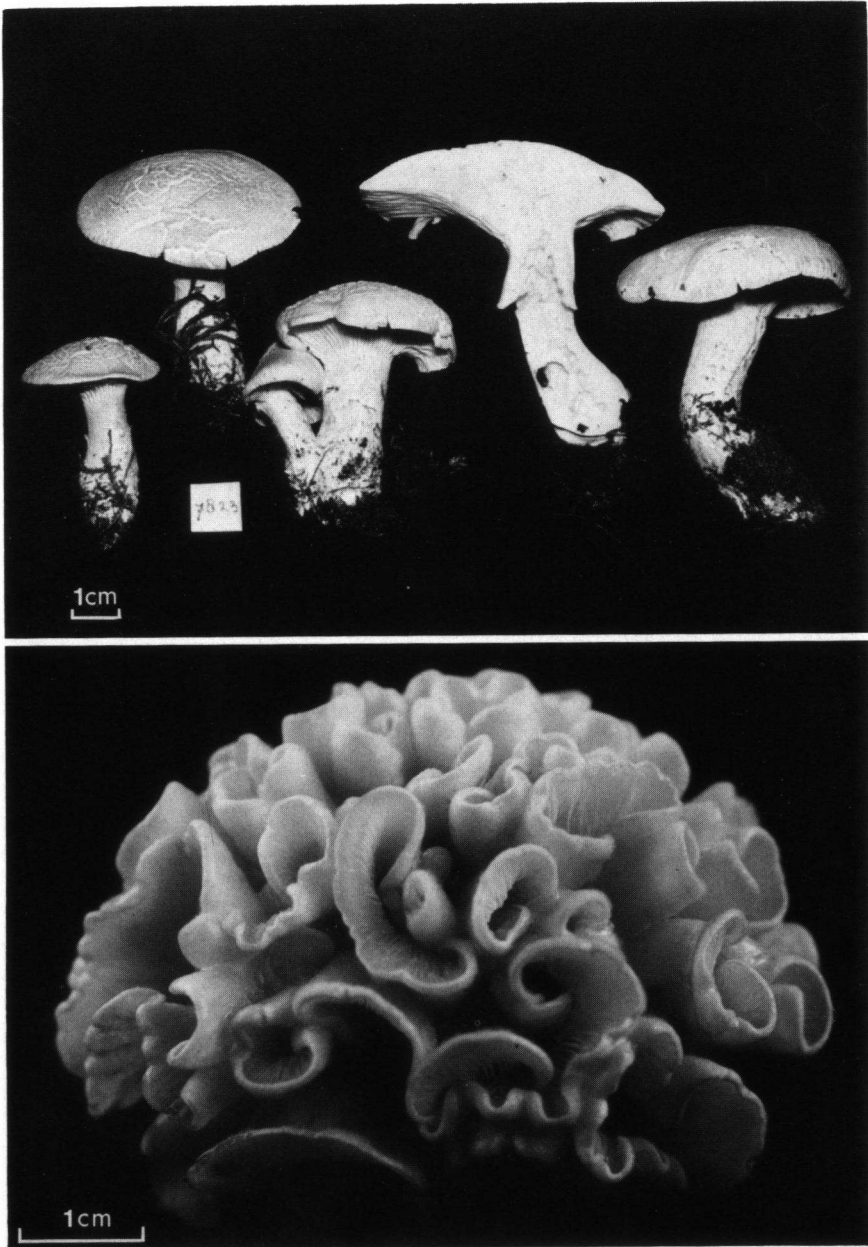


Fig. 9. *Leucopaxillus cutefractus*. — Habit (from holotype).

Fig. 10. *Clitopilus fasciculatus*. — Habit (from holotype).

From the type-study it is evident that *Clitopilus hobsonii* is a good species of *Clitopilus*, and the oldest valid name for *Octojuga pleurotelloides* Kühner.

Clitopilus pinsitus sensu Jossierand (l.c.) most probably represents a luxurious form only of *C. hobsonii*. I have ranged it among the misapplied names awaiting other evidence.

Clitopilus hobsonii is a common species growing terrestrial or on debris of herbaceous or woody plants. The lamellar edge is usually fertile, but occasionally filiform, 2–4 μm wide 'hairs' have been observed, which possibly are of tramal origin (compare *C. daamsii*).

Clitopilus scyphoides f. *reductus* resembles *C. hobsonii* very much, but can be distinguished by its narrower spores.

V. Leucopaxillus

Leucopaxillus cutefractus Noordel., *spec. nov.* — Figs. 8, 9

Pileus 40–120 mm latus, conico-convexus, late expansus, haud hygrophanus, haud striatus, pallide isabellinus vel isabellino-ochraceus, initio villosus late irregulariter rimoso-aereolatus. Lamellae moderate confertae, versus basim anastomosae, pallidae. Stipes 25–60 \times 8–22(–30), versus basim inflatus, pileo pallidior. Caro alba, firma. Odor variabilis, subaromaticus, gratus vel leviter nauseosus. Sapor mitis. Sporae 6.3–8.1(–8.6) \times 4.5–5.9(–6.3) μm , ellipsoidae, amyloidae, verruculosae. Basidia 4-sporigera. Cheilocystidia abundantia, cylindricaco-flexuosa, interdum strangulata vel ad apicem coralloidea, 2.5–6 μm crassa. Pileipellis cutis vel trichoderma, hyphis cylindraceutis, 4–10 μm latis pigmentis membranaceis vel leviter incrustantibus. Fibulae numerosae. — Holotypus: *Th. W. Kuyper 1940*, 14-X.1981, 'Kwade hoek, Isl. Goeree, Netherlands' (L).

Pileus 40–120 mm broad, thick-fleshed, rounded conico-convex then expanding to almost flattened, usually with broad umbo, more rarely with slightly depressed centre, with involute margin, in marginal zone somewhat irregular lobed or wavy with age, not hygrophanous, not striate, pale isabella creamy with whitish margin of entirely isabella-ochraceous, at centre sometimes slightly darker tending to leather brown, dry, entirely felted-tomentose when young sometimes minutely ribbed and fluffy at margin, becoming areolate-craqued to 'pseudo' squamulose with age, more or less glabrescent in moist weather. Lamellae moderately crowded decurrent, narrow to fairly broad (4–10 mm), often anastomosing, especially in basal part on stipe, pallid, almost white and remaining so on drying, with minutely pruinose-fimbriate, concolorous edge. Stipe 25–60 \times 8–22(–30) mm, usually strongly swollen towards base but extreme base mostly attenuated and almost rooting, white or whitish with isabella-creamy spots, flocculose-squamulose at first then fibrillose-streaky to minutely ribbed, at base white tomentose. Flesh very firm, white. Smell variable, usually sweetish, subaromatic, sometimes slightly rancid-acrid or subfarinaceous, unpleasant. Taste strong, difficult to describe but mild. Sporeprint slightly creamy-pinkish.

Spores 6.3–8.1(–8.6) \times 4.5–5.9(–6.3) μm , average 7–7.6 \times 5–5.5 μm , Q = (1.1–) 1.3–1.4(–1.7), (broadly) ellipsoid in outline, covered with small, rounded, strongly amyloid warts. Basidia 24–52 \times 8–11 μm , 4-spored. Cheilocystidia numerous, rendering lamellar edge usually entirely sterile, irregularly cylindrical-flexuose, sometimes with some apical excrescences subcoralloid, 2.5–5(–6) μm wide. Pileipellis a cutis with transitions to a trichoderm, made up of 4–10 μm wide cylindrical hyphae with numerous free endings, resembling the cheilocystidia. Pigment mainly membranous, sometimes minutely encrusting in pileipellis and upper pileitrama. Pileitrama subregular, made up of 4–12 μm wide cylindrical hyphae. Clamp-connections numerous in all tissues.

Habitat & distribution.—In grassland and in deciduous forest in the coastal dunes on relatively calcareous, humus-rich sandy soil. Known to occur in several places, often in large groups, along the coast of the Netherlands.

Collections examined.—NETHERLANDS: prov. Noord-Holland: Bakkum, 11 Oct. 1962, *anonymus*; Castricum, Geversduin, 19 Sept. 1954, *G. D. Swanenburg de Veye*; *idem*, 23 Oct. 1955, *R. A. Maas Geesteranus 10846*; prov. Zuid-Holland: Wassenaar, Meyendel, 24 Oct. 1931, *M. Boetje van Ruyven*; *idem*, 23 Oct. 1955, *R. A. Maas Geesteranus 13453*; *idem*, Bierlap, 5 Oct. 1974, *C. Bas 6418* and 9 Oct. 1974, *C. Bas 6418a*; Island Goeree, 14 Oct. 1981, *Th. W. Kuyper 1940* (holotype) (all collections in L).

The genus *Leucopaxillus* Boursier is relatively well-known due to the excellent monograph of Singer & Smith (1942) and the contributions by F. H. Moeller (1954) and Bon (1979). However, while working through the available Netherlands' collections of the genus, a taxon was encountered which I was unable to name with the works mentioned above, nor with the keys of Kühner & Romagnesi (1953) and Moser (1983). The species concerned is well represented in the Rijksherbarium with several collections, all from the coastal dune-area. Macroscopically it shows some resemblance to *Leucopaxillus paradoxus* (= *L. albissimus* sensu Singer & Smith s.l., = *L. cerealis* (Lasch) Singer), but in general the collections are slightly darker on the pileus than mentioned for *L. paradoxus* in the descriptions of Boursier (1925), Kühner (1926), Singer & Smith (1942), Pegler (1975) and Malençon & Bertault (1975). But this difference is not so great that one could think of one the dark species like *L. tricolor*, *L. gentianeus*, or *L. amarus*. For that reason the Netherlands' collections all were named *L. paradoxus*.

While examining the collections critically I found that all specimens studied had well differentiated cheilocystidia, usually so abundant, that the lamellar edge appeared to be entirely sterile. This is not mentioned in one of the descriptions cited above, and I started to doubt the correctness the identification of our *L. paradoxus*. Also the recent key to the genus *Leucopaxillus* of M. Bon (1979) did not help me out. Choosing for the pale coloured species, the only species with similar cheilocystidia is *L. alboatraceus* (Moell.) Moell., but that differs among other things in having non-decurrent lamellae and much smaller spores ($4-5(-6) \times 3-4(-4.5) \mu\text{m}$). Trying the other way by choosing for the darker species, I encountered a number of species with similar cheilocystidia, but with a considerably darker pileus than our fungus (*L. gentianeus*, *L. mirabilis*, and *L. amarus*). The only species with a more or less similarly coloured pileus seems to be *L. tricolor*, but this species has sulphur yellow lamellae which turn violaceous-chocolate-brown on drying (Michael-Hennig, 1979; Kühner & Romagnesi, 1953; and Singer & Smith, 1942).

Dr. M. Bon (St. Valéry-sur-Somme, France) who kindly checked my descriptions and exciccata of the Netherlands' taxon, agrees that it does not fit into any of the known species of *Leucopaxillus*, with perhaps the exception of *L. albissimus* var. *monticola* Singer & Smith. That variety, which occurs under coniferous trees in the (sub-)alpine regions of the southern United States, differs slightly in having a paler, smoother pileus. Whether this variety is identical with our fungus or not, which is difficult to demonstrate without the type-collection, it seems to be untenable as a variety of *L. albissimus* as the occurrence of cheilocystidia is considered to be a major character on species level in

Leucopaxillus (cf. Singer & Smith, Moeller, Bon, l.c.). Therefore I consider my fungus as a species in its own right, and name it *Leucopaxillus cutedractus* because of the typical cracked-areolate pileal surface of mature, non-weathered specimens.

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REFERENCES

- BON, M. (1979). Tricholomataceae de France et d'Europe Occidentale. Sousfamille Leucopaxilloidae (Sing.) Bon. In *Docum. mycol.* (9)33: 1–79.
- BOURSIER, J. (1925). *Leucopaxillus* nov. gen. In *Bull. Soc. mycol. Fr.* 41: 391–393.
- DONK, M. A. (1949). New and revised nomina generica conservanda proposed for Basidiomycetes (Fungi). In *Bull. bot. Gdns Buitenzorg* 3(18): 83–168.
- FRIES, E. M. (1821). *Systema mycologicum* 1. Lundae.
- (1838). *Epicrisis Systematicis Mycologici seu Synopsis Hymenomycetum*. Upsaliae.
- (1867). *Icones selectae Hymenomycetum nondum delineatorum* 1. Holmiae.
- (1874). *Hymenomycetes Europaei*. Upsaliae.
- KÜHNER, R. (1926). Contribution à l'étude des Hymenomycètes. In *Botaniste* 17: 5–218.
- KÜHNER, R. & ROMAGNESI, H. (1953). *Flore analytique des Champignons supérieurs*. Paris.
- KUMMER, P. (1871). *Der Führer in die Pilzkunde*. Zerbst.
- LANGE, J. (1936). *Flora agaricina danica* 2. Copenhagen.
- MALENÇON, G. & BERTAULT, R. (1975). *Flore des Champignons supérieurs du Maroc*. 2. Rabat.
- MASSEY, G. (1893). *British Fungus-Flora* vol. II, London.
- MICHAEL, E., HENNIG, B. & KREISEL, H. (1979). *Handbuch für Pilzkunde* 3, 3. Aufl. Jena.
- MOELLER, F. H. (1954). The genus *Leucopaxillus* in Denmark. In *Bot. Tidsskr.* 51: 233–241.
- MOSER, M. (1983). Die Röhrlinge und Blätterpilze. In Gams, H., *Kl. Kryptog.-Fl.*, 5. Aufl., 2(b/2). Stuttgart.
- ORTON, P. D. (1960). New Checklist of British Agarics and Boleti. In *Trans. Br. mycol. Soc.* 43: 159–439.
- PEGLER, D. N. (1975). A preliminary Agaric Flora of East Africa. In *Kew Bull. addit. Ser. VI*.
- SINGER, R. (1946). The Boletinae of Florida with notes on extralimital species IV. The lamellate families (Gomphidiaceae, Paxillaceae, and Jugasporaceae). In *Farlowia* 2: 427–567.
- SINGER, R. & SMITH, A. H. (1942). A monograph of the genus *Leucopaxillus* Boursier. In *Pap. Mich. Acad. Sci.* 28: 85–132.

CORRECTION

Persoonia Volume 12, page 161, legend of figure 6 should read:

Fig. 6. *Clitopilus daamsii*. — Habitat ($\times 3$) and spores ($\times 2100$). (All figs. from holotype).