

NOTULAE AD FLORAM AGARICINAM NEERLANDICAM-XII
Some notes on the genera *Oudemansiella* and *Xerula*

T. BOEKHOUT* & C. BAS**

The generic separation of *Oudemansiella* and *Xerula* is discussed and accepted as proposed by Dörfelt. *Xerula caussiei* and *X. kuehneri* are redescribed and illustrated. *Xerula nigra* and *X. renatii* are considered conspecific with *X. caussiei*. *Dactylosporina* is reduced to the synonymy of *Xerula*. The new combinations *X. steffenii* and *X. macracantha* are introduced.

The genus *Oudemansiella* Speg. dates back to 1881. It was originally described as follows: 'Velum haud manifestum; stipes centralis; pileus emisphaericus, carnosus, non liquescentes; lamellae membranaceae, integrae, acie longitudinaliter fissa, labiis oppositis primo cum illis lamellarum lateralium connatis, dein liberis' (Spegazzini, 1881: 23). *Oudemansiella platensis* Speg. (= *O. canarii* (Jungh.) Höhn.) was the only species.

In 1887 Patouillard (1887: 95) created the genus *Mucidula* which according to his description has a distinct veil ('Stipe annulé') contrary to Spegazzini's diagnosis of the genus *Oudemansiella*. *Mucidula mucida* was the only species. Von Höhnel (1913: 2) and Boursier (1924: 332) already noted the similarity of *Mucidula mucida* to the genus *Oudemansiella*.

Boursier (l.c.) divided the genus *Mucidula* in two groups, viz. (i) *Viscosae* with among other species *M. mucida* and *M. radicata* and (ii) *Pilosae* with *M. longipes*. According to most modern authors (e.g. Horak, 1968: 425; Singer, 1975: 344) *Mucidula* and *Oudemansiella* are to be considered congeneric.

The genus *Xerula* was founded by Maire (1933: 66), who defined it as follows: 'Habitus *Mucidulae* cum qua lamellarum trama plus minusve intertextata nec non cute pilei hymeniformi congruit, differt pileo haud viscoso, cum stipite valde piloso, carne lenta haud putrescentes'. *Xerula longipes* was the only included species. According to Singer (1975: 344) *Xerula* Maire is a subdivision of *Oudemansiella* Speg. for which he created the name *Oudemansiella* subgenus *Xerula* (Maire) Sing.

Recently Dörfelt (1979: 365) restricted *Oudemansiella* to the annulate, non-rooting species and raised *Xerula* again to generic level. He emended the concept of the latter genus, so that it includes also viscid, non-pilose species such as *Xerula* (= *Oudemansiella*) *radicata*.

Dörfelt summarized the differences between *Oudemansiella* sensu stricto and *Xerula* sensu lato as follows (1981: 658–660):

* Centraalbureau voor Schimmelcultures, P.O. Box 273, 3740 AG, Baarn.

** Rijksherbarium, Leiden.

Oudemansiella

1. Basidiocarps develop on normal mycelium.
2. Pseudorrhiza absent; basidiocarps directly on wood.
3. Basidiocarps hemiangiocarpous; velar remnants present.
4. Pileipellis young a trichoderm later becoming a cutis; stipitepellis young a tricho-palisadoderm.
5. Spores verrucose (SEM).
6. Spores $> 15 \mu\text{m}$.

Xerula

1. Formation of yellowish, gnarled mycelium before basidiocarp development.
2. Pseudorrhiza present; basidiocarps not directly on wood.
3. Basidiocarps gymnocarpous (to paravelangiocarpous).
4. Pileipellis a hymeniderm; stipitipellis (young) a hymeniderm.
5. Spores nearly smooth.
6. Spores $> 10 \mu\text{m}$.

Although not all differentiating characters as given by Dörfelt seem to be as reliable as that author thinks (e.g. Pegler & Young, 1971: 57, pl. 9, demonstrated under SEM a remarkable ornamentation on the spores of *Xerula radicata*, although perhaps of a different nature from that in *O. canarii* and *O. mucida*), we believe that there are sufficient arguments to separate *Oudemansiella* and *Xerula* in the way Dörfelt does.

STRUCTURE OF STIPITITRAMA AND PILEIPELLIS IN OUDEMANSIELLA AND XERULA

The structure of the stipititrama and pileipellis of some species of *Oudemansiella* and *Xerula* has been studied by us in the framework of generic delimitation.

Corner (1966: 175) distinguished three main types of hyphal constructions in fleshy agarics; viz., monomitic, sarcodimitic and sarcotrimitic. According to his definitions, a sarcodimitic tissue is built up of narrow, branched, generative hyphae and hyphae consisting of long, inflating, frequently thick-walled elements ('skeletal hyphae'). In some cases, in addition many generative hyphae are thick-walled, thus forming the so-called sarcotrimitic structure.

Oudemansiella

Oudemansiella mucida has a monomitic stipititrama, which is built up of long, slender, thin-walled, rarely somewhat branched elements measuring $(25-60-750 \times 3-30 \mu\text{m})$. The hymenophoral trama is regular and made up of $10-30 \mu\text{m}$ wide attenuating elements. Very slender, $2-5 \mu\text{m}$ wide hyphae are also present. The pileipellis is somewhat intermediate between an ixohymeniderm and an ixotrichoderm and is made up of a c. $50 \mu\text{m}$ thick palisade of irregularly branched clusters of clavate elements in a gelatinous matrix. Below this layer slender repent hyphae occur, which have pale yellowish membranous pigment or weak incrustations. The pileipellis of *Oudemansiella canarii* proved to be an ixocutis.

Table 1. Sizes of hyphal elements of in the stipititrama in *Xerula* (taken from the middle of the stipe, unless otherwise indicated; after Scholtes, unpublished report Rijksherbarium, 1976).

species	elements of connective generative hyphae	elements of 'sarcoskeletals' ¹
<i>X. radicata</i>	100–300 × 2–5 μm	250–700 × 5–45 μm
atypical form with dry pileipellis (× <i>X. pseudoradicata</i>)	60–125 × 2–8 μm	250–750 × 10–45 μm
<i>X. caussii</i>		
upper part of stipe	80–250 × 3–8 μm	100–800 × 6–30 μm
basal part of stipe	100–450 × 3–12 μm	200–750 × 6–25 μm
<i>X. longipes</i>		
basal part of stipe	30–175 × 2–10 μm	125–1200 × 5–20 μm

Xerula

The stipititrama of most *Xerula* species investigated by us consists of two types of hyphae (= *sarcodimitic*), viz. hyphae consisting of very long, broad, (cylindrical or) fusi-form elements (skeletal hyphae according to Corner¹, l.c.) and strongly branched narrow hyphae (generative hyphae according to Corner, l.c.). Only the tiny *X. kuehneri* was found to be monomitic. The sizes of hyphal elements in the species studied are presented in Table 1.

Xerula radicata has a subregular hymenophoral trama made up of c. 10–25 μm wide hyphae, which agrees with Knecht's observations (1967: 179). The subhymenium is c. 15–20 μm thick and pseudoparenchymatous. The pileipellis is a c. 60–90 μm thick ixohymeniderm, made up of clavate cells, c. 30–80 × 5–15 μm, with an intracellular brownish pigment.

Most of the specimens studied fully agree with *X. radicata*. Some of them differ, however, slightly by a dry pileipellis giving the pileipellis macroscopically a subvelutinous impression. This variant has been described as *Oudemansiella pseudoradicata* Moser (1955: 5).

The collection Bas 4545 (L) contains both specimens with the normal type of pileipellis and specimens with this dry type. These latter specimens with a dull, pruinose pileus

¹For convenience the term 'sarcoskeletals' is used here for this type of hyphae that is the essence of the sarcodimitic type of trama.

show anatomically a transition from a slightly gelatinized hymeniderm at the centre of the pileus to a dry hymeniderm at the margin of the pileus. Dörfelt (1981: 648) already noted this variability and therefore considered the name *X. pseudoradicata* a synonym of *X. radicata*, a conclusion supported by our observations. This is one of the reasons why the infrageneric classification of the genus *Oudemansiella* (including *Xerula*) made by Cléménçon (1980: 74) is not acceptable, as *X. radicata* and *X. pseudoradicata* are placed there in two different subgenera.

Xerula caussei also has a subregular hymenophoral trama made up of 5–25 μm wide hyphae. The pileipellis is a c. 50–100 μm thick euhymeniderm made up of thin-walled clavate cells, c. 40–60 \times 10–25 μm in size, with a pale grey-brown intracellular pigment. Among these cells occur ampulliform, slightly thick-walled pileocystidia up to 200 μm long and 10–30 μm wide at the base.

Xerula longipes has an irregular hymenophoral trama, which is made up of 10–25 μm wide, somewhat thick-walled hyphae. The pileipellis is a 50–100 μm thick ixohymeniderm made up of rather thick-walled, clavate cells, c. 50–70 \times 7–13 μm in size, with a grey-brown intracellular pigment.

Xerula kuehneri has a monomitic stipitetrata made up of 3–16 μm wide, thin- to slightly thick-walled hyphae. The hymenophoral trama is irregular, made up of up to 25 μm wide thin-walled hyphae. The pileipellis is intermediate between a euhymeniderm and a trichohymeniderm, made up of clavate, fusiform or ventricose-fusiform, thin- to slightly thick-walled cells with brown contents, 45–95 \times 8–26 μm in size. Among these cells occur lageniform to fusiform, thick-walled pileocystidia, 95–320 \times 10–22 μm .

The separation of *Oudemansiella* and *Xerula* is thus supported by the structure of the pileipellis and, to a lesser extent, is also confirmed by the structure of the stipitetrata. Although the stipitetrata of *Xerula* (= *Mycenella*) *kuehneri* is monomitic we prefer its classification in the genus *Xerula* because of similarities of the pileipellis, the hymenium etc. (see also the paragraph on *Xerula kuehneri*).

Oudemansiella is therefore restricted to the species with a distinct veil, a bivelangiocarpous or monovelangiocarpous development (Reijnders, 1963: 154, 155), growing directly on wood, with a monomitic stipitetrata and a pileipellis made up of a cutis (Horak, 1968: 426) or a palisade-like layer with clusters of clavate cells, e.g. *Oudemansiella mucida*.

Xerula contains the species without veil, with gymnocarpous development (Dörfelt & Schröder, 1984: 207), not growing directly on wood, with a sarcodimitic stipitetrata (the tiny *X. kuehneri* is the only exception known) and a pileipellis varying from an (ixo)-hymeniderm to a trichoderm, e.g. *X. caussei*.

THE SPECIES COMPLEX OF XERULA CAUSSEI MAIRE

Xerula caussei Maire was originally described as follows: 'Ab affini *X. longipede* recedit pileo et stipite griseis a pigmento vacuolari (nec fulvis e pigmento membranari); pilis pilei et stipitis prostratis, flexuosis, hyalinis (nec erectis, rigidis, rufobrunneis); sporis

Table 2. Spore dimensions in the *X. causesi* complex.

		reference:
<i>X. causesi</i>	8.5–9.5 × 6.0–7.5 μm	Maire (l.c.)
<i>X. nigra</i>	9–14.5 × 6.5–9.0 μm 8.5–10.5 × 6.0–8.0 μm	Dörfelt (l.c.) (our observations on type)
<i>X. renati</i>	8.9–10.1 × 6.6–7.2 μm (7.5–)8.5–11.5(–14.5) × (6.0–)6.5–8.0(–8.5) μm 9.0–12 × 7–8.7 μm	Cléménçon (l.c.) Dörfelt, 1980 (our observations on type)
specimens from Belgium	9–12 × 5.5–8.0 μm	(our observations)

minoribus (8.5–9.5 × 6–7.5 μm, nec 11–13 × 9–12 μm); cystidis tenuiter tunicatis, gracilioribus, apice capitatis' (Maire, 1937: 265).

The closely related *Xerula nigra* Dörfelt differs, judging from its description, mainly by its very dark blackish brown to greyish brown pileus, somewhat larger spores (viz. 9–14.5 × 6.5–9 μm) and cylindrical to lageniform cystidia (Dörfelt, 1973: 27).

Xerula (= *Oudemansiella*) *renati* Cléménçon is said to differ from *X. causesi* by the absence of pleurocystidia, the absence of capitate cheilocystidia and shorter basidia (Cléménçon, 1977: 14).

Because we found it very difficult to identify specimens of this complex, we studied the types of *X. nigra* and *X. renati*. The type of *X. causesi* could not be traced. In addition we studied material from France and particularly rich collections from eastern Belgium. We made the following observations: The colour of the pileus from specimens gathered during several years from one locality (Belgium, Bois de Resteigne) varies from pale grey-brown to dark blackish grey, thus nullifying the alleged value of the differences in colour given in the descriptions of *X. causesi*, *X. nigra* and *X. renati*. Also it turned out to be hardly possible to define species in this cluster on the base of spore size (Table 2).

According to the original descriptions, the only then remaining differences are to be found in the cheilocystidia. Both *Xerula causesi* and *X. nigra* have pleuro- and cheilocystidia. Those of the latter species are described as '60–90 × 10–13 μm, fast walzig bis flaschenförmig'. However, our study of the holotype revealed fusiform, thin-walled cystidia with a subcapitate apex agreeing very well with those described for *X. causesi*.

Cléménçon (l.c.) reported only cheilocystidia for *X. renati*. However, the holotype has some pleurocystidia which are identical to the cheilocystidia. We found the cystidia of *X. nigra*, *X. renati* and those of the Belgian specimens similar. They also agree fairly well with those described for *X. causesi*, because they frequently have a subcapitate apex. Therefore within this complex we accept only one species.

***Xerula caussei* Maire—Fig. 1**

Xerula caussei Maire in Bull. trimest. Soc. mycol. Fr. 53: 265. 1937. — *Mycenella caussei* (Maire) Romagn. in Bull. trimest. Soc. mycol. Fr. 56: 63. ('1940') 1941. — *Oudemansiella caussei* (Maire) Mos. ex Cléménçon in Nova Hedwigia 28: 19. 1977.

Oudemansiella nigra Dörfelt in Česká Mykol. 27: 28. 1973. — *Xerula nigra* (Dörfelt) Dörfelt in Landschaftspfl. Naturschutz Thüringen 14(3): 60. 1977.

Oudemansiella renati Cléménçon in Nova Hedwigia 28: 14. 1977. — *Xerula nigra* var. *renati* (Cléménçon) Dörfelt in Reprum nov. Spec. Regni veg. 91: 429. 1980.

Misapplied name. — *Collybia longipes* sensu Lange, Fl. agar. dan. 2: 9. 1936.

Selected illustrations. — Lange, Fl. agar. dan. 2, pl. 41A. 1936.

Selected descriptions. — Dörfelt in Reprum nov. Spec. Regni veg. 90: 375. 1979.

Basidiocarps small to medium. Solitary. Pileus 30–60 mm in diam., convex, plano-convex to applanate, with low, broad umbo, when young with margin inflexed, finally undulating, rather fleshy, pale to dark brown-grey, occasionally even blackish grey

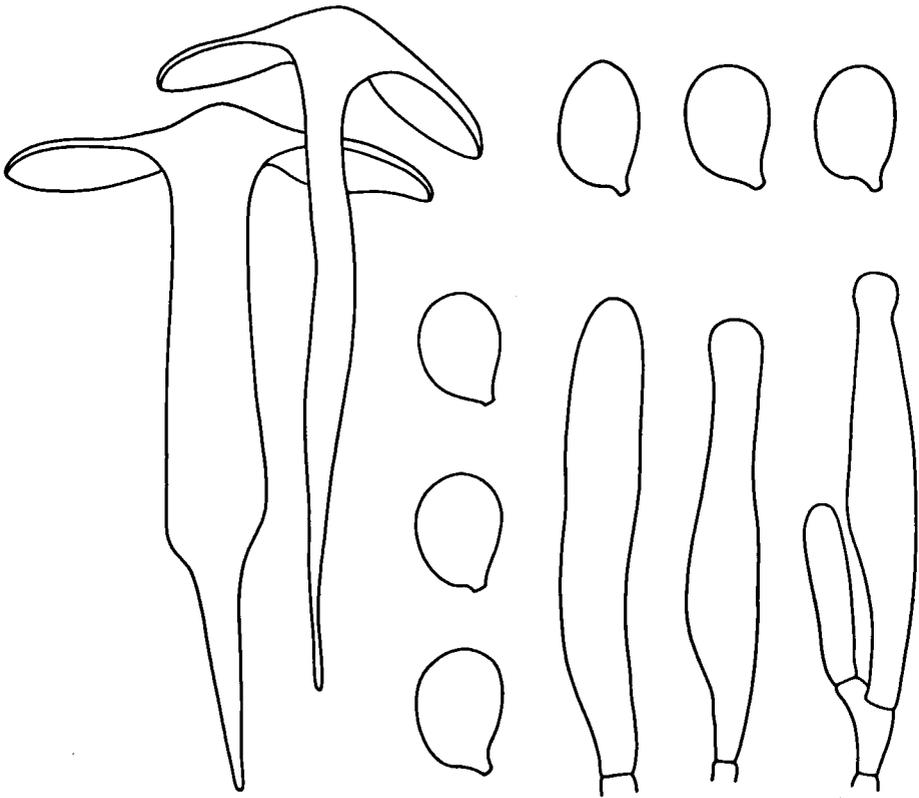


Fig. 1. *Xerula caussei*. Basidiocarps ($\times 1$), spores ($\times 1500$), and cheilocystidia ($\times 1000$).

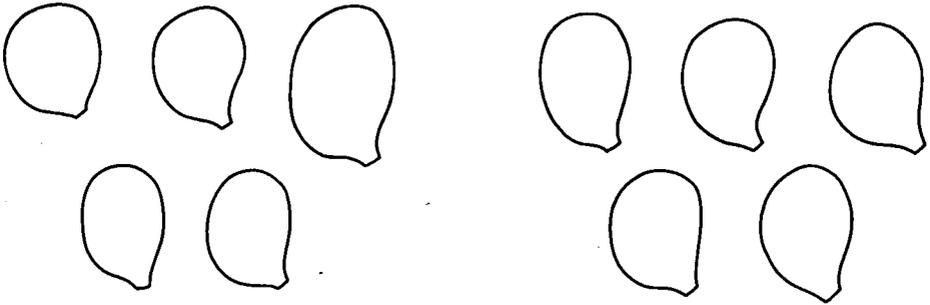


Fig. 2. Spores ($\times 1500$) of type of *Oudemansiella renati* (left) and of type of *O. nigra* (right).

(Munsell 10 YR 4–5/3, 4/2, 5Y 4/2) or very pale (2.5Y 6–7/2), dry, frequently radially rugulose near margin, entirely pubescent with whitish hairs. Lamellae rather distant ($L = 30$, $l = (1-3-7)$), narrowly adnate, sinuate or adnexed, ventricose, frequently venose, rather thick, up to c. 7 mm wide, white to pale cream (10 YR 8/1–2, 5Y 9/2–4), with entire, concolorous edge. Stipe 40–80 \times 3–10 mm, cylindrical with clavate base, occasionally attenuated towards base, mostly rooting, solid, whitish, towards base becoming grey-beige or grey-brown (10 YR 4/2, 5/3, 6/4), entirely whitish pubescent. Context white, but greyish in cortex of stipe. Smell weak, somewhat acid. Taste weak, mild or somewhat adstringent-fungoid. Spore print white.

Spores (8.0–)9.0–12.0 \times 5.5–8.0 μm , $Q = 1.3-1.8$, ovoid or ellipsoid, thin-walled. Basidia 35–50 \times 9–11 μm , clavate, (2–)4-spored. Cheilocystidia 55–100 \times 7–15 μm , cylindrical to fusiform, mostly truncate, sometimes subcapitate at apex. Pleurocystidia sparse, similar to cheilocystidia. Hymenophoral trama subregular, made up of 5–25 μm wide hyphae, some with refractive contents. Pileipellis a hymeniderm, up to c. 70 μm thick, made up of clavate cells, 40–60 \times 10–25 μm , with intracellular pale grey-brown pigment, with scattered, slightly thick-walled, colourless ampulliform setae, up to 200 μm long and 10–30 μm wide at base. Setae at stipe up to c. 400 \times 10–20 μm , slightly thick-walled, colourless, attenuated towards apex. Clamps present.

Habitat & distribution. — Terrestrial in *Fagus* forest on rich, loamy, probably always calcareous soil. Known from Belgium, France, Germany (East and West), Great Britain, and Switzerland.

Collections examined. — BELGIUM, prov. Namur, Resteigne, Bois de Resteigne, 24 Sept. 1974, C. Bas 6386 (L); ditto, 8 Sept. 1975, A. E. Jansen 103 (L); ditto, 11 Sept. 1975, C. Bas 6638 (L, LAU); ditto, 6 Oct. 1978, J. Schreurs, Th. Kuijper & F. Tjallingii (L); ditto, 3 Oct. 1982, T. Boekhout 1003 (L). — EAST GERMANY, Thüringen, Jena, Leutratal, 22 Sept. 1970, H. Dörfelt (PR; holotype of *Xerula nigra*). — FRANCE, dpt. Var, Massif de la St. Baume, Forêt de la St. Baume, 25 Oct. 1974, A. F. M. Reijnders (L). — SWITZERLAND, kant. Vaud, Cuarnens, Sept. 1973, R. Morrier-Genoud (Clémengon 73/50, LAU; holotype of *Xerula renatii*).

3. *Xerula kuehneri* (Romagn.) Bas & Boekhout—Figs. 3, 4

Mycenella kuehneri Romagn. in Bull. trimest. Soc. mycol. Fr. 56: 63. ('1940') 1941. — *Oudemansiella kuehneri* (Romagn.) Sing. in Sydowia 15: 59. ('1961') 1962. — *Xerula kuehneri* (Romagn.) Bas & Boekhout in Persoonia 12: 439. 1985.

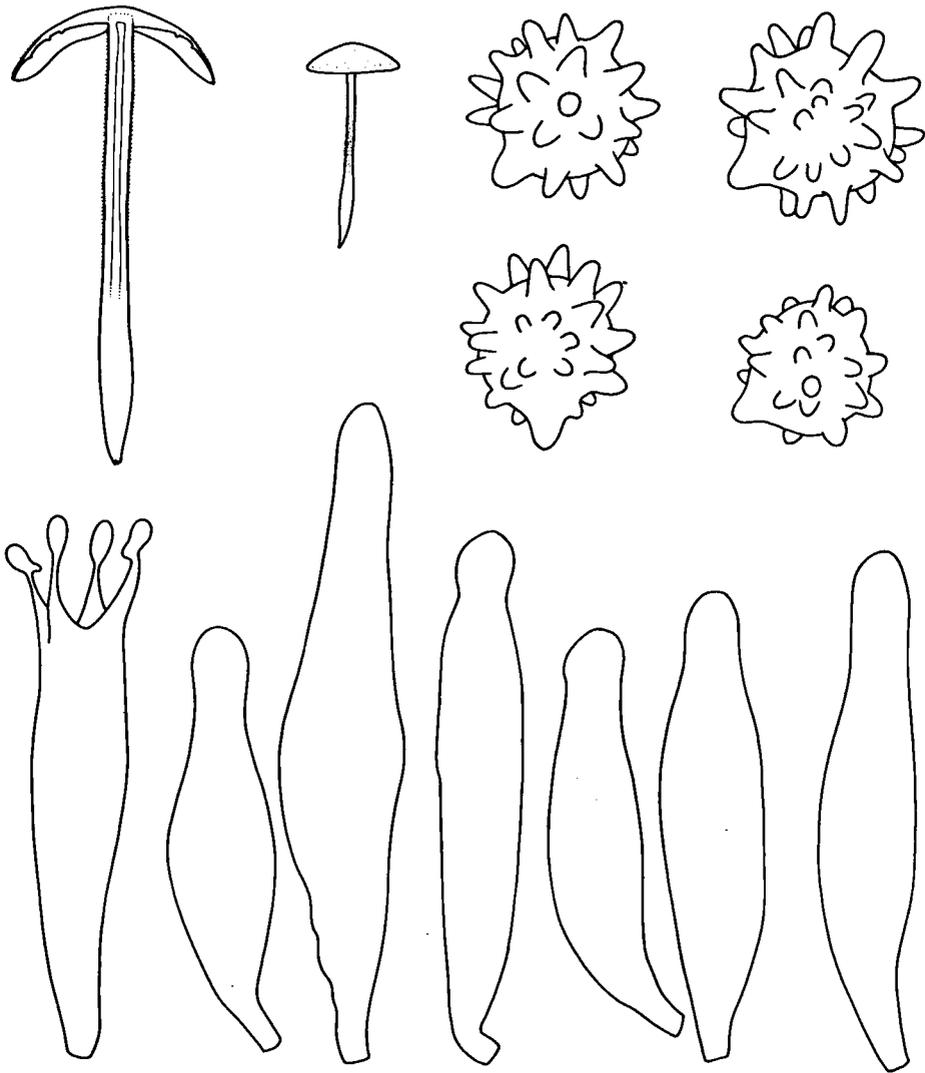


Fig. 3. *Xerula kuehneri*. Basidiocarp ($\times 1$), spores ($\times 1500$), basidium ($\times 1000$), and hymenial cystidia ($\times 1000$). (All figs. from *Bas 8244*.)

Basidiocarps small, solitary. Pileus 12–14 mm in diam., 3–5 mm high, from widely conico-convex with broadly rounded apex to plano-convex, with narrow slightly deflexed margin, very dark brown (between Munsell 5 YR 3/3 and 3/2) but locally paler because of minutely cracking pileipellis and pale context showing, under strong hand lens minutely dark brown subvelutinous-subgranular with minute white hairs locally varying in density but particularly dense near margin, dry, not hygrophorous. Lamellae rather distant

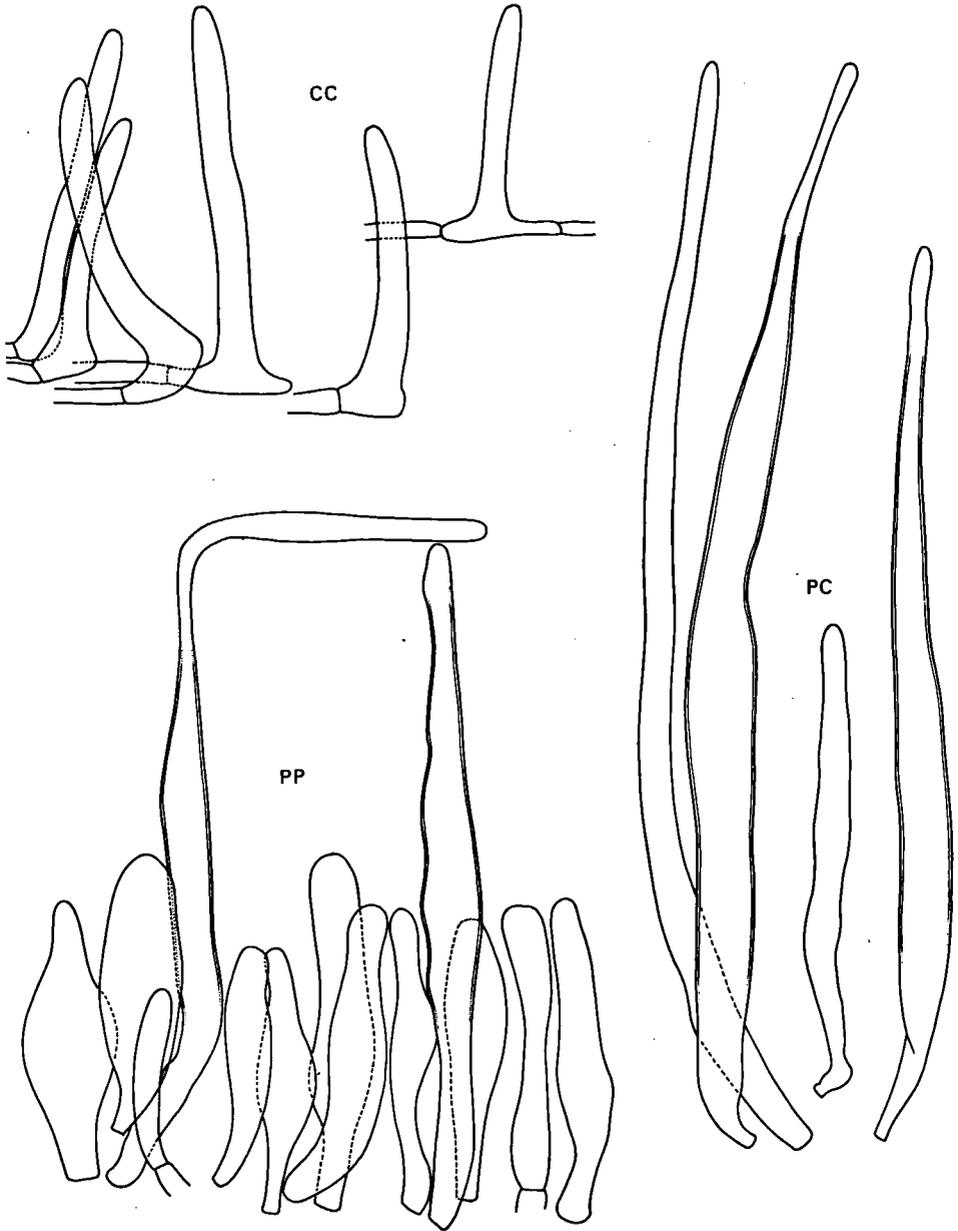


Fig. 4. *Xerula kuehneri*. Caulocystidia (CC), pileipellis (PP), and pileocystidia (PC). (All figs $\times 500$ from Bas 8244.)

(L = 20–22, l = 0–3), attenuate towards stipe and narrowly adnate to free, rather narrow (1–2 mm wide), first concave, later straight to slightly ventricose, whitish with very pale yellowish-greyish tinge (paler than 2.5 Y 8/2), thickish, rather strongly transversely venose, with lamellae frequently anastomosing (here and there near margin of pileus almost net-like connected), under hand lens with powdery appearance, with concolorous, even edge. Stipe c. 20 × 1–1.2 mm, not including rooting part, which is 12 × 2.5 mm in the one (but lower part broken off and missing) and completely missing in the second basidiocarp, more or less equally thick but pseudorhiza very slightly fusiform, fistulose, brownish grey (10 YR 5/2 but somewhat tending towards 5/3), pubescent with whitish up to 0.8 mm long, erect but slightly irregular hairs; pseudorhiza smooth. Context white in pileus, glassy dark brownish grey in stipe but in centre whitish. Smell indistinct. Taste not recorded.

Spores [40/2] (13.5–)14.5–17 × 13.5–16.5 μm including spines, (10–)10.5–12.5 (– 13) × 10–12 (–12.5) without spines, Q = 1.0–1.1 (–1.15), Q̄ = 1.03, globose to subglobose, with up to c. 36 conspicuous, 1.5–3 μm high and up to 2 μm wide, hollow, conical to subcylindrical processes with obtuse apex, colourless, with slightly thickened wall, inamyloid, cyanophilous, weakly metachromatic in Cresyl blue. Basidia 43–52 × 15–16 μm, with 5.5–9 μm long sterigmata, 4-spored, clamped. Cheilo- and pleurocystidia similar, 54–86 × 11–16 μm, slenderly fusiform tending to broad-necked lageniform, with obtuse, rather often subcapitate apex, thin- to slightly thick-walled. Hymenophoral trama irregular, composed of up to 25 μm wide thin-walled hyphae; subhymenium narrow, c. 10 μm wide, composed of densely ramose c. 2–4 μm wide hyphae. Pileipellis a transition between a euhymeniderm and a trichohymeniderm, with long pileocystidia; elements of pileipellis 45–95 × 8–26 μm, subcylindrical, clavate, fusiform, ventricose-fusiform and short-necked sublageniform, thin- to slightly thick-walled, with brown contents; pileocystidia 95–320 × 10–22 μm, slenderly lageniform to slenderly fusiform with cylindrical to tapering neck, colourless, with thickened wall (up to 1 μm) in middle part, at apex often with somewhat refractive granular contents. Stipitipellis a cutis; caulocystidia abundant, 40–165 × 9–18 μm at apex of stipe, several hundreds of microns long near base, subcylindrical, often tapering towards apex, with suddenly enlarged base (which is an intercalary or apical cell of a hypha of the stipitipellis), colourless, with slightly thickened wall and sometimes slightly granular contents. Stipititrama in upper part made up of 3–16 μm wide, thin- to slightly thick-walled, strictly longitudinal hyphae with clamps, in rooting part of somewhat irregular but still predominantly longitudinal similar hyphae, 3–28 μm wide, not sarcodimitic. Clamps present but not very conspicuous.

Habitat & distribution. — In the Netherlands known only from a park on humus-rich sandy soil just at the inside of the coastal dunes, under deciduous trees, ornamental shrubs and *Heracleum mantegazzianum*. Further recorded from France (Romagnesi's type collections, 20 July 1938, dpt. Seine-et-Oise, Bois de Cercay) in deciduous forest on humid clayey soil and from West Germany (Bresinsky & Haas, 1976: 111; Winterhoff & Krieglsteiner, 1984: 68, Baden-Württemberg, Karlsruhe-Durlach²).

Collections examined. — NETHERLANDS, prov. Zuid-Holland, The Hague, estate 'Clingendael', 21 Aug. 1984, C. M. Swart-Velthuyzen (Bas 8244) & 7 Aug. 1985, C. M. Swart-Velthuyzen & F. van Luyn (both coll. in L).

²Prof. Dr. Winterhoff (in litteris) kindly informed us that these two records refer to the same observation by Mr. H. Schwöbel, who studied 2 basidiocarps found in a garden under *Hamamelis*, but did not preserve them.

Xerula kuehneri seems to be a very rare species. Since the publication of the original description from French material by Romagnesi in 1941 it has been recorded in the literature only once as far as we know (see above under 'Habitat & distribution'), viz. from West Germany. Unfortunately its tiny basidiocarps seem to occur often solitary; Romagnesi's description is based on one basidiocarp and ours on two basidiocarps collected in successive years at the same locality in the Netherlands.

Although the basidiocarps are difficult to spot because of their small size and dark colours, they are highly characteristic once they are seen under a hand lens on account of the minute white hairs on the subvelutinous dark brown pileus and on the grey-brown stipe and the strongly contrasting thickish, whitish, distant but intervenose lamellae. In fact *X. kuehneri* looks exactly like a diminutive *X. caussiei*.

Notwithstanding its coarsely spinose spores, in our opinion *X. kuehneri* belongs to *Xerula* (in Dörfelt's and our wide sense) and not in *Mycenella* as stated by Romagnesi (1940: 63) and Dörfelt (1985: 236). The stipitetrema of both *Xerula* (see first paragraph) and *Mycenella* is sarcodimitic (Corner, 1966: 145) and thus the monomitic structure of the stipitetrema of *X. kuehneri* disagrees with the structure of the stipitetrema of both genera. However, the structure of the pileipellis of *X. kuehneri*, viz. a transition between a hymeniderm and a trichohymeniderm with pileocystidia partly shaped like hairs, in combination with the large size of spores and hymenial elements and the total absence of diverticulate elements agree much better with *Xerula*. We agree with Singer (1975: 347) that the gap between *Mycenella* and *Xerula* is still sufficiently wide to maintain these taxa as separate genera.

The spores of *X. kuehneri*, placed by Cléménçon (1980: 76) in his new taxon *Oudemansiella* subg. *Pseudomycenella*, are very similar in size, shape, and ornamentation to those of *Xerula macracantha* (Sing.) Boekhout & Bas, *comb. nov.*³ and *X. steffenii* (Rick) Boekhout & Bas, *comb. nov.*⁴, from South America, two species placed by Cléménçon in his new taxon *Oudemansiella* subg. *Dactylosporina*, which has been raised to generic level by Dörfelt (1985: 236).

It is just the existence of *X. kuehneri* that demonstrates the futility of separating *Dactylosporina* at generic level from *Xerula*. The only discriminating character is the ornamentation of large spines on the spores of *Dactylosporina*. Therefore the latter genus has to include also *X. kuehneri* and then becomes a 'one-character genus' with a variation in pileipellis structures parallel to that in remaining *Xerula*, viz. from a (sub)viscid hymeniderm without pileocystidia to a dry trichohymeniderm with hair-like pileocystidia.

³ Basionym: *Oudemansiella macracantha* Sing. in Sydowia 15: 59 ('1961') 1962. Description by Singer in Darwiniana 13: 157. 1964.

⁴ Basionym: *Tricholoma steffenii* Rick in Broteria 24: 99. 1930 = *Oudemansiella steffenii* (Rick) Sing. in Lilloa 26: 66. 1953. Description by Singer in Darwiniana 13: 154. 1964. Material seen: A. A. R. de Meyer 195b, 13 XI 1979, Brazil, Paraná, Curitiba (L).

REFERENCES

- BOURSIER, M. (1924). Note sur le genre *Mucidula* Pat. In Bull. trimest. Soc. mycol. Fr. 40: 332–333.
- BRESINSKY, A. & HAAS, H. (1976). Übersicht der in der Bundesrepublik Deutschlands beobachteten Blätter- und Röhrenpilze. In Beih. Z. Pilzk. 1: 1–160.
- CLÉMENÇON, H. (1977). Neue Arten von Agaricalen und Notizen zu bemerkenswerter Funden aus der Schweiz. In Nova Hedwigia 28: 1–44.
- (1980). Taxonomic structure of the genus *Oudemansiella* (Agaricales). In Sydowia 32: 74–80.
- CORNER, E. J. H. (1966). A monograph of cantharelloid fungi. In Bot. Mem. 1.
- DÖRFELT, H. (1973). *Oudemansiella nigra* spec. nov. und ihre phytocönologische Beziehungen. In Česká Mykol. 27: 27–32.
- (1979). Taxonomische Studien in der Gattung *Xerula* R. Mre. In Reprim nov. Spec. Regni veg. 90: 363–388.
- (1980). Taxonomische Studien in der Gattung *Xerula* R. Mre. (III). In Reprim nov. Spec. Regni veg. 90: 415–438.
- (1981). Taxonomische Studien in der Gattung *Xerula* R. Mre. (V). In Reprim nov. Spec. Regni veg. 92: 631–674.
- (1984). Taxonomische Studien in der Gattung *Xerula* R. Mre. (IX). In Reprim nov. Spec. Regni veg. 95: 189–200.
- (1985). Taxonomische Studien in der Gattung *Xerula* R. Mre. (X). In Reprim nov. Spec. Regni veg. 96: 235–240.
- DÖRFELT, H. & SCHRÖDER, M. B. (1984). Untersuchungen zur Fruchtkörperentwicklung und zur submikroskopischen Struktur von *Xerula pudens*. In Nova Hedwigia 40: 207–240.
- HÖHNEL, F. von (1913). Fragmente zur Mykologie XV. In Sber. Akad. Wiss. Wien 72: 1–55.
- HORAK, F. (1968). Synopsis generum Agaricalium. Bern.
- KNECHT, J. (1967). Zur Stellung von *Oudemansiella platyphylla* (Pers. ex Fr.) Mos. und Vergleich mit *Oudemansiella radicata* (Relh. ex Fr.) Bours. und *Tricholomopsis rutilans* (Schff. ex Fr.) Sing. In Schweiz. Z. Pilzk. 45: 177–187.
- MAIRE, R. (1933). Fungi catalaunici. In Mus. barcin. Scient. nat. Op. 15: 3–120.
- (1937). Un nouveau *Xerula*. In Bull. trimest. Soc. mycol. Fr. 53: 265–266.
- MOSER, M. (1955). Studien zur Gattung *Oudemansiella* Speg., Schleim- und Sammetrüblinge. In Z. Pilzk. 19: 4–14.
- MUNSELL COLOR (1975). Munsell Soil Color Charts. Baltimore.
- PATOUILLARD, N. (1887). Les Hyménomycètes d'Europe. Paris.
- PEGLER, D. N. & YOUNG, T. W. K. (1971). Basidiospore morphology in the Agaricales. In Beih. Nova Hedwigia 35.
- REIJNDERS, A. F. M. (1963). Les problèmes du développement des carpophores des Agaricales et de quelques groupes voisins. Den Haag.
- ROMAGNESI, H. (1940). *Mycenella* et *Xerula*. In Bull. trimest. Soc. mycol. Fr. 56: 59–65.
- SCHOLTES, C. J. L. (1980). Voorkomen en taxonomische betekenis van sarcodimitische en sarcotrimistische steelstructuren bij de Agaricales. Unpublished report Rijksherbarium, Leiden.
- SINGER, R. (1975). The Agaricales in modern taxonomy. Ed. 3. Vaduz.
- SPEGAZZINI, C. (1881). Fungi Argentini. In An. Soc. cient. argent. 12: 13–227.
- WINTERHOFF, W. & KRIEGLSTEINER, G. J. (1984). Gefährdeten Pilze in Baden-Württemberg. Rote Liste der gefährdeten Grosspilze in Baden-Württemberg (2. Fassung, Stand 31.1.1984). In Beih. Veröff. Naturschutz Landschaftspfl. Bad.-Württ. 40: 1–120.