

P E R S O O N I A

Published by the Rijksherbarium, Leiden
Volume 13, Part 1, pp. 57–68 (1986)

NOTES ON HYGROPHORACEAE – VI
Observations on some new taxa in *Hygrocybe*

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In a preceding paper (Notes on Hygrophoraceae IV, Arnolds, 1985) Latin diagnoses have been provided of six new taxa of *Hygrocybe* from the Netherlands and Belgium, viz. *H. calciphila*, *H. luteolaeta*, *H. subglobispora* forma *aurantiorubra*, *H. viola*, *H. constrictospora* and *H. griseopallida*. In this paper full descriptions are given of the first four of these taxa. In addition the nomenclature and taxonomic position of *H. constrictospora* are discussed. *H. griseopallida* is reduced to the synonymy of *Hemimycena mairei* (E. J. Gilb.) Sing.

Hygrocybe calciphila Arnolds—Figs. 1–9

Hygrocybe calciphila Arnolds in Persoonia 12: 475. 1985.

Hygrocybe calcarum Gröger (ined.) in Mykol. Mitteilungsblatt 26–37. 1983.

Misapplied name.—? *Hygrophorus miniatus* sensu P. D. Orton in Trans. Br. mycol. Soc. 43: 249. 1960.

Pileus 10–32 mm, hemispherical or convex with flattened to depressed centre, then plano-convex to almost applanate, hygrophanous, when moist scarlet red or usually orange-red when young (Kornerup & Wanscher 7 A8, 8 A8, 9 A8), gradually fading to orange or orange-yellow, finally to ochraceous, translucently striate up to half-way radius, dry, minutely golden yellow, orange or pale brownish scurfy to adpressed squamulose at centre, sometimes also towards margin, more distinctly scaly when dried-out; when dry dull ochre-orange to ochre-yellow. Lamellae (L = 14–23, l = 1–3) broadly adnate to rather decurrent, subdistant to very distant, often slightly ventricose, rather thick, rather pale yellow, pale orange or orange (K. & W. 4 A5, 6; 5 A5, 6; 6 A6, 7), exceptionally with pink or reddish tinge. Stipe 20–50 × 1.5–5 mm, cylindrical or slightly tapering downwards, occasionally compressed, stuffed or fistulose, orange to orange-yellow, occasionally orange-red at apex, then yellow, smooth, dry. Context in pileus up to 2 mm thick, rather firm, concolorous with surface; in stipe yellowish. Smell somewhat fruity or not distinctive; taste not distinctive. Spore print white.

Spores 6–9(–10.5) × (4–)4.5–7(–7.5) μm , av. 6.6–8.6 × 5.0–6.1 μm , Q = (1.05–) 1.1–1.5(–1.7), \bar{Q} = 1.25–1.45, broadly ellipsoid or ellipsoid to ovoid, not broader towards the base in face-view, not constricted in any view. Basidia 30–52 × 7.5–9.5(–11) μm , Q = 3.7–6.0(–6.6), rather broadly to slenderly clavate, 4-spored. Hymenial cystidia absent. Hymenophoral trama subregular; made up of short to medium sized, cylindrical or slightly inflated elements, 30–150(–200) × 4–19 μm . Pileipellis at centre a trichodermium, towards margin a cutis with trichodermial tufts of ascending hyphae constricted at septa; terminal elements subcylindrical to clavate, rounded, 20–90 ×

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7–14 μm . Stipitepellis an up to 30 μm broad cutis made up of repent hyphae, 2.5–6 μm wide, in places with erect hyphal tips, projecting up to 50 μm . Clamps present.

Habitat & distribution.—In the Netherlands rare in the limestone area of S. Limburg and along the big rivers, in unfertilized grasslands on mesic or dry, calcareous loam or clay, especially in limestone-grasslands (Mesobromion). (August–)October–November.

Collections examined.—NETHERLANDS: prov. Utrecht, Vleuten, de Bijleveld, in poor meadow on mesic, calcareous clay, 14 Oct. 1976, *C. Bas 7101* (L, holotype); prov. Zuid-Holland, Oudewater, estate 'Linschoten', among tall grass in orchard on heavy clay soil, 31 Aug. 1951, *R. A. Maas Geesteranus 7764* (L); prov. Limburg: Voerendaal, 'Kunderberg', in poor hayfield on dry calcareous loam over cretaceous limestone, 29 Oct. 1978, *Arnolds 4120* (WBS); 30 Oct. 1980, *Arnolds 4428* (WBS); Bemelen, E. slope of 'Bemelerberg', in poor sheep meadow on dry calcareous loam over cretaceous limestone, 31 Oct. 1980, *Arnolds 4481* (WBS); 20 Oct. 1984, *Arnolds 5309* (WBS); Bemelen, W. slope of 'Bemelerberg', same habitat, 20 Oct. 1984, *Arnolds 5330* (WBS); Valkenburg, 'Grachterberg', in poor unfertilized hayfield on dry calcareous loam over cretaceous limestone, 22 Oct. 1984, *Arnolds 5350* (WBS).—EAST GERMANY, Erfurt, 'Grenzberg' S. of Warza, in grassland on dry limestone, 9 and 12 Oct. 1984, *F. Gröger 197/84* (JE).

Hygrocybe calciphila is closely related to *H. miniata* and cannot be distinguished with certainty on macroscopic characters only, although the pileus tends to be orange or orange-red instead of scarlet when young and less brilliantly coloured by the presence of slightly brownish scales. In addition the lamellae in young basidiocarps of *H. miniata* are usually reddish, whereas this is rarely the case in *H. calciphila*. These differences, however, are by no means constant.

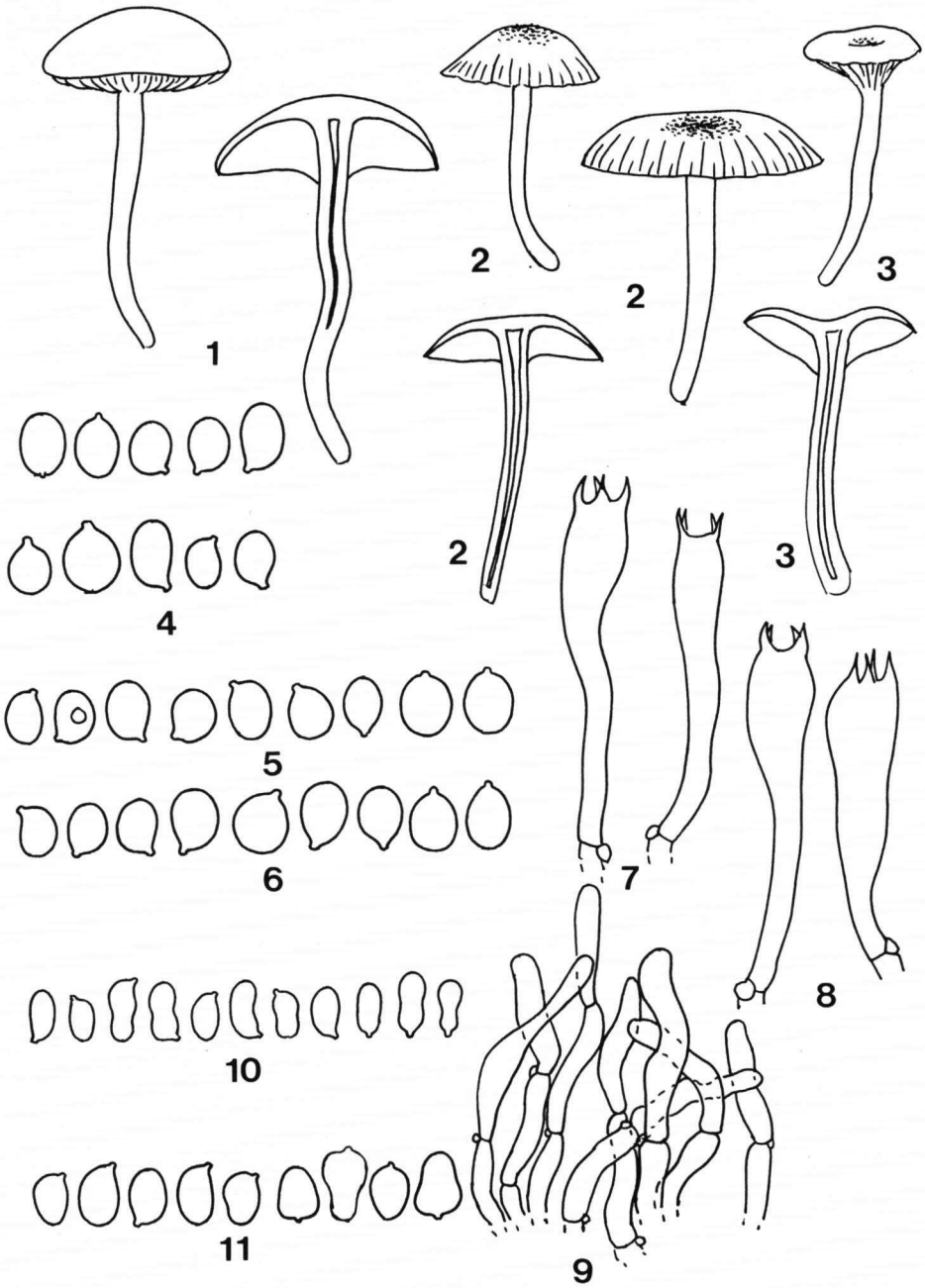
The main diagnostic character of *H. calciphila* is the shape of the spores: they are broadly ellipsoid to ellipsoid or ovoid in side-view ($\bar{Q} = 1.25\text{--}1.45$), not broader towards the base in face-view and not constricted in any view. In *H. miniata* the spores are ellipsoid, ovoid or -oblong in side-view ($Q = (1.4\text{--})1.5\text{--}1.75$) and in majority (>80%) broadened towards the base in face-view, obovoid or obpyriform, and frequently constricted (Fig. 11). In addition the ecology seems to be rather different: *H. miniata* is a typical acidophytic fungus from heathlands and poor grasslands on acid sand and peat (pH 3.5–5); *H. calciphila* is at present only known from basic, loamy or clayey soils (pH 6–8).

Hygrocybe miniata has been described by Orton (1960: 249) as an uncommon species with non-constricted spores measuring 7.5–10(–11) \times 5–6(–7) μm . Mr. Orton kindly wrote me (27 Febr. 1976) that his fungus is typical of calcareous soils, so possibly Orton had *H. calciphila* in mind. *Hygrocybe miniata* in my concept is identical with *H. strangu-latus* P. D. Orton (see Arnolds, 1986). However, Orton's collections of *H. miniata* studied by me (preserved at Edinburgh) do not contain *H. calciphila*: *Orton 816* (27 Oct. 1956) has spores constricted in all views and broadened-obpyriform in front-view and probably

Figs. 1–9. *Hygrocybe calciphila*. — 1–3 Basidiocarps, $\times 1$. — 4–6. Spores, $\times 1000$. — 7–8. Basidia, $\times 1000$. — 9. Radial section of pileipellis at centre of pileus, $\times 300$ (Figs. 1, 4, 7, 9 from *Bas 7101*, holotype; 2, 5, 8 from *Arnolds 4481*; 3, 6 from *Arnolds 20-X-84*).

Fig. 10. *Hygrocybe constrictospora*. — Spores $\times 1000$ (from *Arnolds 3486*, holotype).

Fig. 11. *Hygrocybe miniata*. — Spores, $\times 1000$ (from *Arnolds 3905*, WBS).



concerns *H. miniata*; Orton 5091 (31 Oct. 1980) and Orton 5269 (25 Sept. 1982) certainly belong to that species.

Gröger (1983: 37) included in his key of *Hygrocybe* '*H. calcarum* ined.' He recently sent me a description and one collection from Erfurt (Gröger 197/84), which in all important characters proved to be identical with *H. calciphila*. Probably this species is widely distributed in limestone areas in Central Europe.

Hygrocybe miniata sensu Kühner (1976: 484) is rather similar to *H. calciphila* and has non-constricted spores, which apparently are larger and more elongate, measuring $8-11 \times (4-5)5-6.5 \mu\text{m}$, $Q = 1.5-1.8$. I have not studied exsiccata of that taxon as from a nomenclatural point of view its identity is of no importance.

Hygrocybe biminiata Kühner (1976: 490) differs from *H. calciphila* among other things in the subcylindrical, occasionally constricted spores, measuring $8.5-11 \times 5-6 \mu\text{m}$, $Q = 1.7-1.9$.

Hygrocybe constrictospora Arnolds—Fig. 10

Hygrocybe constrictospora Arnolds in Persoonia 12: 476. 1985.

Misapplied name.—*Hygrocybe strangulata* sensu Arnolds, Taxon. Hygrophorus Nederland 209. 1974; sensu Arnolds in Persoonia 9: 250. 1977.

For a full description and a list of studied collections is referred to Arnolds 1977: 250 (sub nom. *H. strangulata*).

In another paper (Arnolds, 1986) I have demonstrated that *Hygrophorus strangulatus* P. D. Orton sensu P. D. Orton is heterogeneous. However, since the type is identical with *Hygrocybe miniata* (Fr.: Fr.) Kumm., the name *H. strangulatus* has to be regarded as a synonym of that species.

Hygrocybe constrictospora may be confused in the field with weakly squamulose forms of *H. miniata*. However, the structure of its pileipellis is a cutis made up of predominantly repent, slender, cylindrical hyphae, $3.5-6 \mu\text{m}$ wide, widely different from the trichodermium in *H. miniata* and related species (subsect. *Squamulosae*) which is made up of \pm erect, $5-14 \mu\text{m}$ wide hyphae constricted at the septa and with many free ends. Also the shape of the spores is quite different: in *H. constrictospora* in side-view ellipsoid-oblong to cylindrical, a large proportion constricted in side- and face-view (Fig. 10), in *H. miniata* not constricted in side-view, but in face-view broader towards the base, obovoid to obpyriform and often constricted (Fig. 11).

In view of the structure of the pileipellis, *H. constrictospora* does not belong to subsect. *Squamulosae* but to subsect. *Coccineae*. In that group it is the only species with a large proportion of the spores strongly constricted. *Hygrocybe substrangulata* (P. D. Orton) Mos. has also part of the spore weakly constricted, but differs in the much larger spores: $(8-9-11.5(-12.5) \times 4.5-6.5(-7.5) \mu\text{m}$, on the average $10.4-11 \times 6-6.5 \mu\text{m}$. *Hygrocybe marchii* (Bres.) Sing. is closely related, but the pileus in that species is slightly viscid, the uppermost hyphae of the pileipellis being gelatinized, and none or only a small proportion of the spores is constricted in any view (e.g. Arnolds, 1977, figs. 3-6).

HYGROCYBE GRISEOPALLIDA Arnolds = HEMIMYCENA MAIREI (E. J. Gilb.) Sing.

Hygrocybe griseopallida Arnolds in Persoonia 12: 476. 1985.

Camarophyllus nebularis Cléménçon in Beih. Z. Mykol. 4: 55. 1982 (not validly published). — *Cuphophyllus nebularis* (Cléménçon) M. Bon in Doc. mycol. 14(56): 10. 1984 (not validly published).

Misapplied name.—*Hygrophorus cinereus?* sensu Arnolds, Taxon. Hygrophorus Nederland: 66. 1974.

Hygrocybe griseopallida unites some unusual characters for a representative of *Hygrocybe* subgenus *Cuphophyllus*: the spores are in part subamygdaliform to pip-shaped, the basidia are short (27–34 μ m) and the apex of the stipe is provided with many subclavate caulocystidia (Arnolds, 1974). I never saw fresh basidiocarps and first (l.c.) regarded it as identical with or closely related to *H. cinerea* (Fr.) Orton & Watl., which is the name indicated by the collector (E. Kits van Waveren) on the original label. Cléménçon (1982) rightly regarded it as a different species and described it as *Camarophyllus nebularis*. This name is invalid since a Latin diagnosis and indication of the holotype are lacking. Although Cléménçon never studied this species (he merely translated my description from 1974), he made it the type species of *Camarophyllus* sect. *Nebularini*. I recently (1985) renamed this species *Hygrocybe griseopallida* with a valid diagnosis.

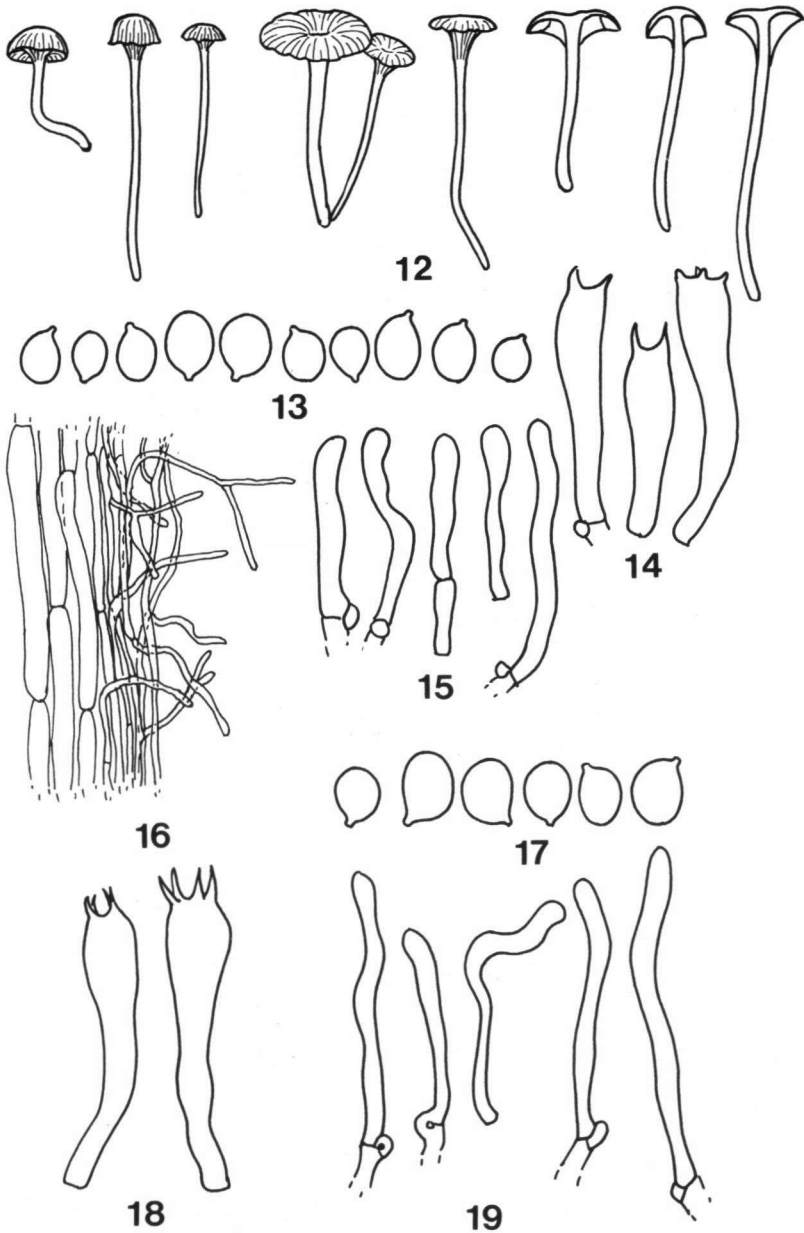
Soon afterwards, however, I received a collection made by Mr. C. B. Uljé (Ter Aar), which according to him might be *H. griseopallida* but also appeared to be very close to *Hemimycena mairei* (E. J. Gilb.) Sing. A study of Uljé's collection and some other exsiccata of *H. mairei* from the Leiden herbarium (*Bas 7039; van de Ham 26 Oct. 1982*) revealed that the size and the shape of spores, basidia and caulocystidia were very similar to those of *Hygrocybe griseopallida*. In macroscopic appearance *H. mairei* with its very distant, thickish lamellae certainly reminds of a *Cuphophyllus*. The only fundamental difference seems to be that the outermost hyphae of the pileipellis are diverticulate ('en brosse') in *H. mairei* and smooth in all species of the Hygrophoraceae. After careful re-examination I found in the type of *Hygrocybe griseopallida* some diverticulate hyphae too. Therefore it is clear now that I blundered when I described this species, since it is undoubtedly identical with *Hemimycena mairei*. The only satisfaction is that I can restore this mistake myself.

Hygrocybe luteolaeta Arnolds—Figs. 12–19

Hygrocybe luteolaeta Arnolds in Persoonia 12: 477. 1985.

Misapplied name.—*Hygrophorus vitellinus* sensu Arnolds, Taxon. Hygrophorus Nederland: 288. 1974.

Pileus 5–14(–17) mm wide, hemispherical at first, soon plano-convex with depressed centre and involute, often crenulate margin, then applanate with straight margin, hygrophanous, when moist chrome- to egg-yellow, gradually fading out to cream-colour, at centre often greyish yellow, translucently striate up to centre, drying pale yellow to whitish, very viscid when moist. Lamellae (L = 18–22, 1 = 0–1) arcuate-decurrent, rather thick, subdistant, up to 2.5 mm broad, concolorous with cap or deeper egg-yellow, slowly



Figs. 12–19. *Hygrocybe luteolaeta*. — 12: Basidiocarps, $\times 1$. — 13, 17. Spores, $\times 1000$. — 14, 18. Basidia, $\times 1000$. — 15, 19. Cheilocystidia, $\times 1000$. — 16. Radial section of stipitepellis, $\times 300$ (Figs. 12–16 from *Arnolds 3509*, holotype; 17–19 from *Van der Aa 204*).

pallescent to lemon-yellow, finally cream-coloured with age, with hyaline, gelatinous edge. Stipe 13–28 × 1.2–2.5 mm, subcylindrical, stuffed, concolorous with cap, gradually fading from apex downwards to pale yellow or cream-colour but at base persistently bright yellow, strongly viscid. Context in pileus very thin, fragile, concolorous with surface, in stipe pale yellow, fibrillose, but cortex glassy and concolorous with surface. Smell in the field weak, after some hours in a box very distinct, unpleasant, musty, like an animal cage in a zoo, exactly as often in *H. laeta*. Taste mild. Spore print 'white'.

Spores 6.5–8.5(–9.5) × 5–6.5(–7.5) μm , $Q = 1.15\text{--}1.5(1.6)$, $\bar{Q} = 1.25\text{--}1.4$, in majority broadly ellipsoid, a few ellipsoid to ovoid, with large, broad apiculus. Basidia 25–39 × 5–8.5 μm , $Q = 3.7\text{--}6.0$, moderately slenderly to slenderly clavate, 4-spored or 4-, 2- and 3-spored intermixed. Edge of lamellae sterile, made up of erect, slender, branched, strongly gelatinizing hyphae, projecting up to 200 μm , ending in numerous cylindrical to slenderly clavate hairs, 17.5–44 × 2–4(–5) μm . Subhymenium thin, up to 15 μm thick, compact, not gelatinized. Hymenophoral trama subregular, made up of rather short, cylindrical to mostly strongly inflated elements, 30–125 × 14–35 μm . Pileipellis an ixotrichodermium, 70–200 μm thick, made up of erect, branched, loosely interwoven hyphae with slender, cylindrical elements, 1.5–4 μm wide. Stipitpellis similar to the pileipellis but thinner, 30–100 μm broad. Clamps present, often in part medaillon clamps.

Habitat & distribution.—In poor, unfertilized grasslands rich in mosses with short sward on weakly acid, sandy soil. In the Netherlands rare, mainly in the coastal dunes. Also known from Denmark. September–November.

Collections examined.—NETHERLANDS: prov. Friesland, Isle of Schiermonnikoog, dunes near 'Westerplas', 2 Nov. 1975, *E. Arnolds* (no. 3509) & *C. Bas* (holotype, WBS; isotype, L); prov. Utrecht: Baarn, estate 'Groenendaal', in lawn shaded by trees, among the moss *Polytrichum commune*, 13 Sept. 1967, *H. van der Aa* 204 (WBS); 11 Sept. 1965, *G. de Vries s.n.* (L); prov. Noord-Holland: Callantsoog, 'Zwanenwater', among mown grass in dunes, 21 Oct. 1979, *C. Bas* 7583 (L); Vogelenzang, 'Zwarte Veld', in dry dune grassland, 9 Oct. 1982, *C. Uljé s.n.* (L, WBS).

Hygrophorus vitellinus Fr. (1863: 312) differs from *Hygrocybe luteolaeta* mainly in considerably larger basidiocarps (pileus 13–26 mm wide, stipe c. 52 mm long). It is possible that *H. vitellinus* sensu Orton is identical with Fries' species.

Hygrocybe luteolaeta strongly resembles *H. vitellina* sensu F. H. Møller (1945: 151), P. D. Orton (1964: 51) with its small, egg-yellow, pallescent basidiocarps with glutinous pileus and stipe, decurrent lamellae and broadly ellipsoid spores. However, *H. luteolaeta* is characterized by entirely sterile gelatinous edge of the lamellae (visible with a hand lens), made up of branched hyphae with clavate terminal cells. Moreover it has a characteristic, unpleasant smell. This smell easily escapes the attention unless one preserves fresh basidiocarps for some hours in a closed box.

For comparison I studied two collections of *H. vitellina* made by Orton (no. 2146, 15 Sept. 1960; no. 2366, 2 Oct. 1961), preserved at Edinburgh. In these exsiccata the edge of the lamellae is entirely fertile. Spores measure (6–)6.5–8.5 × 5–7(–7.5) μm , $Q = 1.15\text{--}1.4$, consequently similar to those of *H. luteolaeta*. *Hygrocybe vitellina* sensu Orton may also be different in the structure of the pileipellis: I found only a thin ixocutis, up to 50 μm thick, made up of repent and ascending, 1.5–4 μm wide hyphae. In *H. luteolaeta* it is a thicker ixotrichodermium, made up of predominantly erect hyphae. In

view of the variability of this character in many species of *Hygrocybe* it is not yet quite certain that this difference is constant.

For a critical study of *H. vitellina* sensu Møller I refer to Kühner (1977: 75). In view of the bad condition of the exsiccata many characters are not distinct, e.g. the exact structure of pilei- and stipitepellis.

Another related taxon is *H. citrina* sensu Sing. & Kuthan (1976: 7). It agrees in the presence of cheilocystidia, but differs among other things in the orange-yellow pileus, less decurrent lamellae, gelatinized subhymenium and much narrower spores ($5.5\text{--}7.7 \times 3.5\text{--}4.5 \mu\text{m}$).

Hygrocybe luteolaeta agrees with *H. laeta* (Pers.: Fr.) Kumm. in the sterile edge of the lamellae and the peculiar smell, but differs widely in the bright yellow colours (hence the name), small dimensions, shape and size of spores and cystidia, etc.

Hygrocybe subglobispora forma *aurantiorubra* Arnolds—Figs. 20–22

Hygrocybe subglobispora f. *aurantiorubra* Arnolds in *Persoonia* 12: 477. 1985.

Pileus up to 50 mm wide, acutely conical then expanded-conical, with undulate margin, first bright orange-red (Kornerup & Wanscher 7 A8), then fading to orange, orange-yellow or bright yellow, short translucently striate, subviscid, drying salmon-orange to sulphur-yellow. Lamellae (L = 34–43, l = 1–3) free or very narrowly adnate, rather crowded, up to 7 mm broad, first whitish, soon sulphur-yellow or pale lemon-yellow (K. & W. 2 A3, 4,5). Stipe 43–60 \times 6.5–9 mm, cylindrical with rounded base, stuffed then hollow, orange to yellow, in places orange-red in some specimens, white at base, fibrillose-striate lengthwise, dry to subviscid. Context in pileus yellow, up to 7 mm thick, in stipe whitish, fibrillose. Smell and taste not distinctive.

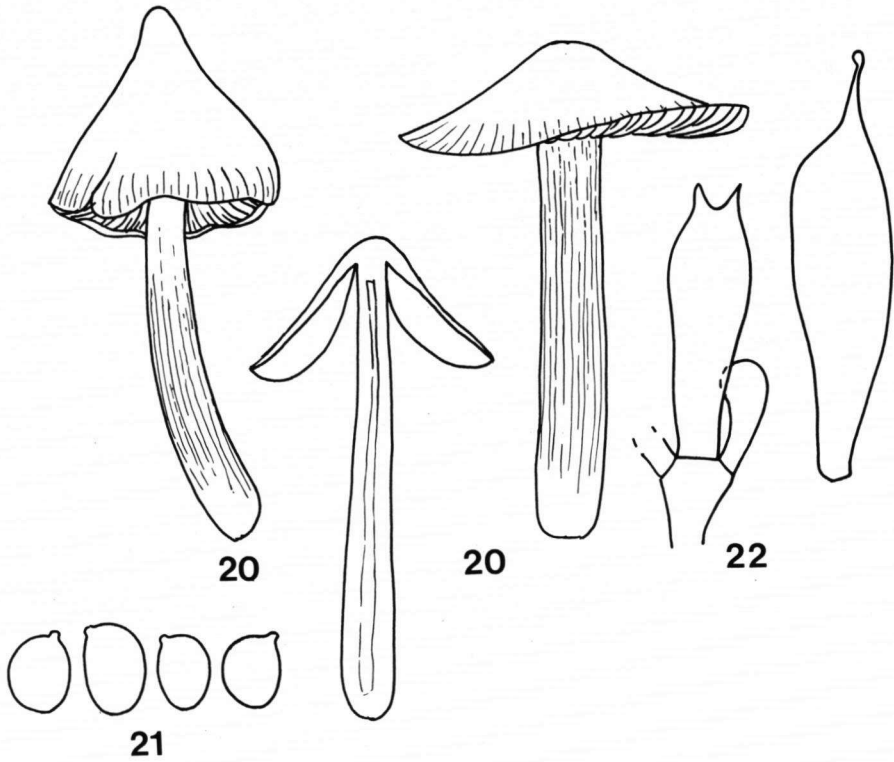
Spores (10–)10.5–12.5(–16.5) \times 7–8.5(–10.5) μm , Q = (1.25–)1.3–1.6, Q = 1.45, ellipsoid or ovoid with broad, blunt apiculus. Basidia (37–)40–58(–83) \times 11–15.5(–20) μm , Q = (2.6–)3–4.5, broadly clavate, in majority (70%) 2-spored, some (20%) 1-spored, a few (10%) 3- or 4-spored. Cystidia absent. Hymenophoral trama strictly regular, made up of broad, tubuliform elements tapering to the ends, up to 25 μm wide and over 500 μm long. Pileipellis an ixocutis up to 100(–180) μm thick, made up of repent to ascending, gelatinized, 3–8 μm wide hyphae. Stipitepellis a slightly gelatinized cutis, made up of cylindrical, 3–6 μm wide hyphae. Clamps not seen.

Habitat & distribution.—Only known from type locality, occurring there together with f. *subglobispora* in hayfield on weakly acid loam. October.

Collection examined.—NETHERLANDS, prov. Noord-Brabant, Drunen, bank of 'Drongelens Kanaal', in unfertilized hayfield on loamy soil, 26 Oct. 1975, *Arnolds 3478* (holotype, WBS).

The only difference with typical *H. subglobispora* is the orange-red colour of the pileus in young basidiocarps. Orton (1960: 267) originally described *H. subglobispora* with the pileus 'chrome or golden-yellow tinged orange in places (especially near margin)'. Since this difference is only gradual and intermediate forms exist, the rank of forma is preferred.

In *Hygrocybe* sect. *Macrosporae* R. Haller ex M. Bon three closely allied species are distinguished, originally described with yellow to orange basidiocarps, but later found to



Figs. 20–22. *Hygrocybe subglobispora* forma *aurantiorubra*. — 20. Basidiocarps, $\times 1$. — 21 Spores, $\times 1000$. — 22. Basidia, $\times 1000$ (from Arnolds 3478, holotype).

have counterparts with (orange-)red colours at least in the pileus. Along with *H. subglobispora* and its forma *aurantiorubra* Arnolds these taxa are: *H. konradii* R. Haller and its forma *pseudopersistens* (M. Bon) Arnolds (= var. *pseudopersistens* M. Bon) and *H. acutoconica* (F. Clem.) Sing. and its variety *cuspidata* (Peck) Arnolds (= *H. cuspidata* (Peck) Murrill = *H. aurantiolutescens* P.D. Orton = *H. pseudocuspidata* Kühner, see Arnolds, 1986). I distinguish *H. acutoconica* var. *cuspidata* in the rank of variety since the red form of this species seems to be more widespread, more constant and less easily fading than the red forms of *H. konradii* and *H. subglobispora*.

Orton (l.c.) supposed that *H. subglobispora* is identical with *H. amoena* sensu Haller & Métrod (1955: 35) forma *silvatica*, whereas their forma *pratensis* would be a different fungus. In my opinion it is just the other way round: forma *pratensis* was described with an orange or yellow pileus and matches the diagnosis of *H. subglobispora* better than forma *silvatica* with a blood-red to orange pileus soon fading to orange or yellow, which agrees with *H. subglobispora* forma *aurantiorubra*. In fact Haller & Métrod (l.c.) made

the same distinction as proposed here. I have not used their epithet '*silvatica*' as it has not been validly published and is not very appropriate for a fungus mainly growing in grasslands.

***Hygrocybe viola* Geesink & Bas—Figs. 23–27**

Hygrocybe viola Geesink & Bas in Arnolds in Persoonia 12: 478. 1985.

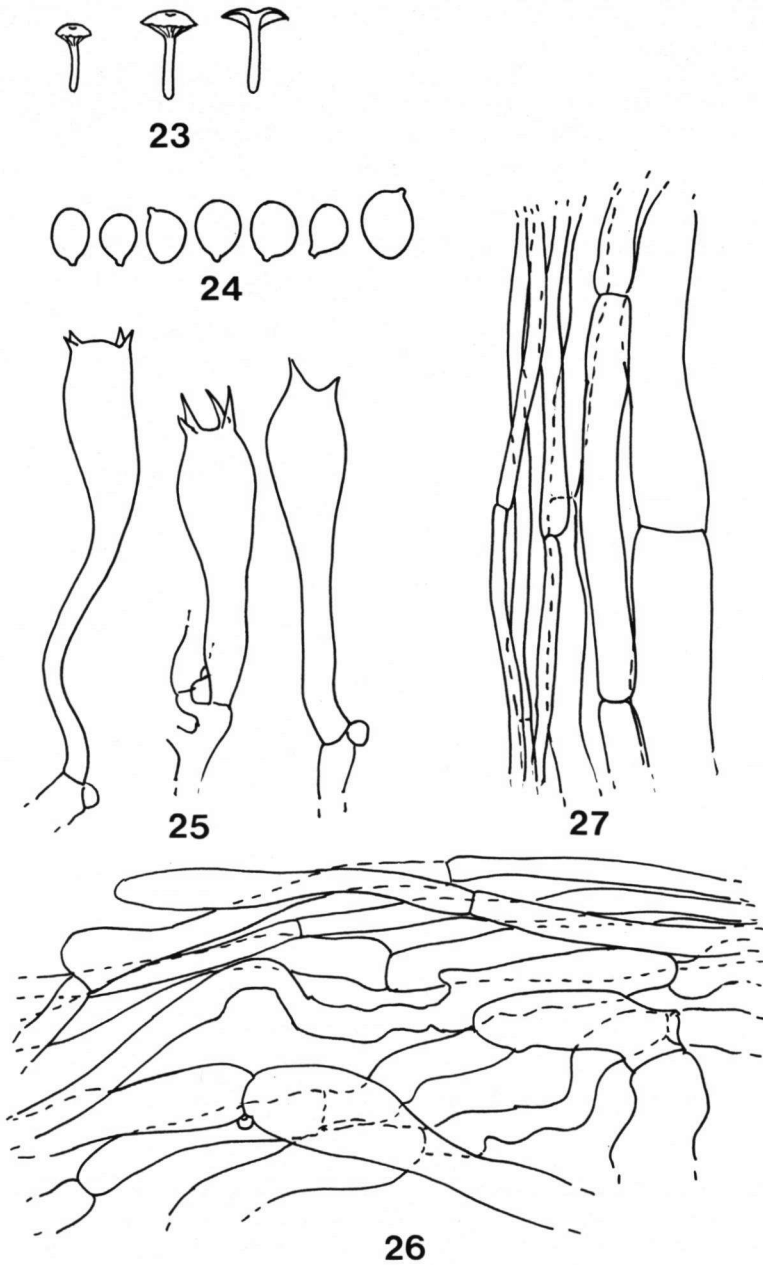
Pileus 4–7 mm wide, hemispherical to plano-convex with flattened, subumbilicate centre and subcrenulate margin, vaguely radially sulcate, deep purple at centre (Kornerup & Wanscher 15 C5/6), paler towards margin with age (K. & W. 15 B4), glabrous. Lamellae ($L = 12-14$, $l = 0-1$) broadly adnate to subdecurrent, rather distant, almost without lamellulae, rarely forked, pale lilaceous-violaceous (K. & W. about 14 B3) to sometimes nearly whitish, with entire, concolorous edge. Stipe 7–9 × 0.8–1.1 mm, somewhat tapering downwards, concolorous with centre of pileus or slightly paler, paler towards base and there sometimes very slightly ochraceous, glabrous, dry or perhaps very slightly viscid. Context purple in pileus and stipe. Smell indistinct. Taste unknown. Spore print not obtained.

Spores 6.5–10(–11) × 5–7 μm , $Q = 1.15-1.6$, $\bar{Q} = 1.25-1.5$ (broadly) ellipsoid to ovoid, smooth, inamyloid, not congophilous. Basidia (36–)38–60 × 8–13 μm , $Q = 3.9-6.3$, rather slenderly clavate, in majority 4-spored, a few 2-spored. Hymenial cystidia absent, but sometimes several basidia at edge with one or more strongly elongate sterigmata and thus simulating cystidia. Hymenophoral trama irregular, made up of interwoven, often branched hyphae with cylindrical and inflated elements, (14–)26–125 × 6–20 μm , smooth. Pileipellis a very thin, up to c. 25 μm thick cutis made up of repent, subradial hyphae with cylindrical, 3–14(–20) μm wide elements with the broader hyphae sometimes slightly constricted near the septa, at centre sometimes with tufts of erect, up to 45 μm high, free-ending hyphae, with subclavate terminal, 4–8 μm wide cells; pigment difficult to localize, probably (almost) exclusively intracellular, a few hyphae possibly with very minute encrustations (see discussion). Pileitrama subirregular; hyphae 4–20 μm wide. Stipitepellis a very thin cutis made up of a few layers of repent, 2–5 μm wide, smooth, hyaline hyphae. Clamps frequent at base of basidia and in subhymenium, scarce in other tissues, in trama sometimes of medallion type.

Habitat & distribution.—Only known from type locality in Belgium.

Collection examined.—BELGIUM, prov. Namur, Vencimont, valley of rivulet Houille; among mosses on moist, acid loam at steep bank of shaded car track in densely wooded valley with small stream, 3 Oct. 1977, *J. Geesink* (Bas 7225) (holotype, L).

This is a very remarkable fungus with dwarfish basidiocarps, omphalinoid habit and purple to violet colours. At first it was considered a species of *Omphalina*, but the long basidia, the obtuse base of the spores, the lack of distinct encrusting pigment and the (scanty) occurrence of refractive vascular hyphae and medallion clamps (both of them absent from *Omphalina* according to Th. Kuyper, pers. comm.) are arguments against *Omphalina* and in favour of *Hygrocybe*. It should be noticed, however, that in the first notes, made by Bas, the spores are described as 'sometimes slightly attenuate towards small apiculus' and the pigment in the pileipellis as '.... in several hyphae a very minute incrustation is visible'. Later, in dried material, these observations, in favour of *Omphalina*, could not be confirmed by Kuyper nor by me (Arnolds). These considerations reveal



Figs. 23-27. *Hygrocybe viola*. — 23. Basidiocarps, $\times 1$. — 24. Spores, $\times 1000$. — 25. Basidia, $\times 1000$. — 26. Radial section of pileipellis halfway the radius, $\times 1000$. — 27. Radial section of stipite-pellis, $\times 1000$ (from *Bas* 7225, holotype).

that the differences between *Hygrocybe* and *Omphalina* are not as fundamental and easy as often thought.

Within *Hygrocybe* the species is remarkable by the combination of irregular trama (a character of subgenus *Cuphophyllus*) and bright colours (a character of subgenus *Hygrocybe*). Some other species share this combination of characters, such as *H. lilacina*, *H. xanthochroa*, and *H. citrinopallida*. The closest relative of *H. viola* seems to be *Hygrocybe lilacina* (Laest.) Mos. (= *Hygrophorus violeipes* M. Lange), which has larger basidiocarps (pileus c. 8–20 mm, stipe 10–35 × 1.5–3 mm) with ochraceous lamellae and often also ochre tinges on the pileus and has gelatinized hyphae at the surface of pileus and stipe. *Hygrocybe xanthochroa* (P. D. Orton) Mos. differs strongly in very viscid pileus and stipe always at least in part with yellow colours, and in narrower spores (6–8 × 3.5–5 µm).

ACKNOWLEDGEMENTS

I am much indebted to Mr. C. B. Uljé (Ter Aar) for drawing my attention to the taxonomic position of *Hygrocybe griseopallida* and for sending me some collections of *Hemimycena mairei* on loan. Thanks are due to Dr. C. Bas (Leiden) for making available some valuable collections from the Rijksherbarium and some unpublished, private notes; to Mr. F. Gröger (Warza, East Germany) for providing me with collections and unpublished descriptions of *H. calcarum*, and to the Curator of the Herbarium at Edinburgh for the loan of some collections.

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