Notes RBG Edinb. 41(3):565–624 (1984)

NOTES ON BRITISH AGARICS: VIII

P. D. ORTON*

ABSTRACT. 22 new species are described: *Cortinarius* (*Telamonia*) *aureomarginatus*, *C.* (*T.*) *basililaceus*, *C.* (*T.*) *basiroseus*, *C.* (*T.*) *tabacinus*, *C.* (*T.*) *violilamellatus*, *Crepidotus bickhamensis* (a renaming of *C. epibryus* (Fr.) Kummer sensu Pilát et al.), *Flammulaster denticulata* (a renaming of *F. erinaceella* (Peck) Watling sensu New Check List, 1960), *F. limulatoides* (a renaming of *F. limulata* (Fr.) Watling sensu auct. eur.), *F. novasilvensis*, *Hygrophorous quercorum*, *Hypholoma xanthocephalum*, *Lepiota bickhamensis*, *L. coxheadi*, *L.* (*Macrolepiota*) *rhodosperma*, *Naucoria badiolateritia*, *N. clavuligeroides*, *N. rubriceps*, *N. saliceti*, *Omphalina fulvopallens* (a renaming of *Omphalia pseudoandrosacea* (Bull.) Gillet sensu Möller), *Omphalina wallacei* (a renaming of *O. rustica* (Fr.) Quélet sensu New Check List, 1960), *Pluteus griseoluridus* and *Tephrocybe alboflоccosa*. *Lepiota cristata* var. *felinoides* Bon is raised to specific rank, *Phaeomarasmius horizontalis* (Bull.) Kühner sensu New Check List, 1960 is transferred to *Melanotus* and redescribed, and a key is given to British species of that genus, and *Leptonia rhombispora* Kühner & Boursier is transferred to *Nolanea* and a description of British material is given. The identity of *Agaricus limulatus* Fr. is discussed and it is redescribed with a key to it and two related taxa; a revised key is given to species in *Naucoria* section *Naucoria* with obtuse cystidia; the *Pluteus nanus* (Pers.: Fr.) Kummer group of species is discussed as well as the distinctions between *P. galeroides* P. D. Orton and *P. xanthophaeus* P. D. Orton and the latter is redescribed. The following species are recorded and described as new for Britain: *Hygrocybe helobia* (Arnolds) Bon, *Lentinellus ursinus* (Fr.) Kühner, *Limacella vinosorubescens* Furrer, *Oudemansiella nigra* Dorfelt, *Pluteus villosus* (Bull.) Quélet sensu Romagnesi, *Tephrocybe baeosperma* (Romagn.) Moser, *T. boudieri* (Kühner & Romagn.) Moser and *T. impexa* (Karsten) Moser. *T. coracina* (Fr.) Moser is also described. *Cystoderma jasonis* (Cooke & Massee) Harmaja, *Entoloma lividum* (Bull.) Quélet and *Tubaria confragosa* (Fr.) Kühner are described and reinstated on the British List and *Leptonia querquedula* (Romagn.) P. D. Orton and *Naucoria tantilla* Favre are described as previously promised.

These notes describe a number of new or critical agarics, material of which is deposited in the Herbarium of the Royal Botanic Garden, Edinburgh (E). In the genus *Cortinarius* reference is made to some of A. A. Pearson's material now in the Herbarium of the Royal Botanic Gardens, Kew (K). The species are arranged in alphabetical order of genera as in the 'New Check List of British Agarics and Boleti' (*Trans. Br. mycol. Soc.* Suppl. 43:1–225, 1960) except that *Flammulaster* is used instead of *Flocculina*, *Hygrocybe* instead of *Hygrophorus* subgenus *Hygrocybe*, and *Tephrocybe* instead of *Collybia* subgenus *Tephrophana*. Colours are as in the *Colour Identification Chart to the Flora of British Fungi*, HMSO, Edinburgh (1969). I am greatly indebted to Dr R. Watling, Royal Botanic Garden, Edinburgh for invaluable assistance and encouragement and also to Mr T. J. Wallace of Membury, Devon, for supplying useful information.

CORTINARIUS

Until his death in 1953, A. A. Pearson had for some time been making descriptions of *Cortinarius* collections which he could not satisfactorily

*Birchfield Cottage, Nethy Bridge, Inverness-shire, PH25 3DD.

name and to which he had recently given provisional names. Duplicates of some of his notes and paintings were passed on to me so that I could eventually publish work on the genus as he had intended to do. Amongst these were many taxa of subgenus *Telamonia* (including *Hygrocybe*) which I have known for many years and which I am convinced are good species and I propose now to publish four of these as new species using Pearson's unpublished names. I have been able to revisit one of his collecting sites at Witley Common, Surrey and rediscover some of them there. These four are only a few of those I have rediscovered but are all rather distinct and easily defined. I add a fifth which he collected with me more than once but did not name himself.

Cortinarius (Telamonia) aureomarginatus Pearson ex P. D. Orton, **sp. nov.**

A *C. sanioso* affinis sed a sporis longioribus et subamygdaliformibus differt.

Pileus 14–53 mm, jove pluvio castaneus, umbrinus vel badius interdum striatus, siccitate ochraceus vel cinnamomeus, ad marginem conspicue luteovelatus. *Lamellae* e pallide ochraceis fulvae dein ferrugineo-fulvae, subdistantes, L(14–)16–24 l(0–)1–3, interdum ad faciem venosae. *Stipes* 20–70 × 1–4(–6) mm, ±aequalis, e pallide luteolo luteus vel fulvus interdum ad basim ferrugineo-fulvus, a velo luteo annuloso-zonatus vel maculatus, *Odor* nullus. *Sporae* (8–)8·5–11(–12) × 4·5–5·5(–6) μm, ellipsoideae vel ellipsoideo-amygdaliformes vel -cylindraceae, (Fig. 1). Acies lamellarum fertilis. *Habitatio*: Inter folia putrida prope Salices.

Typus: Hampshire, New Forest, Park Dale, 30 viii 1970, *Orton* 4026 (holo. E).

Cap 14–53 mm, conico-convex or convex then expanded ±plane, usually acutely or obtusely umbonate, sometimes slightly depressed around centre, *dark brick, bay, chestnut or umber,* sometimes ±cigar-brown at centre or rusty-tawny in outer part, drying sienna or cinnamon with persistently darker centre, sometimes orange or apricot around centre, sometimes striate when wet, at first entirely saffron or pale luteous adpressed silky-fibrillose becoming ±smooth in centre part, fibrils sometimes fairly long and radially arranged around centre when fresh, margin often becoming split and torn and *with ±persistent saffron or luteous* veil-zone. *Gills* adnate with tooth, often ±ventricose, *saffron or pale fulvous then deeper fulvous or fulvous-sienna,* finally rusty-tawny, *rather distant,* L(14–)16–24 l(0–)1–3, sometimes veined on sides or at base, edge concolorous or paler, uneven or slightly uneven. *Stem* 20–70 × 1–4 (–6) mm, equal or slightly thickened at base, pale then deeper luteous, apex whitish at first then saffron or luteous, lower part becoming ochre, sienna or fulvous, sometimes becoming rusty-tawny at base, silky-fibrillose striate, *luteous veil forming adpressed ring-zone and/or patches below whitish or pale saffron cortinal zone,* stuffed becoming ±hollow, fairly firm at first, base sometimes white tomentose. *Flesh* in cap concolorous drying ±saffron, in stem saffron or sienna drying saffron in centre, deepening to rusty-tawny, dark brick, bay or umber in lower part with age. *Smell* none.

Spores (8–)8·5–11(–12) × 4·5–5·5(–6) μm, ellipsoid in face-view, *ellipsoid-amygdaliform or sometimes cylindric-ellipsoid in side-view,* punctate-rough, (Fig. 1). *Basidia* 4-spored, 30–38 × 8–9 μm. *Gill-edge* fertile. *Hyphae on cap* 3–12 μm broad, hyaline or with yellow membranar pigment over shorter, up to 44 μm broad, cells.

In swampy or damp places or wet humus under or near sallow (*Salix* sp.). Widespread and not uncommon. Surrey, Whitley Common, 6 ix

1950, *Pearson* (K); Hants, New Forest, Park Dale, 30 viii 1970, *Orton* 4026 (holo. E), and 31 viii 1970, *Orton* 4029; Dorset, Studland, 30 x 1970, *Orton* 4031; Devon, Membury, Godworthy Moor, 25 x 1975, *Orton* 4757; Devon, Dawlish Warren, 2 xi 1970, *Orton* 4032; Perthshire, Madderty, 17 ix 1961, *Orton* 2479.

Readily distinguished by relatively elongate, ±ellipsoid-amygdaliform spores and dark cap with conspicuous, ±persistent luteous veil-zone at margin. *C. saniosus* (Fr.) Fr. as I interpret it at the moment has shorter, broader, ellipsoid spores 7–9(–10) × 5–6 μm, but there is a nomenclatural problem over this epithet which I have not yet resolved. If distinct from *C. saniosus, C. nothosaniosus* Moser also differs in having shorter, broader spores.

I think this taxon is mycorrhizal with sallow (*Salix* sp.) as in recent years I have always noted these as being in the neighbourhood of my collections, although I did not at first realise the significance of this. I have not collected it from Pearson's locality in Surrey (Witley Common) myself, but I am sure it is the same. There are other taxa with buff or saffron veil on the cap margin, but with different spores, which I have not yet worked out.

Cortinarius (Telamonia) basililaceus Pearson ex P. D. Orton, **sp. nov.**

A coloribus pilei striati, cortina ±alba sed velo luteolo, lamellis subdistantibus, odore, sporis, coloribus partim interdum caesiotinctis et habitatione probabiliter quercicola maxime insignis.

Pileus 15–63(–72) mm, jove pluvio ferrugineo-fulvus vel-ochraceus mox striatus, siccitate luteolus interdum ad discum aurantiacus, primo cremeo sericeo-fibrillosus dein ± laevis, ad marginem a velo luteolo maculatus. *Lamellae* primo luteolobrunneae interdum leviter olivaceo- vel caesio-tinctae dein ferrugineo-fulvae vel ferrugineae, subdistantes, L18–30 l1–3, saepe ad faciem venosae. *Stipes* 30–85 × (2·5–)3–8 mm, aequalis vel leviter clavatus (usque ad 11 mm latus), cremeus vel luteolobrunneus, raro primo ad apicem caesiotinctus, dein ochraceus vel cinnamomeus, a cortina alba vel albida et velo luteolo annulatus, ad basim albo vel interdum caesio tomentosus. *Odor* interdum debilis sed ab inclusione ingratus. *Sporae* 8–10·5(–11) × 4·5–5·5 μm, elongato-ellipsoideae, punctatae (Fig. 2). Acies lamellarum fertilis. *Habitatio*: ad terram umidam vel limosam prope Quercubus.

Typus: Hampshire, New Forest, Denny, 4 x 1969, *Orton* 3851 (holo. E).

Cap 15–63(–72) mm, conico-convex then expanded, from broadly obtusely to rather acutely umbonate, often becoming depressed around umbo when old, *sienna or rusty-tawny,* sometimes deeper rusty at centre or pale sienna or saffron at margin, drying saffron or luteous, sometimes orange or apricot at or around centre when drying out, *striate when moist,* at first with yellowish cream (E) or saffron adpressed silky fibrils, later becoming ±smooth and shiny except at margin, *cream or saffron veil as appendiculate fragments or adpressed patches or zone at margin. Gills* adnate usually with tooth, often emarginate, *buff or pale fulvous then sienna to deep sienna-fulvous or ±rusty-tawny,* sometimes clay-buff or buff-olivaceous-buff or more rarely fawn tinged lilac or violaceous-grey when very young, this colour sometimes persisting at edge of gill, *not crowded,* L18–30 l1–3, often strongly veined on sides or interveined or more rarely anastomosed, edge ±concolorous and even. *Stem* 30–85 × (2·5–)3–8 mm (4–11 mm at base), equal or more often thickened at base or apex or slightly clavate, yellowish cream (E) or buff then saffron, sienna or cinnamon, apex occasionally tinged lilac, vinaceous-grey or clay-buff at

first, strongly silky-fibrillose striate, *white or whitish cortina copious at first, buff or pale saffron veil forming ± well-marked floccose-fibrillose later ± adpressed ring-zone and a few patches below this,* stuffed or narrowly hollow, rather firm and hard at first, *base white, whitish, lilac or livid-vinaceous tomentose. Flesh* concolorous, drying pale ochraceous (F), pale saffron or saffron in centre of cap and stem, when young sometimes milky-coffee or clay-buff in stem-apex, cortex of lower stem deep fulvous or sienna to rusty-tawny. *Smell* often ± none when gathered, but *developing radishy-musty or like garlic-acetylene if kept enclosed.*

Spores 8–10·5(–11) × 4·5–5·5 μm, *elongate ellipsoid with large apiculus,* punctate to punctate-rough (Fig. 2). *Basidia* 4-spored (very rarely 2-spored), 32–40 × 8–10 μm. *Gill-edge* fertile. *Hyphae on cap* 2–10 μm broad, hyaline or encrusted or membranar pigmented, over shorter broader cells up to 22 μm broad.

In damp or wet places under or near oak, especially, but not solely, on clay soils. Common and often abundant in England wherever oak is the dominant tree. It should also be found in Wales. Cheshire, Neston, Ness Wood, 21 and 23 viii 1953, *Orton* (no material kept); Surrey, Epsom, Wilmerhatch Lane, 30 ix 1953, *Orton* 129; Hants, New Forest, Lyndhurst, 11 ix 1954, *Orton* 398; Surrey, Elstead, 15 x 1956, *Orton* 1052; Somerset, Horner Water, 1 ix 1967, *Orton* 3173; Hants, New Forest, Parkhill, 1 x 1969, *Orton* 3847; Hants, New Forest, Rufus Stone, 2 x 1969, *Orton* 3848, 3849, 3850; Hants, New Forest, Denny, 4 x 1969, *Orton* 3851 (holo. E), 29 viii 1970, *Orton* 4033; Norfolk, Surlingham, Tuck's Ride, 10 x 1971, *Orton* 4260; Somerset, Crawley, Bickham Wood, 28 x 1973, *Orton* 4637, 24 x 1975, *Orton* 4760, 4761, 21 x 1976, *Orton* 4873; Warks, Merevale Hall, 6 x 1974, *Orton* 4691; Devon, Membury, Godworthy Bottom, 7 ix 1979, *Orton* 5071. Also the following collected by Pearson in (K): Surrey, Gospel Oak, 12 viii 1943; Surrey, Frillingshurst Wood, 18 ix 1944, (oak); Surrey, Witley Common, ix 1946 and 6 ix 1950 (under oak).

This taxon is recognised by its bright coloured striate cap, yellowish veil, smell, relatively elongate ellipsoid spores and its habitat in damp places under oak. It will, no doubt, have been named *hinnuleus* in the past, but that taxon is not so brightly coloured, has a white veil, a different, more unpleasant, smell and shorter, rougher, broadly ellipsoid spores, 7–9 × 5–6 μm. It may also have been named *gentilis,* which is rather similarly coloured but is strictly associated with conifers and has subglobose or broadly ellipsoid spores as well as a brighter yellow veil.

I first collected this taxon in 1953 and named it provisionally '*paludicola*'. There was no trace of lilac colours anywhere in this collection. I wondered if it could be *C. helvolus* Fr., but eventually decided that it could not be because of its non-coniferous habitat, smell (*helvolus* is said to be inodorous), yellowish veil, striate cap, more slender stature and more elongate spores. It is possible that it may be '*C. helvolus* sensu Bres. (?)' of Kühner & Romagnesi (Flore Analytique des Champignons supérieurs de France 301, 1953). In 1967 I collected a similar taxon which, however, differed in having a lilac tinge to the very young gills and in the stem-apex. Then in 1969 I found another lot which had the tomentum at the stem-base lilac tinted. Since then I have made many collections especially in the New Forest and Somerset, some with

lilac tints, some without, and finally after finding specimens in Somerset with and without lilac tints seemingly from the same mycelium, I came to the conclusion that this colour character is inconstant and that all these collections were of the same taxon. I have therefore abandoned '*paludicola*'.

Pearson had known this taxon since 1943 and had named it provisionally *basililaceus*. Furthermore he noted that he had seen a sketch dated August 1908 from Tumby, Lincolnshire 'on ground at base of peaty ditch under birch and oak' which he thought was *basililaceus,* confirmed by his sketch and notes on the habitat. When I was looking through Pearson's notes I recognised my finds of 1967 but was for sometime not so sure of the earlier ones with no lilac colours. He had seized on the lilac tomentum as a main diagnostic character, but unfortunately this is not a constant character, nor, incidentally, is it confined to this taxon! *C. basililaceus* is so common in many parts of S England that it is high time it is given an authentic, even. if unfortunately not entirely appropriate, name.

Cortinarius (Telamonia) basiroseus Pearson ex P. D. Orton, **sp. nov.**

Species admodum firma a tomento roseo ad basim stipitis, pileo primo nigrobrunneo, sporis latis et habitatione in fagetis in solo calcareo insignis.

Pileus 10–60 mm, primo nigrobrunneus dein castaneus vel umbrinus, siccitate cinnamomeus vel lateritius interdum ad marginem luteolobrunneus, primo albosericeo fibrillosus dein ± laevis, ad marginem a velo albo zonatus, cuticula admodum firma. *Lamellae* e pallide fulvis cinnamomeae vel fere umbrinae, subconfertae, L24–40 l1–3(–7). *Stipes* 25–65 × 3–8 mm (ubi ventricosus usque ad 12 mm latus), aequalis vel clavatus vel ventricosus, primo albus et albosericeo striatus dein brunnescens, a velo albo vel roseo fugace maculatus, plerumque ad basim roseotomentosus. *Odor* nullus. *Sporae* (7·5–)8·5–10 × 5·5–6·5 μm, late ellipsoideo-ovoideae, asperae (Fig. 3). Acies lamellarum fertilis. *Habitatio*: in fagetis in solo calcareo.

Typus: Surrey, Mickleham Downs, 11 xi 1955, *Orton* 699 (holo. E).

Cap 10–60 mm, convex then expanded, usually obtusely or acutely umbonate, sometimes depressed around centre and with upturned wavy-lobed or reflexed margin, *cigar- or date-brown then bay, chestnut or umber,* drying brick or cinnamon sometimes with paler buff margin, at first entirely white then whitish or pale buff silky-fibrillose adpressed scaly then frequently ± smooth except at centre and/or margin, sometimes radially rugulose around centre in places, white veil forming marginal zone at first, *cuticle firm and tough at first. Gills* adnate often with tooth, sometimes slightly emarginate, *pale then deeper fulvous or fulvous-sienna then fulvous-cinnamon or cinnamon to ± umber,* rather crowded, L24–40 l1–3(–7), edge ± concolorous and even. *Stem* 25–65 × 3–8 mm (when ventricose up to 12 mm), equal to ± clavate-bulbous often with slightly pointed base, sometimes ± ventricose or compressed, *at first white and white silky-striate* becoming fulvous, fulvous sienna or sometimes snuff-brown in lower part, *white or pale rose veil forming often fugacious ring-zone and patches, base usually with rose or pale coral tomentum* which may be white or whitish on the outside (examine section), stuffed then hollow, cuticle rather firm and rigid at first. *Flesh* concolorous soon drying fulvous or fulvous-cinnamon in centre of cap and stem, umber or pale date-brown in stem-base, with pale rose basal tomentum showing on stem-base when fresh. *Smell* none.

Spores (7·5–)8·5–10 × 5·5–6·5 μm, *broadly ellipsoid or ovoid, often markedly verrucose-rough* (Fig. 3). *Basidia* 4-spored, 34–40 × 8–10 μm. *Gill-edge* fertile. *Hyphae on cap* 4–12 μm broad over shorter broader cells up to 28 μm broad; hyphae of veil on stem (4–)5–10(–14) μm broad, those of pink zone at stem-base narrower, 2–4(–5) μm broad and much interwoven.

On soil or humus under beech on basic soil. Surrey, Shere, Netley Park Wood, 6 x 1950, *Pearson* (K), 15 x 1958, *Orton* 1766; Surrey, Nork, Park Wood, 15 x 1950, *Orton* (no material kept), 31 x 1951, *Orton* 17; Berks, Mapledurham, Bottom Wood, 22 ix 1954, *Orton* 371; Surrey, Mickleham Downs, 11 xi 1955, *Orton* 699 (holo. E); Surrey, Polesden Lacey, 14 x 1958, *Orton* (no material kept); Surrey, East Horsley, Sheepleas, 28 x 1967, *Orton* (no material kept).

This is one of a number of taxa with pink tomentum at the stem-base which, in this taxon, is practically always visible in fresh specimens, the others differing *inter alia* in spore size and habitat. It seems to be associated with beech and has characteristically broad spores and I have so far found it only on basic soil. It is not uncommon in Surrey and can be expected to occur in suitable habitats in Kent, Sussex, Berkshire, Oxfordshire and probably Gloucestershire. My first collection was sent to Pearson, who straightaway suggested that it was a new species, and gave it the provisional name *basiroseus*.

Cortinarius (Telamonia) tabacinus P. D. Orton, **sp. nov.**

A sporis angustis, coloribus obscuris, velo pallide luteolobrunneo et habitatione in pinetis distinguitur.

Pileus 10–64 mm, jove pluvio ferrugineo-fulvus, badius, umbrinus vel fuscobrunneus, siccitate fulvus, cinnamomeus vel ferrugineus, primo pallide luteolobrunneo sericeo-fibrillosus dein fere laevis, a velo ad marginem zonatus, cuticula primo admodum firma. *Lamellae* pallide umbrinae vel cinnamomeae dein fulvae, ferrugineo-fulvae vel umbrinae, subconfertae, L24–38(–48) l1–3(–7). *Stipes* 15–70 × 2–6 mm (a compressu usque ad 8 mm latus), luteolobrunneus vel fulvus dein ± umbrinus, primo albido dein pallide luteolobrunneo sericeo-striatus et a velo pallide luteolobrunneo floccoso annuloso-zonatus maculatusque, primo firmus. *Odor* fere nullus. *Sporae* 8–10(–10·5) × 3·5–4·5 μm, ellipsoideo-amygdaliformes vel fusiforme ellipsoideae, paulum punctatae (Fig. 6). Acies lamellarum fertilis. *Habitatio*: in pinetis.

Typus: Surrey, Witley Common, 5 xi 1958, *Orton* 1907 (holo. E).

Cap 10–64 mm, convex or conico-convex then expanded, often obtusely or acutely umbonate though sometimes not and then ± plane or slightly depressed, *rusty-tawny, umber, bay or date-brown,* sometimes in part snuff-brown, drying fulvous or sienna often tinged cinnamon, rusty or rusty-tawny at or around centre especially when half-dry and then sometimes radially darker streaky (but not striate), *at first entirely pale buff silky-fibrillose scaly* becoming ± smooth except at margin and sometimes at centre, fibrils often slightly denser at centre and very dense at margin, which may become torn or radially incised, *cuticle rather tough at first. Gills* adnate usually with tooth, sometimes slightly emarginate, *pale umber or cinnamon then fulvous or rusty-fulvous to deep rusty-tawny or umber*, fairly crowded, L24–38(–48) l1–3(–7), edge concolorous ± even but sometimes rather blunt. *Stem* 15–70 × 2–6 mm (when compressed up to 8 mm), equal or slightly thickened at base or apex, occasionally compressed, *pale then deeper buff or fulvous then rusty-tawny or umber*

from base up, rather strongly whitish then pale buff silky-fibrillose striate when fresh, *whitish then pale buff veil forming fairly persistent floccose-fibrillose often irregular ring-zone and patches,* stuffed then ± hollow, *firm and tough at first,* base usually white or whitish tomentose. *Flesh* rusty-tawny or umber when fresh, often darker under cap cuticle, over gills and in stem-cortex, sometimes date-brown in stem base, drying buff or cinnamon. *Smell* none or faint pleasant fungussy.

Spores 8–10(–10·5) × 3·5–4·5 μm, *ellipsoid-amygdaliform or fusiform-ellipsoid sometimes rather boletoid,* faintly to fairly punctate (Fig. 6). *Basidia* 4-spored, 32–38 × 8–10 μm. *Hyphae on cap* 2–10 μm broad, hyaline or membranar pigmented, over shorter ones up to 30 μm broad. *Hyphae of veil* 2–8(–10) μm broad, hyaline.

With pines or where pines have been. Not uncommon in suitable habitats in England and Scotland. Surrey, Esher, Black Pond, 15 x 1954, *Orton* 383, 28 x 1981, *Orton* (no material kept); Surrey, Witley Common, 11 x 1956, *Orton* 1085, 3 xi 1958, *Orton* 1906, 5 xi 1958, *Orton* 1907 (holo. E); Kincardineshire, Gannochy, 14 ix 1958, *Orton* 1905 and 16 ix 1958 (no material kept); Dorset, Studland, 17 xi 1958, *Orton* 1909, 30 x 1970, *Orton* 4100; Perthshire, Rannoch, Dall, 3 x 1967, *Orton* 3193.

This taxon is easily recognised by its relatively narrow fusiform-ellipsoid spores 3·5–4·5 μm broad, colours, non-striate cap, pale buff veil and its habitat with pines. It may also occur with other conifers but I have no evidence of that as yet. It was known to Pearson, who at first thought that it might be *C. heterosporus* Bres., but, as examination of a fragment of the type has shown, this has clearly narrower spores, 8–10·5 × 2·7–3·5 μm, (Fig. 5) which are yet more fusiform-boletoid in shape. He then included it in his concept of *C. biformis* Fr., but I prefer to keep this epithet for a taxon with shorter spores following Ricken and Moser, and in any case Pearson's *biformis* had longer, broader spores (10–12 × 4–5 μm) and is undoubtedly different. I also considered *C. fusisporus* Kühner but this also has longer, broader spores 9·5–11·5 × 4–5 μm and a white veil and is therefore not my taxon. I am therefore describing my taxon as a new species because I cannot find it in any literature. Measurements of spores (from spore prints!) have been remarkably similar for all my collections from different localities.

Cortinarius (Telamonia) violilamellatus Pearson ex P. D. Orton, **sp. nov.**

Ab odore fere *Pelargonii,* lamellis primo vinaceis, sporis angustis ± fusiformibus, velo pallide luteolobrunneo et habitatione in pinetis facile distinguitur.

Pileus 12–40 mm, jove pluvio umbrinus vel fuscobrunneus non vel vix striatus, siccitate luteolus vel ochraceus interdum ad discum ferrugineo-tinctus, primo toto adpresse pallide luteolobrunneo sericeo-fibrillosus dein fere laevis, ad marginem a velo fibrilloso zonatus. *Lamellae* e vinaceis pallide umbrinae, ferrugineo-fulvae vel fulvo-umbrinae, admodum confertae, L24–36 l1–3, saepe ad facies venosae vel intervenosae. *Stipes* 20–64 × 2–6 (–8) mm, aequalis vel ad basim leviter attenuatus vel incrassatus, pallide luteolobrunneus dein ochraceo-cinnamomeus, a velo albido mox pallide luteolobrunneo annulatus et maculatus, ad basim interdum lilacino tomentosus. *Odor* saltem secto fere *Pelargonii. Sporae* 7–9 (–10) × 3·5–4·5(–4·7) μm, ellipsoideo-amygdaliformes vel fusiformes, punctatae (Fig. 4). Acies lamellarum fertilis. *Habitatio*: in pinetis.

Typus: Surrey, Witley Common, 3 xi 1958, *Orton* 1930 (holo. E).

Cap 12–40 mm, conico-convex or convex usually obtusely sometimes

acutely umbonate, becoming expanded and sometimes depressed around centre, *date-brown or umber* drying sienna, saffron or buff sometimes with cinnamon or rusty tinge at centre when half-dry, when moist not striate or rarely slightly so at margin only, *entirely adpressedly whitish or pale buff silky-fibrillose or finely scaly when fresh* then often ± smooth especially around centre, margin with rather copious whitish or pale buff fibrillose veil-zone or scales, often lacerate or incised when old. *Gills* adnate sometimes with slight tooth, *at first livid-vinaceous or deep vinaceous* (magenta) then vinaceous-fawn or pale umber, finally rusty-tawny or deep fulvous-umber (tobacco colour), rather crowded, L24–36 l1–3, often rather thick and veined on sides or interveined, very occasionally forked, edge paler and often retaining livid-vinaceous colour for some time, even or slightly uneven. *Stem* 20–64 × 2–6(–8) mm, ± equal or slightly attenuated at base, more rarely thickened above base (up to 10 mm broad), pale buff or pale sienna then sienna or cinnamon from the base up, strongly silky-fibrillose striate, *whitish soon pale buff veil forming ± well-marked ring or ring-zone and patches,* stuffed-solid then narrowly hollow, firm and hard at first, base whitish or less commonly lilac or lavender tomentose. *Flesh* concolorous drying buff in centre of cap and stem, often umber-horny over gills and fulvous or fulvous-umber in stem cortex. *Smell* faint to fairly strong (especially when cut), oily *Pelargonium*.

Spores 7–9(–10) × 3·5–4·5(–4·7) μm, ellipsoid-amygdaliform or elongate fusiform-ellipsoid, faintly punctate to punctate-rough (Fig. 4). Basidia 4-spored, 26–32 × 7–8 μm. *Gill-edge* fertile. *Hyphae on cap* (3–)5–18 μm broad, hyaline to slightly encrusted pigmented over shorter, up to 30 μm broad, cells. *Hyphae of veil* 3–8(–10) μm broad.

With pines or where pines have been. Not uncommon in England and Scotland (probably also Wales and Ireland) in suitable habitats. Surrey, Witley Common, 6 and 22 xi 1951, *Pearson* (K), 12 xi 1955, *Orton* 753, 3 xi 1958, *Orton* 1930 (holo. E); Kincardine, Gannochy, 14 ix 1958, *Orton* 1929; Perthshire, Rannoch, Black Wood, 31 x 1965, *Orton* 2772; Norfolk, West Harling, 11 x 1970, *Orton* 4113, 4114; Inverness-shire, Abernethy Forest, 4 ix 1971, *Orton* 4354.

This is the only taxon I have found of those smelling of *Pelargonium* with clearly elongate-amygdaliform or -fusiform spores, and it is also characterised by livid vinaceous or magenta young gills, pale buff veil, ± umber cap and habitat with conifers. There is another taxon with similarly coloured gills but with copious white veil and spores less clearly amygdaliform and slightly broader (4–5 μm) with which *violilamellatus* might be confused, but which is seemingly different and will be described elsewhere. It also seems to be associated with conifers.

CREPIDOTUS

In *Trans. Br. mycol. Soc.* 43:220, 1960 I included *Crepidotus epibryus* (Fr.) Kummer s. Pilát in my key to *Crepidotus* but in brackets because it was not then authentically British. In 1981 I collected a *Crepidotus* which I believe to be this taxon, but I do not think this interpretation is the same as the original *Agaricus epibryus* Fr. (*Syst. mycol.* I: 275, 1821),

which was stated to grow on mosses ('in muscos majoribus, praecipue Trichostomo heterosticho') and to have the gills 'gilvae' which I take to mean pale yellow. I think it is more satisfactory to describe this as a new species based on herbarium material, which is done below. My spore size is fractionally broader than that given by Pilát, but does agree with that given by Moser (*Kleine Kryptogamenflora* Bd IIb/2 (Ed. 4): 309, 1978). Moser quotes Cooke 537 (516)C as an illustration for this taxon, which, however, does not look like ny taxon; confirmation could only be by examination of the material from which the plate was made, if such exists. Romagnesi (*Rev. Mycol.* 2:137, 1937) uses this epithet for a taxon with clearly narrower spores, 7–9 × 4–5 μm. It is perhaps doubtful if this is the same. The following is a diagnosis and description of my collection.

Crepidotus bickhamensis P. D. Orton, **sp. nov.**

Misident.: *C. epibryus* sensu Pilát, Atlas Crepidotus 66, fig. 21, 1948, non (Fr.) Kummer, et non *Agaricus epibryus* Fr. (1821).

A sporis ellipsoideo-amygdaliformibus rugulosis, sporis in cumulo et lamellis argillaceo-incarnatis vel rufulo-fuscis et habitatione ad lignum a sociis distinguitur.

Pileus 5–14 mm, medio vel laterale affixus, ex albo albidus vel leviter cremeo tinctus, primo minute radialiter sericeus. *Lamellae* ex albidis vel pallide griseo-cremeis argillaceo-incarnatae, subdistantes, L7–12 l0–7, ad aciem primo minutissime flocculoso-denticulatae. *Sporae* (7·5–)8–10 × 5–6 μm, ellipsoideo-amygdaliformes, a verrucis humilibus rugulosae (Fig. 7), in cumulo argillaceo-incarnatae. *Cystidia ad aciem lamellarum* cylindrica vel anguste lageniformia, interdum flexuosa vel subcapitata, 24–38 × 4–8 μm, ad apicem 3–6 μm. *Habitatio*: ad lignum mortuum.

Typus: Somerset, Crawley, Bickham Wood, ad ramulum Salicis, 25 ix 1981, *Orton* 5255 (holo. E).

Cap 5–14 mm, convex or conical, attached centrally (and then inverted cup-shaped) or laterally, sometimes wavy-lobed when old, *white then whitish,* sometimes faintly tinged pale cream (C) in places or vinaceous-buff when old, *finely radially silky when fresh,* edge often remaining incurved for some time. *Gills whitish or pale grey-cream then clay-pinkish or pale fawn*, rather broad and ventricose, not crowded, L7–12 l0–7, edge minutely white flocculose-denticulate when fresh. *Spore print* clay-pinkish or fawn.

Spores (7·5–)8–10 × 5–6 μm ellipsoid in face-view, *ellipsoid-amygdaliform in side view,* rugulose with low warts (immersion) (Fig. 7). *Basidia* 4-spored, 26–30 × 7–9 μm. *Marginal cystidia* cylindric slightly flexuose ±obtuse to narrowly lageniform, sometimes slightly capitate, 24–38 × 4–8 μm, apex 3–6 μm. *Hyphae on cap* filamentous of narrow cylindrical cells 2–4 μm broad, end-cells ±clavate or fusiform 4–8(–10) μm broad.

On dead wood. Somerset, Crawley, Bickham Wood, On mossy sallow branch (dead but still attached to the tree and about five feet off the ground), 25 ix 1981, *Orton* 5255 (holo. E).

Distinguished by clay-pinkish or fawn spore print and gills, white or whitish cap and rugulose ellipsoid-amygdaliform spores. The fruit-bodies in this collection appeared to be attached to the wood, but in some cases moss was also present at the point of attachment. The specific epithet is chosen to commemorate the mycologically rich type locality.

CYSTODERMA

In the index to the New Check List of British Agarics (*Trans. Br. mycol. Soc.* 43, Suppl.: 194, 1960) I recorded having examined the type of *Armillaria jasonis* Cooke & Massee and concluded that it was a *Cystoderma* with amyloid spores 6–7·5 × 3–4 μm. I was not at that time able to describe any personal collections corresponding to it and so left it for further investigation. Since then Harmaja (*Karstenia* 18:29, 1978) has synonymised it with *C. longisporum* (Kühner) Heinemann & Thoen and made the necessary new combination in *Cystoderma,* since *jasonis* has priority.

I have for a long time kept a lookout for dark coloured '*amianthinum*' and when I collected *C. simulatum* P. D. Orton in 1957 I thought I might have found *jasonis,* but, although the colours were approximately correct, the spores were clearly incorrect. In 1960 I collected a *Cystoderma* with the longer spore size from the Rothiemurchus Forest but unfortunately had not time to make a description and kept no material, so I could not record it. However in 1981, at the very end of the season, I found a fair quantity of a similarly dark-coloured taxon in the Abernethy Forest and examination of the spores confirmed that this time I really had collected *jasonis.* An immediate foray was made to collect more material, which was done about sunset on the day before the first severe night frost of the year! Now I can reinstate it firmly on the British List, though I feel sure others must have collected it, perhaps unwittingly, as I may well have done at Rannoch.

The nomenclature of this genus is made unnecessarily complicated because of a superfluity of varietal names. Since similar characters have been used to distinguish both species and varieties, I feel that the varietal rank is unnecessary and confusing and am pleased to note that Harmaja in a recent work ('Studies on the Genus Cystoderma', *Karstenia* 19:25–29, 1979) has used none at all. As far as I am concerned the use of varieties in agarics in most cases merely confuses the issue; we have enough trouble deciding on what constitutes a species without adding to the problem. *C. jasonis* does not look like *C. amianthinum* except in stature and presence of flocculose veil and I cannot see any grounds for thinking of it as a variety of *amianthinum,* since it has different colours as well as different spores. The following is a description of my recent material.

Cystoderma jasonis (Cooke & Massee) Harmaja in Karstenia 18:29, 1978.

Syn.: *Agaricus jasonis* Cooke & Massee apud Cooke in Grevillea 16:77, 1888.

Lepiota amianthina var. *longispora* Kühner in Bull. Soc. mycol. Fr. 52:204, 1936 (nom. nud., no latin description).

Cystoderma amianthinum var. *longisporum* (Kühner) ex Kühner in Bull. Soc. Linn. Lyon 38:185, 1969.

C. longisporum (Kühner) Heinem. & Thoen in Bull. Soc. mycol. Fr. 89:16, 1973.

Cap 12–33 mm, conico-convex becoming expanded conical or with broad obtuse sometimes ± mammiform umbo, *apricot to sienna-rusty, margin becoming saffron or ochraceous* (*G*) *to* ± *orange,* sometimes strongly radially rugulose around centre or almost to margin, *drying saffron or*

saffron-orange, margin with appendiculate, sometimes dentate, pale ochraceous (F) scales from veil at first, remainder atomate and granular scaly when fresh. *Gills* adnate, *whitish soon pale cream* (*C*) *gradually deepening to ochraceous* (*F or G*) especially near flesh of cap, fairly crowded, L20–32 l1–3, sometimes forked-anastomosing towards margin in larger specimens, edge concolorous then paler, even. *Stem* 40–75 × 2–4 mm, equal or slightly thickened at base, often flexuose, *rusty or rusty-tawny often with paler ± sienna apex,* white silky-flocculose becoming ± smooth above veil-zone, pale cream to ochraceous (C, E, F) veil forming well-marked floccose-scaly ring-zone and scattered patches below this, lower part often also finely flocculose-scaly when fresh but becoming ± smooth, hollow, base white or whitish to ivory (B) tomentose or strigose. *Flesh* concolorous. *Smell* strong, mouldy-rank, especially after boxing.

Spores 6–7·5(–8) × 3–3·5(–4) µm, ellipsoid or ellipsoid-amygdaliform, amyloid. *Basidia* 4-spored, c. 20–24 × 6–7 µm. *Gill-edge* fertile. *Cells of veil on cap* ± globose, 12–36 µm broad, on stem often in chains, globose, ellipsoid or vesiculose, end-cells often slightly pointed at apex or more rarely elongate-fusiform, all with luteous or apricot vacuolar pigment.

In leaves and moss or about stumps in woods. Inverness-shire, Rothiemurchus, 7 ix 1960, *Orton* (no material kept); Inverness-Abernethy Forest, 5 xi 1981, *Orton* 5136; Hants., New Forest, Stubbs Wood, 18 x 1982, *Orton* 5261.

Readily distinguished from *amianthinum* by deeper colours of cap, gills and stem, and longer spores. *C. simulatum* is rather similarly coloured but has small subglobose or broadly ovoid spores, 3·5–5 × 2·5–3·5 µm. *C. jasonis* is probably not uncommon in suitable habitats but overlooked (spore examination vital!). It is perhaps more commonly found in pine woods (as in Inverness-shire) but may occur in deciduous woods (as in the New Forest).

ENTOLOMA

In the New Check List of British Agarics (*Trans. Br. mycol. Soc.* 43, Suppl.: 64, 1960) *Entoloma lividum* (Bull. ex St. Amans) Quél. was given as a synonym of *E. sinuatum* (Bull. ex Fr.) Kummer, following a French tradition which dated back to Quélet. In a recent work on *Entoloma,* Noordeloos (*Persoonia* 11:159, 1981) has separated these two taxa primarily on gill colour ('yellowish' for *lividum,* 'flesh colour with slight brown tinge' for *sinuatum*) but also on firmness of flesh (*lividum* firm and hard at first, *sinuatum* less so).

In 1960 I had not seen *lividum* for many years and did not appreciate these differences, but having made copious gatherings of *lividum* in the New Forest in 1981, I would agree with this separation and propose to return *lividum* to the British List as a separate taxon from *sinuatum.* Noordeloos (*loc. cit*: 162) accepts Cooke *Illustr. Brit. Fungi,* pl. 316 (310) as representing *sinuatum* so this may also remain in the List, but a good description of modern material from Britain is lacking as far as I know. The following is a description of my New Forest material.

Entoloma lividum (Bull.) Quélet in Mem. Soc. Emil. Montbeliard, ser. II, 5:116, 1872.

Syn.: *Agaricus lividus* Bull., Herb. France pl. 382, 1788.

Cap 74–122 mm, convex or irregularly conico-convex becoming expanded, sometimes obtusely umbonate or slightly depressed at centre, *whitish soon very pale grey,* sometimes with pale cream (C) centre, *then cream* (*D*) *with slight grey tinge to pale vinaceous-buff, not hygrophanous,* silky-atomate but finely tomentose in places especially when young, this often persisting at margin or at or around centre, margin exceeding gills slightly, paler when young (narrowly so) then ± concolorous. *Gills* free or narrowly adnate, always emarginate near stem, *pale cream* (*C*) *then yellowish cream* (*E*), becoming pinkish-cream then finally clay-pinkish, fairly crowded, L60–80 l1–3(–7), occasionally veined on the sides, edge ± concolorous, even to rather uneven, sometimes splitting transversely. *Stem* 95–160 × 12–24 mm, from slightly to rather strongly clavate and then up to 30 mm broad, white soon whitish or ivory (B), finely silky-flocculose when young then silky-atomate, sometimes slightly rugulose or ridged, base white tomentose, stuffed soon hollow in part, *very firm at first,* pithy-fibrous in centre, cortex more cartilaginous. *Flesh* white, sometimes with slight cream tinge in stem (B–C), horny over the gills. *Smell strong, mealy* or fruity-mealy.

Spores 8–10 × 7–8 μm, subglobose or broadly ellipsoid in outline. *Basidia* 4-spored. *Gill-edge* fertile. *Hyphae of cap surface* 4–8(–11) μm broad, hyaline.

On heavy soil in deciduous woods (oak, beech, sallow). Hants., New Forest, Norleywood, 3 x 1981, *Orton* 5138; Hants., New Forest, Norley Copse, 3 x 1981, Hollands Wood, 7 x 1981 and Stubbs Wood, 10 x 1981, no material kept.

Distinguished by marked yellowish colour to the young gills, this colour remaining visible for some time, firm stature and non-hygrophanous non-striate pale cap. It has a liking for and indeed may be restricted to clayey soils. The yellowish gills and firm stature when young make it look very tricholomatoid.

FLAMMULASTER

In the New Check List of British Agarics, *Trans. Br. mycol. Soc.* 43, Suppl.: 65, 1960, I included a taxon as *Flocculina erinaceella* (Peck) P. D. Orton, later emended to *Flammulaster erinaceella* (Peck) Watling in *Notes RBG Edinb.* 28:65, 1966. This taxon has very small fruit-bodies (cap 5–16 mm, stem 0·5–1 mm broad) with minutely pointed, floccose-mealy scales on the cap. *Agaricus erinaceellus* Peck, however, though microscopically similar, is rather larger (cap 10–30 mm, stem 2–4 mm broad), and has more conspicuous granular squarrose scales on cap and stem. I do not now think we can use this epithet for the taxon listed as such in the New Check List, for *A. erinaceellus* Peck is more like *Flammulaster muricata* (Fr.: Fr.) Watling, but with gills which are not yellow. Kühner (*Bull. Soc. Nat. Oyonnax* 10–11, Suppl.: 29, 1957) described my taxon as *Naucoria wieslandri* (Fr.) Sacc., but with the comment that the Friesian epithet did not quite fit because it had been described as growing 'Ad terram' and with 'Stipes subnudus, nigricans'. I do not think that this epithet can be used for the British taxon and so I

am describing it as a new species, (see below), for I know of no other name that can be used and it is relatively easy to recognise in the field.

Flammulaster denticulata P. D. Orton, **sp. nov.**

Misident.: *Naucoria wieslandri* sensu Kühner in Bull. Soc. Nat. Oyonnax 10–11, Suppl.: 29, non (Fr.) Sacc., et non *Agaricus wieslandri* Fr. (1851).

Flocculina erinaceella sensu P. D. Orton, non (Peck) P. D. Orton in Trans. Br. mycol. Soc. 43, Suppl.: 65, 1960 [nomen sed non planta], et non *Agaricus erinaceellus* Peck (1878).

Flammlaster erinaceella sensu Watling, non (Peck) Watling in Notes RBG Edinb. 28: 65, 1966 [nomen sed non planta].

A *F. carpophila* et al. a coloribus luteoribus, habitatione ad ramulos vel ad lignum *Fraxini* et *Ulmi*, et sporis magis coloratis distinguitur. *F. muricata* a squamulis squarrosis, statura majore et cystidiis aciei lamellarum longe pedunculatis differt.

Pileus 5–16 mm, fulvo-cinnamomeus vel ochraceus, primo toto minute aculeato floccoso-farinaceus vel papillato-squamulosus, ad marginem juventute a velo pallide luteolobrunneo appendiculato dentatus. *Lamellae* e cremeis vel luteolis ochraceae vel pallide cinnamomeae, vix confertae, L12–18 l(1–)3, ad marginem primo flocculoso-denticulatae. *Stipes* 11–25 × 0·5–1 mm, cremeus dein ochraceus vel cinnamomeus, interdum ad basim fere umbrinus, a velo luteolobrunneo pallide floccoso-granulosus vel ± aculeato fibrilloso-squamulosus. *Sporae* 6–8(–9) × 4–4·5 μm, ellipsoideo-phaseoliformes (Fig. 13), in cumulo ferrugineo-umbrinae. *Basidia* 4-sporigera. *Cystidia aciei lamellarum* clavato- vel capitato-pedunculata, saepe flexuosa vel fasciculata, 24–64 × 4–6(–9) μm ad apicem 6–12(–14) μm lata (Fig. 25). *Cellulae squamulorum pilei* globosae, vesiculosae vel ellipsoideae, interdum catenulatae, (12–)16–58 × (10–)16–37(–42) μm, admodum luteolo crassotunicatae. *Cellulae squamulorum stipitis* elongatiores, cellulae terminales vulgo aculeato-fusiformes, 24–60 × 9–15 μm. *Habitatio:* ad ramulos et lignum deciduis.

Typus: Devon, Pinhay, 1 xi 1969, *Orton* 3576 (holo. E).

Cap 5–16 mm, convex becoming expanded-convex, sienna, cinnamon, or fulvous-cinnamon, sometimes becoming saffron, *at first entirely minutely pointed floccose-mealy or granular papillate-scaly,* scales at centre sometimes ± umber or date-brown, when old becoming ± smooth and atomate, *margin ciliate-lacerate or with pointed appendiculate, pale buff dentate veil-scales when fresh. Gills* broadly adnate, sometimes with slight tooth, *cream* (*D*), *pale buff or saffron then deeper saffron to pale cinnamon,* not crowded, L12–18 l(1–)3, edge whitish or pale flocculose-denticulate when fresh, ± even and concolorous when old. *Stem* 11–25 × 0·5–1 mm, equal or slightly thickened at base, yellowish cream (E) then sienna or cinnamon from base up, sometimes ± umber at very base when old, apex finely pale buff pruinose, *below this with loose pale buff or pale sienna granular-floccose or fibrillose often pointed scales,* which may be coarse on lower stem, stuffed or narrowly hollow. *Flesh* concolorous drying straw, pale cream (B) or more rarely pale luteous in centre of cap and stem, buff-horny over gills and in stem cortex, in stem-base cinnamon, rusty-tawny or ± umber. *Smell* none. *Spore-print rusty-tawny or umber.*

Spores 6–8(–9) × 4–4·5 μ, ellipsoid-phaseoliform (Fig. 13). *Basidia* 4-spored, c. 22–25 × 5–6 μm. *Marginal cystidia clavate- or capitate-pedunculate* rarely broadly lageniform, often flexuose and deep-seated, sometimes in bunches, 24–64 × 4–6(–9) μm, 6–12(–14) μm broad at apex (Fig. 25). *Cells of scales on cap* globose, vesiculose or ellipsoid, sometimes pyriform, often in chains, (12–)16–58 × (10–)16–37(–42) μm, walls fairly thick, yellowish or brownish membranar pigmented. *Cells of scales on stem* more elongate,

end-cells often fusiform-pointed, 24–60 × 9–15 μm, also yellowish membranar pigmented.

On deciduous twigs or logs (e.g. elm, ash). Widespread and probably not uncommon at least in England. Somerset, Leigh Wood, 14 ix 1955, *Orton* 580; Surrey, Boxhill, 4 x 1955, *Orton* 583; Devon, Rousdon, Whitlands Landslip, 26 & 29 xi 1958, *Orton* 1525, 2 xii 1958, *Orton* 1526; Devon, Rousdon, Dowlands Landslip, 18 vii 1959, *Orton* 1964; Somerset, Allerford Wood, 7 xi 1959, *Orton* 2033; Devon, Pinhay, 1 xi 1969, *Orton* 3576 (holo. E).

This taxon is readily recognised by consistently small fruit-bodies, clavate- or capitate-pedunculate marginal cystidia, phaseoliform spores and habitat on wood. It is yellower than *F. carpophila* (Fr.: Fr.) Earle and its allies, and the spore-print is darker (rusty-tawny or umber).

FLAMMULASTER LIMULATA (Fr.) Watling

I have for some time been suspicious that more than one taxon has been included in the specific epithet *limulata* and in recent years have been able to recognise three separate taxa. These are: A, a taxon with relatively larger and more brightly coloured fruit-bodies with cinnamon or rusty-tawny stem which is often luteous strigose at the base, with ellipsoid clearly phaseoliform spores and rather broad clavate or fusiform marginal cystidia, found on both deciduous and coniferous wood; B, a taxon with rather small, often gregarious or subcaespitose fruit-bodies, with stem becoming clearly dark (umber or bay) at the base, ellipsoid-amygdaliform, not or very indistinctly phaseoliform spores and relatively narrow, but versiform, marginal cystidia, growing on pine sawdust or chips; and C, a taxon with rather small fruit-bodies coloured rather like taxon B, but with elongate ellipsoid or ellipsoid-amygdaliform often irregularly phaseoliform spores and markedly clavate or ± utriform marginal cystidia but growing on deciduous wood (birch or oak so far). All three have variously swollen and encrusted pigmented cells in the scales on the cap, those of taxon B being often particularly heavily encrusted.

Taxon A is undoubtedly '*limulata*' as interpreted by most authors, such as Josserand, Kühner, and Romagnesi (see p. 000). Taxon B seems to fit Fries's original description (*Obs. mycol.* II: 28, 1818) and that of Weinmann (*Hymeno. Rossico*: 201, 1836) best as to colours and habitat (see below) and is probably that depicted by Fries in *Ic. Hymenomyc.*, Pl. 119 fig. 3, 1884. Taxon C does not appear to have been previously described. Taxon A is therefore the most widely accepted interpretation of *limulatus,* often, however, with the comment that the Fries plate 119 fig. 3 did not look quite correct. It did not to my mind because it represents a different species! *Flammula limulata* sensu Bresadola (*Icon. mycol.* 785) is something quite different, now usually regarded as *Galerina pruinatipes* A. H. Sm.

The distinguishing macroscopical feature of taxon B is the dark stem, which accords better with Fries's original description ('stipite fuscescente') and that of Weinmann ('stipite umbrino'), and the habitat on pine sawdust and chips agrees with that of Fries ('in serragine') stressed again in the text accompanying his plate ('ad ripas amnium serragine pinea

tactas'). Weinmann's habitat is less definitely convincing but suitable ('ad truncum putridum pineum dejectum muscis (Sphagnis) obtectum'). Fortunately there is a clear difference in spore shape between taxon A (phaseoliform) and taxon B (ellipsoid-amygdaliform) to uphold the other differences. Despite the well-established use of the epithet *limulata* for taxon A, therefore, it seems unfortunately that this epithet should be used for taxon B, which means that taxon A requires another name. I know of no other name available, so I am describing it and taxon C as new species. I regret this action, but it seems nomenclaturally necessary.

The three taxa can be separated on spore, cystidial, stem and habitat characters as follows:

1. On coniferous sawdust or chips (pine so far), gregarious or subcaespitose; spores in side-view ellipsoid-amygdaliform, not or only very slightly phaseoliform (Fig. 10); marginal cystidia versiform, from cylindric-clavate or flexuose to ± lageniform with narrow apex, 28–50 × 5–8 μm, apex (3–)4–12 μm broad (Fig. 22); stem soon umber, bay or date-brown at least in lower part . . . . . *limulata* (taxon B)

1x. Not combining habitat on coniferous wood with stem dark at base and non-phaseoliform spores; marginal cystidia broader, 6–18(–20) μm broad 2

2. Lower part of stem sienna or fulvous to rusty-tawny, often ± luteous strigose at base; spores in side-view clearly phaseoliform (Fig. 11); marginal cystidia clavate or shortly fusiform, apex sometimes slightly narrowed (Fig. 23); on coniferous (*Pinus* in Britain, *Abies* in Norway) or deciduous wood (*Betula* in Britain, *Fagus* and *Quercus* elsewhere in Europe) . . . . . *limulatoides* (taxon A)

2x. Lower part of stem soon umber, bay or date-brown (at least inside), sometimes straw, pale luteous or pale sienna, strigose; spores in side-view phaseoliform-amygdaliform or irregularly shaped (Fig. 12); marginal cystidia clavate to clavate-capitate or utriform, only rarely clavate with narrowed apex (Fig. 24); on *Betula* or *Quercus*. . . . . *novasilvensis* (taxon C)

Flammulaster limulata (Fr.) Watling in Notes RBG Edinb. 28:66, 1966.
Syn.: *Agaricus limulatus* Fr., Obs. Mycol. II: 28, 1818.

Cap 8–44 mm, convex then expanded-convex, often ± plane or with wavy-lobed margin when old, *rusty-tawny or rusty-sienna, drying fulvous or sienna with apricot, sienna or rusty-tawny centre,* sometimes buff or fulvous-buff at margin, *entirely minutely saffron or ochraceous scurfy-fibrillose scaly, margin with appendiculate buff or saffron fibrillose veil remnants at first* then minutely torn and recurved. *Gills* adnate often emarginate and ± ventricose or with tooth, *straw then saffron or fulvous-saffron,* finally deep fulvous, fairly crowded, L(14–)18–30 l(1–)3–7, edge ± conspicuously paler flocculose denticulate. *Stem* 10–35 × 1–3 mm (3–5 mm when compressed), equal or slightly thickened at base or apex, sometimes compressed, fulvous or cinnamon with straw apex but *soon rusty-tawny, umber, bay or date-brown from base up,* apex more persistently yellowish

and yellowish floccose-pruinose and often striate from gills, at first entirely buff or saffron fibrillose from veil, this later sometimes persisting as patches on middle or lower stem, hollow, base sometimes white tomentose. *Flesh* in cap concolorous or fulvous drying pale ochraceous (F), in stem rusty-tawny or concolorous but drying ±luteous in centre, sometimes fulvous- or olivaceous-horny over gills. *Smell* and *taste* none. *Spore-print* fulvous or rusty-snuff to umber.

Spores 6·5–8·5(9) × 4–4·5(–5) µm, ellipsoid or slightly amygdaliform, not or only slightly phaseoliform (larger ones only) (Fig. 10). *Basidia* 4-spored, 26–30 × 5–6 µm. *Marginal cystidia versiform,* from ±cylindric to clavate, slightly utriform, lageniform or irregularly swollen, 28–52 × (4–)5–8 µm, *apex 3–12 µm broad,* (Fig. 22). *Cells of scales on cap* ellipsoid, sausage-shaped or vesiculose, end-cell often ±clavate, 20–60(–100) × 10–22 µm, arising from ±filamentous hyphae 4–16 µm broad, often yellowish-encrusted-pigmented, sometimes heavily so, especially the end-cells, where the pigment may be in lines.

On old pine sawdust, chips, bits of bark and other debris at sawmill site, gregarious or subcaespitose. Perthshire, Rannoch, Black Wood, 16 x 1966, *Orton* 2888, 6 vi 1968, *Orton* 3262, 8 vi 1968, *Orton* 3263, 21 ix 1968, *Orton* 3264, 25 v 1971, *Orton* 4140, 13 ix 1971, *Orton* 4141 and 30 ix 1976, *Orton* 4842, and 30 ix 1976, *Orton* (no material kept).

This taxon is characterised by dark stem-base, ellipsoid-amygdaliform non-phaseoliform spores, versiform relatively narrow marginal cystidia and gregarious or subcaespitose habitat on pine debris. It will be noted that fruit-bodies appeared throughout the season from May to October, no doubt depending on the weather. It may well occur elsewhere in suitable habitats and possibly on debris of other conifers. It remains to be seen whether it is restricted to Caledonian or Northern Pine areas in Britain,

F. limulatoides also grows on pine, but on stumps or logs, as well as birch or other deciduous wood, but has the stem less dark and often luteous strigose at the base, is sometimes rather larger and has clearly phaseoliform spores and rather broader clavate or fusiform marginal cystidia. *F. novasilvensis* is rather similarly though less brightly coloured, but has more distinctly phaseoliform spores, utriform or clavate-capitate marginal cystidia and has been found on birch or oak wood. Past records of *limulata* may be unreliable because of confusion with these taxa. For comments on somewhat similar American taxa see observations to *limulatoides* and *novasilvensis* below.

Flammulaster limulatoides P. D. Orton, **sp. nov.**

Misident.: *Flammula limulata* sensu Romagn. in Bull. Soc. Mycol. Fr. 58:140, 1942, non (Fr.) Karsten; *Naucoria limulata* sensu Kühner in Bull. Soc. Nat. Oyonnax 10–11, Suppl.: 31, 1957, et sensu Josserand in Bull. Soc. Mycol. Fr. 81:556, 1965, sed non (Fr.) Kühner & Romagnesi; *Phaeomarasmius limulatus* sensu Nathorst-Windahl in Friesia 9:398, 1971, non (Fr.) Singer, omnis non *Agaricus limulatus* Fr. (1818).

A *F. limulata* sensu orig. affinis sed a stipite aurantiaco-ferrugineo ad basim saepe luteostrigoso, sporis phaseoliformibus, cystidiis latioribus et habitatione ad lignum coniferarum vel frondosarum differt.

Pileus 12–60 mm, aurantiaco-ferrugineus vel cinnamomeo-fulvus ad marginem saepe ochraceus, totus minute recte interdum concentrico piloso-floccoso squamulosus, ad marginem primo a velo luteolo obtectus. *Lamellae* e pallide luteolo luteae dein cinnamomeo-fulvae, subconfertae, L20–28 l3(–7), ad aciem primo conspicue pallide luteolo flocculoso-denticulatae. *Stipes* 20–60 × 1·5–6 mm, aurantiaco-ferrugineus ad apicem fere luteus, siccitate luteolus et ad basim cinnamomeo-fulvus, primo a velo luteo vel luteolo fibrilloso squamulosus et annuloso-zonatus, ad basim saepe luteostrigosus vel a mycelio disciformis. *Sporae* 7–9(–10) × 4–4·5(–5) μm, ellipsoideo-phaseoliformes (Fig. 11). *Cystidia aciei lamellarum* clavata vel leviter fusiformia, 20–57 × 6–16(–20) μm, (Fig. 23). *Cellulae squamularum pilei* cylindricae, ellipsoideae, ovoideae vel vesiculosae, 20–128 × 6–30 μm, hyalinae vel incrustato-pigmentatae. *Habitatio*: ad lignum coniferarum vel frondosarum.
Typus: Inverness-shire, Guisachan, ad lignum *Betulae*, 2 ix 1957, *Orton* 1177 (holo. E).

Cap 12–60 mm, convex then expanded-convex to ± plane, *rusty-tawny or orange-rusty to cinnamon-fulvous* often with pale saffron or ochraceous margin, ± unicolorous saffron- or ochraceous-buff when dry, *entirely minutely erect and somewhat coarsely sometimes ± concentrically pilose-floccose-scaly*, margin exceeding gills at first with rather inconspicuous remnants of yellowish veil. *Gills* adnate sometimes with tooth, *straw or saffron then ± luteous*, finally fulvous or cinnamon-fulvous, rather crowded, L20–28 l(3–)7, *edge* ± conspicuously pale yellowish flocculose denticulate when fresh, sometimes weeping and then rusty-snuff spotted from the spores. *Stem* 20–60 × 1·5–6 mm, equal or slightly thickened at base or apex, *apricot or rusty-tawny with ± luteous apex*, sometimes drying saffron or saffron-buff with lower part cinnamon or cinnamon-fulvous, ± luteous fibrillose-floccose scaly from veil at first, this later often restricted to a ring-zone and a few fibrils, yellowish silky fibrillose-striate beneath veil, *base often luteous strigose or with mycelial strands forming basal disc*, stuffed then hollow. *Flesh* in cap yellowish or tinged cap colour, fulvous- or rusty-horny over gills, rusty or rusty-tawny in stem, more rarely tinged date-brown in stem-base. *Spore-print* rusty-snuff.

Spores 7–9(–10) × 4–4·5(–5) μm, ellipsoid-phaseoliform, (Fig. 11). *Basidia* 4-spored. *Marginal cystidia* clavate or slightly fusiform, often in bunches, 20–57 × 6–16(–20) μm (Fig. 23). *Cells of scales on cap* from ± cylindric to ellipsoid, ovoid or vesiculose, 20–128 × 6–30 μm, hyaline or encrusted pigmented. *Cells of hyphae of veil on stem* ± cylindric, 3–8 μm broad.

On coniferous or deciduous logs or stumps. Inverness-shire, Guisachan, on *Betula*, 2 ix, 1957, *Orton* 1177 (holo. E) and on ?fir or *Larix*, 13 ix 1969, *Orton* 3577; Inverness-shire, Tomich, near R. Affric, on *Pinus*, 14 ix 1969, *Orton* 3578.

This taxon is distinguished by its habitat on wood, clearly phaseoliform spores and bright colours, with the stem not externally umber or date-brown in lower part and often luteous strigose at base. It seems to be rather uncommon but should be widespread. It was recorded on oak sawdust by Romagnesi and on beech logs by Nathorst-Windahl. For differences from *limulata* see above.

Pholiota subechinata A. H. Sm. & Hesler (*North American Species of Pholiota* 63, 1968) is somewhat similar, having rusty-spotted gills and spores 'somewhat to distinctly phaseoliform in profile', but differs in smaller size, subdistant gills, marginal cystidia enlarged at apex and the presence of numerous subglobose cells in the scales on the cap. *P. granulosa* (Peck) A.H.Sm. & Hesler (*loc. cit.* 60, 1968) is macroscopically rather similar but, although the marginal cystidia are

much the same, the spores are neither described nor drawn as phaseoliform and are given as considerably broader (4·5–6 μm). I do not feel, therefore, that either of these names are availabale for my taxon and in any case I think that the use of N American names for European taxa is only justified when there is complete agreement, preferably backed up by field experience.

Flammulaster novasilvensis P. D. Orton, **sp. nov.**

F. limulatam sensu orig. in mentam revocat, sed a cystidiis aciei lamellarum et habitatione ad lignum deciduum differt.

Pileus 10–35 mm, fulvus, aurantiaco-fulvus vel ferrugineus, siccitate luteolus vel luteus interdum ad discum aurantiacotinctus, primo omnino velutino squamulosus, senectute interdum punctato-squamulosus, ad marginem primo a velo pallide luteolo appendiculato obtectus. *Lamellae* e luteolis fulvo-luteae vel cinnamomeo-fulvae, subconfertae, L16–28 l3–7, ad aciem flocculoso-denticulatae. *Stipes* 20–55 × 1·5–4 mm, e luteolo vel pallide ochraceo fulvus dein ad basim umbrinascens, senectute fere toto umbrinus vel fuscobrunneus, primo a velo luteolo adpresse sericeo flocculoso squamulosus, ad basim albido, luteolo vel ochraceo strigosus. *Sporae* (7–)7·5–10 × 4–4·5(–5) μm, ellipsoideae vel ellipsoideo-amygdaliformes interdum leviter phaseoliformes, (Fig. 12), in cumulo fulvo-cinnamomeae. *Cystidia aciei lamellarum* capitato-clavata vel utriformia rariore clavata vel late lageniformia, 28–58 × 7–12(–18) μm, (Fig. 24). *Cellulae squamulorum pilei* ellipsoideae, fusiformes vel vesiculosae, hyalinae vel incrustato-pigmentatae; 8–36 μm latae. *Habitatio*: ad lignum frondosarum.
Typus: Hampshire, New Forest, Park Dale, 31 viii 1970, (ad lignum *Betulae*), *Orton* 3967 (holo. E).

Cap 10–35 mm, convex then expanded-convex, sometimes with wavy-lobed margin, *fulvous, sienna or orange-sienna,* sometimes cinnamon or ochraceous cinnamon when old, *drying* ±*luteous sometimes with orange or rusty centre, margin at first with pale cream or straw appendiculate veil-scales,* these often persisting as denticles or small adpressed scales inside cap margin, usually finally disappearing. *Gills* adnate with slight tooth, ventricose or ± plane, *straw or straw-buff than pale luteous or fulvous-buff, sometimes with slight olive tinge, finally deep fulvous-cinnamon,* fairly crowded, L16–28 l3–7, edge concolorous or slightly paler, flocculose denticulate sub lente. *Stem* 20–55 × 1·5–4 mm, equal or slightly thickened at base or apex, *saffron or pale ochre or with straw apex, soon becoming sienna or fulvous then umber from base up,* ±*entirely umber or date-brown when old,* apex straw floccose-silky or silky-striate, *straw or yellowish-cream* (*E*) *veil leaving often pointed but* ±*adpressed silky-floccose scales on upper stem,* stuffed then ± hollow, base whitish, straw, pale luteous or pale sienna strigose-tomentose sometimes tinged orange with age. *Flesh* in cap concolorous drying straw or pale luteous, in stem cortex fulvous or rusty, *often umber, bay or date-brown in lower stem,* drying ± ochre in stem-centre, horny over gills and in stem-apex. *Smell* none. *Spore-print* fulvous-cinnamon.

Spores (7–)7·5–10 × 4–4·5(–5) μm, in face-view ellipsoid or cylindric-ellipsoid sometimes slightly phaseoliform, *in side-view, ellipsoid-amygdaliform or irregularly or slightly phaseoliform-amygdaliform,* (Fig. 12). *Basidia* 4-spored, c. 24–26 × 6–7 μm. *Marginal cystidia clavate-capitate or utriform,* more rarely simply clavate or broadly lageniform, 28–58 × 7–12(–18) μm (at apex), (Fig. 24). *Cells of scales on cap* ellipsoid, vesiculose or fusiform, hyaline or encrusted pigmented, sometimes slightly thick-walled, 8–36 μm broad. *Cells of hyphae of veil* ± cylindric, branched, hyaline, clamped, sometimes flexuose, 3–7 μm broad.

On deciduous wood. Hants., New Forest, Park Dale, 30 viii 1970, (on *Betula*), *Orton* 3966, and 31 viii 1970, *Orton* 3967 (holo. E); also 5 x 1981, (on *Quercus*), *Orton* 5142.

This taxon is distinguished by habitat on deciduous wood, yellowish gills, stem darkening with age, clavate-capitate or utriform marginal cystidia and relatively long only slightly or irregularly phaseoliform spores. For differences between this, *limulata* and *limulatoides* see key above. No doubt some past records of *limulata* may refer to this taxon. Although I have only met this in a small area of the New Forest, it should occur elsewhere at least in S England, but seems to be rather uncommon.

It is somewhat similar to *Pholiota curcuma* (Berk. & Curtis) A. H. Sm. & Hesler (*North American Species of Pholiota* 63, 1968) and in particular to *P. curcuma* var. *lanatipes* A. H. Sm. & Hesler (*loc. cit.* 65, 1968), both of which have somewhat similar marginal cystidia, but differ in smaller size, slightly shorter narrower spores, duller colours and more heavily encrusted cells in the cap scales. Agreement is not exact enough for me to use either of these names for my taxon, but see observations to *limulatoides* about use of American names for European taxa.

HYGROCYBE

Hygrocybe helobia (Arnolds) Bon in Docums mycol. 24:43, 1976.
Syn.: *Hygrophorus helobius* Arnolds in Persoonia 8:99, 1974.

Cap 12–30 mm, convex then expanded, often slightly umbilicate at first or depressed when old, *scarlet drying apricot or orange* but usually remaining red at centre or at margin for some time, neither viscid nor striate, *entirely slightly reflexed concolorous fibrillose-scaly, fragile. Gills* adnate with tooth then subdecurrent, *whitish, pale rose or pale salmon at first then pale to fairly deep luteous or suffused with scarlet and becoming ± apricot,* fairly crowded, L20–26 l1–3, often thick and blunt and veined on sides, occasionally forked near margin, edge even. *Stem* 30–45 × 2–4 mm, equal or slightly swollen at base, scarlet with apricot or luteous base, apex sometimes paler, dry, finely and often interruptedly luteous silky striate, hollow, base whitish tomentose. *Flesh* concolorous, luteous inside cap and stem especially when dry. *Smell* none.

Spores 7–9 × 4–6 μm, versiform, ellipsoid or ovoid with large apiculus, but sometimes ± cylindric or constricted. *Basidia* 4-spored. *Gill-edge* fertile. *Hyphae of scales on cap* filamentous, (6–)8–16(–20) μm broad, with red or orange vacuolar pigment, cells often long (60–200 + μm) and constricted at the septa.

In *Sphagnum*. Inverness-shire, Tomich, 7 vii 1970, *Orton* 3969.

Recognised by fragility, pale, often rose coloured, young gills and the habitat in *Sphagnum*. It is nearest to *miniata* which occurs in grass and drier habitats and is tougher, but has similar spores and scales on the cap. The above is a description of British material, which does not differ significantly from Arnold's description. His measurements are very similar except that he gives the stem as 18–58 mm long. I have collected what I believe to be this taxon in the Black Wood of Rannoch, Perthshire, but

have no material to record it. It is no doubt widespread in suitable habitats and should be looked for early in the season (June to August).

HYGROPHORUS

For the last ten years or so I have been dissatisfied with the naming of the white or slightly ivory or cream coloured taxa in this genus—here taken in the narrow sense, i.e., subgenus *Limacium* of older authors—and more especially the use or misuse of the epithet *cossus*. In the field I know four taxa, three well-defined, one with beech, one with oak, and one more catholic, all without or with a not unpleasant smell, as well as having in the past once collected one with beech with a disagreeable smell.

There are five epithets available—*chrysaspis, cossus, discoxanthus, eburneus* and *melizeus*. Of these *chrysaspis* is well characterized by its habitat with beech and the characteristic sienna or rusty discoloration with age or NaOH. I know *eburneus* as a practically pure white taxon usually with equal rather slender stem occurring especially, but not only, with beech and with a faint but not disagreeable smell. Of the remaining three *cossus* dates back to Sowerby who described it as evil smelling, the smell, which was interpreted as like that of the goat-moth larva (hence the name), 'remaining on the hands after handling it'. It was originally described from Peckham Wood, Surrey and may well therefore have been with beech. I have a description of one such collection from Surrey under beech, which I described as having a strong disagreeable smell, but could not unfortunately identify the smell with that of the goat-moth larva, since I had not then (and still have not) encountered this insect. However, I believe this to be a good but rare taxon, distinct from *chrysaspis* and *eburneus,* and that this epithet should not be used for taxa without the goat-moth smell. Microscopic characters are of little use for separating these taxa, since the spores tend to be all rather similar.

Of the two remaining classical epithets, *discoxanthus* was originally described as much more strongly coloured—'pileo albido disco flavescente', 'lamellis albido fuscescentis' and with stem 'squamuloso albo'. Unfortunately no habitat was given and so I would not feel justified in using this epithet for any of my finds. Neither would I use *melizeus* which is even more divergent and was originally described as dry, and placed in *Agaricus* tribus *Clitocybe* in *Systema Mycologicum* I by Fries, with gills 'luteis' and occurring in 'silva abiegna muscosa'. This was considerably changed in *Epicrisis Systematis* but this revised version is not available nomenclaturally.

Of other epithets, *leucophaeus* with beech, hornbeam or oak and *hedrychii* with birch are quite distinct in possessing ochraceous or pinkish tints and are outside the scope of this discussion as is *penarius* with a dry stem.

Of my four taxa, three (*chrysaspis, cossus, eburneus*) are thus accounted for, which leaves the taxon with oak unnamed. I have now collected this in Devon, the New Forest and Norfolk always with oak and often on clayey soil, and am convinced it is a good taxon, so I am describing it as a new species since there seems to be no name available for it. The following is a short key for the separation of these four taxa, followed by a diagnosis and description of my new species.

Key to species of *Hygrophorus* with viscid cap and stem and white, ivory or cream colours.

1. With strong disagreeable smell like that of the goat-moth larva; probably with beech; cap discolouring slightly cream coloured with age . . . . . *cossus*
1x. Without or with not unpleasant or aromatic smell . . . 2

2. With beech on basic soil; all parts (gills especially) discolouring sienna or rusty with age or with NaOH . . . . *chrysaspis*
2x. If with beech not showing this discoloration 3

3. With oak often on clayey soil; smell rather strong, resinaceous aromatic or of artichoke; often rather robust and relatively thick-stemmed; stem persistently rather firm and discolouring cream or buff with age; cap and gills also becoming pale cream or ivory . . . . . *quercorum*
3x. With beech or other deciduous trees; smell none or faint to fairly strong aromatic peculiar; usually less robust with ± equal and slender stem; persistently pure white except for cap centre which may become ivory when old . . . . . *eburneus*

Hygrophorus quercorum P. D. Orton, **sp. nov.**

A *H. eburneo* et sociis a habitatione in quercetis, statura robustiore, odore forte peculiare et coloribus magis cremeis facile distinguitur.

Pileus 20–84 mm, primo albus mox cremeus vel pallide cremeo-luteolobrunneus, glutinosus. *Lamellae* ex albis vel albidis mox pallide cremeae, vix confertae, L30–40 l1–3, saepe ad faciem venosae vel intervenosae. *Stipes* 38–100 × 4–25 mm, vulgo leviter ventricosus vel ad basim attenuatus, ex albido mox pallide cremeus, senectute cremeo-luteolobrunneus, sursum viscido-floccosus, admodum firmus. *Caro* mox pallide cremea vel stipitis cremeo luteolobrunnea. *Odor* aliquantum fortis, aromaticus vel resinaceus fere cinarae. *Sporae* 7–9 × 4–5 μm cylindrico-ellipsoideae. *Habitatio*: in quercetis.

Typus: Devon, Membury, Godworthy Moor, 3 ix 1979, *Orton* 5038 (holo. E).

Cap 20–84 mm, convex then expanded-convex or ± plane, sometimes obtusely umbonate or depressed around the centre, white at first but *soon cream* (D, E or F) *or pale creamy-buff* except for ± persistent paler margin, glutinous when fresh. *Gills* adnate with tooth then ± decurrent, *white or whitish but soon pale cream* (B, C or D), subdistant to fairly crowded, L30–40 l1–3, often veined on sides or interveined especially in larger specimens, edge even or slightly uneven. *Stem* 38–100 × 4–25 mm, equal or attenuated at base, sometimes slightly thickened above or at base, *whitish but soon pale cream* (*B, C or D*) *often becoming creamy-buff or buff when old,* apex to upper half strongly white viscid floccose-pruinose when fresh, lower part ± silky-viscid, and sometimes longitudinally grooved-wrinkled, stuffed-solid, *rather firm and hard at first, often remaining so for a long time. Flesh* in cap white then pale cream (B or D) especially in centre, in stem pale cream (B, C or D), sometimes deeper creamy-buff in lower stem. *Smell strong, fragrant peculiar, aromatic-resinaceous or of artichoke.*

Spores 7–9 × 4–5 μm, cylindric-ellipsoid. *Basidia* 4-spored, 40–50 × 6–8 μm, usually with rather long sterigmata 5–8 μm long. *Gill-edge* fertile. *Hyphae on cap* 2–5 μm broad, hyaline with refringent walls (in water).

Under *Quercus*. Somerset, Crawley, Bickham Wood, 3 ix 1970, *Orton* 3971; Devon, Membury, Godworthy Moor, 6 ix 1978, *Orton* 4968 and 3

ix 1979, *Orton* 5038 (holo. E); Norfolk, Brooke, Brooke Wood, 25 x 1981, *Orton* 5144; Hants., New Forest, Marlborough Deeps, 10 x 1981, *Orton*, no material kept; Hants., New Forest, Stubbs Wood, 18 x 1982, *Orton* 5271.

Readily recognised by its habitat with oak, strong smell and tendency to cream colours. It decays very readily so that it is not easy to get good herbarium specimens. This will no doubt have been named *cossus* in the past, but apart from having a different smell this seems also to be more robust and more strongly coloured.

HYPHOLOMA

Hypholoma xanthocephalum P. D. Orton, **sp. nov.**

A sociis a habitatione ad solum argillaceum, stipite tenace, coloribus primo luteolis et sporis distinguitur.

Pileus 9–30 mm, luteolus vel ochraceus vulgo ad marginem ± olivaceo-tinctus, siccitate pallide luteolus, udus striatus, siccitate opacus vel fere sericeonitens. *Lamellae* e luteolis vel pallide citrinis olivaceae vel avellaneae, interdum senectute pallide violaceotinctae, subconfertae, L16–30 l1–3(–7). *Stipes* 30–65 × 1–4 mm, aequalis vulgo flexuosus, ad apicem luteolus et primo minute albido pruinoso-floccosus, deorsum fulvus, cinnamomeus vel ferrugineus, a velo fugace annuloso-zonatus, primo aliquantum tenax. *Odor* saporque nulli. *Sporae* 9–11(–11·5) × 5–6·5 μm, ellipsoideae vel ellipsoideo-amygdaliformes, poro germinativo parvo, (Fig. 15), in cumulo violaceo-umbrinae. *Cystidia aciei lamellarum* late lageniformia vel leviter utriformia, 30–40 × 5–8 μm ad apicem 4–6 μm lata. *Chrysocystidia* aciei et faciei lamellarum lageniformia vel fusiformia vel mucronato clavata, 30–50 × 8–14 μm, ad apicem ubi mucronata 1–6 μm lata. *Habitatio*: ad solum argillaceum in silvis deciduis (*Quercus, Carpinus*).

Typus: Hampshire, New Forest, Hollands Wood, 15 xi 1969, *Orton* 3634 (holo. E).

Cap 9–30 mm, convex then expanded often slightly obtusely umbonate to ± plane, *saffron, yellowish cream or pale ochraceous* (E, F) sometimes with sienna tinge at centre, *often with rather persistently darker lemon-yellow, buff-olivaceous or pale citrine olivaceous marginal zone when moist, entirely straw or pale lemon-cream when quite dry,* striate to centre when wet, matt with silky sheen when dry, especially near margin. *Gills* adnate ± emarginate with or without tooth, *straw, pale lemon-yellow or pale yellowish-green* then pale greenish-yellow buff, pale citrine buff or fulvous olivaceous-buff, *finally buff-olivaceous, pale hazel or* pale vinaceous-grey grey-olivaceous (i.e. *watery violaceous-olive*), not too fairly crowded, L16–30 l1–3(–7), edge concolorous or slightly paler or retaining yellowish-green tinge for some time. *Stem* 30–65 × 1–4 mm, equal often flexuose, *apex pale cream* (*C*), *pale lemon-yellow or straw, lower part fulvous, sienna, sienna-cinnamon or rusty-tawny,* rarely darker at base only, apex scattered whitish pruinose-floccose when fresh, remainder finely silky striate especially in lower part, surface sometimes undulate, stuffed or narrowly hollow, base whitish tomentose or strigose-tomentose, *rather tough and elastic at first. Flesh* cream to pale ochraceous in cap and upper stem, olivaceous-buff horny over gills, concolorous in lower stem. *Smell* and *taste* none. *Spore-print* dark fawn, purplish-date or brown-vinaceous.

Spores 9–11(–11·5) × 5–6·5 μm, *in side-view ellipsoid slightly amygdaliform,* in face-view ellipsoid with small or very small germ-pore, (Fig. 15). *Marginal cystidia* broadly lageniform or slightly utriform, 30–40 × 5–8 μm, apex obtuse 4–6 μm broad. *Chrysocystidia* both facial and

marginal, versiform, from broadly lageniform to fusiform or clavate with shorter or longer appendage, 30–50 × 8–14 μm, appendage when present 1–6 μm broad. *Hyphae on cap* filamentous, branched, clamped, hyaline or pale yellowish encrusted pigmented, 2–6(–8) μm broad.

On bare soil or on soil in grass or moss in clayey *Quercus* or *Carpinus* woods. Hants., New Forest, Hollands Wood, 15 xi 1969, *Orton* 3634 (holo, E); Herts., Watford, Bricket Wood, 22 x 1977, *Orton* 4917.

Distinguished from the other small soil-inhabiting species of this genus by habitat on clayey soil, yellowish colours, rather tough stem and spores. The Hertfordshire collection had spores up to 0·5 μm broader with rather thicker and browner walls (in ammonia) and with germ-pore often barely visible, as well as rather more olivaceous-yellowish colours. Nevertheless I think it is the same taxon because of the similar habitat, tough stem and general appearance. Further field work is necessary to establish the limits of this taxon. It is probably widespread in suitable terrain and should be looked for in oak or hornbeam woods on clayey soil. I have seen it elsewhere in the New Forest but did not collect it.

I at first thought this might be *H. subfusisporum* (Möller) Moser but that was found on peaty soil and has clearly narrower subfusiform spores as well as less yellow gills. My taxon has similar spores to *laeticolor* but that too has gills lacking yellow colours and a paler stem and is also found on acid soils. The colours of my taxon are near those of *elongatum* but that has paler spores and stem and grows on or near *Sphagnum*. I also considered *Agaricus* (*Psilocybe*) *corneipes* Fr. (*Monogr. hymenomyc. Suec.* II: 304, 1863) on account of it being described as having a tough stem, but it is said to have cap 'badio' and stem 'badionigricante' and not to be yellow, so it is not my taxon. Not having found any epithet that fits I have described it as a new species because I suspect that it is one of a number of taxa characteristic of woods on clay soil which were not encountered by Fries and which are still not fully worked out.

LENTINELLUS

Lentinellus ursinus (Fr.) Kühner in Le Botaniste 17:99, 1926.

Syn.: *Agaricus ursinus* Fr., Syst. mycol. I: 185, 1821.

Lentinus ursinus (Fr.) Fr., Epicr. syst. mycol. 395, 1838.

In 1969 I made a fine collection in the New Forest of a *Lentinellus* unknown to me, but delayed publicising the fact until I could either find more or make a firm decision as to its identity. At first I was doubtful whether it was *castoreus* or *ursinus,* but habitat and macroscopic characters agreed better with *ursinus*. As I interpret these epithets the main point is that *castoreus* has paler fruit-bodies with smooth cap and grows on conifers, whereas *ursinus* has darker fruit-bodies with the cap at least in part tomentose or villose and grows on beech. This is also how Moser describes them (*Kleine Kryptogamenflora* Bd IIb/2 (Ed. 4) 462, 1978), but is not entirely in agreement with the descriptions of Kühner & Romagnesi (*Flore Analytique des Champignons Supérieurs* 66, 1953). Miller & Stewart (*Mycologia* 63:351, 1971) treat them as one species under the prior name *ursinus*. The collection described below agrees well with Fries's descriptions of *ursinus* and with his plate (*Ic. Hymenomyc.* 176, Fig. 3,

1884). After much deliberation, therefore, I am recording this as *ursinus*, since the habitat and cap characters are correct. I have no experience of *castoreus*, so prefer to keep them separate since I do not believe in synonymising Friesian names without good reason, but I think this collection can be safely recorded as *ursinus*. Further visits to the log on which it occurred were fruitless and the log has now decayed almost to nothing, so nothing further can be expected there.

Cap 60–84 mm across × 65–80 mm long, hoof-shaped or irregularly lobed shell-shaped, often depressed either in centre or around point of attachment, *umber, bay or date-brown with paler cinnamon margin,* drying ±entirely fulvous-buff, *entirely velvety tomentose except for ±smooth incurved margin,* tomentum pale buff when dry but soaking up water like a sponge and then ±concolorous, surface sometimes slightly radially rugulose towards margin. *Gills* decurrent to point of attachment, whitish, pale cream or creamy-buff, often becoming darker cinnamon-buff or umber at point of attachment, pale milky-coffee or pale fulvous-buff when old, subcrowded, Lc.40–50 l 0–7, edge slightly to very jagged, usually less so towards edge of cap and more so towards point of attachment. *Stem* absent, but caps attached to broad irregularly shaped tough woody base 8–20 mm broad. *Flesh* thin except at point of attachment, pale date-brown or horny under cap cuticle, pale cream or greyish creamy-buff below this, narrowly horny over gills where it is sometimes not easy to decide where flesh ends and gills begin. *Smell* fairly strong, acid-fragrant, peculiar.

Spores 3–4 × 2·5–3 μm, subglobose or broadly ovoid, minutely spiny or smooth, amyloid. *Marginal cystidia* cylindric-flexuose but often slightly swollen near base, lageniform or ±fusiform, often flexuose, 15–28 × 3–5 μm, apex 1–2·5 μm broad. *Hyphae on cap* filamentous flexuose often with swellings at septa, hyaline or with slightly refringent sometimes yellowish-brown walls (in water).

On deciduous wood. Hants., New Forest, Hollands Wood, on *Fagus*, 23 x 1969, *Orton* 3663.

This appears to be a new record for Britain since no British authors as far as I know have described or even mentioned it. See above for comments on its relationship to *castoreus* which likewise has seemingly been ignored by British authors.

LEPIOTA

Lepiota bickhamensis P. D. Orton, **sp. nov.**

A coloribus incarnatis *L. subincarnata* similis sed a statura graciliore, cellulis cuticulae pilei cylindraceis etiam clavatis et sporis leviter latioribus distinguitur.

Pileus 11–22 mm, pallide lateritius, rufulus vel fulvus, ad marginem albidus vel luteolobrunneus, interdum ad discum ferrugineo-fulvus, ad discum aut fere laevis aut minutissime acute squamulosus, ad externam partem adpresse vel leviter recurvato tomentoso squamulosus, ad marginem primo a velo albo appendiculato obtectus. *Lamellae* vulgo remotae, ex albis pallide cremeae, aliquantum confertae, L24–30 l1–3, ad aciem primo minute conspicue albo-flocculoso denticulatae. *Stipes* 27–50 × 1–2·5 mm, ex albo argillaceo-incarnato vel rufulo, a velo albo sericeo-floccosus, interdum praecipue deorsum argillaceo-incarnatis vel rufulis squamulosus. *Caro* stipitis praecipue deorsum mox argillaceo-incarnata vel rufula. *Odor* nullus vel debilis. *Sporae* 6–7 × 4–4·5 μm, ellipsoideae, in liquore Melzerio

rubrobrunneae. *Cystidia aciei lamellarum* clavata, fusiformia vel leviter lageniformia, 20–36 × 6–16 μm. *Cellulae squamularum pilei* cylindricae, 90–250+ × 6–14 μm ad basim vulgo flexuosae vel strangulatae, cellulis brevioribus clavatis vel pyriformibus, 8–18 μm latis intermixtae. *Habitatio*: inter *Mercuriales, Hederas,* vel *Rubos* in silvis.
Typus: Somerset, Crawley, Bickham Wood, 1 ix 1980, *Orton* 5095 (holo. E).

Cap 11–22 mm, convex or conico-convex then expanded, often obtusely umbonate, *pale brick, cinnamon, sienna or sienna-fulvous with buff or whitish margin,* sometimes rusty-tawny at centre, ±*smooth to very minutely pointed scaly at centre, outer part with adpressed or slightly reflexed scales,* these smaller and sparser near margin, which exceeds gills and may become split or slightly radially wrinkled when old and *with conspicuous white appendiculate floccose veil at first. Gills* free often remote, sometimes attached to a collar, *white then whitish to pale cream* (*C*), rather crowded, L24–30 11–3, edge finely but often conspicuously white flocculose denticulate when fresh. *Stem* 27–50 × 1–2·5 mm, equal or more often slightly thickened downwards, often flexuose, white then whitish or pale cream, *soon clay-pinkish, salmon-cinnamon, or cinnamon in places especially in lower part,* apex finely scattered adpressed silky flocculose, white silky veil forming ± conspicuous silky floccose patches sometimes with reflexed sienna-fulvous, clay-pinkish or cinnamon scales as on cap often in irregular incomplete zones or bands, stuffed-pithy becoming hollow. *Flesh* in cap white or whitish, horny over gills and in upper stem cortex, *soon clay-pinkish, cinnamon, brick or vinaceous in lower stem. Smell* none or faintly sweetish.

Spores 6–7 × 4–4·5 μm, ellipsoid or ellipsoid slightly amygdaliform, dextrinoid. *Basidia* 4-spored, c. 20–24 × 6–7 μm. *Marginal cystidia* clavate, slightly fusiform or fusiform-lageniform, 20–36 × 6–16 μ. *Cells of scales on cap* cylindric often constricted or flexuose at base, 90–250+ × 6–14 μm, some shorter often clamped pyriform or clavate ones 8–18 μm broad also present.

Under *Mecurialis, Hedera* or *Rubus* in deciduous woods. Devon, Northleigh, Hawkswood, 25 x 1976, *Orton* 4850; Somerset, Crawley, Bickham Wood, 27 x 1979, *Orton* 5041 and 1 ix 1980, *Orton* 5095 (holo. E).

Recognised by small size, pinkish or cinnamon cap and lower stem, and spores 4–4·5 μm broad. I at first thought it might be small *subincarnata* but that differs in narrower spores as well as being more robust and having narrower marginal cystidia 5–8 μm broad, and is said to be without short clavate cells in the cap cuticle. I also considered *kuehneri,* but this also is more robust and has narrower spores and seemingly broader cells in the cap scales. It also has points in common with *echinella* but that differs clearly in having dark brown scales on the cap. It does not really agree clearly with any European taxa known to me and I prefer therefore to describe it as a new species.

Lepiota coxheadi P. D. Orton, **sp. nov.**

A *L. setulosa* et *L. rhodorhiza* maxime affinis sed a sporis longioribus, carne alba et coloribus squamularum pilei differt.

Pileus 14–25 mm, ad discum umbrinus, ferrugineo-fulvus, cinnamomeus vel fulvus, ad marginem pallidiore coloratus, ad discum minute acute tomentoso-squamulosus, ad externam partem acute recurvato vel adpresse squamulosus, ad marginem a velo albo

appendiculato dense fimbriatus. *Lamellae* ex albidis pallidissime griseae vel pallide cremeae, confertae, L32–40 l1(–3), ad aciem primo albodenticulatae. *Stipes* 25–45 × 2–4 mm, aequalis vel infra incrassatus, albus, a velo albo oblique annuloso-zonatus et maculatus et a squamulis coloris pilei decoratus. *Caro* alba vel albida non vel levissime griseotincta. *Odor* debilis vel fortis, odori *L. cristatae* similis. *Sporae* 6–7·5(–8) × 3–3·7 μm, ellipsoideae, in liquore Melzerio rubrobrunneae. *Cystidia aciei lamellarum* cylindrica, clavata, fusiformia vel leviter lageniformia, 16–32 × 4–9 μm. *Cellulae squamularum pilei* cylindricae ad extremitates attenuatae et ad basim flexuosae, 150–250+ × 6–10 μm, cellulis brevioribus clavatis vel constrictis 9–16 μm latis intermixtae. *Habitatio*: inter *Hederas*, et *Rubos* in silvis.
Typus: Devon, Northleigh, Hawkswood, 29 viii 1977, *Orton* 4923 (holo. E).

Cap 14–25 mm, convex then convex-expanded often broadly obtusely umbonate, *umber, rusty-tawny, brick or sienna-cinnamon in centre, pale cinnamon in outer part,* centre finely umber, milky-coffee or cinnamon, ±pointed tomentose-scaly, outer part with pointed reflexed or adpressed cinnamon, buff-clay-pinkish, fulvous or buff scales, margin with thick appendiculate white veil fringe when fresh. *Gills* free, whitish then very pale grey or pale cream (C), crowded, L32–40 l1(–3), edge finely but distinctly white denticulate when fresh. *Stem* 25–45 × 2–4 mm, equal or slightly thickened towards or at base, *white,* finely white silky flocculose above often basal veil-zone, white veil forming oblique ring-zone and patches, *the lower ones especially with pale cinnamon, cinnamon-clay-pinkish or fulvous scales like those on cap,* hollow. *Flesh* in cap white, whitish or faintly clay-buff, in stem cortex pale clay-buff horny, centre slightly white pithy. *Smell* weak to strong, cristatoid.

Spores 6–7·5(–8) × 3–3·7 μm, ellipsoid or ellipsoid-ovoid, dextrinoid. *Basidia* 4-spored. *Marginal cystidia* cylindric or clavate to fusiform or slightly lageniform, 16–32 × 4–9 μm. *Cells of scales on cap* cylindric, often narrowed at both ends and flexuose at base, with vacuolar pigment and rather thick refringent walls, 150–250+ × 6–10 μm, together with some short clavate or strangulated cells 9–16 μm broad. *Cells of flocci on upper stem* cylindric flexuose, branched, clamped, hyaline, 5–10 μm broad.

Under *Hedera* and *Rubus* beneath deciduous bushes and trees. Devon, Northleigh, Hawkswood, 29 viii 1977, *Orton* 4923 (holo. E), 1 ix 1977, *Orton* 4924 and 5 ix 1979, *Orton* 5040; Somerset, Crawley, Bickham Wood, under *Mercurialis* in mixed deciduous wood, 7 ix 1979 (no material kept) and 27 x 1979, *Orton* 5042.

This keys out to the section containing *kuehneri, setulosa, rhodorhiza* and *heimii* in European literature. Of these *setulosa* (smaller spores and darker colours) and *rhodorhiza* (stem-base pinkish strigose and smaller spores) are clearly different; *heimii* has slightly longer and broader spores and is less strongly veiled without pointed scales or strong smell, and *kuehneri* is rather similarly coloured but has pinkish tints in cap and stem, is said to be more robust (cap 35–70 mm and stem 3–7 mm broad), and has the cells of the scales on the cap broader (10–20 μm broad) and a loose woolly veil on the stem and grows under conifers. It is only after much deliberation that I have decided to describe this as a new species since it does not agree satisfactorily with any of these taxa. It is named in honour of the late J. R. W. Coxhead Esq who lived at Hawkswood for many years and managed it as a Nature Reserve; this reserve is now owned by the Devon Trust for Nature Conservation and its integrity is maintained through a generous bequest by Mr Coxhead.

Lepiota felinoides (Bon) P. D. Orton, **comb. et stat. nov.**

Basionym: *L. cristata* var. *felinoides* Bon, Docums mycol. 11, 43:34, 1981; (Bull. Soc. mycol. Fr. 92:326, 1976, ad. int., not validly published, no latin description).

In 1967 in Surrey I collected a very small *Lepiota* which did not seem to be described anywhere, but as I had only one specimen I wished to find more before describing it. I have now no doubts about assigning it to *L. cristata* var. *felinoides* Bon, said to differ from *cristata* in smaller spores and darker scales on the cap, which difference is surely indicative of specific rank, so that I have made the above new status for it. The difference in spore length is clear: (4·5–)5–6 μm for *felinoides*, 6–7·5 μm for *cristata* though width is much the same in both species. The following is a description of my material which seems to compare very well with Bon's description (*loc. cit*).

Cap 12 mm, conical, *almost black at centre, around this with ± concentric small adpressed umber or date-brown scales on white background,* margin slightly striate-sulcate, centre matt in places, cuticle tough. *Gills* free, white or whitish to slightly creamy, crowded, L c.40 l0–1, edge conspicuously white flocculose denticulate sub lente. *Stem* 25 × 1·5 mm, slightly thickened downwards, white then discoloured slightly brownish in places, silky striate, apex white pruinose; *ring fairly thick, white with dark scales on underside like those on cap,* eventually breaking up. *Smell strong of L. cristata.*

Spores (4·5–)5–6 × 2·5–3·5 μm, *spurred or subtriangular in side-view,* ellipsoid slightly ovoid in face-view, dextrinoid. *Marginal cystidia* clavate or pyriform, 20–30 × 7–12 μm. *Cells of cap cuticle* ± clavate, 6–12 μm broad, encrusted pigmented over filamentous interwoven, narrow, hyaline or brown encrusted pigmented hyphae 1–7 μm broad.

Under *Mercurialis* in beech debris under ash. Surrey, Mickleham, Norbury Park, 24 viii 1967, *Orton* 3000.

Readily distinguished by spores, dark scales and cellular cap cuticle. I have I think gathered this elsewhere but regrettably have no notes or material. No doubt the above description will need some modification when more material is found. It is probable that in colour chart terms the cap centre and probably some of the scales would be cigar-brown. It should be looked for under *Mercurialis* in shady woods on basic soil.

Lepiota (Macrolepiota) rhodosperma P. D. Orton, **sp. nov.**

Species insignis, a *L. procera* et sociis a sporis in cumulo incarnato-tinctis et squamulis stipitis parvioribus differt.

Pileus 74–220 mm, e convexo expansus late umbonatus, fuscobrunneus, ad discum velutino-tomentosus, circa discum aut late aut minute fuscobrunneo adpresse squamulosus, ad marginem versus ± radialiter fibrillosus carne alba vel albida exposita et a velo albo maculatus. *Lamellae* liberae, remotae, a stipite collario cartilagineo separatae, ex albis albidae vel pallide griseae interdum aliquantisper pallide incarnatae vel senectute brunneo maculatae, confertae, L c.120 l0–1(3), ad aciem primo alboflocculoso denticulatae. *Stipes* 140–280 × 7–12·5 mm, ad basim 20–35 mm latus, clavato-bulbosus, toto minute pallide fusco vel fulvo squamulosus, ad basim albo vel incarnato tomentosus; annulus amplus, usque ad 22 mm latus, sursum albo vel albido sericeo-floccosus, deorsum pallide fusco squamulosus, ad centrum collariatus. *Caro* alba interdum sub cuticula pilei et in corticem stipitis brunnescens. *Odor* nullus vel fragrans. *Sporae* in cumulo pallide argillaceo-incarnatae vel

pallide incarnatae, 15–18 × 8–10 μm, ellipsoideae poro germinativo. *Cystidia aciei lamellarum* clavata, fusiformia vel late lageniformia, 24–48 × 10–19 μm. *Habitatio*: in pratis.
Typus: Devon, Membury, Bewley Down, 5 xi 1969, *Orton* 3666 (holo. E).

Cap 74–220 mm, convex becoming expanded obtusely umbonate, *date-brown and velvety tomentose at centre, surrounded by a zone of scattered larger adpressed or slightly reflexed date-brown patches as well as zones of minute date-brown adpressed fibrillose scales, outer part with ±radially arranged umber or snuff-brown fibrils* which get sparser and often V-shaped towards margin showing white or whitish flesh between them, margin exceeding gills and strongly lacerate with adpressed white silky patches of veil at first. *Gills* free, remote, attached to a cartilaginous collar, *white then whitish or pale grey, sometimes pale salmon when mature,* this colour disappearing 15 to 24 hours after picking, or sometimes discolouring sepia, snuff-brown or ±fawn near edge of cap with age, crowded, L c.120 l0–1(3), edge white flocculose denticulate when fresh. *Stem* 140–280 × 7–12·5 mm, 20–35 mm in bulb, clavate-bulbous, *entirely pale snuff-brown or fulvous adpressed minutely silky floccose scaly,* those at base and apex smallest, hollow, base white or pinkish tomentose; *ring large, spreading* (*up to 22 mm broad*), on upper side white or whitish silky floccose, *pale snuff-brown scaly beneath with broad membranous collariate central part. Flesh* white or whitish, sometimes tinged snuff-brown or pale milky-coffee under cap cuticle and in cortex of stem-base. *Smell* none or faint, pleasant, base of stem strongly fragrant cristatoid when cut. *Spore-print pale clay-pink or pale salmon to pale rose.*

Spores 15–18 × 8–10 μm, ellipsoid with germ-pore. *Marginal cystidia* ±clavate or fusiform to broadly lageniform, 24–48 × 10–19 μm.

In grass in fields. Gregarious. Devon, Membury, Bewley Down, 5 xi 1969, *Orton* 3666 (holo. E) and 2 ix 1970, *Orton* 3982.

Readily distinguished by pink spore-print and rather small scales on cap and stem. I only know of one taxon in this subgenus which has been described as having a pink spore-print and that is *Macrolepiota olivascens* Moser from alpine conifer woods, which bruises olivaceous or greenish and has smaller spores and is obviously different. I have therefore described this as a new species, which, so far, I only know from the type area in Devon.

The exact colours of the spore-print of this group of species do not seem to have been carefully enough noted and more observations are required. In *procera* it is cream (D) or greyish-cream and in *konradii* cream or creamy-buff according to my recent observations, but further investigation is needed to prove the constancy of these colours. *L. procera* differs in more coarsely scaly stem and cap and strongly fibrillose lacerate, more clearly funnel-shaped, ring whilst *konradii* has less scaly stem and rather smaller spores. I am indebted to T. J. Wallace for assistance in compiling this description. He tells me he has known the taxon in the type locality for 30 years.

LEPTONIA

Leptonia querquedula (Romagn.) P. D. Orton in Kew Bull. 31:711, 1976.
Syn.: *Rhodophyllus querquedula* Romagn. in Rev. Mycol. 19:8, 1954

(Latin diagnosis) and ibid. 20:227, 1955 (description in French).

Cap 15–35 mm, convex becoming expanded-convex, usually umbilicate, sometimes convex truncate when young, *at first grey bluish-green or greenish leaden-grey, sometimes eye-blue or pale leaden-grey in outer part, fading to snuff-brown, milky-coffee or clay-buff but margin retaining bluish-green tinge for some time,* entirely or at centre only adpressed rather minutely fibrillose scaly, sometimes radially fibrillose virgate in outer part, margin striate when moist. *Gills* adnate or adnate-decurrent to subdecurrent, at first grey bluish then pale clay-buff or clay-pinkish, finally pinkish clay-buff, subcrowded, L22–32 l(–1)3(–7), *edge eye-blue or leaden-grey flocculose denticulate* or interrupted flocculose *sometimes becoming ± cigar-brown. Stem* 30–84 × 1·5–3 mm, equal or slightly thickened at base, *pale olivaceous-buff or tinged bluish-green, sometimes fading to greyish or greyish vinaceous-buff,* upper part minutely greenish leaden-grey scaly like cap when fresh then adpressed fibrillose or ± smooth, stuffed or hollow, base white tomentose. *Flesh* greyish or pale vinaceous in cap, olivaceous-buff or pale grey-olivaceous horny over gills and in stem cortex, pith in stem-centre white or whitish. *Smell* none.

Spores 9–12 × 6–8 μm, ellipsoid-oblong angular. *Basidia* 4-spored, 44–50 × 10–12 μm. *Gill-edge* sometimes fertile in places, but *marginal cystidia* clavate, cylindric or irregularly cylindric, sometimes flexuose or septate, 30–80(–130) × 6–12(–16) μm, with vacuolar pigment. *Hyphae on cap* 4–14 μm broad, filamentous, branched, with vacuolar or granular pigment.

In grass or in woods. Mid-Ebudes, Island of Mull, Penmore Mill, in grass, 9 ix 1968, *Orton* 3335; Somerset, Crawley, Bickham Wood, in mixed deciduous wood, 1 xi 1970, *Orton* 3936 and 28 x 1973 (no material kept).

Immediately recognised amongst taxa with dark gill-edge by the grey-blue-greenish colours when fresh. This taxon was recorded by me in Notes V, *Kew Bull.* 31:711, 1976, when this description, which is of British material, was promised. Measurements given by Romagnesi are very similar.

LIMACELLA

Limacella vinosorubescens Furrer in Schweitz. Zeits. Pilzk. 47:214, 1969.

Cap 32–60 mm, convex becoming broadly umbonate often with wavy-lobed margin, *chestnut or dark-brick often with blood-red tinge in centre,* drying or with age brick with pale brick or rose-brick margin, viscid when fresh, drying minutely stippled or apparently adpressed tomentose especially around centre, at first with appendiculate, rather thick, whitish or cream (D) veil scales which may be pale rose or pale brick in places. *Gills* free or narrowly adnate with tooth, cream (D) or pale vinaceous-buff *soon tinged cinnamon, brick or rose-brick near flesh of cap* or becoming pale cinnamon-buff, sometimes bruising rose-cinnamon or cinnamon-buff, crowded, L c.60–80 l3, edge paler and rather uneven then ± concolorous and even. *Stem* 28–60 × 5–9 mm, often slightly narrowed above veil-zone and thickened at apex, base sometimes lightly attenuated, whitish then pale rose-brick, sometimes cinnamon-buff at base, *at first with thick floccose-scaly ring-zone(s) and patches of dark brick or rose-brick veil,* apex silky striate, lower part often fibrillose-striate, solid but rather pithy,

base white tomentose, firm at first. *Flesh* in cap concolorous or paler, sometimes rose or blood-red tinted, especially under the cuticle, fulvous-or umber-horny over gills, in stem whitish or cream (D), sometimes bruising buff or fulvous-buff, often thinly brick or rose-brick in cortex. *Smell strong, mealy.*

Spores 3–4·5 μm, subglobose, non-dextrinoid, non-amyloid. *Basidia* 4-spored c. 20 × 5–6 μm. *Gill-edge* fertile but with some sterile cylindric or clavate cells rarely with apical point, 20–30 × 8–14 μm. *Hyphae on cap* filamentous, 1–6 μm broad, with membranar or encrusting pigment.

Under *Mercurialis perennis* in beech/oak wood on clay-with-flint soil. Hants., Winchester, Crabwood, 14 ix 1982, legit Alan Silverside, *Orton* 5305.

It is obviously related to *glioderma* by mealy smell and spores but differs in darker colours, especially of the gills, for which reason the species was created. In *glioderma* the cap is pale to deep coral, the gills white to very pale cream then sometimes pale clay-pink to coral when old and the stem whitish to pale pink with rose or pale coral veil patches. When I came to compare my notes on this with *glioderma* I found I had no personal notes on the latter and I am much indebted to T. J. Wallace for loaning me his notes and excellent paintings of *glioderma* so that I could make the comparison. Further field work is necessary to ascertain if this is a good species as I suspect it is, for they look very different and there may well be a habitat difference. *L. roseofloccosa* Hora differs clearly in dextrinoid spores and is coloured more like *glioderma.*

MELANOTUS

A good collection of a very short-stemmed taxon growing on a large old beech log was made in Epping Forest on the Annual Foray of the Essex Field Club in 1982. As soon as I saw it I thought it would be *Phaeomarasmius horizontalis* (Bull. ex St. Amans) Kühner of the New Check List, 1960. Study of the ample collection kindly given to me by the collector confirmed this and enables me to dispose of it more definitively. The 1960 entry was based on very scanty notes by me and was discussed in *Trans. Br. mycol. Soc.* 43:167–168, 1960.

The ±smooth cap, snuff-brown to umber spore-print, spores with germ-pore and rather small narrow lageniform marginal cystidia are all psilocyboid characters and indicate that this taxon really belongs to *Melanotus* Pat., since *Phaeomarasmius* in the restricted and original sense, to which I would restrict it, is for scaly-capped taxa with rusty spore-print, spores without germ-pore and rather larger marginal cystidia.

Melanotus was originally based on tropical material and contains a majority of taxa from warmer climates. It is now used for crepidotoid agarics with psilocyboid microscopical characters as in this case.

When describing *Psilocybe caricicola* P.D. Orton (*Notes RBG Edinb.* 29:119, 1969) I remarked that that taxon might be considered by some to belong to *Melanotus.* I was put off using it mainly by the tropical nature of that genus as I then knew it, and also by the fact that the cap had gelatinised hyphae on it. However, the genus *Psilocybe* contains a few species without as well as many with gelatinised hyphae, so I think it is

reasonable to use *Melanotus* in the same way and I think that we should use it in Britain (some do already). Guzmán has transferred *caricicola* to *Melanotus* (*Mycotaxon* 6:468, 1978) and it has been recorded in Canada as such (Redhead and Malloch, *Fungi Canadenses,* No. 189, 1980). Two other taxa transferred to *Melanotus* by Singer are on the British list: *Crepidotus phillipsii* (Berk. & Br.) Sacc. (widespread) and *Melanotus proteus* (Kalchbr.) Singer first recorded by van Waveren in *Trans. Br. mycol. Soc.* 73:176, 1979 and subsequently collected on three separate occasions (Watling, pers. comm.). In addition to these, two other taxa have been reported by Watling: *M. vorax* Horak (originally described from New Zealand) on a doormat of Asian origin and an as yet unidentified taxon in a greenhouse at the Royal Botanic Garden, Edinburgh. Both of these I prefer to regard as aliens for the moment, as I think they do not qualify for the British list. (*M. vorax* has larger spores, 6·5–8·5 × 4–5·5 μm and a subviscid cap). The following is a key to the four authentic British taxa known to me.

1. Growing on wood 2
1x. Growing on grasses, *Carex* or other herbaceous debris . . 3

2. On deciduous wood; spores 5–7 × 3·5–4·5 μm, (Fig. 8), not or barely lentiform, ellipsoid or ellipsoid-ovoid in both views; cap rusty-tawny or umber when moist, drying saffron; stem pale to rather deep umber, tomentose at base . . . *horizontalis*
2x. On coniferous wood (*Cupressus, Picea*); spores 5–7 × 3·5–4·5 × 4–5·5 μm, lentiform, broadly ellipsoid to ellipsoid-amygdaliform in side view, ellipsoid or ovoid in face-view; cap pale brown or fuscous to subferrugineous; stem dark brown but entirely white villose . . . . . *proteus*

3. Spore print not deeper than fawn, never violaceous; spores 5–7 × 2·7–3·5 μm; cap dry; gills pale cinnamon; on stems and leaves of grasses, *Carex* and other herbaceous plants not necessarily near water . . . . . *phillipsii*
3x. Spore-print brown-vinaceous to violaceous-umber (clearly violaceous in fresh prints); spores slightly broader, 5·5–7·5 × 3–4(–4·5) μm; cap viscid when fresh, at least in part; gills becoming tinged umber or violaceous-umber; on standing stems and leaf-bases of *Carex* (also *Juncus* and *Scirpus* sec Redhead) in wet places, often just above water level . . *caricicola*

The following is a description of the Epping Forest material and the necessary new combination is made to transfer *horizontalis* to *Melanotus*. For a discussion on the synonymy and interpretation by various authors of *horizontalis* see my notes in Trans. Br. mycol. Soc. 43:167–168, 1960.

Melanotus horizontalis (Bull.) P. D. Orton, **comb. nov.**
Basionym: *Agaricus horizontalis* Bull., Herb. France, pl. 324, 1787–88.
Syn.: *Naucoria horizontalis* (Bull.) Quélet [nomen sed non planta]; sensu Winter in Rabenhorst (1884), Rea (1922), sed non auct. mult.
Phaeomarasmius horizontalis (Bull.) Kühner [nomen sed non planta]; sensu Dennis, Orton & Hora (1960), sed non Singer (1951).

Cap 4–18 mm, convex, conico-convex or ungulate, pale greyish-cream at first *soon cinnamon or rusty then rusty-tawny to umber at least at centre, drying cinnamon or cinnamon-rusty with paler saffron-buff margin, entirely saffron when quite dry,* finely tomentose at first but soon *smooth* except sometimes at margin for a while then entirely smooth, sometimes finely innately radially silky towards margin, cuticle rather tough and *drying rigid. Gills* adnate sometimes narrowly so, *pale clay-buff or pale milky-coffee then deeper milky-coffee or fawn, finally umber,* fairly crowded, L 10–18 l(0–)1–3(–7), edge paler then concolorous, even or slightly uneven. *Stem* 1–4 × 0·5–1 mm, excentric, recurved, always present, often thickened at apex, *pale to rather deep umber,* apex sometimes whitish silky tomentose, *base often with a white or whitish tomentose swelling. Flesh rather thick for size of fruit-body,* in cap pale saffron or concolorous sharply marked off from umber stem-flesh, which may also dry pale saffron in centre. *Smell* none. *Spore-print snuff-brown to umber.*

Spores 5–7 × 3·5—4·5 μm, *ellipsoid or ellipsoid-ovoid with small germ-pore,* apiculus also small and sometimes barely visible, (Fig. 8). *Basidia* 4-spored, c. 18–20 × 5–6 μm. *Marginal cystidia narrowly lageniform with ± acute apex,* neck sometimes rather long and flexuose, 24–32 × 4–6 μm, apex 1—2 μm broad, (Fig. 26). *Hyphae on cap* filamentous, 2–8 μm broad, hyaline or encrusted-pigmented, with rather refringent walls.

On large very rotten beech log (growing out of longitudinal cracks and sometimes barely visible at a glance). Essex, Epping Forest, Monks Wood, 10 x 1982, legit Martin Gregory, *Orton* 5316. Also on beech, Surrey, Mickleham, Norbury Park, 3 x 1952, no material kept.

Recognised by habitat, dark ±smooth cap drying pale and rather rigid, short excentric, but relatively substantial, stem and ellipsoid-ovoid spores. I am satisfied that Bulliard's plate is a reasonable representation of this taxon. The smooth cap is the crucial classical character for identity. As in some other taxa in this genus, it seems the cap starts finely tomentose but then becomes smooth.

NAUCORIA

I have for some time been aware that the key I gave to species of *Naucoria* section *Naucoria* with obtuse marginal cystidia in *Trans. Br. mycol. Soc.* 43:312–314, 1960 is sadly incomplete. Over the years since 1960 I have made many collections which simply do not fit, in particular those with spores mostly or all more than 12 μm long. At one time I thought I had collected both *clavuligera* and *langei,* which were included in the key as not then recorded for Britain, but on examining material I find I have not collected *clavuligera* though I think I have collected *langei* but have no description to back this up. I find it necessary to introduce four new taxa, two with 4-spored basidia and two with 2-spored basidia. This still leaves at least one apparently undescribed taxon with spores 10–12 × 6–6·5 μm of which I have insufficient material and which must await further field work. I prefer at present to keep taxa in this group with 2-spored basidia and 4-spored basidia as separate species. I have so far only noted one fruit-body with a mixture of these—a specimen of *salicis* with most basidia 2- or 3-spored and a few 4-spored. Even in a case like this if

one notes the predominant number of sterigmata there is no real problem in identifying it.

Macroscopically the taxa in this group all tend to look rather similar, with caps often reddish at least in part, stem when fresh ± white silky striate and gills often pale and dull coloured, and they seem to decay rather quickly. Microscopical characters such as the nature of the cap cuticle and details of spores and cystidia do on the other hand provide a basis for species separation. I am sure also that habitat is vital for most if not all of these taxa and that whereas for instance *bohemica* and *rubriceps* are found in drier, though still damp, habitats, others require ground which is waterlogged or flooded for at least part of the year and only appear when such ground dries up temporarily. Some seem to be associated with *Salix* spp. (sallow in particular) and it is vital to take careful field notes when gathering them. It seems that *celluloderma* and *alnetorum* (which I still prefer to regard as a distinct species) are the only ones which are strictly alnicole. There are occasions when both alder and sallow are present when it is not possible to be certain with which tree a taxon is associated.

The following is an amended key and descriptions of the four new taxa. In my opinion taxa of this group cannot be identified with certainty in the field; it is vital to investigate spore size-range and shape (from spore-print), number of sterigmata and details of cystidia and cap cuticle (examine the cuticle about half to two-thirds in) before coming to any decision about names.

Revised partial key to *Naucoria* section *Naucoria* with obtuse marginal cystidia to replace couplets 21–26 in the 1960 key (loc. cit.).

21. Marginal cystidia cylindric-flexuose with large head, 50–65 × 4–5 μm, apex 8–12(–14) μm; cap cuticle with dermatocystidia like those on the gill edge; spores 10–14 × 6–7 μm, amygdaliform, rough; basidia 4-spored; cap 7–10 mm, ochraceous-rusty in centre, pallid or whitish at margin, slightly silky-viscid when fresh; smell faintly radishy; on peaty soil . . (*N. clavuligera* (Romagn.) Kühner & Romagn.)

21x. If cystidia capitate with large head then cap cuticle cellular, spores different or cap colours darker 22

22. Basidia 4-spored 23

22x. Basidia 2-spored 26

23. Spores 8·5–11 × 4·5–6 μm; (marginal cystidia ± clavate or subcapitate, up to 15 μm broad at apex) . . . (*submelinoides*)

23x. Spores 11–16(–18) × 6–8 μm 24

24. Spores rather broadly papillate-limoniform, rough, (11–)12–14 × (6–)6·5–8 μm, (similar to Fig. 20); (marginal cystidia capitate-cylindric to clavate more rarely slightly utriform, 30–60 × 4–9 μm, apex 5–14 μm; cap cuticle cellular; on mud under *Carex* sec Kühner) . . . . . *langei*

24x. Spores more narrowly limoniform, often less clearly papillate, punctate-rough, 11–16(–18) × 6–7(–8) μm, (Figs. 17, 18) . . 25

25. Cap cuticle heterocellular with narrow hyaline hyphae 1–4 μm broad over globose, vesiculose or ellipsoid cells 18–40 μm broad, end-cells clavate to capitate-cylindric 6–15 μm broad at apex, similar to those on gill-edge; marginal cystidia clavate or cylindric-capitate to ± utriform, 30–44 × 4–9 μm, apex 6–12 μm broad, (Fig. 28); on mud which is frequently flooded (sallow and alder both present) . . . . . *clavuligeroides*

25x. Cap cuticle cellular of spheropedunculate, ellipsoid or more rarely fusiform cells, 16–50 × 8–38 (–50) μm, with occasional elongate or dumb-bell shaped end-cells; marginal cystidia clavate pedunculate, pyriform or slightly utriform, 20–60 × 8–18 μm at apex, (Fig. 32); with sallow . . . . . *saliceti*

26. Spores broadly limoniform, rough, (10–)11–14 × 6·5–8 μm, (Fig. 20); cap cuticle heterocellular; (marginal cystidia *narrow*, 30–70 × 4–8 μm, (Fig. 30); on soil under various deciduous trees) . . . . . *bohemica*

26x. Spores more narrowly elongate limoniform, sometimes merely punctate, (Figs 16, 19, 21); cap cuticle cellular or heterocellular. 27

27. Cap cuticle cellular 28

27x. Cap cuticle heterocellular; (fresh colours ± reddish-cinnamon, brick or bay, sometimes umber or cigar-brown at centre only) . 29

28. Colours predominantly reddish (brick, cinnamon); with alders; spores 12–17·5 × 6·5–7(–8) μm . . . . . *celluloderma*
(Note: *alnetorum* may be the same, but is said to have mealy smell and taste and to have spores 7–8 μm broad)

28x. Colours darker—umber, bay, date-brown to ± cigar-brown; with sallow; spores (12–)13–20 × (5·5–)6–8·5 μm, (Fig. 19) . . *salicis*

29. Marginal cystidia narrower, 4–10 μm broad at apex, 35–70 μm long, cylindric or narrowly lageniform, often ± capitate, (Fig. 31); on soil, in humus or amongst moss under deciduous trees; spores 12–17·5 × 6–7·5 μm, (Fig. 21) . . . . . *rubriceps*

29x. Marginal cystidia broader, 7–24 μm at apex, 24–60 μm long, clavate, pyriform or clavate-pedunculate, (Fig. 29); in wet places with sallow; spores 12–17·5(–18·5) × 6·5–7·5(–8) μm, (Fig. 16) . . . . . *badiolateritia*

Naucoria badiolateritia P. D. Orton, **sp. nov.**

A sociis salicetorum a basidiis 2-sporigeris, cuticula pilei heterocellulare, cystidiis aciei lamellarum ad apicem 7–24 μm latis et coloribus pilei vulgo rubrotinctis distinguitur.

Pileus 9–35 mm, ferrugineo-umbrinus vel fere lateritius, interdum ad centrum umbrinus vel fuscobrunneus, siccitate rufulus, jove pluvio striato, primo ad marginem a velo albosericeo-fibrilloso obtectus. *Lamellae* pallide dein obscuriore luteolobrunneae vel fulvae, subconfertae, L18–28 l(1–)3(–7), ad aciem conspicue albo-flocculoso denticulatae, interdum lacrymantes. *Stipes* 22–50 × 1–3 mm, fere aequalis, ex albo pallide dein obscuriore luteolobrunneus interdum ad basim rufulotinctus, primo albosericeo striatus, velo fugace. *Odor* nullus. *Sporae* 12–17·5(–18·5) × 6·5–7·5(–8) μm, elongato papillato-limoniformes, punctatae vel asperae, (Fig. 16). *Basidia* 2-sporigera, 32–40 × 8–10 μm. *Cystidia aciei lamellarum* clavata vel capitato-cylindrica rariore leviter utriformia, 24–60 × 4–7 μm ad apicem 7–24 μm lata, (Fig. 29). *Cellulae cuticulae pilei* (1) cylindricae vulgo incrustato-pigmentatae, 2–8 μm latae: (2)

vesiculosae, ellipsoideae, clavatae vel constrictae, 8–36 μm latae. *Cellulae pruinae ad apicem stipitis* clavato-cylindricae, 30–50 × 6–9 μm. *Habitatio*: in salicetis ad terram palustrem.
Typus: Norfolk, Surlingham, Marsh Cottage Carr, 8 ix 1972, *Orton* 4425 (holo. E).

Cap 9–35 mm, convex or conico-convex then expanded-conical to ± plane, *rusty-tawny or dark brick,* sometimes with umber, bay or cigar-brown centre or *outer part brick or cinnamon,* drying cinnamon or cinnamon-buff sometimes with darker central spot, striate when moist, drying matt and silky-atomate or sometimes slightly rugulose, when fresh with adpressed white or whitish silky fibrils or patches inside margin from veil. *Gills* adnate with or without tooth, sometimes separating, pale then deeper buff or buff clay-buff then fulvous-buff to fulvous, subcrowded, L 18–28 l(1–)3(–7), *edge very conspicuously flocculose denticulate when fresh and often holding drops of water when wet. Stem* 22–50 × 1–3 mm, equal or slightly thickened at base, white or whitish, soon pale vinaceous-buff or pale buff then deeper buff or fulvous and sometimes milky-coffee or cinnamon from base up, finely white silky fibrillose striate, apex finely white pruinose when fresh, white veil traces fugacious, base white or whitish tomentose, hollow.

Spores 12–17·5(–18·5) × 6·5–7·5(–8) μm, elongate papillate-limoniform, punctate to rough, (Fig. 16). *Basidia 2-spored,* 32–40 × 8–10 μm. *Marginal cystidia* clavate, cylindric-clavate or pyriform to *capitate-cylindric* (sometimes irregularly so), more rarely slightly utriform, 24–60 × 4–7 μm, *apex 7–24 μm broad,* (Fig. 29). *Cap cuticle heterocellular* with (1) narrow filamentous often red-brown encrusted-hyphae 2–8 μm broad, and (2) vesiculose, ellipsoid, clavate or dumb-bell shaped cells 8–36 μm broad. Encrusted pigmented narrow hyphae also present beneath these broader cells. *Cells of pruina at stem-apex* clavate-cylindric, 30–50 × 6–9 μm.

On muddy humus with sallow, Norfolk, Surlingham, Thack Marsh, 24 vii 1957, *Orton* 1297; ibid., Parish Marsh, 6 ix 1972, *Orton* 4423; ibid., Marsh Cottage Carr, 7 ix 1972, *Orton* 4424 and 8 ix 1972, *Orton* 4425 (holo. E); Dorset, Studland, 11 viii 1971, *Orton* 4183.

Readily distinguished amongst other salicicole taxa of this group by elongate limoniform spores, 2-spored basidia, heterocellular cap cuticle and relatively broad marginal cystidia. *N. salicis* differs in even longer spores (12–)13–20 × 6–8·5 μm (Fig. 19), cellular cuticle and generally has darker umber, bay, date-brown or cigar-brown cap, whilst *saliceti* is 4-spored and has a cellular cuticle. This taxon and *saliceti* appeared in large numbers in early September 1972 after a long hot dry spell in places which are sometimes flooded all the year round and are always flooded for part of the year. They may be characteristic of such habitats.

Naucoria clavuligeroides P. D. Orton, **sp. nov.**

A coloribus pilei rubris vel lateritiis, habitatione palustre, cystidiis aciei lamellarum et pilei capitato-cylindricis et cuticula pilei heterocellulare insignis.

Pileus 12–36 mm, castaneus, ferrugineo-vel rubro-lateritius interdum ad centrum umbrinus vel ad marginem rufulus, siccitate rufulus vel ad marginem luteolobrunneus vel fulvus, jove pluvio striatus et primo leviter lubricus. *Lamellae* e pallide fulvis vel coffeatis cinnamomeae vel colore pilei tinctae, aliquantum confertae, L20–26 l3(–7). *Stipes* 15–58 × 2–4 mm, aequalis vel ad basim leviter incrassatus interdum flexuosus, ex albo mox pallide dein obscuriore luteolobrunneus, primo albosericeo striatus, ad apicem pruinosus, velo albo cortinato fugace. *Odor* nullus. *Sapor* leviter raphanoideo acerbus. *Sporae* 11·5–16 × 6–7

(–7·8) μm, elongato papillato limoniformes, punctatae vel punctato-asperae, (Fig. 17). *Basidia* 4-sporigera. *Cystidia aciei lamellarum* cylindrico-clavata vel capitato-cylindrica, interdum etiam ad basim incrassata, 30–60 × 4–9 μm, ad apicem 6–12 μm lata, (Fig. 28b). *Cellulae cuticula pilei* (1) cylindricae hyalinae 1–4 μm latae: (2) globosae, vesiculosae vel ellipsoideae, 8–30 μm latae, cellulis terminalibus clavatis, constrictis vel capitato-cylindricis, usque ad 40 × 4–7 μm, ad apicem ubi capitatis, 6–14 μm latis, (Fig. 28a). *Habitatio*: ad terram palustrem.

Typus: Norfolk, Surlingham, Parish Marsh, 9 x 1971, *Orton* 4186 (holo. E).

Cap 12–36 mm, convex or conico-convex then expanded-convex, often obtusely umbonate, sometimes wavy-lobed at margin, *chestnut, rusty-tawny, dark brick or brick,* sometimes umber at centre or cinnamon at margin, drying cinnamon or buff-cinnamon and sometimes fulvous or buff at margin, striate when wet, slightly viscid or greasy-shiny when young and wet, sometimes radially rugulose around centre when expanded, no veil traces seen. *Gills* adnate with tooth, pale milky-coffee or pale fulvous then deeper fulvous or cinnamon or tinged colour of cap, rather crowded, L20–26 l3(–7), edge paler and ± even. *Stem* 15–58 × 2–4 mm, equal or slightly thickened at base, sometimes flexuose, white at first but soon pale then deeper buff or fulvous from base up, white silky striate when fresh, this persisting at also white pruinose apex, veil white, cortinate, fugacious, narrowly hollow, base white tomentose. *Flesh* in cap concolorous drying pale buff or cream in centre, in stem whitish then buff or fulvous. *Smell* none. *Taste* slightly radishy-bitter.

Spores 11·5–16 × 6–7(–7·8) μm, *elongate papillate-limoniform,* punctate or punctate-rough (Fig. 17). *Basidia 4-spored. Marginal cystidia cylindric-clavate or capitate-cylindric, sometimes also swollen near base,* 30–60 × 4–9 μm, apex 6–12 μm broad, (Fig. 28b). *Cap cuticle* heterocellular with (1) narrow filamentous hyphae 1–4 μm broad, and (2) globose, vesiculose or ellipsoid cells, 8–30 μm broad, end-cells cylindric-clavate, dumb-bell shaped or *capitate-cylindric resembling those on gill-edge,* up to 40 × 4–7 μm, apex 6–14 μm when capitate, (–dermatocystidia, Fig. 28a).

On muddy soil and humus. Norfolk, Surlingham, Parish Marsh, 10 viii 1970, *Orton* 3986, 9 x 1971, *Orton* 4186 (holo. E) and 6 ix 1972, *Orton* 4426.

Distinguished by 4-spored basidia, elongate spores and capitate marginal cystidia and the presence of similarly shaped cells on the cap.

I at first thought that this was *N. clavuligera* Romagnesi but it differs clearly from that taxon by larger spores and larger fruit-bodies. It was found under hazel with alder and sallow both near, at the edge of a muddy depression which is regularly flooded. It remains to be seen just what the exact habitat is. I am unable to find a description that fits, so although I have only found it in this one place I am describing it as a new species. At least it turned up three years running. I suspect that I have seen this elsewhere in Norfolk, but have no notes or material to back this claim. I have no doubt it will turn up again in S England in the correct kind of habitat.

Naucoria rubriceps P. D. Orton, **sp. nov.**

A *N. bohemica* proxime accedit, sed a sporis distincte longioribus et lamellis luteolobrunneis differt.

Pileus 12–37 mm, ferrugineo-fulvus, umbrinus vel badius ad marginem lateritius vel

rufulus, siccitate luteolobrunneus vel pallide rufulus vulgo ad discum obscuriore coloratus, jove pluvio striatus, ad marginem primo a velo albo fugace decoratus. *Lamellae* e pallide luteolobrunneis obscuriore vel rufulo luteolobrunneae vix confertae, L18–24 l1–3, interdum intervenosae, ad aciem primo albofloccuIoso denticulatae. *Stipes* 28–52 × 1–3 mm, ex albo pallide dein obscuriore luteolobrunneus vel fulvus, albosericeo striatus, ad apicem primo albofloccuIoso pruinosus, a velo albo vel albido fugace fibrilloso floccosus. *Caro* stipitis ad apicem pallide cremea vel luteolobrunnea in corticem obscuriore luteolobrunnea vel fulva. *Odor* nullus. *Sporae* 12–17·5 × 6–7·5 μm, elongato papillato limoniformes, punctatae vel asperae, (Fig. 21). *Basidia* 2-sporigera. *Cystidia aciei lamellarum* anguste lageniformia capitato-cylindrica vel clavata vulgo ad basim incrassata, 35–70 × 4–7 μm ad apicem 4–10) μm lata, (Fig. 31). *Cellulae cuticulae pilei* (1) cylindricae 1–6 μm latae interdum incrustato-pigmentatae: (2) vesiculosae, ellipsoideae, clavatae vel constrictae, 8–38 μm latae. *Habitatio*: ad terram humosam vel inter muscos in silvis deciduis.
Typus: Norfolk, Surlingham, Tucks East, 16 x 1972, *Orton* 4428 (holo. E).

Cap 12–37 mm, convex or conico-convex becoming expanded-convex or ± plane, often with large obtuse umbo, margin sometimes becoming wavy-lobed, *rusty-tawny, dark brick, umber or bay with brick or cinnamon margin,* drying buff, buff-cinnamon or pale cinnamon often with darker brick central spot, strongly striate when wet, sometimes radially rugulose around centre, margin at first with fugacious white veil traces. *Gills* narrowly to broadly adnate sometimes with tooth, often separating, *at first buff or creamy-buff then deeper buff to cinnamon-buff,* not crowded, L 18–24 l1–3, sometimes veined on sides or interveined, edge white flocculose denticulate when fresh then ± concolorous. *Stem* 28–52 × 1–3 mm, ± equal, often flexuose, white at first but soon pale creamy-buff or pale buff then deeper buff or fulvous, *white silky striate,* apex white flocculose-pruinose when fresh often remaining whitish, white or whitish veil forming ± fugacious fibrils or flocci, hollow with a few whitish fibrils inside, fibrous-fragile, base white tomentose. *Flesh* in cap concolorous drying pale creamy-buff to white, slightly horny over gills and in stem apex, in stem-cortex cream (D) or creamy-buff to deep buff or fulvous. *Smell* none.

Spores 12–17·5 × 6–7·5 μm, *elongate papillate-limoniform,* punctate to rough, (Fig. 21). *Basidia 2-spored. Marginal cystidia narrowly cylindric-capitate to clavate usually thickened near base,* 35–70 × 4–7 μm, *apex 4–10 μm broad,* (Fig. 31). *Cap cuticle heterocellular,* with (1) filamentous sometimes encrusted-pigmented hyphae, 1–6 μm broad, and (2) vesiculose, ellipsoid, clavate or dumb-bell shaped cells 8–38 μm broad.

In humus or amongst moss under deciduous trees. Norfolk, Surlingham, Tucks East, 16 x 1972, *Orton* 4428 (holo. E); Suffolk, Theberton, Whin Covert, 18 x 1981, *Orton* 5166.

This taxon is best recognized by the relatively narrow limoniform spores from 2-spored basidia, narrow marginal cystidia less than 11 μm broad, white silky stem when fresh and habitat seemingly not necessarily with alder or sallow. It is somewhat similar to *N. bohemica,* but that has shorter relatively broader spores (Fig. 20), ± fawn gills and cap frequently darker coloured (date-brown, umber or bay). These two taxa are immediately recognisable by having marginal cystidia not exceeding 10 μm at apex.

Naucoria saliceti P. D. Orton, **sp. nov.**

A sociis salicetorum a basidiis 4-sporigeris, sporis elongatis vix papillatis pileo rufiore coloratus et a *N. langei* a sporis et probabiliter habitatione differt.

Pileus 12–43 mm, umbrinus, badius vel castaneus ad partem externam ferrugineo-fulvus vel rufobrunneus, siccitate rufulus, argillaceo-incarnato coffeatus vel rufulo-fulvidulus, vulgo ad discum persistente obscuriore coloratus, jove pluvio striatus, siccitate opacus et ± sericeo-atomatus. *Lamellae* ex argillaceo-luteolobrunneis fulvo-coffeatae vel fulvae interdum rufulotinctae, subconfertae, L22–28 l(1–)3–7, rariore intervenosae, ad aciem primo albodenticulatae. *Stipes* 28–65 × 1·5–4 mm, ex albo argillaceo-luteolobrunneus, fulvus vel pallide fuscus, primo argenteo-albo sericeo-fibrilloso striatus. *Caro* aliquantum tenuis, concolorata, siccitate albida vel luteolobrunnea. *Odor* nullus. *Sapor* nullus dein interdum tarde levissime acris. *Sporae* (11–)12–16(–18) × 6–7(–7·5) μm, elongato limoniformes vix papillatae, punctatae vel asperae, (Fig. 18). *Basidia* 4-sporigera. *Cystidia aciei lamellarum* clavata, pyriformia, capitato-cylindrica vel leviter utriformia, 20–60 × 4–6 μm ad apicem 8–16(–18) μm latae, (Fig. 32). *Cellulae cuticulae pilei* spheropedunculatae, vesiculosae, ellipsoideae vel leviter fusiformes, cellulis terminalibus cylindrico-ellipsoidis vel constrictis, 16–50 × 8–38 (–50) μm. *Habitatio*: in salicetis.
Typus: Dorset, Studland, 11 viii 1971, *Orton* 4187 (holo. E).

Cap 12–43 mm, convex soon expanded sometimes slightly obtusely umbonate or slightly depressed around centre or with wavy-lobed margin, *umber, bay or chestnut with dark brick, rusty-tawny or cinnamon outer part,* drying cinnamon, clay-pinkish milky-coffee or cinnamon-fulvous often with persistent darker central spot, striate at margin when moist, matt and ± silky-atomate when dry, margin sometimes slightly crenate-sulcate. *Gills* adnate often with tooth, clay-buff or milky-coffee then fulvous milky-coffee or fulvous, sometimes tinged cinnamon, rather crowded, L22–28 l(1–)3–7, occasionally veined on sides or interveined, edge white or whitish flocculose-denticulate at first. *Stem* 28–65 × 1·5–4 mm, equal or slightly thickened at base, occasionally compressed, often flexuose, white then vinaceous-buff, clay-buff, fulvous, hazel or pale sepia, silvery-white silky-fibrillose striate when fresh, this persisting at apex, base slightly whitish tomentose, hollow. *Flesh* in cap thin, concolorous drying whitish or buff in centre, in stem-cortex especially at apex ± grey-horny or milky-coffee, in stem-centre buff or whitish. *Smell* none. *Taste* none or with slight bitterish astringent after-taste.

Spores (11–)12–16(–18) × 6–7(–7·5) μm, *elongate limoniform but not or only slightly papillate,* punctate to rough, (Fig. 18). *Basidia 4-spored,* 30–36 × 9–11 μm. *Marginal cystidia clavate or pyriform-clavate to capitate-cylindric or slightly utriform,* rarely cylindric-clavate, 20–60 × 4–6 μm, *apex 8–16(–18) μm,* (Fig. 32). *Cap cuticle cellular,* cells spheropedunculate, vesiculose, ellipsoid or slightly fusiform with occasional cylindric-ellipsoid or dumb-bell shaped end-cells, 16–50 × 8–38(–50) μm. *Cells of pruina at stem-apex* cylindric-clavate to elongate capitate-cylindric often with flexuose stalk, 22–25 × 6–10 μm, often in bunches.

Under sallow. Dorset, Studland, 11 viii 1971, *Orton* 4187 (holo. E); Norfolk, Irstead, Heron's Carr, 9 ix 1972, *Orton* 4427.

Distinguished by habitat, 4-spored basidia, elongate spores, cellular cap cuticle and relatively broad marginal cystidia. It differs from *salicis* in 4-spored basidia, shorter spores and redder cap. It could perhaps be regarded as a 4-spored *salicis,* but I prefer to keep taxa with 2- and 4-spored basidia separate for the moment. I have once in the past found them together I think, but I did not then realise that I was collecting what were probably two separate taxa and did not make notes on their distribution in this particular locality. Further field work is needed to establish their relationship.

I at first thought that the collection from Studland was *langei,* but on drawing the spores I found they were longer and narrower than those given by Kühner for *langei,* which is not given as *Salix*-associated.

Naucoria tantilla Favre, Les Champignons supérieures de la Zone Alpine du Parc Nationale Suisse 120, 1955.

Cap 8–20 mm, convex or conico-convex becoming expanded-convex, often papillate, sometimes depressed around papilla when expanded, *umber or date-brown sometimes paler fulvous-umber at margin, drying ± saffron from centre out,* striate when moist, matt when dry, often very finely radially silky-grooved sub lente, margin sometimes slightly exceeding gills and whitish silky-pruinose when fresh. *Gills* adnate sometimes with slight tooth, often deeply emarginate and very ventricose, *whitish then pale milky-coffee or fulvous,* not crowded, L16–22 l(0–)1(–3), edge pale then concolorous, even or slightly uneven. *Stem* 20–40 × 1·5–2 mm, equal or slightly thickened at base, *whitish then soon pale buff or fulvous at apex and umber or date-brown in lower part,* apex white pruinose when fresh, white or whitish striate below this, lower part pale buff silky striate sub lente, hollow, rather stiff and brittle. *Flesh* concolorous drying buff or creamy-buff in cap and stem-centre, horny over gills when fresh. *Smell* and *taste* none.

Spores 10–13 × 5–6 μm, ellipsoid or ellipsoid-amygdaliform, *smooth to very finely punctate. Basidia* 4-spored, 28–32 × 8–10 μm. *Marginal cystidia acutely lageniform* often with long stalk, sometimes curved or flexuose at base, 32–52 × (5–)6–10 μm apex 1–2(–3) μm broad. *Cap cuticle heterocellular* with (1) filamentous hyphae, 3–10 μm broad, strongly brown zébrée encrusted pigmented cylindric or slightly fusiform cells, and (2) ellipsoid, fusiform or irregularly shaped, up to 30 μm broad, hyaline or encrusted pigmented cells.

Under *Salix repens.* Devon, Braunton Burrows, 8 ix 1969, *Orton* 3694.

Distinguished from its allies by its salicicole habitat and ± smooth spores.

This species was recorded in Notes V, *Kew Bull.* 31:713, 1976, when this description was promised. It was there stated to be growing under *Salix herbacea,* but this was an unfortunate mistake for *repens,* for which I apologise.

NOLANEA

Nolanea rhombispora (Kühner & Boursier) P. D. Orton, **comb. nov.**

Basionym: *Leptonia rhombispora* Kühner & Boursier in Bull. Soc. mycol. Fr. 45:276, 1929.

Syn.: *Entoloma rhombisporum* (Kühner & Boursier) Horak in Sydowia 28:228, 1976.

Cap 8–28(–52) mm, convex becoming convex-expanded, sometimes ± umbonate or slightly depressed around centre, *fulvous* or sometimes ± snuff-brown at centre *when wet, drying vinaceous-buff or buff-clay-pinkish* with sometimes saffron centre, *cream* (*D*) *or creamy-buff when really dry,* margin sometimes more clearly clay-pinkish, striate at margin

when moist, drying radially streaky *then silky-shiny,* large specimens sometimes somewhat rimose at margin. *Gills* adnate with tooth to adnate-decurrent, sometimes emarginate, whitish then pale vinaceous-buff finally pale clay-pinkish, *rather distant,* L12–20(–24) l1–3, edge concolorous, ±conspicuously flocculose-denticulate when fresh. *Stem* 16–56(–70) × 1–3(–8) mm, ±equal, pale cream (C, D) to creamy-buff or vinaceous-buff, apex minutely white pruinose when fresh, smooth or silky-fibrillose striate, base white tomentose, stuffed then ± hollow. *Flesh* in cap very thin, concolorous drying paler, in stem whitish to ivory (B) or pale cream (C). *Smell* ±mealy, rather faint.

Spores 8–12 × 7–10 μm, 4- or 5-angled often ±*cuboid or oblong-rhomboid* in certain views, (Fig. 9). *Basidia* 4-spored, 40–50 × 11–13 μm. *Marginal cystidia* ±*lageniform or fusiform with appendage,* 30–70 × 8–17 μm, appendage 1–4(–6) μm broad, (Fig. 27). *Hyphae on cap* filamentous, narrow, 1–6(–8) μm broad with often strongly refringent walls.

In grass. Mid-Ebudes, Ulva, 11 ix 1968, *Orton* 3337; Devon, Membury, The Cleeves, 26 x 1979, *Orton* 5053 (unusually large specimen) and 30 x 1980, *Orton* 5101.

Readily recognised by rather pale colours, often ±cuboid spores and lageniform marginal cystidia. The 1979 collection was an unusually large specimen—size in brackets in description—normal size is smaller than this, I think. The above description is of British material and compares quite well with that of Noordeloos in *Persoonia* 10:450, 1980. He includes it in *Entoloma* subgenus *Nolanea,* which on account of the non-scaly cap I think is correct, but as I prefer to keep *Nolanea* as a genus at present the above new combination is made. I do not think this microscopically rather characteristic taxon has been recorded for Britain before.

OMPHALINA

I have for a long time been unhappy about the naming of an omphalinoid taxon growing on *Sphagnum,* which resembles *ericetorum* superficially, as 'a pale form of', or, even worse, '2-spored form of' *ericetorum.* Recent work on *ericetorum* has shown that it is a taxon associated with lichens (*Coriscium* and *Botrydina*). In the field in recent years I have always found lichen present at or around the base of the stems of *ericetorum* and that the stem is differently coloured from that of the sphagnicolous taxon. The latter was described by Möller (see below) as *Omphalia pseudoandrosacea* (Bull.) Gillet but *Agaricus pseudoandrosaceus* Bull. was originally described as a terrestrial taxon and I do not think this epithet should be used for a sphagnicolous taxon. This epithet has also been used for a lichenicolous taxon as well as for *O. velutina* Quélet. The latter interpretation is possibly the one most likely to be correct, but use of this epithet will always be doubtful because of the inadequacy of the original description and I prefer to reject it as a nomen dubium.

Microscopical characters are little use for separating *ericetorum* from the sphagnicolous taxon for both can be 2- or 4-spored and spore size is rather variable although roughly the same for both. Since it is quite easy to distinguish them in the field by habitat and stem colour I do not think that 'a form of' *ericetorum* is at all adequate and as I know of no other

epithet available I prefer to describe it as a new species, of which a diagnosis and description is given below.

Omphalina fulvopallens P. D. Orton, **sp. nov.**

Misident.: *Omphalia pseudoandrosacea* sensu Möller, Fungi of the Faeroes 259, 1945, non (Bull.) Gillet, et non *Agaricus pseudo-androsaceus* Bull. (1786).

A habitatione inter *Sphagna,* stipite pubescente et coloribus pilei et stipitis facile distinguitur.

Pileus 8–30 mm, primo cinnamomeus vel fere lateritius mox fulvus, siccitate cremeus dein albidus vel albus, jove pluvio forte striatus, ad marginem vulgo crenatus. *Lamellae* arcuato-decurrentes, pallide dein obscuriore cremeae, siccitate ochraceoluteae, distantes, L10–16 l1–3, rariore furcatae, ad aciem acutae non obscuriore lineatae. *Stipes* 12–22 × 1–2 mm, luteolobrunneus ad apicem primo cinnamomeus vel fulvus dein argillaceo-brunneus, siccitate cremeus vel albidus, totus minute pubescens. *Sporae* 7–9 × 4·5–6 μm, ellipsoideae vel ovoideae. *Basidia* 2- vel 4-sporigera, rariore 1–4-sporigera. *Hyphae cuticulae pilei* 3–7 μm latae. *Habitatio*: inter *Sphagna*.

Typus: Perthshire, Rannoch, lower northern slopes of Meall Garbh, 7 viii 1980, *Orton* 5105 (holo. E).

Cap 8–30 mm, convex-umbilicate then ± plane and umbilicate to slightly depressed with upturned margin, *cinnamon or ± brick when young but soon sienna-fulvous or fulvous* then fading to fulvous-buff or cream (C to E), *when dry white or whitish,* when moist dark fulvous striate, drying silky atomate, margin ± crenate. *Gills* arcuate-decurrent, sometimes ± triangular, pale cream (C, D) then deeper cream (E), *saffron when dry,* distant, L 10–16 l1–3. occasionally forked, lamellules sometimes crisped in larger specimens, edge rather sharp without dark line in middle. *Stem* 12–22 × 1–2 mm, equal or slightly thickened at apex, buff or pale buff *with sienna, fulvous-cinnamon or cinnamon apex when young*, later clay-buff with buff clay-buff apex, creamy-buff to whitish when dry, *entirely minutely pubescent when fresh,* stuffed, base sometimes white tomentose or strigose. *Flesh* concolorous but thin in cap, buff or clay-buff in stem. *Smell* none or pungent-fungussy when cut.

Spores 7–9 × 4·5–6 μm, ellipsoid or ovoid to broadly ellipsoid. *Basidia* usually 2-spored but sometimes 2(4)-spored or (1)2(3)(4)-spored on same gill. *Hyphae on cap* filamentous, 3–7 μm, hyaline, walls slightly refringent in water. *Hairs on stem* cylindric-clavate or irregularly swollen, often flexuose, occasionally septate, 20–50 × 5–8 μm.

On *Sphagnum*. Perthshire, Rannoch, on lower northern slopes of Meall Garbh, 28 vi 1980, *Orton* 5104 and 7 vii 1980, *Orton* 5105 (holo. E).

Differs from *ericetorum* not only in habitat but also in cinnamon or fulvous stem-apex when young (in *ericetorum* it is milky-coffee or fawn). It remains to be seen if the absence of a dark line in the middle along the gill-edge is another difference from *ericetorum,* which has this feature. More observations on this are needed. The fruit-bodies are attached directly to the *Sphagnum* plant with no lichen present. The other sphagnicolous species of *Omphalina* differ in colour (*fusconigra* is almost (black), or in colour, larger size or spores (*sphagnicola, philonotis* and *oniscus*).

Omphalina wallacei P. D. Orton, **sp. nov.**

Misident.: *O. rustica* sensu Dennis, Orton & Hora in Trans. Br. mycol. Soc. 43, Suppl.: 129, 1960, non (Fr.) Quélet, et non *Agaricus rusticus* Fr. (1838).

A sociis stipite pubescente a coloribus brunneis vel fuscis, habitatione ad solum et sporis ellipsoideis vel late ellipsoideis differt.

Pileus 5–15(–20) mm, umbrinus vel rufulo-fuscus ad marginem interdum coffeatus vel cinnamomeus, siccitate cremeus vel pallide luteolobrunneus, jove pluvio striatus, interdum ad centrum minute sericeo-fibrilloso squamulosus, ad marginem vulgo crenatus vel plicato-crenatus. *Lamellae* arcuato-decurrentes, e pallide luteolobrunneis coffeatae vel rufulofuscae, distantes, L10–161 l(–3), rariore furcatae, ad aciem crassae et medius obscuriore lineatus. *Stipes* 7–17(–25) × 0·5–1·5(–2) mm, pileo concoloratus, totus minute pubescens. *Sporae* 7–9 × 4·5–6 μm, ellipsoideae vel late ellipsoideae. *Hyphae cuticulae pilei* 3–10(–12) μm latae, hyalinae vel zebrino incrustato-pigmentatae. *Habitatio*: in locis arenosis maritimis vel ad solum nudum.

Typus: Devon, Dawlish Warren, 14 xi 1972, legit T. J. Wallace, *Orton* 5393, (holo. E).

Cap 5–15(–20) mm, convex soon expanded-convex slightly umbilicate or plane and depressed, *umber or fawn sometimes with paler milky-coffee or cinnamon outer part,* drying cream (D) or pale buff, striate to centre when moist, silky matt and opaque when dry, *sometimes minutely silky-fibrillose scaly when fresh especially in centre part,* scales sometimes ± pointed and acute at disc, margin often crenate or plicate-striate. *Gills* decurrent, often deeply so and arcuate, *pale buff but often milky-coffee or fawn near flesh of cap or entirely so,* distant, L10–16 l1(–3), occasionally forked towards edge of cap, edge rather thick and blunt often with darker line in centre. *Stem* 7–17(–25) × 0·5–1·5(–2) mm, equal or slightly thickened in lower part, *umber or fawn,* sometimes slightly paler at apex, *entirely minutely pubescent,* solid, base sometimes whitish tomentose. *Flesh* concolorous drying whitish or pale buff. *Smell* none.

Spores 7–9 × 4·5–6 μm, ellipsoid or broadly ellipsoid. *Basidia* 4-spored, 26–32 × 6–7 μm. *Hyphae on cap* 3–10(12) μm broad, hyaline or *zébrée encrusted-pigmented,* clamped. *Hairs on stem* clavate or capitate-cylindric, sometimes flexuose or septate, often in bunches, 20–160 × 5–10 μm, apex 5–20 μm broad, commonly 12–16 μm broad when capitate.

On sand-dunes or on bare soil. Devon, Braunton Burrows, on dunes, 21 xi 1956, *Orton* 804; Devon, Dawlish Warren, on foredunes, 24 xi 1956 (no material kept) and 14 xi 1972, legit T. J. Wallace, *Orton* 5393 (holo. E); Cornwall, Padstow, Cove Bay, on dunes, 3 xii 1969, *Orton* 3703; Perthshire, Rannoch, Black Wood, old sawmill site on disused track, 25 v 1981, *Orton* 5171.

This species is characterised by umber or fawn cap and stem, milky-coffee, fawn or buff gills, pubescent stem and encrusted hyphae on the cap and spore size. I originally named this *O. rustica* (Fr.) Quélet sensu J. Lange and it was included in the New Check List (1960) as such. I do not feel the epithet *rusticus* can be used for my taxon, however, since *Agaricus rusticus* Fr. is described as having the stem smooth ('glabro') and the gills grey ('griseis'), by Fries (*Epicr. syst. mycol.* 124, 1838). This being so Lange's interpretation may well be correct, but I have no record of this. In any case Lange's spore measurements are not quite in agreement—'6½–7½ × 4¾–5½ μm'. Two further classical epithets, *muralis* and *cupulatus* are said to be somewhat similarly coloured, but the former as originally

conceived by Sowerby and Fries is most likely *pyxidata,* and *cupulatus* was placed in *Cantharellus* by both Fries and Lange and does not really fit my taxon. There is nowhere mention of a pubescent stem for either of these. Other taxa with pubescent stem, of which there are quite a number, differ either in colour, spores or habitat. Of more recently published taxa, *O. pseudomuralis* Lamoure (*Travaux Scientifiques du Parc National de la Vanoise* 5:155, 1974) is perhaps closest in colour, but this too is clearly stated to have a smooth stem and is an alpine species. None of these epithets seem to me to fit my taxon which I have therefore described as a new species. I have named it after T. J. Wallace of Membury, Devon, who not only introduced me to this taxon in the first place and is really more familiar with it than I am, but also has so kindly and enthusiastically introduced me to many new, interesting or puzzling agarics not only on sand dunes in SW England but also in the attractive and seemingly mycologically rich countryside of East Devon, and has done so much for the cause of Nature Conservation in Devon.

OUDEMANSIELLA

Oudemansiella nigra Dorfelt in Česká Mykol. 27:28, 1973.

Whilst on the Yorkshire Naturalists Union Annual Mycological Foray in Whitby in 1981 I collected one fruit-body of a very dark dry *Oudemansiella* unknown to me from that classical locality Mulgrave Woods growing by a beech stump. In my experience the dry members of this genus occur rather rarely in Britain and then usually after a hot summer and fairly early in the season. This particular example was obviously not the rather robust and hairy-stemmed *longipes* or *badia* and was more like a very dark dry *radicata.* Reference to the literature showed that a number of taxa have been described in this section of the genus, and although it differs in a few details, I am recording my collection as *O. nigra* Dorfelt, a determination kindly supported by Prof. Moser (pers. comm.). The following is a description of my specimen.

Cap 36 mm, conico-convex becoming expanded-convex with slight umbo, ±*cigar-brown when gathered fading to snuff-brown* and slightly paler when dry, irregularly radially rugulose around centre, *dry,* matt and apparently smooth but in reality *finely velvety. Gills* adnate, whitish or with a slight vinaceous-buff tinge, not crowded, L22 l3–7, edge rather thick but minutely white flocculose sub lente. *Stem* 120 × 5 mm (10 mm above base) thickened downwards and with narrower rooting base (unfortunately broken off), clay-buff but becoming ±*concolorous, entirely finely minutely fibrillose-striate,* solid but white pithy, firm at first, base white tomentose. *Flesh* white tinged vinaceous-buff under cap and stem cuticles, sometimes with buff tinge in middle stem-cortex. *Smell* none.

Spores 11–13 × 8–10 μm, subglobose to broadly ellipsoid. *Marginal cystidia* clavate or elongate-clavate to cylindric-fusiform, sometimes irregularly swollen below, 50–160 × 10–26 μm, often with acute, obtuse or globose apical appendage 4–8 μm broad. *Facial cystidia* cylindric-clavate or broadly lageniform, 60–100 × 18–30 μm, apex 16–25 μm, not numerous. *Cap cuticle* cellular.

At side of beech stump. Yorkshire, Sandsend, Mulgrave Wood, 11 ix 1981, *Orton* 5172.

Distinguished by dark dry velvety cap and stem. My material differed slightly from the validating description in that the marginal cystidia showed a greater range of size, though correct shape, and the facial cystidia were not exactly 'rare' and also the gills were not pure white, but I suspect this is because the species is not yet well-known. It should surely be found in beech woods in S England eventually. Dorfelt gives cap 35–50 mm and stem 40–100 × 3–8 mm with a white rooting part 5–50 mm long, and facial cystidia 50–70 × 10–14 μm.

PLUTEUS

Two problems needing attention in this genus concern firstly *P. nanus* and secondly *P. galeroides* and *P. xanthophaeus,* which are discussed below, followed by a description of *P. villosus* (Bull.) Quélet as currently conceived.

In my key to *Pluteus* (*Trans. Br. mycol. Soc.* 43:344–351, 1960) I included in a final couplet *phlebophorus* and *nanus,* both of which have relatively narrow facial cystidia (*loc. cit.* figs 475, 476, p. 435). As I then understood them (and still do so) *phlebophorus* has the cap umber, rusty-tawny or cinnamon, usually veined at least at the centre, sometimes striate at the margin, the stem often hollow and rather tough, white at first then discolouring pale cream, buff or clay-buff, but never grey, and an acidulous smell; *nanus* has the cap ±uniformly umber, date-brown or cigar-brown, often appearing minutely stippled or atomate and not or only slightly pellucid striate though sometimes radially wrinkled striate, the stem silvery-white silky outside but white to hyaline-horny or pale greyish inside and solid but soft-fibrous, and no smell. These interpretations correspond reasonably with the validating descriptions. However, I soon found after the key appeared that I was collecting a taxon on twigs or apparently on soil with snuff-brown, fawn, hazel, drab or milky-coffee, striate, rather hygrophanous cap with the same kind of facial cystidia which either keyed out to this couplet or if one took the cap colour as grey and followed couplet 41 then it came to somewhere near *cinereofuscus* but did not agree, however, with any of these three taxa. It was not *phlebophorus* because the cap colour was different and paler, the cap was more clearly striate and less markedly or not at all veined, the stem and in particular the flesh in the stem-base tended to be grey and it did not smell acidulous. It was not *nanus* because the cap was paler and more clearly striate at least at the margin and the stem though silvery-whitish at first was often greyer and seemed tougher. It was not *cinereofuscus* although the cap was somewhat similarly coloured, because that taxon has the cap non-striate, the stem white, and is found on beech debris and is often rather more robust. Neither was it *olivaceus* for that is more definitely olive-tinted.

It was more like *griseopus* in the grey-fleshed stem, but that taxon has broader clavate, fusiform or broadly lageniform facial cystidia (*loc. cit.* fig. 472, p. 435) and the stem is white floccose at first. It was like *pallescens* in the rather hygrophanous striate cap but that taxon also has the broader type of facial cystidia and the cap ±umber. After having collected my puzzling taxon many times I feel it needs a name, and since I know of none that fit in the European literature I am describing it as a

new species. It will no doubt have been named *nanus* in the past because it is often quite small. The time has passed when Plutei with veined caps are called *phlebophorus* and those with small caps are called *nanus!*

Pluteus griseoluridus P. D. Orton, **sp. nov.**

A *P. nano, P. phlebophoro* et sociis a pileo pallidiore colorato jove pluvio striato et stipite ± griseo differt.

Pileus 11–40 mm, fuscus, griseofuscus vel coffeatus, jove pluvio ad marginem striatus, siccitate pallidiore coloratus vel griseus, interdum ad discum subtiliter venosus vel ad marginem rugulosus, cuticula admodum firma. *Lamellae* ex albidis pallide griseo-incarnatae, confertae, ad aciem primo alboflocculosae. *Stipes* 18–54 × 1–4 mm, fere aequalis, primo albus dein griseotinctus, primo argenteo sericeo-striatus et admodum firmus. *Caro* pilei concolorata siccitate albida, stipitis colore cornus tincta dein grisescens interdum ad basim griseolurida. *Odor* nullus. *Sporae* subglobosae, 6–8 × 5–6 μm. *Cystidia aciei lamellarum* versiformia, clavata, pyriformia, fusiformia vel ± lageniformia, 28–70(–80) × 10–24(–30) μm. *Cystidia faciei lamellarum* lageniformia cervice angusta, 58–90 × 12–27 μm, ad apicem 6–14 μm lata. *Habitatio*: ad ramulos vel ut videtur ad terram.

Typus: Somerset, Crawley, Bickham Wood, 28 viii 1977, *Orton* 4931 (holo. E).

Cap 11–40 mm, convex becoming expanded often obtusely umbonate, *snuff-brown to fawn, hazel, drab, or milky-coffee,* often found unicolorous, sometimes darker sepia at centre or drying paler grey or drab and silky atomate in places, *striate at margin when moist,* sometimes finely veined at centre or wrinkled rugulose in outer part, *cuticle rather tough. Gills* free, whitish soon pale vinaceous-buff or clay-pinkish to grey-salmon, fairly crowded, L24–48 l1–3, edge often finely white flocculose when fresh then even or slightly uneven. *Stem* 18–54 × 1–4 mm, equal or slightly thickened at base or apex, *white at first then tinged grey from base up, white silvery silky striate at first,* stuffed or slightly hollow in places, *rather firm at first. Flesh* in cap pale hazel, clay-buff or drab drying white in centre, *sharply marked off from stem flesh which is whitish then pale grey to pale drab and sometimes deeper drab or ± hazel in stem-base. Smell* none.

Spores 6–8 × 5–6 μm, subglobose or broadly ellipsoid. *Marginal cystidia* versiform, pyriform or clavate to fusiform or obtusely to rather acutely fusiform-lageniform, 28–70(–80) × 10–24(–30) μm. *Facial cystidia lageniform often with relatively narrow neck,* 58–90 × 12–27 μm, apex 6–14 μm. *Cells of cap cuticle* spheropedunculate or slightly pyriform, 18–50 μm broad, with pale clay-buff to milky-coffee vacuolar pigment (daylight in water).

On various deciduous twigs or apparently on soil (probably on buried wood). Rather common and widespread at least in England, but often found singly. Norfolk, Surlingham, Tuck's Plantation, 3 viii 1968, *Orton* 3378, 4 viii 1968, *Orton* 3379: Parish Marsh, 6 ix 1972, *Orton* 4442; Devon, Membury, Rookery Hollow, 27 viii 1974, *Orton* 4672; Somerset, Crawley, Bickham Wood, 28 viii 1977, *Orton* 4931 (holo. E).

Differs from *nanus* and *phlebophorus* in duller colours and greyish stem and from *griseopus* and *pallescens* in narrower facial cystidia and cap colours, also from *nanus* in more clearly pellucid-striate cap and tougher stem when fresh. It differs from *cinereofuscus* in striate moist cap, greyish stem and more slender stature. Very small specimens tend to be paler in cap colour.

This could perhaps be best temporarily inserted in my key after couplet 39 (*loc. cit.* 349) pending a complete revision of this section of the key. If

the second part of couplet 39 is made to lead to 39a, it can be inserted thus:

39a. Cap snuff-brown to fawn, hazel, drab or milky-coffee, sometimes darker sepia at centre or drying paler, margin striate when moist, sometimes finely veined in centre; stem at first white and silky striate but soon greyish from the base up, often drab or ± hazel in the base; facial cystidia relatively narrowly lageniform with apex 6–14 μm broad (as in *phlebophorus* and *nanus*) . . . . . *griseoluridus*

x. Not combining these cap characters with narrow type facial cystidia and stem becoming greyish 40

PLUTEUS XANTHOPHAEUS AND P. GALEROIDES

Some time after publishing my description of *xanthophaeus* (*Trans. Br. mycol. Soc.* 43:366, 1960) I found more material from the type locality and realised that I had not described the cap colour as green enough nor the origin of this colour precisely enough, for I had merely stated that the narrow ± cylindric cells under the cellular cuticle contained a 'yellow' vacuolar pigment. For *galeroides* in the latin description I stated that the broad cuticular cells were 'flavo- vel brunneolo-vacuolatae', without mentioning this character at all in the English description. In recent years I have found that the yellow pigment in these two taxa is always in the narrow ± cylindric cells beneath the broad cuticular cells. I fear I may have been misled by the sometimes colourless nature of the broad cells, for when seen from above they appear yellow because of the pigment in the cells beneath. Their true nature is best seen in a section of the cap therefore. However, the point is not settled because they may be yellow sometimes—further observations are required. In any case this does not affect the point about the vagueness of the words 'yellow' and 'flavo-' I used in my descriptions, which failed sadly to emphasise the distinction between the colours of the two taxa clearly enough. As long ago as 1953 I had noted the colour of this pigment as *'lemon*-yellowish' for *xanthophaeus* and '*chrome*-yellowish' for *galeroides*. I apologise for this lapse and hereby correct it. In terms of the *Colour Indentification Chart to the Flora of British Fungi,* HMSO, Edinburgh (1969) *xanthophaeus* has 'greenish-yellow' or 'lemon-yellow' pigment or less commonly 'straw' whereas *galeroides* has 'lemon-chrome' pigment.

Not surprisingly, in view of my above-mentioned lapse, Reid (*Fungorum rariorum Icones coloratae* 3:18, 1968) has made *galeroides* a synonym of *xanthophaeus*. In his description Reid states that '*luteovirens* is a bright citron yellow species'—and by inference different—whereas '*xanthophaeus* and *galeroides* are yellowish brown fungi'. This is unfortunately incorrect, for *luteovirens* and *xanthophaeus* are 'citron yellow' and *galeroides* is 'yellowish brown', although young ones of the latter are clearly lemon-chrome at least in the outer part of the cap when fresh. This means that if any synonymy is called for, it is much more likely that *luteovirens* and *xanthophaeus* should be combined rather than *xanthophaeus* and *galeroides*. Until I find a set of fruit-bodies obviously growing from the same source some with one kind of pigment and some with the other, I

prefer to keep them separate, and *luteovirens* looks different because of the white stem and flesh. It is useful to have names for the three until there is firmer evidence of synonymy. More careful studies in the field are called for. Reid's description of *xanthophaeus* is undoubtedly *galeroides* and should be referred to the latter epithet. Alterations are needed to my key to clarify the pigment distinction. This can be done by altering couplets 35–38 (*loc. cit.* 348–349) as follows:

35. Pigment in ± cylindric cells under the upper cap cuticular cells greenish-yellow, lemon-yellow or straw; facial cystidia relatively narrow lageniform with apex 4–12(–14) μm broad 36
35x Pigment in these cells lemon-chrome or ± luteous; facial cystidia various 37

36. Stem, flesh and gills with greenish-yellow or straw tints at least when fresh. . . . . *xanthophaeus*
36x Stem and flesh white, gills not or only slightly yellow-tinted when fresh. . . . . *luteovirens*

37. Facial cystidia lageniform with relatively narrow, usually longer neck 5–11 μm broad; cap hygrophanous, striate at margin when moist, drying pale ochre or lemon-chrome often with ochre-fulvous marginal zone; stem ± cream or ochraceous (E, F), sometimes deeper lemon-chrome at first . . . . *galeroides*
37x Facial cystidia broadly clavate or vesiculose-fusiform, more rarely broadly lageniform, usually with short neck 14–24 μm broad; cap not or only slightly striate when moist; stem often deep lemon-chrome 38

38. Cap distinctly and abruptly bicoloured, the bright chrome yellow part sharply marked off from the ± umber remainder; stem very bright lemon-chrome . . . . . *splendidus*

38x Cap ± umber or date-brown, sometimes with yellowish tinge in outer part; stem pale to fairly deep lemon-chrome or lemon-yellow at least at base . . . . *romellii* (= *lutescens*)

In all these species except *splendidus* (for which I have no information on this point) the facial cystidia may or may not have yellowish pigment in them and the spheropedunculate cuticular cells have almost colourless clay-buff or vinaceous-buff to ± umber vacuolar pigment. In recent years for these taxa I have only once noted the cuticular cells as containing yellowish pigment (in a description of *luteovirens* dated 1958). It is possible I may at that time have been misled, for when ± colourless they may appear yellow when viewed from above. Further observations are needed on this character. It is many years since I collected *splendidus* and my notes are sadly silent on this point as is Pearson's description. Again further observations are needed; *splendidus* is easily recognisable in the field, but seemingly rarely found.

Moser has used the epithet *chrysophaeus* for *xanthophaeus*. This is not tenable to my mind because in the absence of microscopical data *chrysophaeus* is not sufficiently clearly defined originally by Fries to be really sure what it was, although as later described I suspect it was

phlebophorus. In 1960 (*loc. cit*: 367) I stated that *P. chrysophaeus* sensu J. Lange was *xanthophaeus*. This I no longer believe to be true for it has no greenish tints and is more likely to be *galeroides*. An amended description of *xanthophaeus* is given below.

Pluteus xanthophaeus P. D. Orton. Trans. Br. mycol. Soc. 43:366, 1960, non sensu Reid, 1968, (loc. cit.)

Cap 14–48 mm, convex then expanded, sometimes obtusely umbonate, snuff-brown, hazel or fulvous-hazel with greenish-yellow or lemon-yellow margin to ±entirely greenish-yellow, sometimes grey olivaceous-hazel or ±citrine in centre or almost entirely so, when old or dry fulvous-buff with straw margin, striate at margin when moist, finely to rather coarsely reticulate-veined at centre or almost to edge, sometimes entirely or in part rugulose or minutely punctate-stippled in places, when old often sulcate-striate at margin. *Gills* free, sometimes remote, at first white or whitish or pale greenish-yellow, pale straw or pale grey-olivaceous especially near flesh of cap, then clay-pinkish or greyish-salmon, ±crowded, L30–40 l(0–)1–3(–7), edge white or whitish flocculose when fresh. *Stem* 16–60 × 1·5–5(–8) mm, equal or slightly swollen at base, white then whitish and often pale straw or pale greenish-yellow at base, sometimes pale olivaceous buff-creamy or entirely faintly hyaline-straw, scattered white or whitish silky-flocculose at first at least at apex then finely white silky striate, stuffed-solid or slightly hollow, firm at first, base white or whitish tomentose or strigose-tomentose. *Flesh* of cap straw to straw olivaceous-buff horny drying whitish in centre, pale olivaceous-buff creamy or straw olivaceous-buff in stem cortex, sometimes tinged greenish-yellow in stem base, whitish or pale lemon-cream in stem centre. *Smell* none to strong acidulous (especially when cut—as in *phlebophorus*).

Spores 5·5–8 × 5–6 μm, subglobose. *Marginal cystidia* versiform, clavate or fusiform sometimes with rather pointed apex to lageniform, 28–75 × 10–24(–28) μm. *Facial cystidia* lageniform or fusiform-lageniform, usually with rather long neck and narrow apex, 40–84 × 14–30 μm, apex 4–12(–14) μm broad, sometimes with pale straw or pale clay-buff vacuolar pigment. *Cells of cap cuticle* (1) spheropedunculate or pyriform, 12–35 (–56) μm broad, with pale clay-buff, milky-coffee or hazel vacuolar pigment except those at or near margin which are often ±colourless, and beneath these (2) ±cylindric or slightly clavate cells with greenish-yellow, lemon-yellow or straw vacuolar pigment, 5–17 μm broad.

On twigs and logs (especially *Fraxinus*). Locally common at least in S England, sometimes solitary. Surrey, East Horsley, Mountain Wood, 6 xi 1953, *Orton* 72; Devon, Rousdon, Bindon Landslip, 29 xi 1958, *Orton* 1697, 2 xii 1958, *Orton* 1698, and 18 vii 1959, *Orton* 2001: Whitlands Landslip, 18 vii 1959, *Orton* 2002 (holo. K): Dowlands Landslip, 14 viii 1972, *Orton* 4445: Pinhay Landslip, 1 xi 1969, *Orton* 3753/54 and 14 viii 1972, *Orton* 4444.

Note: the entry for Derbyshire, Chatsworth Park, is to be deleted from the 1960 protologue (*loc. cit.* 367).

Pluteus galeroides P. D. Orton, Trans. Brit. mycol. Soc. 43:354, 1960.
Misident.: *P. xanthophaeus* sensu Reid, Fungorum rariorum Icones coloratae 3:18, 1968, non sensu P. D. Orton.

A full description is not necessary, but colours in terms of the *Colour Identification Chart to the Flora of British Fungi* may be helpful.

Cap fulvous, cinnamon-fulvous or at centre ±fawn, with lemon-chrome or ±ochre margin, sometimes at first lemon chrome-citrine with narrow lemon-yellow margin but soon becoming ±fulvous with lemon-chrome margin, drying ±bicoloured, pale ochre (H), lemon-chrome, straw-buff or ochraceous (F)-buff to lemon-yellow buff in centre with margin ochre-fulvous, fulvous or pale cinnamon. *Gills* very pale cream (C) or with pale lemon-yellow, straw or lemon-chrome tinge especially near flesh of cap or cap margin, then tinged clay-pink but finally ±salmon-ochraceous. *Stem* white and finely silvery silky striate at first but soon cream or ochraceous (D, E, F), straw or straw-buff, occasionally with slight clay-pink tinge at base. *Flesh* in cap concolourus drying whitish, often buff-horny over gills, in stem cream to ochraceous (D, E, F) or D-buff, sometimes ±buff in stem base.

Further material collected: Norfolk, Surlingham Wood, 2 x 1982, *Orton* 5320, and 5 x 1982, *Orton* 5321/22.

Pluteus villosus (Bull.) Quélet, Fl. mycol. France. 187, 1888.
Syn.: *Agaricus villosus* Bull., Herb. France, pl. 214, 1785.

In my key to *Pluteus* in *Trans. Br. mycol. Soc.* 43:347, 1960 I included *villosus* sensu Decary and Romagnesi as yet not recorded for Britain. In 1969 I found one specimen which I believe belongs to this taxon, but did not record it because of a little doubt about its correct name. This epithet was used by Decary (*Bull. Soc. mycol. Fr.* 43: Atlas Pl. 19, 1927) for a taxon stated to grow on the ground, which I now believe looks more like *murinus*, and would therefore reject for my taxon. However, the Bulliard plate looks more convincing and is said to grow on wood, and my specimen undoubtedly agrees very well with Romagnesi's description of *villosus* (*Bull. Soc. mycol. Fr.* 72:212, 1956). Singer has used the epithet *drepanophyllus* Schulzer apud Kalchbrenner for it, but perusal of the validating description and plate of this (*Icon. select. Hymenomyc. Hung.* 21, Pl. 11^3, 1875) suggests a different taxon probably in the *nanus* group because of habitat ('in terra humosa per silvas mixtas'), small size (cap '1 unc. latus') and white shining stem, and I would not use it for my taxon. In view of these facts I am retaining the name *villosus* for it, even though there is inevitably in a critical group such as this a little doubt about an epithet of such antiquity. The following is a description of my collection.

Cap 81 mm, expanded obtusely umbonate slightly depressed around centre, *date-brown or umber* sometimes with snuff-brown tinge near margin, *densely minutely fibrillose-pilose tomentose at centre, more scattered minutely and rather adpressedly fibrillose scaly in outer part,* scales often arranged in ±radial rows at margin which thus appears striate, edge lacerate-fringed and sometimes slightly radially cracked in places. *Gills* free, remote, whitish then pink, crowded, L c.110 l1–3, edge whitish denticulate when fresh. *Stem* 85 × 10 mm (13 mm at base), slightly thickened at base and apex, *white or whitish,* clay-buff or pale hazel at base, upper part finely white silky striate and with scattered white fibrillose flecks sub lente, *with very minute hazel or snuff-brown scales* above white tomentose base. *Flesh* white, whitish or slightly horny in stem. *Smell* none.

Spores 6–7 × 5–6 μm, subglobose. *Basidia* 4-spored. *Marginal cystidia* very variable, lageniform or fusiform often with slightly capitate apical appendage, 46–110 × 12–36 μm, apex 4–10 μm broad. *Facial cystidia* lageniform with short sometimes slightly asymmetrical neck (as shown in Romagnesi, *loc. cit.* fig. 18^{III}), 56–98 × 16–36 μm, apex 5–14 μm. *Scales on cap* of septate hyphae with brown vacuolar pigment sometimes darker in places, end-cells fusiform or vermiform, 80–220 × 10–22 μm.

On sawdusty soil but touching decayed beech log. Surrey, East Horsley, Sheepleas, 18 x 1969, *Orton* 3752.

Looks like a large *P. cervinus* at first sight, but without hooked facial cystidia and the cap is entirely scaly. It is rather similar to *murinus* but that taxon has less definitely scaly, often clearly radially cracked, cap, stem without scales and often ±marginately bulbous at base and is terrestrial.

I think *villosus* must be uncommon in Britain for it is a striking taxon and would not be overlooked and can now be added to the British list. Further collections may show that the above description will need some slight modifications. Romagnesi gives the cap as 80–110 mm and the stem 90–130 × 10–17 mm. It may have been recorded as *cervinus*.

TEPHROCYBE

Tephrocybe alboffloccosa P. D. Orton, **sp. nov.**

A pileo et lamellis olivaceotinctis, stipite firmo albofloccoso squamuloso, odore forte, sporis 6–8 × 3–4 μm, et habitatione inter folias probabiliter a delectu in solo calcareo distinguitur.

Pileus 18–40 mm, fuscus vel avellaneus interdum ad marginem vulgo persistentiore olivaceotinctus, siccitate luteolobrunneus vel cremeus dein albidus ad centrum argillaceo-luteolobrunneus, jove pluvio ad marginem striatus, siccitate ±toto radialiter sericeus. *Lamellae* pallido dein obscuriore argillaceo-luteolobrunneae interdum prope carne pilei olivaceotinctae, confertae, L24–40 l(1–)3–7. *Stipes* 26–68 × 2–4 mm, fuscobrunneus, fuscus vel avellaneus, sursum forte albofloccoso squamulosus, firmus et lentus. *Odor* forte farinaceus. *Sporae* 6–8 × 3–4 μm, ellipsoideae. *Hyphae cuticulae pilei* filamentosae, 3–10 μm latae, hyalinae. *Habitatio*: inter folias probabiliter a delectu in solo calcareo.

Typus: Devon, Northleigh, Hawkswood, 27 x 1975, *Orton* 4751 (holo. E).

Cap 18–40 mm, convex or conico-convex then ±plane, usually obtusely or rather acutely umbonate, sometimes with wavy-lobed margin, *snuff-brown or hazel sometimes with grey-olivaceous or ±citrine margin when fresh,* drying pale vinaceous-buff, buff clay-buff or cream (D) with ±persistent grey-olivaceous margin, whitish with pale clay-buff centre when really dry, striate in outer part when wet, ±entirely radially silky when dry. *Gills* adnate, sometimes narrowly so, often with tooth, *pale then deeper clay-buff or buff clay-buff, sometimes with hazel or slight citrine tinge especially near flesh of cap,* crowded, L24–40 l(1–)3–7, in occasional specimens anastomosed near stem or in middle, edge paler then ±concolorous and even. *Stem* 26–68 × 2–4 mm, equal or slightly thickened at base or compressed (and then 5–7 mm broad), often flexuose in lower part, sometimes slightly narrowed or pointed at extreme base, *sepia, date-brown, snuff-brown, hazel or drab, sometimes paler at apex,* drying slightly paler, *upper part coarsely white silky flocculose scaly* with more scattered finer sometimes whitish flocci below this, extreme apex finely white pruinose, lower part white silky-fibrillose striate, stuffed-pithy becoming

hollow, *firm and cartilaginous at first,* base white or whitish tomentose or strigose-tomentose. *Flesh* concolorous in cap drying creamy vinaceous-buff in centre, snuff-brown horny over gills and in upper stem-cortex, paler horny lower down, white pithy in stem-centre at first. *Smell strong mealy or mealy-rancid.*

Spores 6–8 × 3–4 μm, ellipsoid. *Basidia* 4-spored, carminophilic. *Gill-edge* fertile. *Hyphae on cap* filamentous, 3–10 μm broad, hyaline with rather refringent walls, with shorter broader cells beneath these. *Hyphae of flocci on stem* 3–6(–8) μm broad, filamentous, branched, end-cells often clavate and 8–12 μm broad.

In leaves and humus seemingly preferably on basic soil. Surrey, Mickleham Downs, in beech leaves, 25 x 1968, *Orton* 3428; Surrey, East Horsley, Sheepleas, in beech leaves, 17 x 1970, *Orton* 3948; Devon, Northleigh, Hawkswood, in humus under ash, 27 x 1975, *Orton* 4751 (holo. E); Herts. Ashridge, in beech leaves, 23 x 1977, *Orton* 4942.

Recognised by strong smell, cap often with olivaceous tints, upper stem coarsely white floccose-scaly, spores 6–8 × 3–4 μm, and habitat in leaves seemingly on basic soil. In the Surrey and Hertfordshire localities quoted above, the soil is unquestionably basic, whilst in the Devon locality which is by a stream, there is some indication that the adjoining ground is basic because of the presence of other calcicole species.

I have had some trouble with the naming of this taxon. At first I used the epithet *coracina* for it on account of the tough stem and white floccose-scaly stem apex but I have twice collected another even tougher taxon which I believe to be *coracina* also with the stem-apex white floccose-scaly but with slightly broader spores (4–5 μm broad) and a tendency to be much more buff coloured and seemingly growing in a more acid habitat (see description below). Other epithets considered have been *putidella* (= *Agaricus putidus* Fries, 1838 non Weinmann, 1836) and *boudieri.* The former has been placed in *Tricholoma,* is larger, reputedly has smaller spores 5–6 × 3–3·5 μm and the description of Fries (*Epicr. syst. mycol.* 54, 1838) gives the stem as soft and fragile ('mollis, fragilis') which is certainly not applicable to my taxon. For some time I called it *boudieri,* with, however, a question-mark at the back of my mind, until 1982 when I collected genuine *boudieri* smelling as Kühner & Romagnesi say of *Macrocystidia cucumis* and not of meal and differing in some colour details, so that I have rejected it as a name for my taxon (see description below).

Yet another possibility to be considered is *ozes* Fr. (*Epicr. syst. mycol.* 95, 1838), but according to the original description that differs more particularly in less tough stem ('gracili, fragli'), the cap is given as 'udus cinereo-fuscus, siccus fusco-argillaceo pallens' and habitat in pine needles, although olivaceous tints are given for the gills ('e cinereo olivaceo-fuligineis'). This seems too divergent for me to use, though it is possible that *ozes* sensu Ricken (*Die Blätterpilze* 402, pl. 108 fig. 9, 1915) is my taxon; certainly the illustration looks rather like it, but I am not sufficiently sure of this identity to quote it. The use of Friesian epithets in this genus is just about as tricky as in *Cortinarius* subgenus *Telamonia* in the absence of spore details, and unless there is absolute or near-absolute agreement I am rather chary of doing this. All this emphasises that one

must not think that any taxon with a tough stem with white floccose-scaly apex *must* be *coracina*: it is the combination of characters that matters. So after all these uncertainties I have decided to describe it as a new species firmly based on herbarium material, of which the above is a diagnosis and description.

Tephrocybe baeosperma (Romagn.) Moser in Gams, Kleine Kryptogamenflora Band IIb/2 (Ed. 4): 132, 1978.

Syn.: *Lyophyllum baeospermum* Romagn. in Bull. Soc. Nat. Oyonnax 8: 75 (Latin diagnosis) and 124 (French description), 1954.

Cap 17–30 mm, convex soon expanded-plane, sometimes slightly depressed, *snuff-brown to date-brown, slowly drying ± buff in patches around centre,* extreme margin striate when wet, matt when dry, *cuticle rather tough. Gills* adnate with tooth, rather narrow and ± plane, *clay-buff,* crowded, L24–32 l3–7, edge paler ± even. *Stem* 32–42 × 3–4 mm, equal or slightly thickened at base or constricted below apex, *snuff-brown or sepia,* apex whitish from dense white silky flocci below gills, remainder rather densely white silky-fibrillose striate almost to base, stuffed becoming hollow, firm and *tough at first,* base white tomentose. *Flesh* concolorous, drying whitish or pale cream in centre of cap and stem. *Smell strong, mealy.*

Spores 4–5 × 2·5–3 μm, ellipsoid. *Basidia* 4-spored. *Gill-edge* fertile. *Hyphae on cap* filamentous, 4–9 μm broad, hyaline with refringent walls or encrusted pigmented.

In grass by roadside under *Quercus*. Norfolk, Surlingham, 23 x 1981, *Orton* 5184.

Recognised by relatively small spores, dark colours and tough cap and stem. Of the other species of *Tephrocybe* with small ellipsoid spores, *mephitica* (not yet British as far as I know) is smaller and ± uniformly pale grey, *confusum* is also paler and less tough with slightly broader spores, and *putidella* is larger, paler and less tough and also with slightly broader spores. Sizes given by Romagnesi are very similar: cap 15–45 mm, stem 20–44 × 1·5–3·5 mm, and spores 4·2–5·2 × 2·2–3·2 μm.

Tephrocybe boudieri (Kühner & Romagn.) Moser in Gams, Kleine Kryptogamenflora Band IIb/2 (Ed. 4): 133, 1978.

Syn.: *Lyophyllum boudieri* Kühner & Romagn. in Bull. Soc. Nat. Oyonnax 8: 75 (Latin diagnosis) and 111 (French description), 1954.

Misident.: *Collybia mephitica* sensu Boudier, Icon. mycol. 66, 1905, non (Fr.) Karsten, et non *Agaricus mephiticus* Fr. (1838).

Cap 13–24 mm, conico-convex then expanded ± plane, sometimes slightly umbonate, *snuff-brown or hazel, sometimes with date-brown centre,* drying greyish-cream (-B, -C) or whitish from centre out, radially streaky when drying out, sometimes persistently slightly darker at centre, striate to centre when moist, entirely ± radially adpressed finely silky when dry. *Gills* narrowly adnate to adnate with tooth, *pale clay-buff or buff clay-buff,* often darker near flesh of cap, fairly crowded, L20–24 l1–7, occasionally anastomosed or veined on sides especially near edge of cap, edge often paler, even, rather thick and blunt. *Stem* 26–30 × 1·5–2 mm,

equal or slightly thickened at apex, *snuff-brown to date-brown, apex sometimes ± hazel, with small scattered white flocci throughout when fresh,* apex more markedly silky-floccose, stuffed becoming hollow, rather tough when fresh, base white tomentose or strigose sometimes with white mycelial threads. *Flesh* concolorous drying pale clay-buff in cap-centre, snuff-brown or hazel-horny over gills and in stem-apex, sometimes darker in stem-base, whitish clay-buff in stem-centre. *Smell strong of cucumber or like Macrocystidia cucumis.*

Spores 6–8 × 3–4 μm, cylindric-ellipsoid. *Basidia* 4-spored. *Gill-edge* fertile. *Hyphae on cap* filamentous, 1–4 μm broad often in bundles, with refringent walls or finely encrusted-pigmented, over broader ones 6–22 μm broad also with refringent walls.

In *Fagus* leaves. Surrey, Mickleham Downs, 14 x 1982, *Orton* 5335.

Readily distinguished by smell, brown colours and white floccose-scaly stem. The smell would seem to be diagnostic. The above is a description of my material and may need modification when more material is found. Kühner & Romagnesi's measurements are as follows: cap 10–35 mm, stem 20–55 × 1·5–5·5 mm, gills (probably on account of thicker stem) more numerous, L28–39 l3–7, spores 6·5–8·7 × 3–4 μm and hyphae on cap 2·5–11 μm. I have a record from 1952 elsewhere in Surrey in beech leaves which probably refers to this taxon and now that I know what it looks like I shall no doubt find it again. I have probably passed it by in the past. In the New Check List (1960) *bouderi* was quoted as a synonym of *inolens* but with a query. This entry should be deleted.

Tephrocybe coracina (Fr.) Moser in Gams Kleine Kryptogamenflora, band IIb/2 (Ed. 3): 11b, 1967.

Syn.: *Agaricus coracinus* Fr., Epicr. syst. mycol. 95, 1838.
Collybia corocina (Fr.) Gillet, Hyménomycètes 307, 1976; sensu Konrad & Maublanc, Bresadola, sed non Ricken.
Tephrophana coracina (Fr.) Métrod in Rev. Mycol. 17:92, 1952.

Cap 15–48 mm, soon expanded depressed or slightly umbilicate, sometimes with wavy-lobed margin, *snuff-brown or milky-coffee with ± buff margin,* sometimes ± date-brown at centre, drying buff, creamy-buff or greyish-cream from centre out, striate at margin when moist, when dry with whitish silky sheen, *tough when fresh. Gills* adnate with tooth to subdecurrent, pale greyish or *pale vinaceous-buff then creamy-buff,* sometimes tinged milky-coffee or hazel especially near flesh of cap, lubcrowded, L18–26 l3(–7), sometimes veined on sides or occasionally forked, edge ± concolorous, even, rather thick and blunt at first. *Stem* 20–58 × 2–5 mm, ± equal, often flexuose, sometimes compressed, *vinaceous-buff or clay-buff, sometimes milky-coffee, hazel or date-brown at base,* drying slightly paler, extreme apex white pruinose when fresh *otherwise smooth* or with very fine silky sheen sub lente, stuffed then hollow, *tough and elastic at first. Flesh* concolorous, drying whitish in centre of cap and stem, horny over gills and in stem-cortex. *Smell strong mealy,* especially when cut.

Spores 6–8(–9) × 4–4·5(–5) μm, ellipsoid or slightly ovoid with large apiculus. *Basidia* 4-spored 27–32 × 7–8 μm. *Gill-edge* fertile. *Hyphae on cap*

filamentous, branched, 4–18 μm broad, no clamps seen, with pale vacuolar pigment.

Derbyshire, Chatsworth, on soil inside burnt stump, 11 ix 1956, *Orton* 787; Perthshire, Rannoch, Black Wood, in grassy soil under pine and birch near road, 30 ix 1965, *Orton* 2710.

Distinguished by tendency to buff colours, toughness, relatively broader spores and smooth stem pruinose only at extreme apex. I think this is *coracina* sensu Konrad & Maublanc and Bresadola also, but not that of Ricken which has subglobose spores. The habitat of the Perthshire collection is correct, for Fries gives 'in locis graminosis in silvis' in the original description. The cap characters do not tally exactly with Fries' 'fuscus dein griseus, non sericellus'; these colours are fair but 'non sericellus' is not quite so good, although the cap shows no more than a silky sheen, and Fries probably meant without silky fibrils. Further field work is needed before abandoning this epithet, however, because its use for this taxon is fairly well established by now and is probably well-founded.

Tephrocybe impexa (Karsten) Moser in Gams, Kleine Kryptogamenflora Band IIb/2 (Ed. 3): 115, 1967.

Syn.: *Collybia impexa* Karsten, Ryssl. Hattsvampar I: 549, 1879.

Cap 10–50 mm, convex then expanded, sometimes papillate at first, often becoming umbilicate or depressed at centre, *cigar-brown or fuscous-black then date-brown or umber, drying fulvous-buff or buff* often in radial streaks around centre and retaining darker marginal belt, striate at margin when wet especially when young though sometimes non-striate, sometimes ±radially rugulose when drying out or silky streaky when dry, *cuticle tough* especially when young. *Gills* adnate sometimes emarginate or adnate-decurrent, *whitish or very pale drab then cream* (*C*) *with tinge of cap colour to ±buff,* rather crowded, L24–40 l1–3(–7), *often veined on sides* or more rarely interveined or forked in larger specimens, edge concolorous ±even. *Stem* 10–75 × 1–6 mm, 8–16 mm when compressed, equal, or slightly to markedly thickened in lower part especially when *compressed, which it often is,* and then with ±pointed base, sometimes flexuose, *snuff-brown to ±cigar-brown,* sometimes pale snuff-brown or milky-coffee in upper part, apex white pruinose, sometimes entirely silky-floccose scaly when young then ±entirely smooth to longitudinally rugulose striate, stuffed then hollow at least in part, *tough at first with very cartilaginous cuticle,* base usually white tomentose or strigose, *often caespitose. Flesh* snuff-brown in cap and stem, horny over gills, drying whitish or pale cream in cap centre. *Smell strong* especially when cut, *mealy or rancid-mealy.*

Spores 4·5–6 μm, *globose,* in dilute ammonia *with low obtuse or pointed warts giving an angular outline,* but sometimes, especially in spores from young fruit-bodies, appearing almost smooth (Fig. 14). In Melzer's solution the warts are slightly more conspicuous. *Basidia* 4-spored, c. 30–32 × 6–8 μm. *Gill-edge* fertile. *Hyphae on cap* filamentous, 3–7(–11) μm broad, branched, clamped, hyaline or encrusted-pigmented.

Surrey, Wootton Hatch, under hedge by path in churchyard, 28 x 1951, no material kept; Devon, Membury, The Cleeves, on old grassy bonfire

site in field, 28 x 1977, *Orton* 4943 and 1 xi 1977, *Orton* 4944. Possibly not uncommon, but overlooked.

Recognised by globose variably warted spores, very dark colours, smell and tough fruit-bodies. The Devon collection was where wood had been burnt two years previously but which had become overgrown with grass. I cannot remember the exact details of the Surrey collection except that it was at the edge of a churchyard. Continental authors make no mention of burnt ground as a habitat and it may have no significance. Further field work is necessary to ascertain the exact habitat. The carbonicolous *T. anthracophila* (Lasch) P. D. Orton has globose spores of similar size but they are smooth and the fruit-bodies are smaller, often omphalinoid and much less tough. I am grateful to R. Watling for very kindly confirming the spore characters by the use of the electron microscope.

TUBARIA

Ever since I first mycologized in Scotland in 1938 it had been my ambition to find *Pholiota confragosa* (Fr.) Karsten, which I imagined to be a northern species. This name had to be rejected for inclusion in the New Check List of 1960 because of lack of British material or modern descriptions. I looked in vain until 1976, when during a not very productive season I was having a last rather despairing look round a wood which is normally good for agarics, but in which in that year only very few fruit bodies of even common species were to be seen, when I suddenly stumbled on a very fine group of fruit-bodies on a fallen birch log, which I immediately recognised as belonging to this taxon. After all those years I had found it literally on my doorstep, for this wood is only a short distance from where I lived at Rannoch School and could be seen from my window! It reappeared the following year on the same log and I made one further collection a mile or two up the road to Glen Lyon from the school, but I have not collected it anywhere since, although a specimen was shown to me (Culbin Forest, legit Margaret Holden) on the occasion of the 1975 British Mycological Society Foray at Aberdeen. I suspect it is truly uncommon in Britain.

The collections agreed very well with the description given by Kühner (1969), who remarked after having investigated it himself that he thought that Fries rightly pointed out its true affinity by saying that it was related to *Agaricus conspersus* and *A. furfuraceus,* and for this and other reasons he placed it in the genus *Tubaria.* I found the spores, cystidia and general habit and appearance quite definitely tubarioid and I am therefore in full agreement with Kühner's action. Probably because of the rather broad sometimes encrusted pigmented cells in the cap cuticle Singer included it in his enlarged genus *Phaeomarasmius.* This use of *Phaeomarasmius* is to my mind cumbrous and erroneous and means that it becomes a genus including a mixture of often quite dissimilar taxa united only by the presence of these or similar cells in the cap cuticle or cap scales and very far removed from its original conception. I think one must beware of taking a microscopic character such as this and thinking that other taxa with it regardless of their form must be in the same genus. A combination of two or more characters gives a much better foundation to a genus.

A.H.Sm. & Hesler retained it in *Pholiota* (*North American Species of Pholiota* 42, 1968) presumably on account of the ring, but this obscures its affinities. We have now become accustomed to having taxa with or without a ring in the same genus, so its inclusion in *Tubaria* presents no problem. The following is a description of my collections and I am pleased to be able to reinstate *confragosa* in the British List as *Tubaria confragosa* (Fr.) Kühner.

Tubaria confragosa (Fr.) Kühner in Travaux du Laboratoire de la Jaysinia 3:67–71, 1969.

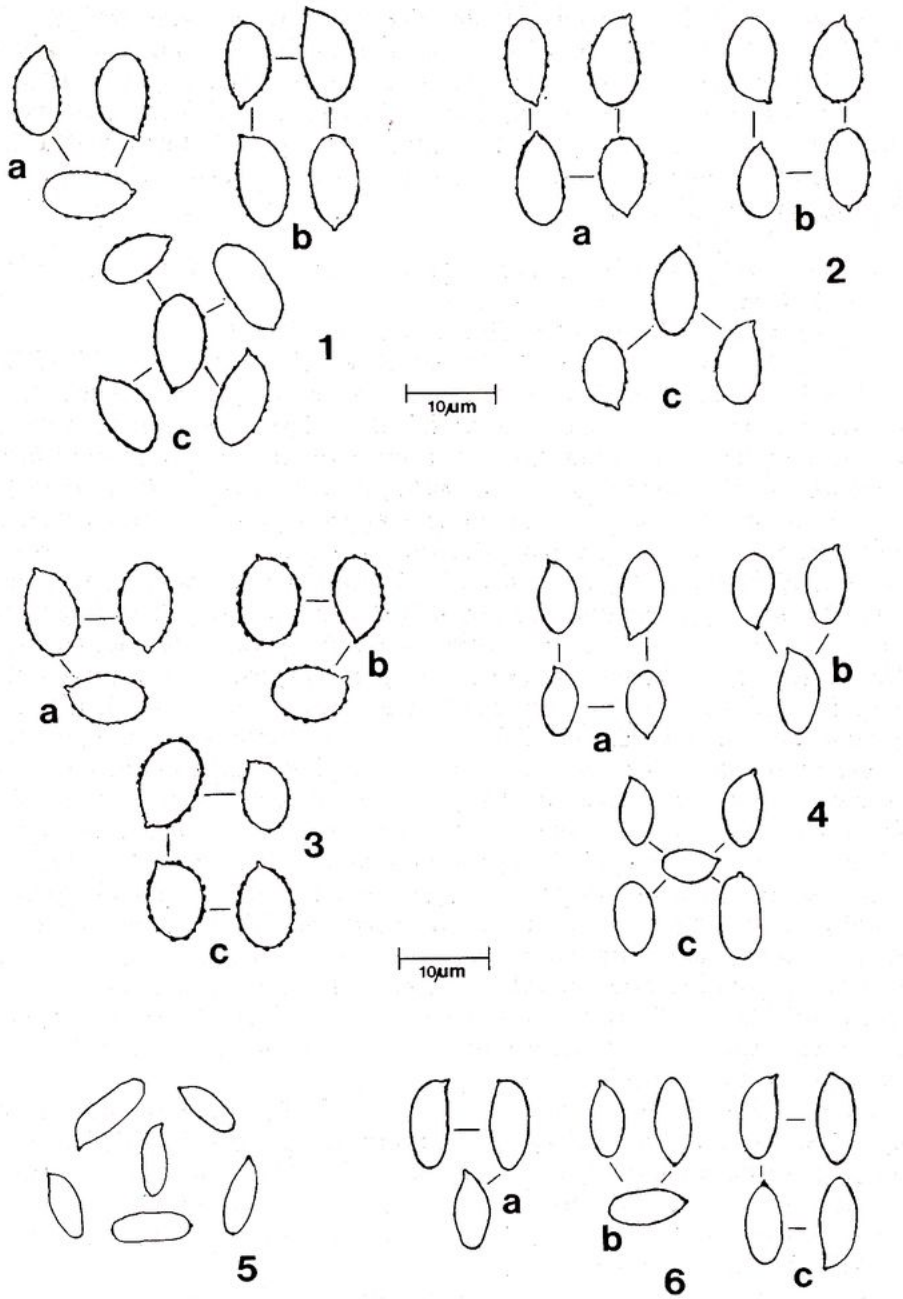
Syn.: *Agaricus confragosus* Fr., Epicr. syst. mycol. 169, 1838.
Pholiota confragosa (Fr.) Karsten, Ryssl. Hattsvamper I: 304, 1879.

Cap 20–66 mm, convex then expanded-convex to ± plane, often slightly depressed, margin sometimes wavy-lobed in large specimens, sepia or date-brown before opening, then soon *brick or rusty-tawny to dark brick or umber, drying rusty or sienna at centre, then ± entirely saffron or tinged orange in centre,* striate at margin and appearing smooth when wet, *at first entirely finely adpressed fibrillose scurfy-scaly,* later these scales become dispersed or may be washed off, scales at first snuff-brown then concolorous or ± cinnamon, margin at first with narrow pale clay-pinkish, pale salmon or whitish silky-fibrillose zone from veil. *Gills* adnate with tooth, *pale then deeper cinnamon finally rusty-tawny to bay,* crowded, L32–50 13(–7), edge rather thick and finely flocculose-denticulate, ± concolorous. *Stem* 32–85 × 2·5–5 mm (up to 10 mm when compressed), equal or slightly thickened above base, sometimes compressed, *cinnamon or cinnamon-buff* with paler whitish or pale saffron clay-pinkish apex, *then brick or rusty-tawny to dark brick with cinnamon or pale brick apex,* fibrillose striate especially in upper or middle part, apex at first finely cream or pale saffron flocculose, adpressed pale saffron or buff floccose patchy below ring when fresh then with pale patches between the striae, hollow, base whitish or white tomentose or strigose; *ring large, apical, membranaceous but thin, spreading at first and rather indistinctly striate on upper side then collapsing. Flesh* rusty-tawny or dark brick drying pale cinnamon. *Smell* none of faint fungussy. *Spore-print* buff to deep fulvous, fulvous-cinnamon in thick layer.

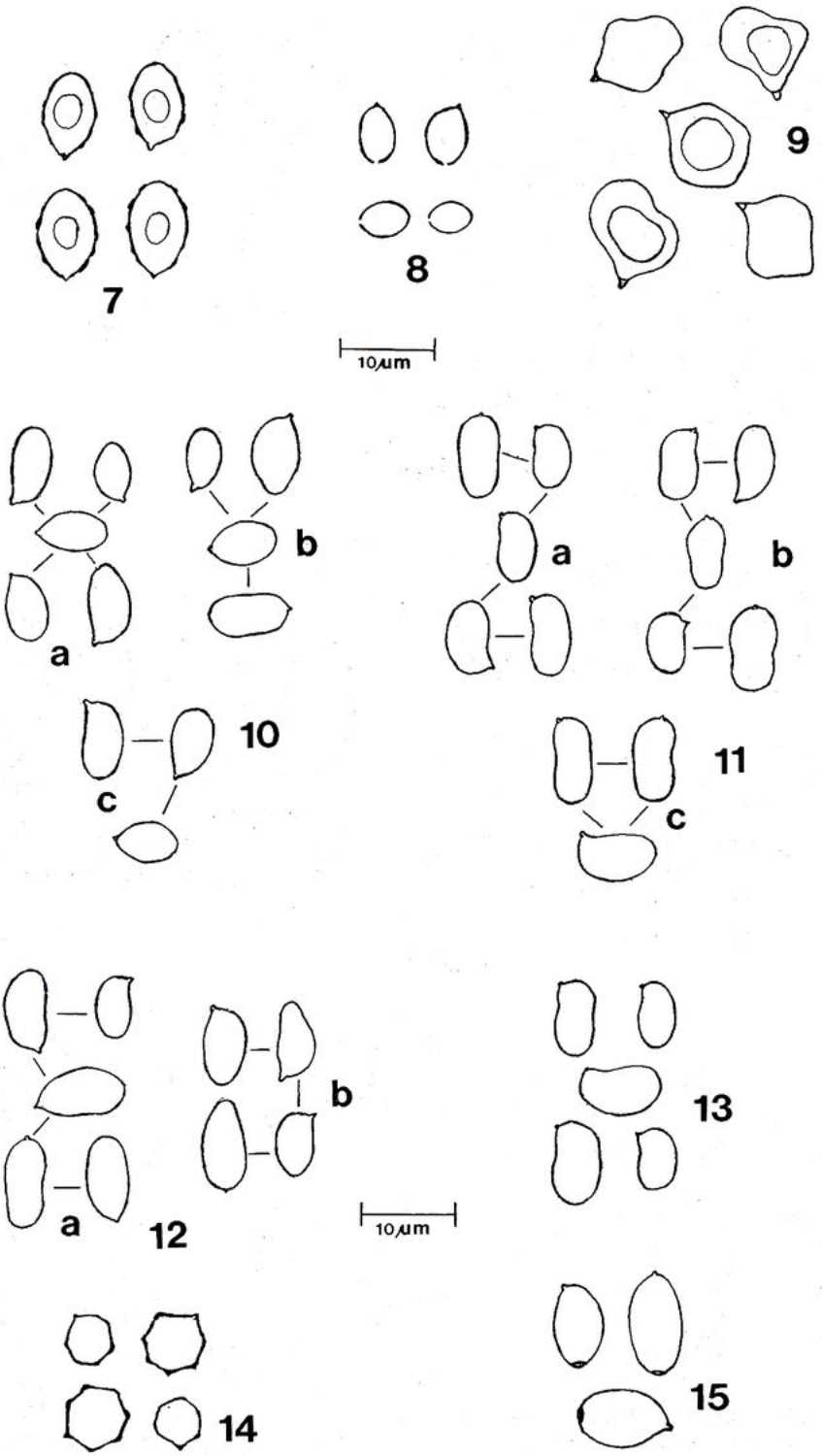
Spores 7–9(–10) × 4–5 μm, in face-view ellipsoid-phaseoliform or cylindric-ellipsoid, in side-view ellipsoid-ovoid or ellipsoid slightly amygdaliform. *Basidia* 4-spored, 27–30 × 7–8 μm. *Marginal cystidia* cylindric or cylindric slightly lageniform sometimes flexuose, 30–52(–74) × 6–10 μm. *Cells of cap scales* 40–150 + × 5–24 μm, hyaline or encrusted pigmented, loosely interwoven, ± cylindric.

Singly or caespitose on fallen birch wood. Perthshire, Rannoch, Dall Farm Wood, 17 x 1976, *Orton* 4866 and 12 ix 1977, *Orton* 4946; also Dall Reservoir Wood, 15 x 1977, *Orton* 4947.

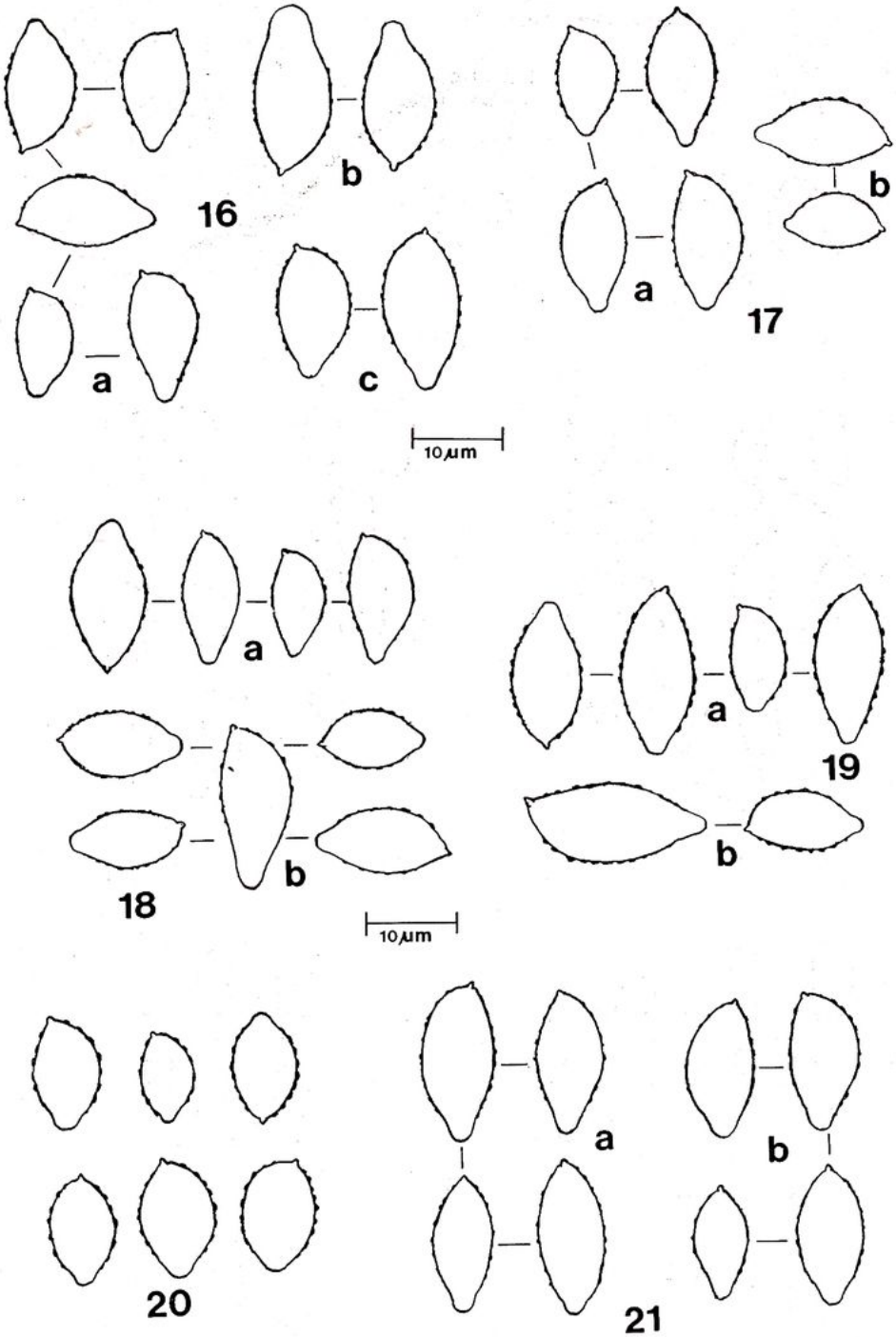
Very readily recognised by the large ring and its colours and truly 'species nobillissima' as Fries says.



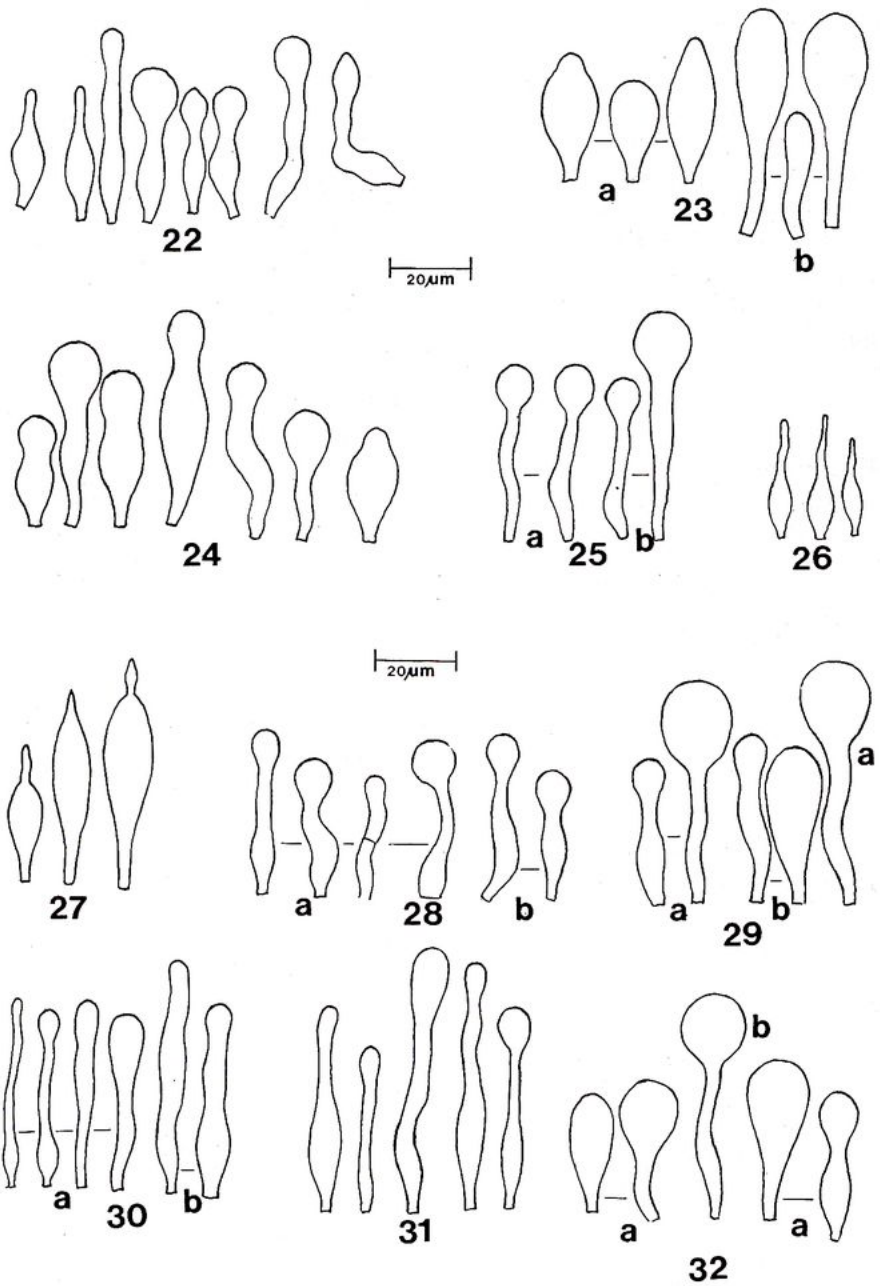
FIGS 1–6. Spores; all except fig. 5 from spore-prints. **1:** *Cortinarius* (*Telamonia*) *aureomarginatus*; a, 6 ix 1950, Witley Common (legit. Pearson); b, 30 viii 1970, Park Dale, New Forest; c, *Orton* 4031. **2:** *C.* (*T.*) *basililaceus*; a, 6 ix 1950, Witley Common (legit. Pearson); b, 2 x 1969, Rufus Stone, New Forest; c, *Orton* 3851. **3:** *C.* (*T.*) *basiroseus*; a, 6 x 1950, Netley Park, Shere (legit. Pearson); b, *Orton* 699; c, 28 x 1967, Sheepleas, East Horsley. **4:** *C.* (*T.*) *violilamellatus*; a, 6 xi 1951, Witley Common (legit. Pearson); b, *Orton* 1930; c, *Orton* 2772. **5:** *C.* (*T.*) *heterosporus*, from fragment of type **6:** *C.* (*T.*) *tabacinus*; a, *Orton* 1085; b, *Orton* 1907; c, 16 ix 1958, Gannochy.



FIGS 7–15. Spores; all from spore-prints. **7:** *Crepidotus bickhamensis, Orton* 5255. **8:** *Melanotus horizontalis, Orton* 5316. **9:** *Nolanea rhombispora, Orton* 5101. **10:** *Flammulaster limulata*; a, *Orton* 3262; b, *Orton* 3264; c, 30 ix 1976, Black Wood, Rannoch. **11:** *F. limulatoides*; a, *Orton* 1177; b, *Orton* 3577; c, *Orton* 3578. **12:** *F. novasilvensis*; a, 31 viii 1970, Park Dale, New Forest; b, *Orton* 5142. **13:** *F. denticulata, Orton* 3576. **14:** *Tephrocybe impexa,* 28 x 1977, Membury. **15:** *Hypholoma xanthocephalum, Orton* 3634.



FIGS 16–21. Spores; all from spore-prints. **16:** *Naucoria badiolateritia*; a, *Orton* 4183; b, *Orton* 4423; c, *Orton* 4424. **17:** *N. clavuligeroides*; a, *Orton* 4186; b, *Orton* 4426. **18:** *N. saliceti*; a, *Orton* 4427; b, *Orton* 4187. **19:** *N. salicis*; a, 5 ix 1959, Thack Marsh, Surlingham; b, 16 ix 1959, Freshfield. **20:** *N. bohemica,* 19 ix 1970, Black Wood, Rannoch. **21:** *N. rubriceps;* a, *Orton* 4428; b, *Orton* 5166.



FIGS 22–32. Cystidia; all marginal except 28a (dermatocystidia). **22:** *Flammulaster limulata, Orton* 3262; **23:** *F. limulatoides*; a, *Orton* 1177; b, *Orton* 3578. **24:** *F. novasilvensis,* 31 viii 1970, Park Dale, New Forest. **25:** *F. denticulata*; a, *Orton* 3576; b, *Orton* 1526. **26:** *Melanotus horizontalis, Orton* 5316. **27:** *Nolanea rhombispora, Orton* 5053. **28:** *Naucoria clavuligeroides, Orton* 3986; a, dermatocystidia; b, marginal cystidia. **29:** *N. badiolateritia*; a, *Orton* 4423; b, *Orton* 4183. **30:** *N. bohemica*; a, 19 ix 1970, Black Wood, Rannoch; b, 10 x 1957, Wheatfen Carr, Surlingham. **31:** *N. rubriceps, Orton* 4428. **32:** *N. saliceti*; a, *Orton* 4187; b, *Orton* 4427.