CORTINARIUS II

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A note on pagination

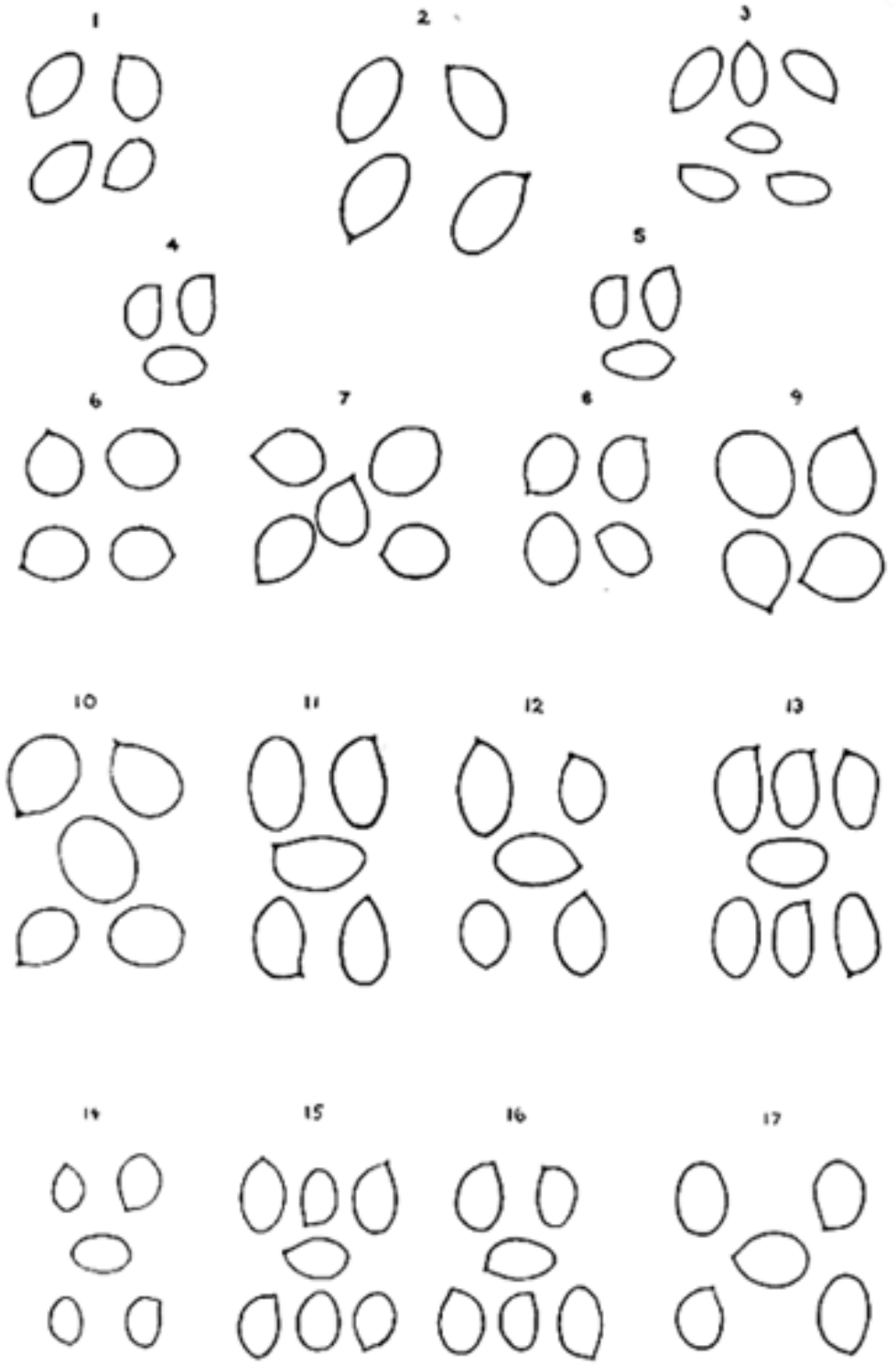
This Key and Cortinarius II by PD Orton were published separately in *The Naturalist.* The page numbers at the top of the pages reflect this. However the two keys go together, so the pages have been given numbers **at the bottom of the pages** which run on from Cortinarius I to Cortinarius II. It is hoped that this will not prove to be a problem to readers.

THE GENUS CORTINARIUS
II. *INOLOMA* AND *DERMOCYBE*

P. D. ORTON

CLASSIFICATION. In dealing with the two Friesian subgenera of dry non-hygro-phanous Cortinarii, *Inoloma* and *Dermocybe*, the first question to decide is whether to maintain these two subgenera as Fries left them or whether to attempt a re-grouping of the species. Fries separated these two subgenera on stem-shape, clavate-bulbous and fleshy in the former and ± equal or attenuated and slender in the latter. This distinction has not been found satisfactory in the light of more complete examination of the species, since some species may have either clavate or equal stems and some otherwise related species may differ in just this character. It seems better to separate the species on a group of characters since no single character will serve the purpose satisfactorily and a modification of the Friesian subgenera is therefore required. Dr. Moser in Austria has recently (1955) divided the species into three groups: genus *Phlegmacium* subgenus *Inoloma,* genus *Cortinarius* and genus *Dermocybe.* In *Phlegmacium* subgenus *Inoloma* he includes those species from the Friesian subgenus *Inoloma* with a ± smooth silky-shiny cap and robust clavate-bulbous stem, plus the *'anomalus'* group of species and *C. pholideus* from subgenus *Dermocybe* Fr.: in *Dermocybe* he includes those brightly coloured often ± equal-stemmed species forming the *'cinnamomeus'* group together with *C. sanguineus* and other red species, a natural and easily definable group: in *Cortinarius* (so-called because it includes the type species of *Cortinarius - C. violaceus)* he includes the residue from both Friesian subgenera, mostly scaly-capped often bright coloured species with varied stem shapes. My classification follows similar lines with some modifications but treats the groups as three subgenera. Since it is recommended that the subgenus containing the type species of the genus should be given the generic name and the type of subgenus *Inoloma* Fr. is *C. violaceus* as for *Cortinarius,* subgenus *Inoloma* becomes a synonym of subgenus *Cortinarius* (similarly at generic level *Inoloma* (Fr.) Ricken is therefore a synonym of *Cortinarius* Fr.) and a new name is required for my subgenus corresponding roughly to *Phlegmacium* subgenus *Inoloma* Moser; for this subgenus I propose the name *Sericeocybe,* and the three subgenera included in this part are therefore *Sericeocybe, Cortinarius* and *Dermocybe.* Although it is true that a few species of *Sericeocybe* (*C. cyanites* and *C. tabularis* in particular) are sl. viscid when fresh and moist, the former is more often found dry and robust with clavate-bulbous stem (i.e. Sericeocyboid in habit) and the latter has obvious affinities with section *Anomali* (shape, silky sheen on cap and ± subglobose spores), I feel it is a pity to include predominantly dry species in a subgenus which was founded and is maintained for predominantly viscid species and it seems more convenient for the present to maintain *Sericeocybe* as a separate subgenus. *C. cyanites* should, however, have been included in Part I under *Phlegmacium,* an error for which I apologise and hope to rectify at a later date. Dr. Moser has included *C. bolaris, C. rubicundulus* and *C. pholideus* in his *Phlegmacium* subgenus *Inoloma* but I prefer to keep species with bright colours or truly scaly caps such as *C. bolaris* and *C. pholideus* in subgenus *Cortinarius,* and *C. rubicundulus* having bright colours and a similar flesh colour-change to *C. bolaris* is perhaps better placed with that species. He also included *C. gentilis* in his genus *Cortmanus,* but since this species has a smooth cap and is hygrophanous I prefer to keep it m *Hydrocybe* and it will be described in Part III.

As will be seen from the key to the subgenera of *Cortinarius* on p. 99 (key 4), the separation of my three non-hygrophanous subgenera is based mainly on cap colour, nature of cap surface (whether silky-shiny or scaly, etc.) and stem-shape. All hygrophanous species, whether with or without a second veil in addition to the cortina are included in subgenus VI, *Hydrocybe* to be dealt with in Part III. It is important to define the word 'hygrophanous' somewhat carefully as it is likely that confusion has been caused in the past by an inexact use of this term. I have taken it to mean that as the cap loses moisture it becomes paler in colour and vice versa A number of species included in this part - e.g. section *Anomali* – change colour with age, but the colour becomes darker rather than paler and some initially blue-violaceous species - e.g. *C. malachius* - 'fade' with age to dirty-brownishor ochraeceous, but this is a different phenonomenon to the 'fading' due to loss of moisture in truly hygrophanous species.



Spores of various species of *Cortinarius* belonging to the subgenera *Sericeocvbe, Cortinarius* and *Dermocybe,* all X 1000 (in original A5 document)

1. *C. malachius,* 105, elliptic or elliptic sl. amygdaliform; 2. C. *malachioides,* 106, elliptic sl. amygdaliform; 3. C. *pearsonii,* 107, elliptic sl. amygdaliform; 4. *C. semisanguinius,* 141), elliptic; 5. C. *phoeniceus,* 148, elliptic-amygdaliform; 6. *C. lepidopus,* 127, subglobose or broadly ovate; 7. *C. tabularis,* 128, broadly elliptic-ovate or sl. pruniform; 8. C. *simulatus,* 110, broadly elliptic; 9. C. *azureovelutus,* 123, subglobose or broadly ovate; 10. C. *epsomiensis.* 125, broadly ovate or sl. prunifom; 11. *C. aureifolius,* 153, elliptic or elliptic-oblong to sl. amygdaliform; 12. *C. cinna-momeo-lutescens,* 157, elliptic or sl. amygdaliform; 13. *C. sphagneti,* 15S. elliptic-ainygdaliform; 14. C. *croceofolius,* 152, elliptic or elliptic sl. amygdaliform; 15. *C. cinnamomeus,* 150, elliptic or elliptic sl. amygdaliform; 16. C. *cinnamomeo-badius,* 156, elliptic or elliptic sl. amygdaliform; 17. C. *croceoconus,* 154, elliptic.

In sorting out the species of those subgenera the same problem arises as with *Phlegmacium* namely the use of one Friesian name for two or more different species by different authors. This is further aggravated, in *Sericeocybe* especially, by the fact that no detailed up-to-date descriptions exist for some species and also that some are only occasionally found and then sometimes only as single specimens. Dr. Henry in France has described a number of species in detail and I have been able to confirm most of his observations on the rather difficult *'cinnamomeus'* group, a discussion of which is included in the notes and index under *'cinnamomeus'.* With his treatment of the *'anomalus'* group I am not quite so much in agreement, however - e.g. the species he describes as *C. azureus* with conspicuous ring-like veil cannot be the Friesian *C. azureus* described by Fries as "stipite *glabro, striatulo*", and the original descriptions and paintings of *C. lebretonii* and *C. lepidopus* do not to my mind indicate that they are the same species (see notes) - in fact I have found it necessary to describe two new species in this group. Nevertheless there is no doubt that Dr. Henry has made most useful and important contributions to our knowledge of the species of these subgenera. For those species not dealt with by Dr. Henry or collected by myself or Mr. Pearson, I have often relied on Ricken (1915) for descriptions; not only are they for the most part excellent descriptions but Ricken described what he saw and was not just content to translate Fries' diagnoses as many older authors did and he seems to have collected more species of *Sericeocybe* than most authors. Within the subgenus *Sericeocybe* I have found it necessary to describe two of the three recent interpretations of *C. malachius* as new species. I have not personally collected any of the section *Opimi,* which must accordingly be regarded as a provisional grouping of species. I have included two rather slender species sometimes formerly placed in *Telamonia* - *C. psammocephalns* and *C. penicillatus* - in subgenus *Cortinarius* section *Pholidei,* since they are truly scaly, but *C. psammocephalus* may be slightly hygrophanous and might be sought in *Hydrocybe* and this is in any case another section in need of further study. Besides *C. (Dermo.) ochroleucus* already transferred to *Myxacium* and described in Part I, *C. (Ino.) bulliardii* is ± hygrophanous and is transferred to *Hydrocybe* together with the distinctly hygrophanous *C. (Dermo.) purpureo-badius (= C. anthracinus* sensu Bresadola (Icon, only) non Fr.: = C. *subanthracinus* Henry), which will be described in Part III but is included in the key to species in this part. On the whole the hygrophanous character of the cap is fairly easy to see, but although no doubt a few of the less obviously hygrophanous species might be sought for amongst the species dealt with in this part, a little field experience should eliminate most of these. The species are arranged for convenience in sections as in Part I. In the lack of personal data on *C. myrtillinus* Fr. I have refrained from assigning this species to a section for the present, but have included a description in the tabular notes at the end of subgenus *Sericeocybe.*

HABITAT. Species of these three subgenera may be found in almost any sort of woodland, *C. epsomiensis,* however, occurs regularly in chalk grassland well away from any trees. On the whole species of the subgenus *Sericeocybe* are the least common, some, especially the section *Opimi,* are distinctly uncommon and others are sometimes met with only as single specimens. Members of the section *Anomali* are, however, frequently found, as are many species of *Dermocybe,* especially in coniferous woods. Some of the larger species of the subgenus *Cortinarius* are also rather uncommon.

Characters of particular importance in studying these subgenera are as follows:

CAP. Colour and surface, whether silky-smooth, tomentose or scaly, are important characteristics; furthermore many species undergo a series of colour changes often difficult to describe concisely and without coloured plates. A series of specimens showing the colour changes from young to mature states is a help and sometimes essential, since a single specimen may give a deceptive impression of the colour and some of the essential data may be unobtainable from mature specimens. Broadly speaking the *Sericeocybes* are silky-smooth often with marked silky-shiny sheen when dry (minute silvery-shiny fibrils), wheras the other subgenera are more often scaly, tomentose or at least minutely fibrillose – but there are exceptions! Except in a few cases shape is not of great importance, most species are convex then expanded often broadly umbonate, in a few cases acutely so, a few are ± persistently conical and some, especially the larger ones, may be slightly depressed with wavy-lobed margin when old

GILLS. As in all Cortinarii it is useful and often essential to know the colour of the young gills and the colour changes that follow. Shape is rarely diagnostic. The gills are usually adnate, occasionally slightly decurrent when old, ± emarginate and ventricose or not; sometimes the edge is constantly uneven or denticulate. In most species the gills are fairly crowded but in a few they are distant and I have ventured to introduce in the tabular notes the gill formula as used by some continental mycologists; it is quite simple: 'L' stands for the number of gills (or 'lamellae' reaching the stem, and 'l' for the number of gills (or 'lamellulae') between adjacent lamellae, which is commonly 1, 3, or 7. ie of 1, 2, or 3 lengths, sometimes in odd cases other numbers. This formula is, I think, helpful in the case of consistently small species which do not show much variation in cap size and for which it is often remarkably constant; the figures I give should not be taken as more than a guide since I have not yet had opportunity to examine more than a limited number of specimens of any one species. I am introducing it in this part in preparation for Part III, where it may have greater significance.

STEM. Colour and shape are both useful characteristics; the colour is sometimes a paler edition of that of the cap, often showing a similar series of changes; many species of *Sericeocybe* and *Cortinarius* have rather characteristically clavate-bulbous stems whereas in *Dermocybe* most species have ± equal and often rather slender stems, but again there are exceptions. It is important to note whether a veil is present in addition to the cortina and if so, its colour and whether it forms a distinct persistent ring-zone or ± fugacious patches or zones below the cortinal zone, which is nearly always easily seen in these subgenera at least at first or when dusted with the rusty spores. A few species have persistently hard and solid stems, others soon go spongy inside and yet others are stuffed then hollow.

FLESH. Colour, both when young and when older should be noted and any marked colour change when the flesh is cut or bruised. The action of chemical reagents on the flesh has not yet proved to have any very decisive diagnostic value in these subgenera.

TASTE AND SMELL. A number of species (especially of *Dermocybe)* have a rather radishy taste and smell whilst *C. traganus, C. hircinus* and *C. camphoratus* have characteristic strong disagreeable smells. One or two species taste ± bitter.

SPORES. Shape and size of spore are of considerable value in these subgenera just as in *Myxacium* and *Phlegmacium.* It is difficult to describe the shapes accurately but perhaps the figures included with this part may help to clarify my terminology. It is, as always, important to measure spores from a spore-print, when the variation in size is often quite small; if those on the gill are measured there are likely to be some oversize and some undersize or immature spores which may give a false impression of the range of variation, and it is always possible that if care has not been taken to keep specimens of different species separate in the collecting basket, spores from another species may have landed on the gills. The more critical figure in spore dimensions is the width, which frequently shows no more than ½µ variation for one specimen, or 1µ for different specimens of the same species - it is only in those species with subglobose or very large spores that there is a regular variation in width of 1 to 2µ. Length, however, may vary much more and ranges of 3µ are normal, with the odd spore increasing the extreme range to 4 or 5µ in some cases. My experience is that on the whole width measurements are remarkably constant for one species and of great value in determining the species. Unless otherwise indicated spore measurements given in the tabular notes are from camera lucida drawings at x2000 of spores from spore-prints mounted in weak ammonia. Mounting in weak ammonia (not more than about 30%) helps one to see the degree of roughness of the spore and measurements made in this medium do not appreciablv differ from those of spores from fresh spore-print mounted in water. I have included details of relative size of apiculus and spore-roughness as far as my limited experience permits more as a matter of interest and without attaching much significance to them as yet. All basidia so far examined have been 4-spored with the exception of one collection of *C. anomalus* sensu lato made some years ago, which was 2-spored but, unfortunately, not described in detail; from my meagre notes I suspect it may have been *C. azureovelatus*; further investigations of the *Anomali* from this point of view would be interesting. I have not, unfortunately, made a critical investigation of the colour of the spore-print, which, if always done under similar conditions, might be of value.

CYSTIDIA. Most species have the gill-edge fertile, only a few specied in these subgenera having the gill-edge constantly sterile. A few cylindric-clavate sterile cells may quite often be seen projecting beyond the neighbouring cells on a fertile gill-edge and are not really of any diagnostic value; it is only when the entire gill-edge is consantly sterile that this character is of use. It is unfortunate that the species chosen to be the type of *Cortinarius – C. violaceus –* is one of the very few possessing true facial and marginal cystidia, since this feature is rare in the genus and not at all typical, and only found in two other species included in this part – *C. pseudocrassus* and *C. rubicunculus.*

OTHER CHARACTERS. Measurements of widths of cap cuticle hypliac have been noted but it is difficult as yet to see the significance of any of these It seems that in most or perhaps all *Scriceocybes* the hyphae of the cap cuticle are relatively narrow (1-7μ in diam.), bnt so also are those in some *Dermocvbes* and *Hydrocybes.* A number of the section *Cinnamomei* have pigment masses in the gill-trama and also in some basidia, but I have not yet enough data to be sure whether this is significant or not or, indeed, confined to this section.

CONCLUSION. Quotations of illustrations are given from standard works when possible as in Part I. Descriptions are as far as possible based on my own notes or those of Mr. Pearson, particularly in the case of critical sections such as *Anomali* and *Cinnamomei,* since I feel that it is more valuable primarily to study what is in the field rather than what others have published, although the books, having been written, cannot be ignored; I have indicated the source of descriptions of species I have not seen myself. So much trouble could have been avoided if in the past authors (British authors in particular!) had described what they found and not been content merely to copy or translate the descriptions of Fries or other authors. Reference to the key to subgenera (key 4), which is included more particularly to help define the subgenera, is not necessary before using the key to species (key 1) which deals collectively with the species of all three subgenera. Alternative keys are provided for sections *Anomali* (including one or two additional species likely to be thought Anomaloid) (key 2) and *Cinnamomii* (key 3). Characters given under the subgeneric or sectional headings in the tabular notes must be understood to refer to all species in that subgenus or section and are not necessarily repeated in the descriptions of the species, this refers especially to cap and gill shapes. The importance of examining young and fresh material whenever possible and checking field-work by spore-measurement is as great as in Part I, there is plenty of room for error in a critical group like this! I cannot too strongly emphasise the fact that in this genus one specimen of a particular fungus may not be sufficient for identification purposes especially if it is rather old. Diligent search in the neighbourhood of the place where the first specimen was found, including scraping under the leaves nearby if necessary, may show the presence of further possibly younger specimens. Failing this a visit to the same place later the same year (weather permitting) or twelve months later (on the same date or a few days earlier!) may help to solve the problem. It is so often essential to know the sequence of colours from young to old specimens so that a series of specimens of different ages is necessary. Sometimes the colour changes are striking and bewildering as, for instance, the change from blue-violaceous to tawny-ochre in *C. malachius,* so that it may need several seasons collecting before one can recognise all the different stages separately. Out of 58 species included in this part, 51 are British with reasonable certainty and 7 need confirmation. Seven new species are proposed and, including these, 16 new records are made. As in part I a few additional European species are included in the key. I have no doubt a few more new records and possibly also new species will be necessary before we get a true picture of the British species of these subgenera. Finally I should like to record my very grateful thanks to the Nufield Foundation for a grant to travel about the country collecting toadstools for description, to the Council of the Leeds Literary and Philosophical Society for a grant towards the costs publication, and to Dr. R. W. G. Dennis of The Herbarium, Royal Botanic Gardens, Kew, who has, as usual, allowed me very free access to specimens and papers and given me much helpful advice and criticism.

Latin diagnoses of one new subgenus and seven new species are included after the notes and index.

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Some abbreviations have, been used in the, keys and tabular notes as follows

conif.	coniferous	occ.	occasionally
cvx.	convex	s.	sensu
decid.	deciduous	sl.	slightly
esp.	especially	sub.micr.	under the microscope
exp.	expanded	v.	very
f.	fairly		

An asterisk (*) preceding the species name denotes a species not yet recorded fo Britain and a dagger (†) a new species for Britain.

Key 1. Key to the Species of *Sericeocybe, Cortinarius* and *Dermocybe,*

(If possible find out the following data about your collection before using the key - spore size and shape from spore-print, colour of young gills and cap and subsequent colour changes, presence or absence of second veil (best seen in young specimens), habitat.)

1. Bluish or violaceous tints present in some part at least when young 2
1. Bluish or violaceous tints absent even when young (*suillus, opimus* s. Ricken and *urbicus* s. Lange may show a very vague bluish tinge in stem-apex or gills when quite young) 27

Species with blue or violaceous tints

2. Almost unicolorous dark-violaceous or blackish-violet discolouring blackish-brown with sl. violaceous tinge (flesh sl. paler in part and gills becoming rusty-bay or purplish umber); cap entirely velvety-scaly; spores large, ± amygdaliform, 11-15/7-9µ; facial and marginal ± lageniform or fusiform-cylindric cystidia present *violaceus* (131)
2. Not so; (if ± unicolorous blue-violaceous, spores smaller and facial and marginal cystidia absent) 3

3. Lower part of stem and often also cap with distinct red, reddish-brown, sepia or dark-brown scales on a paler background; blue-violaceous tints confined to young gills and sometimes also stem-apex 4
3. Not so 6

4. Scales on cap and lower part of stem crowded, ± erect, pointed, sepia or dark-brown; (gills and stem-apex blue-violaceous at first; spores broadly elliptic, 6½-8½/5-6µ; deciduous woods, esp. birch) *pholideus* (140)
4. Scales on lower part of stem and/or cap brighter coloured or more scattered, scarlet-red, reddish or reddish-brown 5

5. Lower part of stem whitish with scattered reddish or reddish-brown adpressed fibrillose scales; cap sometimes also with similar scales on a pinkish-clay-white or reddish-buff background; spores 6-8(9)/5-6½(7)µ subglobose or broadly ovate; gills and stem-apex grey-violaceous at first; woods, esp. heathy birch and pine. *spilomeus* (129)
5. Lower part of stem straw-coloured with ± longitudinal scarlet-red fibrils; cap lacerate, with broad scarlet-red fibrillose scales on a pinkish-ochraceous background; spores 10-14/6½µ, oblong sec Henry; violaceous tints confined to young gills; flesh white or whitish, cream coloured in stem; mixed woods, esp. conif.; (cap 30-70 mm.; stem ± clavate, 7-10 mm. in diam.) *(*pavonius* Fr.)

6. Smell strong, penetrating, unpleasant, sickly sweet, of goats, burnt-horn, acetylene or sweat; (under conifers, esp. pine) 7
6. Smell none or different (if unpleasant, weak or different) 9

7. Gills lilac or blue-violaceous at first as well as cap and stem; flesh blue- violaceous or whitish, sometimes pallid or rusty-yellowish in part; smell of goats, burnt horn or sweat 8
7. Blue colours confined to stem and sometimes cap margin at first; gills yellow-ochraceous at first then ± rusty; flesh pallid-yellowish in cap, deeper ochraceous or rusty in stem; smell sickly sweet or of acetylene *traganus* (112)

8. Flesh whitish or blue-violaceous often deeper at stem-apex then pallid or dirty-yellowish, finally ± unicolorous ochraceous-yellowish; cap and stem becoming rusty-ochraceous or tawny-buff at least in part; smell of goats or burnt horn; spores ± amygdaliform, 9-11/5-6µ *hircinus* (111)
8. Flesh lilac or blue-violaceous becoming whitish or cream-colour in the stem; cap and stem lilac or blue-violaceous, only becoming sl. pallid or brownish in places; smell penetrating of sweat or raw potato; spores elliptic-oblong, 11/5½µ sec Henry; (cap 50-70 mm.; stem ± clavate, 60-80/15 or more mm., woolly peronate at first) *(*camphoratus*(FR.) Fr. S. Henry non Ricken)

9. Flesh slowly turning rose-red, wine red wine-red or reddish-violaceous when cut or bruised (after 30 sees, or more); cap, gills and stem grey-violaceous or prussian blue at first; cap ± viscid at first; spores ± amygdaliform, 8-10/5-6µ) *cyanites* (109)
9. Flesh not changing colour markedly whencut or bruised 10
10. Cap and stem silvery-whitish or pale bluish-white sometimes disclourig pale ochraceous or pallid with age, never deeper violaceous except at stem-apex (but gills and flesh may be so); stem clavate-bulbous, 7-25 mm. at base; spores elliptic or amvgdaliform, 7½-10.5-6µ 11
10. Cap and stem deeper blue-violaceous or differently coloured from the first; stem clavate-bulbous or not 13
11. Gills not blue-violaceous at first, whitish then clay; pale bluish tints confined to young cap (whitish-lilac); spores ± amygdaliform, 8-9/5µ *argentatus* (114), see § 82 (see also *urbicus* s. Lange, § 82)
11. Gills pale or deep blue-violaceous at first; spores elliptic (7½)8-10/5-6µ 12
12. Stem peronate with pale bluish-white or lilac veil, forming ± persistent and well-marked ring-zone; cap, stem and gills ± unicolorous pale blue-violaceous or bluish-white at first (but deeper blue-violaceous at stem-apex); generally more robust (cap 30-90 mm., stem 12-25 mm. at base) *alboviolaceus* (103)
12.. Stem without second veil, white silky-smooth below cortinal zone, surface sometimes sl. broken up when old; cap and stem at first silvery-white or with soon fugacious faint blue-violaceous tinge but stem-apex deeper blue-violaceous, gills relatively deep blue-violaceous at first but soon becoming paler; generally less robust (cap 30-55 mm., stem 7-18 mm. at base) *kanffmannianus* (104)
12. (See also *malachius* (105), § 26, with spores eliptic or sl. amygdaliform, 7½-9(10)/4½-5½µ, found under conifers)
13. Vague bluish tints confined to young gills and stem-apex; cap pale ochraceous or tan, minutely tomentose-scaly; stem whitish, short and stout, ± pointed at base, very hard and firm; spores subglobose, 8-9/7-8µ *opimus* (119)
13. If bluish tints confined to young gills and stem-apex, stem not short, stout and hard, cap not tomentcse-scaly or colours and spores otherwise 14
14. Cap fuliginous tinged with lilac becoming white-silky-hoary, not turning reddish; gills rather persistently amethyst-blue then clay-bluish, not turning purplish; stem without distinct second veil; spores elliptic-oblong, about 10µ long sec Quélet, Henry *myrtillinus* (130)
14. Not so; (note - *azureus* (126), may be similarly coloured but has cap becoming pallid-buff or tinged tawny and subglobose spores) 15
15. Spores subglobose or broadly ovate; cap *either* soon ± plane, orbicular and rather thin-fleshed *or* broadly umbonate or cvx.-truncate and thick-fleshed at disc, with marked silky-atomate sheen when dry (sometimes sl. viscid when fresh and moist) - section *Anomali* (see also Key 2) 16
15. Spores ± amygdaliform, elliptic or broadly elliptic; ckp less commonly plane and regular, generally thick-fleshed, with or without strong silky sheen when dry 22
16. Second veil ± conspicuous, forming ± distinct ring-zone and patches below cortinal zone (examine young specimens!) 17
16. Second veil absent, stem white silky or silky-striate below cortinal zone, surface occ. sl. broken up when old 20
17. Cap soon reddish-brown, date-brown or umber, when young sometimes with blue-violaceous margin, generally becoming expanded ± orbicular, often thin-fleshed; habit rather slender; stem 4-12 mm. in diam.; spores 6½-8½/5-7µ (stem blue-violaceous above, whitish or pale dirty yellowish below then entirely whitish or dirty yellowish; decid. and conif. woods *lepidopus* (127)

17. Cap differently coloured, generally broadly umbonatc *or* habit more robust, stem 10-30 mm. in diam 18
    18. Habit generally robust; stem usually distinctly clavate-bulbous, 10-30 mm. at base; cap with strong silky atomate sheen sometimes becoming wrinkled or rugulose, *either* soon bright tawny-buff or rusty *or* ochraceous or yellowish-buff often with paler or bluish margin at first 19
    18. Habit less robust; stem ± equal or with clavate or sl. thickened base, 5-13 mm. at base; cap minutely adprcssed grey-silky at first then with strong atomate sheen, ashy-sepia or pallid-grey gradually discolouring dirty ochraceous, olive-grey or pallid-buff, disc sometimes with sl. reddish-brown tinge, finally ± unicolorous pallid-tan or rusty-buff *anomalus* (122)
19. Cap soon rather bright tawny-buff or rusty-tawny to rusty-brown, at first clay-brownish, sometimes with sl. blue-violaceous tinge; smell none or faint; especially under conifers *caninus* (124)
19. Cap pale bluish-clay or ochraceous-buff, then ochraceous or yellowish-buff, not becoming bright tawny or rusty, often with paler bluish or whitish ochraceous margin at first, sometimes becoming wrinkled or rugulose; smell fairly strong when cut, sickly-aromatic; deciduous woods, especially birch (not yet recorded from under conifers) *azureovelatus* (123)
    20. Almost entirely blue-violaceous at first; cap and stem discolouring pallid or yellowish with age, disc of cap sometimes tinged tawny when old; gills and stem rather persistently blue-violaceous; gills finally violaceous-umber *azureus* (126)
    20. Cap not blue-violaceous when young; blue tints in gills, stem and flesh more fugacious; gills becoming clay-buff or rusty-buff 21
21. Rather fugacious blue-violaceous tints restricted to young gills; stem and flesh white at first, discolouring sl. ochraceous or pallid; cap soon date-brown, bright tawny-buff or rusty-tawny except sometimes at margin, ochraceous, tawny-buff or pale date-brownish at first, with atomate silky sheen; spores 8-11(12)/6-8(8½)µ (Fig. 10); often growing in grass, especially on basic soils *epsomiensis* (125)
21. Stem-apex and flesh blue-violaceous at first as well as gills, discolouring yellowish; cap brownish then rusty-buff with white silky sheen, often with wrinkled disc; spores 8-10/7-8µ sec Ricken; under beech (cap 40-50 mm.; stem 50-60/8-15 mm. sec Ricken) *(*C. diabolicus* Fr.)
    22. Spores ± amygdaliform, 13-15/7-8µ; (cap violaceous soon becoming reddish-brown from disc out; stem robust and firm, 15-40 mm. in diam. at base; small peculiar, specific sec Ricken; under conifers) *muricinus* (108)
    22. Spores broadly elliptic to ± amygdaliform, smaller, mostly less than 7µ in diam. 23
23. Spores 6-8(8½)/3-4µ, elliptic sl. amygdaliform (Fig. 3); (cap hoary ochraceous-buff then reddish-buff, minutely tomentose; stem with peronate lavender-blue veil (often also present at cap margin); mixed woods) *pearsonii* (107)
23. Spores larger, 4½µ or more in diam. 24
    24. Smell ± radishy at least when cut; gills soon dark violaceous-date-brown or umber; cap lilac or blue-violaceous then pale reddish-or dull date-brown to grey-brown, margin often remaining lilac for some time 25
    24. Smell none or faint, pleasant; gills blue-violaceous or pale violaceous-umber then dull rusty-clay or watery-buff to rusty-buff; cap blue-violaceous or lilac-greyish then clay-buff, pallid or dirty ochraceous sometimes with tawny or reddish-brown tinge at disc when old 26
25. Spores broadly elliptic, 7-8½/5-6µ (Fig. 8); cap 24-60 mm., matt, often innately fibrillose or fibrillose-tomentose in places esp. near margin; stem ± clavate, with pale lilac or lavender-blue peronate veil forming ± well-marked ring-zone and patches below this *simulatus* (110)

25. Spores elliptic-amygdaliform, 10-12/6-7½µ; cap 40-80 mm., silky then punctate-scaly; stem clavate-bulbous, 50-70/15-25 mm., scaly peronate; (deciduous and coniferous woods) *(*violaceo-cinereus* (Pers. ex Fr.) Fr. s. Ricken)
    26. Spores elliptic or sl. amygdaliform; 7½-10µ½-5½µ (Fig.1); cap blue-violaceous at first, gradually discoluoring clay-buff or dirty ochraceous, sometimes tawny-ochre when old, esp. at disc; under conifers, esp. pine *malachius* (105)
    26. Spores elliptic-amygdaliform with rather large apiculus, 9½-12/5½-6½µ (Fig 2) cap pale lilac-greyish or silvery-violaceous then pallid or clay-buff sometimes with reddish-brown tinge at disc; conif. and decid. woods *malachioides* (106)
27 Lower part of stem and/or cap with distinct red or darker ± erect fibrillose scales or conspicuous blackish fibrils on a paler background 28
27 Lower part of stem and cap without distinct darker scales (some species may have ± concolorous or sl. darker tomentose scales on the cap, or the lower part of the stem may be somewhat fibrillose) 41

Species with distinct darker scales at least on lower part of stem

28. Scales pinkish- or scarlet-red on yellowish background, entirely covering cap and lower part of stem; flesh at least at stem-base turning deep yellow when cut or bruised, cuticle also bruising; yellowish or deep red; (gills pale ochraceous or cream then milky-coffee to rusty-buff; spores subglobose 6-7½µ½-5½µ) *bolaris* (136)

(See also *rubicundulus,* 137, which has a similar flesh colour-change but different spores and cap and stem without red scales; see §50)

28 If scales reddish characters otherwise; flesh and cuticle without striking colour change when cut or bruised 29

29. Cap and lower part of stem with conspicuous hispid or net-like blackish fibrils on an olive-greenish or yellowish background; cap 30-66 mm.; stem ± clavate-bulbous; spores small, 5½-6/3½-4µ; smell of radish and habit of *Armillaria mellea* sec Fries *(*phrygianus* (Fr.) Fr.)
29. Not so 30
    30. Cap and lower part of stem with distinctly reflexed golden or rusty-tawny scales on a chrome- or ochraceous-yellow back. ground; cap ± persistently conical of acutely umbonate; smell pleasant, like *Pholiota squarrosa* (general appearance also. like a small solitary *Ph. Squarrosa*); stem f. robust, 3½-10 mm. in diam.; spores 8-10/5-6µ, elliptic or sl. Amygdaliform; inbeech woods *humicolus* (141)
    30 Not so; if in beech woods, spores smaller or characters different 31
31. Spores subglobose to broadly elliptic, 6-9/5-7µ; habit slender or robust 32
31. Spores elliptic or elliptic-amygdaliform, either narrower (3½-5µ in diam.) or longer (9-11(12)µ); habit slender or rather slender 38
    32. Scales or background ± olivaceous 33
    32. Scales or background never olivaceous 34
33. Habit robust, cap 40-105 mm., stem clavate-bulbous, up to 36 mm. at base; scales small, velvety-pilose, ± olive-brown on olivaceous or yellowish background; gills olive-yellow then brownish-olive, finally rusty-buff; spores 7½ -9/5-7µ; decid. woods, esp. beech and oak *cotoneus* (138)
33. Habit more slender, cap 25-36 mm., stem ± clavate or attenuated upwards, 50/6-8 mm.; scales dark-brown or blackish on a brownish-yellow-olive background, disc of cap almost woolly-tomentose; gills yellowish-cinnamon; spores 6½ -8/5-5µ; decid. woods *(*melanotus* Kalchb.)

(Note: the rather slender *venetus,* 139, might run down here; see § 55.)

    34 Spores subglobose or broadly ovate, 6-9/5-7µ (as Fig. 6) 35
    34 Spores, broadly elliptic, 6½ -9/5-6µ (as Fig. 8) 37

35. Habit robust, cap 32-100 mm., stem clavate-bulbous, 20-35 mm. at base; in beech woods; scales golden or tawny-rusty on yellow or golden background; (spores 7-9/5 ½ -7 *tofaceus* (133)

35. Habit more slender, cap 18-55(70) mm., stem ± equal or sl. clavatc, 5-10 mm. in diam.; conif. or decid. woods; scales red, reddish-brown or dark brown 36

36. Scales red or reddish-brown on pinkish-clay-white or pallid-reddish background; gills and stem-apex grey-violaceous at first soon pallid-ochraceous; cap cvx. then plane with sl. incurved margin, not or sl. umbonate; spores 6-8(9)/5-6½ (7)µ *spilomeus* (129)

36. Scales dark-brown on pale ochraceous or yellowish-buff background; buff with paler yellowish margin, reddish-brown when touched; never blue-violaceous in any part; cap becoming exp. umbonate; spores 6-7/5µ sec Ricken; (cap 40-55 mm.; stem 8-9 mm. in diam.; conif. woods) *(*penicillatus* s. Ricken)

37. Scales erect, pointed, sepia or dark-brown on ochraceous-buff or pale date-brown background; habit f. robust, cap 30-100 mm., stem ± clavate, 8-25 mm. at base; gills and stem-apex blue-violaceous at first then watery- or pallid-buff; spores 7-9/5-6µ; decid. woods, esp. birch *pholideus* (140)

37. Scales tawny-buff, rusty-ochraceous or golden on yellowish or golden background; habit rather slender, cap 20-50 mm., stem ± equal, 2-5(8) mm. in diam.; never blue-violaceous in any part; spores 6½-9/5-6µ; conif. and decid. woods . *psammocephalus* (143)

38. Spores 9-11(12)/5-6(7)µ, elliptic-pruniform; (scales rusty-brown on ochraceous-olive or reddish-brown background; cap 15-32 mm., margin rather persistently olivaceous-yellowish; stem ± equal, 25-45/3-6 mm.; under firs) *(*arenatus* (Pers.) Fr. s. Konrad)

38. Spores smaller, either 5-7/3½-5µ or 7-10µ-5µ 39

39. Spores 5-7µ long; gills either yellowish then buff or bright chrome-yellow then tawny-ochre 40

39. Spores 7-10µ long; gills clay- or pallid-ochraceous then date-brown-rusty or rusty-umber; (scales rusty-umber to dark-brown on pale tawny-ochraceous or rusty-buff background; stem ± equal, 2-6 mm. in diam.; spores 7-10/4-5µ, elliptic sl. amygdaliform; woods, esp. oak and pine) *penicillatus* s. Rea (142)

40. Gills bright chrome-yellow soon tawny-ochre; scales rusty-orange on yellow or ochre background; stem ± equal, 2-3 mm. in diam.; spores 5-6 ½ (7)/3½-4½µ, elliptic or sl. amygdaliform (Fig. 14); cap 15-30 mm; coniferous woods *croceofolius* (152)

40. Gills yellowish then buff; scales dark-brown on pale brownish or sl. olivaceous background; stem often thickened downwards, about 6-10 mm. in diam.; spores 6-7/4-5µ, obliquely elliptic; cap 30-70 mm.; decid. and conif. woods *(*arenatus* (Pers.) Fr. s. Moser)

41. In some part bright yellow, orange, tawny, brick-red, scarlet-red, blood-red, deep chestnut, purplish-bay, or olive 42

41. Colours whitish, ochraceous or dingy, never olivaceous (cap sometimes rusty-buff or tinged tawny when old) 73

Species in some part bright coloured (yellow, olive, red, tawny or deep chestnut)

42. Gills bright-red, blood-red, purplish-blood-red, purplish-chestnut or deep chestnut from the start 43

42. Gills yellowish, ochraceous, tawny or olive at first sometimes becoming golden-red, tawny-red or tawny-red-rusty, never bright red, blood-red or purplish-red (bruising blood-red sometimes in *rubicundulus,* 137) 49

43. Cap and stem some shade of red, purplish-red or chestnut from the start 44

43. Cap and stem yellowish, olivaceous or ochraceous. often becoming red-brown or chestnut, stem sometimes pink or reddish tomentose at base 48

44. Cortina bright red, scarlet or blood-red; almost unicolorous red lead, scarlet red or blood-red from the first, scarcely changing colour with age, except for gills acquiring a ± rusty tinge 45

44. Cortina ochraceous or brownish, or if reddish, fungus not ± unicolourous, bright or blood red; *either* ± unicolorous deep chestnut or dark blood-red-brown *or* purplish-lilac tints present at least in flesh 46

45. Entirely red-lead or bright scarlet-red; cortina bright red; smell and taste radishy; spores 7½-9½/4½-5µ, elliptic or sl. amygdaliform; in beech woods *cinnabarinus* (145)

45. Almost unicolorous deep carmine- or dark blood-red; cortina blood-red; smell and taste not distinctly radishy; spores 7-9/4-5µ, elliptic; in deciduous or coniferous woods *sanguineus* (144)

46. Almost unicolorous deep chestnut or dark blood-red-brown; flesh concolorous or paler; spores 7½ -9½ /5-6µ, broadly elliptic or sl. amygdaliform *anthracinus* (146)

46. Colours different or not unicolorous; purplish-blood-red, purplish-bay or purplish-lilac at least in part; flesh lilac or purplish-blood-red; spores narrower (4-5½/4µ in diam.), elliptic 47

47. Gills intense purplish-blood-red or purplish-chestnut from the start; cap purplish-blood-red or purplish-bay, sometimes at first with paler carmine or rose-tinted margin, fibrillose-tomentose or radially innately fibrillose to ± smooth, rather shiny or sl. paler when dry; stem purplish-blood-red, apex often with ochraceous or golden-brown tinge from cortina; spores 6½-8(8½)/4-4½(5)µ *puniceus* (147)

47. Gills ochraceous-buff then reddish-rusty or tawny-reddish-umber; cap purplish-date-brown or purplish-bay, drying paler ochraceous or tawny at least at disc in larger specimens, ± smooth, often shiny when dry; stem concolorous or paler, often with orange-red or vermilion fibrils from veil; cap 10-35 mm.; stem 35-70/1½-5 mm.; in woods, esp. birch spores 7½ -9½ /4½ -5µ †*C. (Hydro.) purpureo-badius* Karsten (included here since it sometimes appears ± unicolorous purplish-date-brown, resembling *puniceus,* 147, at first sight, but in reality a hygrophanous species to be described in Part III)

48. Stem ochraceous or yellowish with tawny-ochre or red fibrils below cortinal zone, base yellowish or pinkish tomentose; flesh dirty ochraceous or buff, reddish under cap cuticle and at stem-apex, somemetimes also at stem-base; spores 6-8/3½-4(4½)µ, elliptic-amygdaliform or -fusiform (Fig. 5); cap ochre-buff soon red-brown or chestnut *phoeniceus* (148)

48. Stem yellow-ochraceous or olivaceous, often with brownish or olivaceous fibrils but without red fibrils, base yellowish, pinkish or carmine-red tomentose; flesh ochraceous or olive-buff, without red tints except sometimes at very base of stem; spores 6-8(8½)/4-4½ (5)µ, elliptic (Fig. 4); cap ochraceous- or olive-buff, sometimes tawny-date-brown at disc when old *semisanguineus* (149)

49. *Either* flesh at least in part and stem-base turning chrome-yellow or rusty-orange when cut or bruised *or* cap and stem-cuticle bruising blood-red then brownish 50

49. Not so 51

50. Flesh at least in part and stem-base turning chrome-yellow or rusty-orange when cut or bruised; cap and gills yellow or ochraceous, bruising ± blood-red or orange-rusty; spores 6½ -8/3½-4½µ, elliptic-fusiform *rubicundulus* (137)

50. Cap and stem cuticle pale ochraceous turning immediately blood-red when touched then fading to brownish; flesh whitish, unchangeable; gills clay then pale buff; spores 9-10/5µ, elliptic *fuscotinctus* (118)

51. spores subglobose or broadly ovate, 6-9/5-7µ or 9-12½/6½-8µ; stemrather thick and robust; (cap minutely tomentose-scaly or becoming smooth, bright tawny-yellow, tawny-orange, olivaceous or greenish) 52

51. spores elliptic or amygdaliform, sizes various; stem slender or robust 56

52. Cap and stem ± tawny-yellow, tawny orange or rusty-tawny 53
52. Cap and stem ± olivaceous or greenish; (spores 6-9/5-7µ) 55

53. Spores 6 ½ -9/5 ½ -7µ.; gills yellowish at first then tinged tawny or rusty, finally tawny-ochre or rusty-tawny 54
53. Spores 9-12/6½-8½µ; gills ochraceous at first, soon tawny-ochre or deep tawny-red-rusty; (cap acutely or obtusely umbonatc, tawny-reddish or tawny-date-brown with paler ochre, tawny-buff or tawny-ochre margin; stem ochre then tawny or rusty in places, with yellowish ring-zone or patches of veil; basidia very large, 40-50/12-15µ; in coniferous woods) *speciosissimus* (135)

54. Flesh pale golden-yellow, deep rusty-tawny in lower part of stem, often ± tawny under cap cuticle; under conifers, esp. pine; cap minutely yellow-fibrillose-scaly or innately-fibrillose, often becoming ± smooth *callisteus* (132)
54. Flesh white or whitish in cap, ± ochraceous or tawny in lower part of stem, sometimes yellowish under cap cuticle; under beech; cap ± entirely distinctly tomcn-tose-scaly, less commonly ± smooth in places *tofaceus* (133)

55. Robust: cap 40-105 mm., stem ± clavate-bulbous, up to 36 mm. in bulb; cap pilose- or tomentose-scaly at first, yellowish-olive to tawny-olive-brown or dark olive-brown *cotoneus* (138)
55. Rather slender: cap 20-60 mm., steme ± equal or sl. thickened at base, 5-12 mm. in diam.; cap minutely tomentosc-floccose-scaly at first, greenish-yellow or greenish-olive then ochraceous- or brownish-olive *venetus* (139)

56. Stem peronate-scaly with ± distinct fibrillose scales, similar scales also on cap; colours predominantly golden-yellow or tawny-buff never olivaceous 57
56. Stem not scaly, ± silky-striate or fibrillose, sometimes with a few darker adpressed fibrils in lower part; cap from ± smooth to minutely tomentose-scaly; colours various 58

57. Stem gen. rather thick, 3 ½ -10 mm. in diam.; cap conical or exp.-conical, f. thick-fleshed at least at disc, entirely covered with reflexed fibrillose rusty-tawny or golden scales; spores 8-10/5-6µ, elliptic or sl. amygdaliform; under beech *humicolus* (141)
57 . Stem gen. rather slender, 2-5(8) mm. in diam.; cap cvx. then exp. often umbonate, sometimes acutely so, rather thin-fleshed, entirely minutely fibrillose-scurfy-scaly, scales tawny-buff, yellowish -ochraceous or golden; spores 7-9/5-6µ, broadly elliptic; conif. and decid. woods *psammocephalus* (143)

58. Cap bright tawny-ochre, orange-tawny or tawny-brick to tawny-umber; stem yellowish or concolorous, 3-12 mm. in diam., often rather thick for size of cap; cap 15-70 mm.; spores 8-12/5-6½(7)µ, elliptic or sl. amygdaliform 59
(See also *pseudocrassus,* 121, with facial and marginal cystidia, robust habit and spores 7-9/4-5µ, § 78.)
58. Cap colour otherwise or if tawny, stem slender, 2-4 mm. in diam. *or* flesh deep olive at least when moist *or* spores smaller; section *Cinnamomei* (see also Key 3) 60
(If with purplish-red flesh see *C. (Hydro.) purpureo-badius,* § 47, specimens of which with ochre or rusty-ochre gills may run down here.)

59. Gills ochre-yellow soon bright tawny or tawny-orange, finally rusty-tawny; cap minutely tomentose-scaly, ± obtusely umbonate; flesh yellowish or tawny-yellowish, sometimes reddish-brown in cap; decid. woods *orellanus* (134)
59. Gills bright lemon-yellow then ochre- or -tawny-buff sometimes with sl. olivaceous tinge; cap minutely yellowish silky-fibrillose or innately fibrillose with silky sheen when dry; acutely or obtusely umbonate or ± plane; flesh lemon-yellow, bright lemon or sulphur in centre of stem, often tinged tawny or pallid-reddish in cap; always in swampy woods or wet places, gen. under willow or alder *uliginosus* (155)

60. Gills ± bright chrome or lemon-yellow then golden-red, tawny, ochre or rusty 61
60. Gills lemon-yellow or olive-yellow hardly changing colour or becoming ochraceous-olive or olive-rusty 70

61. Gills soon vermillion-yellow to tawny-orange or bright golden-red; cap soon olive-red-brown to bright red-brown, coppery or date-brown, margin often remaining ± olivaceous, at least middle portion of stem becoming flushed with similar colours; spores 6½-8(8½)/4-4½(5)µ, elliptic or sl. amygdaliform (Fig. 15); sometimes f. robust: stem 2-10 mm. in diam., cap 12-90 mm.; (often under conifers) *cinnamomeus* (150)
61. Gills never bright golden-red, if ± ½µ tawny-orange then cap less deeply coloured and stem more slender or spores different 62
62. Gills soon becoming ± tawny or tawny-orange then rusty or rusty-tawny 63
62. Gills becoming yellow-ochre, ochre-buff, rusty-ochre or olive-rusty, (amber when old in *cinnamomeo-badius*) 68
63. Cap and stem ± bright tawny-orange or tawny-brick to tawny-bay; spores 8-11/5-6µ, elliptic or sl. amygdaliform; in swampy woods or wet places gen. under willow or alder *uliginosus* (155)
63. If cap and stem so coloured, spores or habitat different 64
64. Cap dirty ochraceous-buff or sepia-buff, ± adpressedly brown fibrillose; spores 9-12/5-6µ, elliptic or elliptic-oblong to sl. amygdaliform (Fig. 11) *aureofolius* (153)
64. Cap brighter coloured, yellow, ochraceous or tawny in part at least when young, often silky-fibrillose or ± smooth; spores rarely more than 9µ long 65
65. Flesh deep olive when moist esp. in cap, paler yellowish-olive in places when dry; stem often tinged olivaceous; (cap olive-brown to ± rusty-tawny-with golden-yellow margin, ± silky-tomentose; spores (5½)6-8/4-5µ elliptic or sl. amygdaliform; under conifers) *malicorius* (151)
65. flesh lemon- or golden-yellow, not or hardly olive whether moist or dry; when dry; stem not tinged olivaceous 66
66. Rather small; cap 15-30 mm., stem 2-4 mm. in diam.; cap and stem soon ± unicolorous yellow-ochre or rusty-orange; cap minutely fibrillose or fibrillose-scaly; spores small, 5-6½(7)/3½-4½µ, elliptic or elliptic-amygdaliform (Fig. 14); under conifers *croceofolius* (152)
66. If small species, cap characters different and spores larger 67
67. Slender to f. robust: cap 12-90 mm., stem 2-10 mm. in diam.; cap obtusely or acutely umbonate or ± plane, rarely conical, innately-fibrillose or ± smooth; cap and stem soon deep red-brown, coppery or date-brown at least in part; gills becoming bright golden-red; spores 6½-8(8½)/4-4½(5) µ, elliptic or sl. amygdaliform (Fig. 15) *cinnamomeus* (150)
67. Always rather small: cap 10-40 mm.; stem 2-5 mm. in diam.; cap ± persistently conical, tawny-brick or tawny-buff often with darker disc and yellower margin, ± smooth; gills becoming tawny-ochre or rusty-buff; spores 7½-9i(10)/4½-5½(6)µ, elliptic (Fig. 17) *croceoconus* (154)
68. Spores 6-7½ (8)/4-4½(5)µ; (gills lemon- or deep-yellow then ochre-yellow; cap 20-45 mm., ochre-yellow, ochre-buff or olive-ochre, sometimes with reddish-brown disc; stem 30-80/3-6 mm., lemon to chrome-yellow then golden, not or hardly discolouring but with some darker fibrils; flesh lemon- or golden-yellow, sometimes sl. olive-tinted in stem; sec Kauffmann on moist rich ground in decid. or cf. woods, very decayed wood or in Sphagnum) * *(cinnamomeus* sensu Kauffmann)
(included here provisionally since I believe I have seen this in damp birch woods in Scotland, but I prefer to gather more material before recording and renaming it)
68. Spores longer (6½)7-10/(4)4½-5½(6)µ. 69

69. Gills ± persistently lemon- or olive-yellow, hardly changing colour, ochraceous-olive or olive-rusty only when quite old; cap lemon-, olive-yellow or olive-buff, sometimes becoming reddish-brown at disc; spores 7 ½-10(11)/4½-5½(6)µ, elliptic or sl. amygdaliform (Fig. 12) *cinnamomeo-lutescens* (157)

69. Gills chrome- or golden-yellow then ochre-buff to rusty-ochre or amber; cap ochraceous-buff with lemon-yellow margin, soon reddish-bay, chestnut or chestnut-umber often with yellowish margin; spores 6½-9/(4) 4½-5µ elliptic or sl. amygdaliform (Fig. 16) *cinnamomeo-badius* (156)

70. Cap, gills and stem ± persistently lemon- or olive-yellow; gills hardly changing colour until quite old, cap and stem sometimes becoming reddish-brown in part; spores 7½-10 (11)/4½-5½(6)µ, elliptic or sl. amygdaliform (Fig. 12) *cinnamomeo-lutescens* (157)

70. Cap *either* olive-buff or olive-brown *or* chestnut to bay with olive-yellow or olive-brown margin; spores shorter or sl. narrower 71

71. Rather robust species: cap 25-100 mm., stem 5-15 mm. in diam.; smell strong, radishy, taste ± bitter; typically under beech (spores 6½-8/4½-5½µ elliptic) *raphanoides* (160)

71. More slender species: cap 17-40 mm., stem 3-6(10) mm. in diam.; smell none or faintly radishy, taste none or sl. bitterish; under beech or in *Sphagnum* or other damp moss 72

72. Typically in *Sphagnum,* occ. in other damp moss (*Aulacomnium*); spores 7½-9½/(4¼)4½-5µ elliptic-amygdaliform (Fig. 13); cap gen. soon ± plane *sphagneti* (158)

72. Under beech, esp. on chalk soil; spores (5½)6-8/(3¾)4-5µ, elliptic; cap gen. ± umbonate *olivaceofuscus* (159)

(See also *C. schaefferi* Bres., alternative key to '*Cinnamomei*' § 8)

Whitish, ochraceous or dingy coloured species

73. Predominantly grey, esp. cap, stem, cortina and veil; (cap 30-70 mm., sometimes with sl. brownish-red tinge, minutely grey-silky-floccose; stem, firm, ± equal, 50-100/10-15 mm., greyish-fibrillose and occ. vaguely violaceous above, brownish below; gills cream colour then pale ochraceous-rusty; spores 10-11/6½µ ovoid sec Henry) * *(sordescens* Henry)

73. Not so 74

74. Spores subglobose or broadly ovate 75

74. Spores elliptic, oblong, amygdaliform or limoniform 76

75. Stem 25-50/20-50 mm., very hard and firm, short and stout with ± pointed base, white or whitish; cap dry, minutely tomentose, pale ochraceous to rusty-buff; spores 8-9/6½-8µ *opimus* (119)

75. Stem 35-120/4-9 mm. (6-15 mm. at base), gen. elongate, ± equal with thickened or sl. clavate base, white or whitish discolouring pallid or pale yellowish; cap smooth with silky-atomate sheen when dry, sl. viscid when fresh and moist, pallid-whitish to dirty ochraceous-buff or pallid-ochraceous; spores 7-9(9½)/5½-6½(7)µ (Fig. 7) *tabularis* (128)

76. Spores limoniform, 12-13/7½-8½µ; (flesh hard; stem ventricose with rooting often incurved base; smell like *Tricholoma album)* *argutus* (120)

76. Spores smaller, not limonform 77

77. Stem 25-40/25-40 mm., short and stout ± attenuated at base, dirty white, white cortinate at apex; cap rimose-rivulose, pale ochraceous; gills clay-rusty; flesh whitish; spores 7-9/5-6µ, oblong sec Bres. *(*opimus* s. Bres., ?Hry.)

77. Not so 78

78. Marginal cystidia ± lageniform 44-64/5-7µ, facial cystidia ± cylindric or awl-shaped, 40-60/6-8µ; spores 7-9/4-5µ, elliptic-amygdaliform; cap innately fibrillose or tomentose esp. near margin, ochraceous to rusty, often with paler patches, thick-fleshed; stem robust and firm, 15-35 mm. at base, pale dirty ochraceous *pseudocrassus* (121)

78. Marginal and facial cystidia absent; if spores about 7-9/4-5µ, cap silky-smooth or habit less robust 79

79. Cap soon ochraceous-buff or pale rusty-pallid, sometimes with tawny or date-brown tinge at disc or when young with vague violaceous flush; flesh whitish then pale sepia or reddish-brown, bruising pallid or darker sepia in base of stem; spores 9-11/5½-6½µ, elliptic or sl. amygdaliform; under beech *suillus* (116)

79. Cap without rusty or tawny tinge; flesh white or whitish sometimes discolouring sl.; spores and habitats various (Note: old discoloured *malachius,* 105, might run down here, but grows under pines and has spores 7½-10/4½-5½µ). 80

80. Taste mild; stem often clavate-bulbous, more robust, 10-45 mm. in diam. at base, but 7-10 mm. in diam in *decumbens* and *urbicus* s. Lange 81

80. Taste bitter; stem ± ventricose with pointed base, 5-12 mm. in diam.; (spores 7-8/4-5µ, elliptic-pruniform; cap whitish then pale pallid with ± ochraceous disc; stem white silky) *C. (Myx.) ochroleucus,* 20 (see Part I, p. 26)

81. Cap at first lilac-whitish soon clay-whitish or silvery-shiny; spores not more than 9µ long 82

81. Cap white or silvery-white then pallid or pale milky-coffee or pale yellowish; spores 9µ or more long 83

82. Habit robust: cap 40-100 mm., stem 80-100/10-20 mm.; gills whitish or clay then watery- or rusty-buff; spores 8-9/5µ, ± amygdaliform; disc of cap or base of stem discolouring sl. ochraceous or yellowish; veil forming ± fugacious ring-zone or patches; decid. and conif. woods . *argentatus* (114)

82. Habit less robust: cap 40-50 mm., stem 40-50/10 mm.; gills watery-ferruginous with sl. purplish tinge sec Lange; spores 7½-8/4½µ, elliptic; cap and stem clay-whitish or watery-greyish with sl. pallid tinge; veil peronate, forming torn ring-zone; under willows *(*urbicus* (Fr.) Fr. s. Lange)

83. Flesh whitish soon ± unicolorous pale milky-coffee or dirty brownish; smell f. strong when cut, fruity; cap and stem silvery white then pallid or pale milky-coffee; white veil forming adpressed tomentose patches on lower part of stem; (spores 9-10½/5-6µ, elliptic) *hillieri* (115)

83. Flesh white or whitish, only discolouring sl. with age; smell none or sl. fungussy; cap and stem white or clay-whitish then pale buff or sl. yellowish; silky white veil forming ± fugacious ring-zone or absent 84

84. Habit robust: cap 40-100 mm., stem 13-45 mm. at base, often stoutly clavate-bulbous; spores 9-10½/6-6½µ, elliptic or sl. amygdaliform; cap with strong silvery-shiny silky sheen; under beech *turgidus* (113)

84. Habit less robust: cap 30-60 mm., stem 7-10 mm. in diam., ± clavate-bulbous or irregular; spores 9-12/5-6µ, elliptic; cap silky-shiny and smooth but innately fibrillose; in grassy places esp. under conifers *decumbens* (117)

Key 2. Alternative key to section Anomali
(including two other species which might be thought to belong to this section).

1. Lower part of stem and sometimes also cap with distinct reddish or reddish-brown scales on a paler background *spilomeus* (129)

1. Not so 2

2. Gills rather persistently amethyst-blue then clay-bluish not turning purplish; cap fuliginous tinged with lilac, becoming white-silky-noary, not turning reddish; stem without distinct second veil; (spores elliptic-oblong, 10µ long sec Quélet *myrtillinus* (130)

2. If gills rather persistently bluish, cap becoming tinged reddish, tawny-buff or umber or distinct second veil present 3

3. Spores broadly elliptic, 7-8½/5-6µ, Fig. 8); smell ± radishy at least when cut; stem with lilac or blue-violaceous peronate veil in addition to cortina; (gills becoming dark violaceous-date-brown or umber) *simulatus* (110)

3. Spores subglobose or broadly ovate, 6½-9/5-7µ, (Figs. 6,7) or 8-11/6-8µ, (Figs. 9, 10); smell not radishy; second veil, if present, yellowish or pallid. 4

4. Entirely without blue-violaceous tints even when young (except very occ. a vague bluish tinge at stem-apex); cap and stem pallid-whitish or pale buff then pallid- or yellowish-ochraceous; (gills whitish or clay at first; stem with sparse second veil; spores 7-9 (9½)/5½- 6½ (7)µ (Fig. 7) *tabularis* (128)

4. At least gills blue- or grey-violaceous at first, often also stem-apex; cap dirty ochraceous or pallid-grey to ochraceous-buff, date-brown or umber, sometimes changing to tawny-buff or rusty 5

5. Spores 6½-8½/5-7µ; gills, stem-apex and sometimes cap margin blue-violaceous at first; stem with adpressed sometimes fugacious yellowish or dirty patches of veil below cortinal zone, sl. clavate, 4-12 mm. in diam.; cap soon reddish-brown, date-brown or umber, generally becoming expanded ± orbicular, less commonly umbonate often thin-fleshed *lepidopus* (127)

5. Spores 8-11/6-8µ; from entirely blue-violaceous to blue-violaceous only in young gills; stem with or without second veil; cap colours various, often broadly umbonate and ± thick-fleshed at least at disc 6

6. Cap soon bright tawny-buff or rusty-tawny to rusty-brown, clay-brownish or ochraceous-buff to date-brownish at first (sometimes tinged sl. blue-violaceous in *caninus*) 7

6. Cap blue-violaceous, pallid-grey, ochraceous-buff or brownish, if becoming rusty or tawny-tinged only so when quite old 8

7. Stem clavate, often robust (10-20 mm. in diam.) with pallid or dirty-brownish veil forming ± distinct ring-zone below cortinal zone; flesh blue-violaceous in stem-apex at first; in woods, especially under conifers *caninus* (124)

7. Stem ± equal or clavate, generally slender (3-10 mm. in diam., up to 18 mm. at base), without second veil, white silky striate below cortinal zone; flesh and stem white at first; in grass, especially on basic soils, probably also in woods *epsomiensis* (125)

8. Habit generally robust; stem usually distinctly clavate-bulbous, 10-30 mm. at base; smell fairly strong when cut, sickly sweet; (cap ochraceous or yellowish-buff with or without bluish or paler margin, sometimes becoming wrinkled or rugulose; in woods especially birch, probably also conifers) *azureovelatus* (123)

8. Habit relatively slender; stem clavate or not, 5-15 mm. at base; smell none or faintly sickly-sweet . 9

9. Almost entirely blue-violaceous at first; gills rather persistently blue-violaceous, finally violaceous-umber; (cap and stem discolouring pallid or yellowish with age, disc of cap sometimes tinged tawny when old) *azureus* (126)

9. Blue-violaceous colours restricted to gills, stem-apex and flesh when young; gills becoming clay-buff or milky-coffee then rusty-buff. 10

10. Stem with distinct yellowish second veil; cap pallid-grey or ashy-sepia discolouring dirty ochraceous, olive-grey or pallid-buff, finally pallid-tan or rusty-buff, grey-silky at first with strong silky-atomate sheen; in woods *anomalus* (122)

10. Stem without second veil, smooth below cortinal zone; cap brownish then rusty-buff with white silky sheen, disc often becoming wrinkled; in beech woods

**(C. diabolicus* Fr.)

Key 3. Alternative key to section Cinnamomei, based primarily on spore size from spore print

1. Spores 5-6½(7)/3½-4µ, elliptic or elliptic-amygdaliform (Fig. 14); often rather small: cap 15-30 mm., stem 25-80/2-4 mm.; gills bright chrome-yellow then orange-ochraceous; flesh chrome- or golden-yellow; cap yellow-ochre or rusty-orange, minutely fibrillose or fibrillose-scaly; under conifers *croceofolius* (152)
1. Spores rarely less than 6½µ long, if so flesh olivaceous or other characters different 2
   2. Spores 8-12/5-6µ, elliptic or elliptic-amygdaliform, sometimes sl. oblong 3
   2. Spores smaller; not more than 7½-10/4½-5½µ(6)µ 6
3. Cap bright tawny-orange or tawny-brick to tawny-bay; gills lemon-yellow then ochre or tawny-buff; stem f. robust, 3-9 mm. in diam., concolorous with cap, yellow at apex; in wet woods, esp. under willow and alder *uliginosus* (155)
3. Not so 4
   4. Cap dirty ochraceous-buff or sepia-buff then tawny-date-brown, ± adpressedly brown fibrillose; gills chrome then tawny-ochre; conif. woods *aureifolius* (153)
   4. Cap yellow, tawny-brick or dark brown, minutely fibrillose to ± smooth; gills lemon-olive- or chrome-yellow at first; decid. and conif. woods 5
5. Cap, gills and stem ± unicolorous lemon- or olive-yellow at first; cap variously shaped, discolouring olive-buff or reddish-brown from disc out; gills rather persistently olive-yellow *cinnamomeo-lutescens* (157)
5. Cap tawny-brick or tawny-buff, often with dark-brown disc and yellower margin; gills pale or golden-yellow then tawny-ochre or rusty-buff; stem yellow, discolouring tawny-ochre from base up; cap rather persistently conical or acutely umbonate *croceoconus* (154)
   6. Spores 5½-8/4-5µ, elliptic to ± amygdaliform 7
   6. Spores 6½-8/4½-5½µ, elliptic; (robust: cap 25-100 mm., stem 5-15 mm., in diam.; predominantly olivaceous species typically in beech woods; smell strong radishy, taste ± bitter; gills olive then olive- to rusty-buff) *raphanoides* (160)
   6. Spores 7½-10/(4)4½-5½(6)µ, elliptic to ± amygdaliform 11
7. Gills soon vermilion-yellow, tawny-orange or bright golden-red; cap and stem becoming bright red-brown or coppery; flesh lemon- or chrome-yellow; (sometimes f. robust: cap 12-90 mm., stem 2-10 mm. in diam.; spores 6½-8(8½)/4-4½(5)µ, elliptic or sl. amygdaliform (fig. 15)) *cinnamomeus* (150)
7. If gills with tawny tinge, flesh deep olive when moist, yellowish-olive when dry 8
   8. Gills olive-yellow then olive-ochre or olive-rusty; (cap soon chestnut or bay-brown with bright olive-yellow margin; flesh olive-yellow to olive-greenish; spores (5½)6-8/(3¾)4-5µ, elliptic; under beech esp. on basic soils *olivaceofuscus* (159)
      (See also the duller-coloured *C. schaefferi,* Bres. (Bres 648); cap 20-30 mm., 'fusco-olivaceus dein brunneus, sericeo-puberulus, glabrescens; lamellae olivaceo-cinnamomeae; stipes 35-50/4-6 mm., cylindraceus, pallide olivaceus, velum albidum mox evanidum; caro pallide olivacea, inodora et insapora; sporae obovato-amygdaliformes, 6½-8/4-5µ; in silvis'.)
   8. Gills chrome- or golden-yellow then ochre-buff or bright tawny-yellow to rusty-golden, not distinctly olive 9
9. Spores 5½-7½(8)/4-5/½µ; flesh lemon, chrome-yellow or deep olive (at least in moist cap) 10

9. Spores (6½) 7-10/(4)4-½-5µ; flesh lemon or chrome-yellow, sometimes becoming pallid olivaceous in stem, not deep olive in cap when moist; (stem ± slender, 2-5 mm. in diam.; gills chrome-yellow then ochre-buff or rusty-ochre; cap ochre-buff with lemon-yellow margin soon reddish-bay or chestnut from disc out; decid. or conif. woods, sometimes in pastures (esp. on basic soils) *cinnamomeo-badius* (156)
   10. Flesh deep olive when moist, esp. in cap, yellowish-olive when dry; stem often rather robust, 5-12 mm. in diam.; gills rusty- or bright tawny-yellow then dark rusty-golden; cap olive-brown or rusty-tawny with golden-yellow margin; under conifers; spores (5½)6-8/4-5µ, elliptic or sl. amygdaliform *malicorius* (151)
   10. Flesh lemon or golden-yellow, sometimes sl. olive-tinted in stem; stem 3-6 mm. in diam.; gills lemon- or deep yellow then ochre-yellow; cap 20-45 mm., ochre-yellow, ochre-buff or olive-ochre sometimes with reddish-brown disc; on moist rich ground, very decayed wood or in *Sphagnum',* spores 6-7½(8)/4-4½(5)µ, elliptic; (see main key § 68) . *(*cinnamomeus* sensu Kauffmann)
11. Gills lemon, chrome or olive-yellow then rusty-ochre or olive-rusty; cap olive- or lemon-yellow to reddish-brown or chestnut-umber, ± fibrillose-tomentose at least around margin, rarely conical but sometimes acutely umbonate 12
11. Gills pale or golden-yellow then tawny-ochre or rusty-buff; cap tawny-brick or tawny-buff with darker disc and yellower margin, almost smooth, often ± conical; (stem yellow with paler apex then tawny-ochre or rusty from base up; spores 7½-9½(10)/4½-5½(6)µ, elliptic (Fig. 17) *croceoconus* (154)
   12. Spores elliptic-amygdaliform (fig. 13), 7½-9½/(4¼)4½-5µ; ± uni-colorous olive-yellow or olive-buff at first; flesh olive-yellow to olive, often darker olive in stem-cuticle; stem with olive-brown fibrils, base olive-yellow or pale olive tomentose; in *Sphagnum,* occ. in other damp moss (*Aulacomnium*) *sphagneti* (158)
   12. Spores elliptic or sl. amygdaloid (Figs. 12, 16), (6½)7-10(1 i)/4-5½(6)µ; colours much less olive, esp. of flesh; on soil in coniferous or deciduous woods, or in grass, occ. in *Sphagnum* (esp. *cinnamomeo-badius*) 13
13. Gills rather persistently lemon- or olive-yellow, finally yellow- or olive-rusty; ± unicolorous lemon- or olive-yellow at first, changing colour only when relatively old or not at all, but stem sometimes discolouring sl. rusty from base up; flesh ± persistently lemon-yellow, not distinctly olive; spores 7-10(11)/4½5½(6)µ *cinnamomeo-lutescens* (157)
13. Gills chrome or golden then ochre-buff to rusty-ochre; cap and stem soon reddish-brown to chestnut-umber at least in part, stem sometimes becoming pallid olivaceous below; flesh bright chrome- or lemon-yellow, sometimes becoming sl. olivaceous over gills or in stem cuticle; spores (6½)7-10/(4)4½-5µ *cinnamomeo-badius* (156)

Key 4. The subgenera of Cortinarius

1. Cap and stem or cap only viscid; (see PART I) 2
1. Cap and stem dry; (a few species in subgenus *Sericeocybe* may have the cap sl. viscid when young and fresh) 3
   2. Cap and stem viscid I. *Myxacium*

   2. Cap viscid, at least at first; stem dry II. *Phlegmacium*

3. Cap hygrophanous (i.e. paler in colour when dry) IV. *Hydrocybe*
   (to be dealt with in PART III).
3. Cap not hygrophanous (note-some blue-violaceous species may fade paler or brownish with age); PART II 4

4. Blue-violaceous colours never present in any part; stem gen. ± equal and slender (2-12(15) mm. in diam.), less commonly sl. clavate, never with distinctly squamulose veil; colours often bright yellow, tawny, red, deep chestnut or olive; cap never with conspicuously darker scales on a paler background; flesh not changing to bright yellow or reddish when cut or bruised
V. *Dermocybe*

4. Blue-violaceous colours present or absent; stem typically clavate-bulbous (10-40 mm. in diam. at base), or if ± equal and slender then cap and lower part of stem with distinct darker scales on a paler background *or* flesh changing to bright yellow or reddish when cut or bruised *or* blue-violaceous colours present in part 5

5. Colours blue-violaceous only in *violaceus* (entirely so) and *pholideus* (young gills and stem-apex), often bright (yellow, tawny, reddish or olive), gen. yellowish or brownish in those species which are peronate-scaly and slender-stemmed, never whitish or pale; cap. gen tomentose-scaly or with darker or reddish scales on a paler background, less commonly innately fibrillose or almost smooth (and then without silky sheen), always dry; flesh becoming yellow or reddish when cut in *bolaris* and *rubicundulus* IV. *Cortinarius*

5. Colours rarely tawny or reddish, never bright yellow or olive, often pale or blue-violaceous in. part; cap gen. silky-smooth with ± marked silvery-atomate sheen when dry (rarely sl. viscid when fresh and moist), sometimes innately fibrillose or minutely tomentose (darker ± reddish scales sometimes present in *spilomeus)*; flesh never changing to yellow or reddish when cut (but cap and stem cuticle bruising blood-red then brownish in fuscotinctus) III. *Sericeocybe*

SUMMARY OF CLASSIFICATION

Subgenus **III. - SERICEOCYBE, subg. nov.** Cap not hygrophanous, dry (sl. viscid when fresh and moist in a few species), smooth, rarely minutely tomentose, sometimes innately-fibrillose, often with marked silky sheen when dry; stem typically clavate-bulbous, less commonly ± equal, often robust (10-40 mm. in diam. at base); colours blue-violaceous, ochraceous or dingy, never bright red or yellow; (cap cvx. then exp. often broadly umbonate, sometimes depressed around disc when old; gills adnate ± emarginate, rarely sl. decurrent when expanded, linear or ventri-cose. Spp. 103-130).

IV. - CORTINARIUS. Cap not hygrophanous, dry, ± scaly or minutely tomentose, sometimes i smooth and then bright yellow, tawny-orange or tawny-rusty; stem clavate-bulbous and robust or ± equal and slender and then with distinct concolorous or darker scales; colours often bright, e.g. violaceous, yellow, tawny, red, olive-yellow or greenish; (cap and gill shapes as in *Sericeocybe,* slender species sometimes acutely umbonate or ± conical. Spp. 131-143).

V. - DERMOCYBE. Cap not hygrophanous, dry, ± loosely or innately fibrillose, sometimes fibrillose-tomentose or ± smooth, more rarely tomentose-scaly; stem typically ± equal and slender, rarely more than 12 mm. in diam., sometimes sl. swollen towards base; colours often bright, e.g. yellow, tawny, red, chestnut or olivaceous, never blue or violaceous in any part (cap cvx. then exp. often umbonate (acutely or obtusely) more rarely ± conical, sometimes depressed at or around disc when expanded, mostly thin-fleshed except at disc; gills narrowly or broadly adnate, sometimes sl. decurrent, emarginate or not, linear or ventricose. Spp. 144-160).

III. SERICEOCYBE

27. *Cyanei.* - Gills at first violaceous or bluish. Spores elliptic or amygdaliform, never subglobose or broadly ovate. Smell none or pleasant, or of radish. Stem clavate-bulbous and robust. (Spp. 103-110.)

28. *Hircini.* - Smell strong, disagreeable often penetrating, sickly-sweet, of goats, burnt horn, sweat or acetylene. Cap bluish or violaceous at first. Gills blue-violaceous or ochraceous-yellowish at first. Stem ± clavate and robust. Spores elliptic or amygdaliform. Under conifers, esp. pine. (Spp. 111-112.)

29. *Pallidi.* - Gills at first whitish, clay or pallid-ochraceous, sometimes with faint blue-violaceous flush in *suillus,* 116. Cap silky-shiny or innately-fibrillose.f Stem ± elongate and clavate-bulbous, sometimes sl. pointed at base, often firm at first, robust. Spores elliptic or amygdaliform. (Spp. 113-118.)

30. *Opimi.* - Gills at first whitish, clay or clay-ochraceous (bluish-clay in *opimus,* 119 sec Ricken. Cap minutely tomentose or tomentose-scaly, sometimes adpressedly fibrillose or silky in places. Stem often short, sometimes elongate, bulbous, fusiform-pointed, subturbinate or ± equal, robust, often persistently firm and hard. Spores subglobose, elliptic, amygdaliform. or limoniform (Spp. 119-121.)

31. *Anomali.* - Gills at first blue-violaceous, whitish or clay in *tabularis,* 128, sometimes sl. decurrent when expanded. Spores subglobose or broadly ovate. Cap ± smooth, sometimes with darker scales in *spilomeus,* 129, with very marked atomate-silky sheen when dry, sometimes sl. viscid when fresh and moist, often becoming thin-fleshed and ± plane and orbicular but sometimes thick-fleshed and umbonate at disc. Stem ± equal, less commonly clavate-bulbous, slender or robust. (Spp. 122-129.)

IV. CORTINARIUS.

32. *Violacei.* - Robust, stem clavate-bulbous. Entirely dark violaceous at first. Cap velvety-scaly. Spores large, amygdaliform, 11-15/7-9µ. Facial and marginal cystidia present. (Sp. 131.)

33. *Callistei.* - Medium to large, often thick-stemmed. Cap, gills and stem bright yellow or tawny at first. Cap tomentose-scaly or innately-fibrillose to ± smooth. Flesh not changing colour markedly when cut or bruised. Spores subglobose or broadly ovate, not more than 9µ long. (Spp. 132-133)

34. *Orellani.* - Medium to f. large, stem ± equal, f. robust. Cap, gills and often also stem tawny-ochre or orange-tawny at first. Cap tomentose-scaly or i smooth at least at disc. Flesh not changing colour markedly when cut or bruised. Spores broadly ovate, elliptic or amygdaliform, 9µ or more long. (Spp. 134-135.)

35. *Bolares.* - Medium to large, stem equal, ventricose or clavate-bulbous, rather thick. Colours yellow, tawny or reddish. Cap either with conspicuous reddish scales or innately-fibrillose to ± smooth. Flesh at least at stem-base turning sulphur- or golden-yellow when cut or bruised. Spores subglobose or elliptic-fusiform, less than 9µ long. (Spp. 136-137.)

36. *Cotonei.* - Rather small to large, stem ± equal to clavate-bulbous. Cap, gills and stem predominantly olivaceous or greenish at first. Cap ± tomentose-scaly. Spores subglobose or broadly ovate, not more than 9µ, long. (Spp. 138-139.)

37. *Pholidei.* - Small to f. large, stem slender to f. thick, equal to sl. thickened at base. Colours chrome- or golden-yellow to yellow-ochraceous, buff or date-brown, young gills and stem-apex blue-violaceous in *pholideus,* 140. Cap and lower part of stem with distinct darker or more rarely concolorous fibrillose scales. Spore shapes and sizes various. (Spp. 140-143.)

V. DERMOCYBE.

38. *Sanguinei.* - -Gills carmine- or purplish-blood-red, scarlet-red, red-lead colour or dark chestnut at first, hardly changing colour but tinged ± rusty from spores when mature. Cap and stem red, yellow, olivaceous or coloured like gills. (Spp. 144-149.)

39. *Cinnamomei.* - Gills at first bright yellow, ochre-yellow or olive-yellow, then changing colour, to golden-red (150), tawny, tawny-ochre or rusty-orange (151-154). rusty-buff or amber (155-156) or ± olivaceous (157-160). Cap yellow or olive to tawny, brick-red, bright red-brown or bay-brown. (Pigment masses sometimes present in gill-trama or in some basidia. Spp. 150-160.) *(continued on p 138)*

SPECIES	CAP	GILLS	STEM
III. SERICEOCYBE SUBGEN. NOV.	Cap not hygrophanous, dry (sl. viscid when fresh and moist in a few species), smooth, rarely bulbous, less commonly ± equal, often robust (10-40 mm. in diam. at base). Colours sometimes depressed around disc when old; gills adnate ± emarginate, rarely sl.		
27. Cyanei.	Gills at first violaceous or bluish. Spores elliptic or amygdaliform, never subglobose or		
103. *alboviolaceus* (Pers. ex Fr.) Fr.	30-90 mm., **pale blue-violaceous or bluish-white, discolouring whitish or pale dirty ochraceous or pallid esp. at disc** when old or washed out, **at first entirely covered by pale blue-violaceous or whitish veil,** later almost smooth on disc and silky-fibrillose in outer half, margin rather thin, often becoming sl. reflexed and torn.	Pale blue-violaceous, then clay-violaceous, finally watery-buff to ± rusty-buff, f. crowded, L 50-80 l 3-7, edge concolor-ous or sl. paler often becoming rather uneven or denticulate.	50-100/9-18 mm. (12-25 mm. at base), ± clavate at first, often with rather pointed base, sometimes becoming ± equal, **pale blue-violaceous or bluish-white**, apex often rather deeper blue-violaceous, discolouring sl. ochraceous or pallid from base up, **at first covered by silky veil** except at apex, which soon forms a ± well-marked ring-zone about half-way down stem, apex becoming silky-striate, pale blue-violaceous cortina ± plentiful, base white to-mentose.
†104. *kauffmannianus* Hry. *(=argentatus sensu* (Kauffmann)	30-55 mm., **at first silvery white** or with **faint** blue-violaceous tinge, then **discolouring pale pallid ochraceous** or pale rusty-tawny around margin **with paler whitish or cream-coloured disc,** radially fibrillosely silky *sub lente*, with marked silky shiny sheen, margin with remnants of cortina sometimes sl. striate in old specimens.	Blue-violaceous only when very young, soon pale blue-violaceous or clay-violaceous then clay-ochraceous or pale milky-coffee to watery-buff or rusty-buff, f. crowded, L 34-48 l (1) 3, edge paler, finally ± con-colorous, ± eroded or finely serrulate	35-75/5-9 mm. (7-18 mm. in bulb), clavate-bulbous, sometimes markedly so, **concolor-ous then whitish,** apex often persistently deeper blue-violaceous, discolouring pale watery-buff from base up, silvery-white or pale blue-violaceous cortina abundant at first, **surface smoothly silky** or silky-striate below cortinal zone, sometimes splitting up later into ad-pressed patches, **without distinct second veil,** stuffed, base pale violaceous then white or pale buff tomentose.
105. *malachius (Fr.* ex Fr.) Fr. *sensu FT.,* Kühner & Romagnesi *(non sensu* Lange, Ricken = *malachioides nec* Pearson =*pearsonii)*	**45-110 mm., blue- or clay-violaceous** at first then paler, **discolouring clay-buff** or dirty ochraceous from disc *out,* **often finally tinged tawny ochre** esp. at sometimes deeper coloured disc, at first densely silky-fibrillose from whitish or pale violaceous veil, later ^ innately-silky-fibrillose esp. around disc, with strong silky sheen when dry, sometimes cracking radially when old.	Deep blue-violaceous soon fading to clay-violaceous or watery violaceous-umber then dull rusty-clay or rusty-buff, sometimes with sl. tawny-umber tinge when mature, f. crowded, L 60-80 l 3, edge concol. ±-even.	40-140/9-20 mm. (15-28 mm. at base), ± clavate-bulbous, either gradually so, or abruptly so and almost marginate, later sometimes ± equal with sl. swollen base, **pale blue-violaceous,** apex often persistently and deeper blue-violaceous, **discolouring** dirty whitish or ochraceous from base up, cortina and veil whitish or pale violaceous, **veil gen. forming ±well marked ring-zone,** apex ± white fibro-streaky when old, base pale blue-violaceous or white tomentose.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
minutely tomentose, sometimes innately-fibrillose, often with marked silky sheen when dry. Stem typically clavate-blue-violac'eous, ochraceous or dingy brownish, never bright-red or yellow. (Cap cvx. then exp. often broadly umbonate, decurrent when expanded, linear or ventricose. Spp. 103-130.)					
broadly ovate. Smell none or pleasant, or of radish. Stern clavate-bulbous and robust. (Spp. 103-110.)					
At first entirely pale blue -violaceous, sometimes deeper blue- violaceous at stem-apex and in centre of cap, then whitish with faint bluish tinge, sometimes pallid-whitish at base of stem.	Smell none or faint, pleasant.	(7½)8-10/5-6½µ. elliptic, apiculus small, faintly punctate-rough.	Gill-edge fertile.	Decid. woods, esp. beech and oak. Not uncommon. Often gregarious.	Distinguished by robust habit, pale blue-violaceous colours fading with age and conspicuous second veil; *kauffmannianus* (No. 104) differs in being externally ± silvery white at first without distinct second veil and generally less robust; malachius (No. 105) differs in being deeper coloured at first and when old, sl. smaller spores and habitat under conifers
Deep blue-violaceous at first, soon pale blue-violaceous, deeper tinge sometimes persisting at stem-apex, pale ochra-ceous or pallid when old, especially at base of stem or in cap.	Smell none or pleasant.	8-10/5-fyi, elliptic, apiculus small, minutely punctate.	Gill edge fertile.	Damp woods esp. birch. Probably not uncommon. Solitary or gregarious. (First record 11.9.56 Badger Falls, Glen Affric, Inverness-shire).	Entirely externally silvery-white or with v. faint blue-violaceous tinge at first, showing deeper blue-violaceous gills and flesh when cut. Differs from *alboviolaceus* (No. 103) in lack of distinct second veil, paler colours when young and generally less robust habit; *argentatus* (No. 114) differs in not having blue-violaceous gills or flesh at first, more robust habit and, according to Ricken, a slight radishy smell.
Deep blue-violaceous at first, often persistently so at stem-apex, then whitish or tinged ochraceous or pallid under cap cuticle and in base of stem, firm at first but soon soft and spongy esp. in lower part of stem.	Smell none or pleasant.	**(7)7½-9(10)4½-5½µ elliptic** or elliptic sl. amygdaliform, apiculus moderate ±punctate-rough, (Fig. 1).	Gill-edge fertile, but projecting ± cylindric or cylindric-clavate cells 7-Sytf in diam. may be present when old.	Under conifers, esp. pines. Common, both in Scotland and England. Often gregarious.	Distinguished from Nos. 103 and 104 by slightly narrower spores, habitat under conifers, deeper blue-violaceous colour when young and more marked tawny-ochre tinge when old; *malachioides* (No. 106) has larger spores of a different shape and cap with less pronounced blue-violaceous colours at first; *pearsonii* (No. 107) has much smaller, narrower spores and duller colours. (See notes).

SPECIES	CAP	GILLS	STEM
†106. *malachioides sp. nov.* *sensu* Lange, Ricken *non* Fries.	40-110 mm., **pale lilac-greyish or silvery-violaceous** at first, **discolouring pallid or clay-buff or with reddish-brown tinge,** often paler at disc, white silky-fibrillose at first, often becoming ; ± innately-streaky esp. near margin.	Rather deep violaceous, soon fading to pale violaceous-umber or dingy lilac (then watery-buff, sec Ricken), ± crowded, L about 64 1 (1) 3, edge concolorous ± even.	40-75/8-11 mm. (15-25 mm. in bulb), clavate-bulbous, **pale silvery violaceous** often deeper violaceous at apex, **fading to dingy lilac** or whitish and discolouring pallid below, cortina and veil white or silvery-violaceous, **veil forming sometimes rather vague ring-zone,** silky striate when old, base whitish or pale violaceous tomentose.
†107. *pearsonii sp. nov.* *=malachius* *sensu* Pearson *non al.*	40-150 mm., **hoary ochraceous- buff then reddish-buff,** often with reddish spots, tomentose sub lente, veil pale azure or lavender then white adhering in small tufts or larger adnate patches near margin, sometimes cracking radially when old.	Purplish-blue before veil breaks, purplish-brown as soon as this happens, subcrowded, edge ± wavy.	100-140/10-25 mm., ± equal above, irregularly bulbous below, larger specimens often less bulbous, **f. persistently bluish-lavender,** then coloured like cap, peronate **lavender-blue veil often forming ring-zone,** sometimes shaggy below this, base pale lavender-tomentose then white.
108. *muricinus* Fr. *sensu* Ricken	50-100 mm., **violaceous soon becoming reddish-brown** from disc out, at first with remains of pale veil at margin then ± smooth, surface broken up into ± concentric scales in dry weather.	Purplish- or blue-violaceous then watery-buff, finally almost liver colour, ± crowded.	30-100/15-40 mm., clavate-bulbous sometimes almost marginately so, robust and firm, **lilac-violaceous then pale rusty-reddish, villose-scaly from pale veil.**
109. cyanites Fr.	47-82 (130 sec Rea) mm., pale prussian-blue often with disc tinged buff or da to-brown, then **pale ultramarine or grey-blue at margin and ± wine-red at disc,** sometimes sl. ochraceous around disc, ± viscid when fresh and moist, soon dry, **Innately-fibrillose** around disc, margin with traces of pallid-sepia veil at least at first.	Deep grey-blue then grey-blue-clay to olive-clay, finally olive-rusty, crowded, L. about 100-120 1 1-3, edge paler or concolorous ± even or sl. uneven.	60-80 (130 sec Rea)/12-18 mm. (24-38 mm. in bulb), clavate-bulbous, often markedly so, sometimes pointed at base, **ultramarine or grey-blue** deeper at apex, bruising reddish- or brownish-violaceous, bulb soon whitish then tinged ochraceous, **pallid-sepia or ochraceous-buff veil** forming ± conspicuous patches in lower part of stem, base bluish tomentose.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Whitish or pallid, f. deep violaceous ± at stem-apex esp. under cuticle, be- coming pallid- or pale-ochraceous at stem-base, firm then soft and spongy esp. in lower part of stem.	Smell none or faint, pleasant.	**(9)9½-12/5½-6½µ, elllptic-amygdaliform**, apiculus f. large, punctate-rough, (Fig. 2).	Gill-edge fertile.	Under conifers (also decid. woods sec Ricken). Uncommon. (Type material 29.9.55 Loch-an-Eilean, Inverness-sh ire in Herb. Kew.)	Distinguished from other species of this section except *muricinus* (No. 108) by larger spores and rather dull colours, blue-violaceous colour often only seen at stem-apex except in really young specimens. (See notes.)
Pale lavender-blue then whitish, finally ochraceous-buff, firm at first, spongy when older.	Smell not unpleasant.	**6-8(8½)/3-4µ, elliptic sl. amygdaliform** apiculus rather small, apparently smooth, pale sub micr. (Fig. 3).	Sack-shaped cells of different sizes seen on gill-edge.	Mixed woods, (on sandy soil under oak and pine among bracken). (Type material 8.10.43, Clockcase Wood, Englefield Green, Surrey in Herb. Kew.)	Description from Pearson, *Trans. Brit. Myc. Soc.* 26 (1943), 43, except for spore measurements made by me from spore prints collected by Pear-son. Distinguished from other species of this section by small spores combined with rather dull colours. (See notes.)
Pale violaceous, darker towards cuticle, finally pale, hard, very thick at disc of cap.	Smell **peculiar**, specific, but not strong sec Ricken.	**13-15,7-8µ**, amygdaliform, rough, sec Ricken.		Under conifers. Uncommon. (Description from Ricken).	Should be readily dis-tinguished by large spores, smell, robust habit and dark colours. Not known in Britain in recent years and needs further study and con-firmation.
Pale bluish, soon whitish, pale ochraceous or pallid sepia in cap and bulb, often horny over gills, **slowly turning rose-red, wine-red** or deep reddish-violaceous when cut or bruised (30 sees, or more).	Smell rather fruity esp. near gills often faint, later less agreeable, pungent.	**8-10/5-6µ,** ± **amygdaliform,** apiculus rather small, punctate-rough.	Gill-edge fertile at first soon ± sterile with ∞ ± clavate cells, sometimes with short point, 20-30/6-1 0µ.	Under pine or birch. Not uncommon at 1east in Scotland. Solitary or gregarious	A characteristic and different shade of blue from the other species in this section. Easily distinguished by these colours, flesh colour-change and spores. Wou.d probably be better placed in *Phleg-macium* on account of the viscid nature of the rap when young.

SPECIES	CAP	GILLS	STEM
† 110. *simulatus sp. Nov*	24-60 mm., cvx. then cvx.-exp. or exp., broadly umbonate or not, **lilac or blue-violaceous becoming** pale reddish- or **dull date-brown** with sl. tawny tinge esp. at disc, finally ± uni-colorous tawny- or reddish-date-brown, margin sometimes remaining tinged lilac for some time, dry with silky sheen or matt surface, often innately-fibrillose orfibrillose-tomentose in places, margin ± adpressedly fibrillose-scaly or hoary-fibrillose, strongly incurved at first, often remaining incurved for a long time.	Lilac or **blue-violaceous then** rusty-lilac, **vio-laceous-date-brown** or pale purplish-umber to date-brown-buff, **finally rusty-umber**, f. crowded L 40-70 l 1-3, broadly or narrowly adnate even or uneven.	40-90/5-10 mm. (10-10 mm. at base), ± clavate-bulbous or ventricose, sometimes ± equal with sl. thickened base, **entirely pale blue-violaceous or lilac-blue at first,** sometimes deeper at apex, discolouring colour of cap or paler from base up, cortina pale lilac-blue, **peronate veil pale lilac-or lavender-blue** soon whitish and forming ± well-marked ring-zone and scattered patches below, stuffed then hollow, base lilac or pale blue-violuceaus torn entose fading to whitish
28. **Hircini.**	Smell strong, disagreeable often penetrating, sickly-sweet, or of goats, burnt horn or acetylene. Stem ± clavate and robust. Under conifers, esp. pine. (Spp. 111-112.)		
111. *hlrcinus* Fr. *(= amethystinus* Quélet)	35-100 mm., **lilac-violaceous** or pale blue-violaceous, disc soon **becoming rusty-ochraceous** cr tawny-buff, finally ± unicoloious rusty, or brownish-lilac-rusty, **silky,** margin at first with remnants of white veil, flesh thick at disc.	Dark blue-violaceous then **rather persistently reddish-lilac-violaceous,** finally rusty-buff, subdistant.	40-80/12-25 mm., attenuated upwards from clavate-bulbous base, lilac-violaceous or pale blue-violaceous becoming pallid or rusty-ochraceous from base up, apex more persistently lilac-violaceous, white silky veil forming ± fugacious ring-zone or concentric patches below white cortinal zone, solid, soon soft and spongy, sometimes hollow at the base.
112. *traganus* (Fr.) Fr.	40-120 mm., **lilac or pale blue-violaceous** soon whitish **then** pale yellowish or **ochraceous, finally rusty-ochre** or pallid-rusty, at first entirely and ± concentric-ally adpressedly **silky-scaly,** then silky-smooth or sl. radially fibrillose, sometimes cracked when dry, margin at first with remnants of veil, flesh thick at disc.	**Pale ochre-buff or** watery ochraceous then pallid-buff to pallid-rusty or rusty-ochre, subdistant or f. crowded, edge paler at first, uneven or sl. flocculose-dentate	60-120/10-20 mm. (15-40 mm. at base), ± clavate-bulbous, often stoutly so, lilac or pale blue-violaceous at first (sometimes deeper at apex) then whitish or pale ochraceous from base up, finally ± rusty-ochre, cortina and veil pale blue-violaceous, veil leaving ring-zone and patches on lower part of stem, which become whitish or dirty yellowish, bulb often tinged yellowish-buff or ochraceous, white tomentose below.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Pale lilac or blue-violaceous at first, then whitish or pallid ochra-ceous esp. in cap and base of stem, sometimes tinged awny under cap ruticle, blue-vio-laceous colour often persisting at stem-apex, firm then rather soft and spongy esp. in stem.	Smell of radish, often strong, esp. when cut.	7-8½ (9)/5-6µ, broadly elliptic, apiculus moderate, faintly to distinctly punctate-rough (Fig. 8).	Gill-edge fertile. (Hyphae of cap surface 4-7(10) µ, in diain., pigment inter-cellular.)	Under pine and birch sometimes in Sphagnum. Probably not uncommon (at least in Scotland). Often solitary. (Type material 31.8.55, Loch-an-Eikan, Inverness-sh ire in Herb. Kew.)	Distinguished by radishy smell, spore size and shape, dry matt cap and colours. Similar in colours to *C. (Phleg.) largus,* 93, but also looks 'anomaloid' at times. Differs from *largus* in never being viscid, smell, spore size and shape and generally rather more slender habit, and from *lepido-pus,* 127 and *azureus,* 123, in spore size and shape, smell and veil characters; *myrtillinus,* 129, has no veil, cap without reddish to tawny tinge and paler gills. (See notes.)
Cap bluish or violaceous at first. Gills violaceous or ochraceous-yellowish at first. Spores elliptic or amygdaliform.					
Whitish or blue-violaceous often deeper at stem- apex and over the gills **at first,** becoming pallid or dirty yellowish from base up, **finally ± unicolorous ochra-ceous-yellow-ish.**	Smell **strong,** penetrat-ing, **dis-agreeable,** of goats or burnt horn.	9-11/5-6µ, ± amygdaliform, apiculus moderate, very faintly punctate-rough (from spore-print collected by Pearson). *		Under pines. Uncommon. (Description from KM and Bresadola.)	Differs from other blue-violaceous Sericeocybes except *traganus* and *camphoratus* in strong disagreeable smell; *tra-ganus* (No. 112) differs in having gills yellow-ochraceous from the first and flesh never blue- violaceous; *cam-phoratus* (see key 1, § 8) differs in flesh remaining bluish or whitish, a different smell and dif-ferent spore size *sec* Henry. (See notes.)
Pale yellowish-b u ff in cap, deeper yellow-ochre or with tawny tinge in **stem** (esp. in bulb), then ± entirely rusty- or tawny- ochre, soft and spongy and often marbled-horny in stem.	Smell **strong,** disagree-able **sickly sweet** (of acetylene, *sec.* Moser)	8-10/5-6µ elliptic sl. amygdaliform, apicalus moderate, punctate-rough.	Gill-edge fertile, but a few ± cylindric cells 6-8µ, in diam. may be seen here and there projecting about 20µ.	Coniferous woods. Not uncommon, at least in Scottish pine woods. Solitary or gregarious	Like *hircinus* (No. Ill) distinguished by strong smell but differs from that species in having gills yellowish or ochra-ceous from the first and flesh never blue-viola-ceous in any part; opinions differed about the smell of specimens gathered in Scotland (9/57), some saying the smell was pleasant whilst to me it was sick-ly-nauseating, thus var. *finitimus* Wcinm. said to be sweet-smelling may not really be different.

SPECIES	CAP	GILLS	STEM
29. Pallidi.	Gills at first whitish, clay or pallid-ochraceous (but sometimes with faint lilac-flush in *suillus*, firm at first, robust. Spores elliptic or amygdaliform. (Spp. 113-118.)		
113. *turgidus* Fr. *sensu* Lange *non* Henry-	40-100 mm., **clay whitish or pale buff,** disc sometimes sl. darker or tinged ochraceous, with **strong silvery-shiny white silky sheen,** sometimes sl. innately-streaky near margin, margin with remnants of white silky veil at least at first, flesh thick at disc.	Whitish then clay or clay-buff, finally pale rusty-clay, subdistant to f. crowded, L about 54 1 3 (7), edge paler often uneven or denticulate.	30-75/8-21 mm. (13-45 mm. in bulb), clavate-bulbous, often **stoutly** so, base generally ; ± pointed and rooting, **white,** apex tinged horn colour or very vaguely violaceous, white floccose above white cortinal zone, **silky white veil** forming ± **well-marked but sometimes fugacious ring-zone,** base white tomen-tose, cortex firm, flesh becoming ± spongy.
114. *argentatus* (Pers. ex Fr.) Fr. *sensu* Ricken, Cooke *(non sensu* Kauffmann = *kauffmannianus* Henry)	40-100 mm., **whitish-lilac or silvery shining,** disc becoming pale ochraceous or pallid yellowish, margin at first lilac-silky then whitish or discolouring like disc, silky or sometimes radially rugulose.	Whitish then clay, finally watery-buff or rusty-buff, crowded, edge white or pale, uneven.	80-100/10-20 mm., attenuated upwards or ± equal above the shortly clavate-bulbous or thickened base, **silvery-white or whitish** discolouring sl. yellowish at base, ± silky smooth and **without veil** below ± fugacious white cortinal zone, stuffed sometimes becoming hollow.
†115. *hillieri* Hry	50-92 mm., silvery-white with sl. pallid disc **becoming entirely pallid or pale milky coffee,** disc sometimes with sl. tawny tinge, **very conspicuously silvery-white streaky,** disc with adpressed silvery-white tomentose patches when young, later with ± smooth disc but often innately fibrillose-silky towards margin.	Pale clay-pallid, then pale to darker milky coffee or pallid-rusty, sometimes bruising darker, f. crowded L 60-72 1 3 (7), sl., ventricose or not, edge sl. paler and uneven.	70-100/14-19 mm. (25-31 mm. at base), attenuated upwards from thickened base or sl. clavate-bulbous, **silvery-white at first, discolouring pallid or pale milky coffee** from base up with age or when handled, white silky striate, apex sl. floccose, **ad-pressed tomentose white veil** forming patches and irregular ring-zone below cortinal zone, base similarly white tomentose.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
116). Cap silky-shiny or innately fibrillose. Stem ± elongate and clavate-bulbous, sometimes sl. pointed at base, often					
White then whitish, sl. tinged dirty pallid in cap and stem-apex, pale horn or v. vaguely violaceous in cortex of stem-apex, sometimes persistently white in lower part of stem.	Smell none or faint, pleasant of fungus or sl. pungent.	**9-10½/6-6½µ, elliptic or elliptic sl. amygdaliform,** apiculus small or moderate, ± punctate-rough.	Edge of gill with some sterile cylindric-clavate cells 6-8µ in diam.	**Beech woods.** Uncommon. Often solitary.	Owing to its firm stem might be sought in section *Opimi* but the cap is never scaly or tomentose. Differs from *argutus* (No. 119) in smaller spores, paler, strongly silky-shiny cap and presumably smell, from *suillus* (No. 116) and *hillieri* (No. 115) in paler colours and firmer often stouter stem and from *argentatus* (No. 114) in stouter stem, lack of lilac tinge on cap, presence of veil and sl. larger spores.
Whitish, watery in places.	Smell faint, **almost radishy** *(sec.* Ricken).	**8-9/5µ,** ± amygdale-form, almost prickly-rough, *sec* Ricken.		Decid. and conif. woods. Uncommon. (Description from Ricken.	Resembling *alboviolaceus* (No. 103) and especially *kauffmannianus* (No. 104) but differing in having gills entirely without blue-violaceous tints and also in radishy smell. Distinguished from other members of this section in lilac tinge to young cap and lack of veil, but not well known and needs further study and confirmation.
Whitish becoming ± **unicolorous pale milky coffee or dirty brownish,** at first sl. darker at base of stem under cuticle of cap, above gills and at apex of stem, sometimes persistently darker at stem-base	Smell **f. strong** esp. when cut, **fruity** ('mirabelle plum').	**9-10½/5-6µ, elliptic,** apiculus moderate, punctate-rough to ± rough.	Gill-edge fertile.	Under beech. Uncommon. (First record 11.10.54, Langley Bottom, Surrey.)	This description is from British material collected by me which seems to agree with Henry's species in most points. I did not see the cap 'tomentose-scaly' but my specimens were gathered in wet weather and he does say 'more rarely found smooth'. Differs from other species in this section by discolouring a ± uniform dull brownish colour, relatively dark flesh and smell.

SPECIES	CAP	GILLS	STEM
116. *suillus Fr. sensu* Lange (= *subferrugineus sensu* Kicken *non al.)*	32-100 mm., pale clay-buff to date-brownish with darker buff, date-brown or tawny-tinged disc, sometimes with vague blue-violaceous flush when young and fresh, then - ± **unicolorous ochra-ceous-buff or rusty-pallid but often with more pro-nounced tawny or date-brown tinge at disc,** with silky sheen when dry except sometimes on matt disc, sometimes marked with darker streaks or spots, margin with fugacious traces of veil at first.	Pale clay sometimes with faint blue-violaceous flush when young, soon pallid-clay or ochraceous-buff, finally rusty-clay or pallid-rusty, sub-distant to f. crowded, L 40-80 l 1-3, edge concolorous, often sl. uneven.	35-90/8-20 mm. (10-25(35) mm. in. bulb), ± clavate-bulbous or thickened below, often with ± pointed sl. rooting base, white or **whitish becoming flushed colour of cap** from base up, apex with vague and fugacious blue-violaceous flush at first usually remaining paler, ± white silky striate, white cor-tina rather fugacious, **white silky veil often forming rather fugacious ring-zone** half-way down, base usually remaining white below bulb.
117. *decumbens* (Pers. ex Seer.) Fr. *sensu* Ricken	30-60 mm., **white then pale yellowish, silky-shiny,** smooth but iunately-fibril-lose, cortina appendiculate at margin at first.	Clay-whitish, finally ochraceous-yellowish, crowded.	40-50/7-10 mm., clavate-bul-bous then irregular in shape, **white,** apex ± pruinose, white cortina plentiful, smooth below cortinal zone, stuffed becoming hollow.
118. *fuscotinctus* Rea	20-60 mm., **pale ochraceous, becoming immediately blood-red then brownish when touched** esp. around margin, fibrillosely silky, disc tloccosely squamulose *sub lente,* margin at first incurved with remnants of cortina.	Clay, then pale cinnamon, crowded, edge white uneven.	60-100/5-10 mm., fusiform often incurved at the base, **pale ochraceous becoming blood-red** and then brownish when touched, apex minutely white pruinose, white cortina forming median at length fugacious zone, solid, firm.
30. Opimi.	Gills at first whitish, clay or clay-ochraceous (bluish-clay in *opimus,* 119, *sec* Ricken). Cap elongate, bulbous, fusiform-pointed, subturbinate or ± equal, robust, often persistently		
119. opimus Fr. *sensu* Ricken, Lange, Rea *non* Bres, Henry	70-100 mm., **pale ochraceous or tan** colour, then rusty-buff or wood-brown, **minutely** tomentose or **tomentose-scaly,** sometimes becoming ± smooth or cracked, cvx. becoming exp. or sl. de-pressed often irregular or with lobed margin, very hard and fleshy.	Whitish or clay (bluish-clay *sec* Ricken), then pale- or clay-ochraceous, f. crowded, sometimes interveined or crisped, narrower than flesh of cap.	25-50/20-50 mm., **short and stout,** subturbinate with ± **pointed base,** whitish (apex with blue-violaceous tinge *sec* Ricken), white cortinate at first, later fibrillose-cracked, hard and solid.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Whitish, apex with vague and fugacious blue-violaceous flush at first, soon yellowish or pale sepia or reddish-brown under cuticle of cap and stein, bruising pallid or darker sepia in stern, firm at first, soon spongy in stem. Pale	Smell none or faint, pleasant, or sl. unpleasant, when older. Taste none or with sl. bitterish aftertaste.	**9-11/5½-6½µ, elliptic or sl. amygdaliform,** apiculus small or moderate, ± punctate-rough	Gill edge fertile.	**Under beech** esp. on basic soils *(sec* Fries under fir). Not uncommon at least in S.E. England. Solitary or gregarious sometimes stib-caespitose.	Nearest to *turgidus* (No. 113) from which it differs in darker coloui and less firm habit. Differs from other species in this section in being tinged tawny or reddish-rusty. The fugacious blue-violaceous tints are often scarcely to be seen even in young specimens, but those that are so tinged seem identical in other respects.
Pale.	Smell none. Taste **mild** *(sec.* Ricken).	**9-12/5-6µ, elliptic,** appearing almost smooth, *sec* Ricken		In grassy woods esp. under conifers. Uncommon. (Description from Ricken.)	Agreeing in colours and habit with the section *Amarescentes* of *Myxacium* but according to Ricken differing in entirely mild taste, constantly dry cap and larger spores. Not authentically British and requires further study.
White, unchangeable, horny over gills, thick at disc of cap.	No smell or taste.	9-10/5µ, elliptic, contents minutely granular, *sec* Rea.		Oak woods. Uncommon. (Description from Rea.)	Placed temporarily in this section pending rediscovery. The striking colour change restricted to cuticle of cap and stem combined with unchangeable white flesh seems very characteristic. According to Rea bruised specimens look superficially like *Collybia maculata.*
minutely tomentose or tomentose-scaly, sometimes adpressedly fibrillose or silky in places. Stem often short, sometimes firm and hard. Spores subglobose, elliptic, amygdaliform or limoniform. (Spp. 119-121.)					
Whitish, becoming ± rusty-yellowish, **very hard and firm.**	Smell none or pleasant. Taste mild.	8-9/7-8µ, *sec* Ricken, 8-8½/6½-7µ *sec* Lange, **subglobose,** rough.		Woods (esp. beech *sec* Ricken, esp. coniferous *sue* Rea). (Description mainly from Ricken).	Distinguished by short, stout hard stem, pale colours and subglobose spores. Ricken mentions slight blue-violaceous tints in young gills and stem-apex not given by Fries and other authors. Not known in Britain in recent years and needs confirmation. (For *opimus* sensu Bres., Henry see notes.)

SPECIES	CAP	GILLS	STEM
120. *argutus* Fr. *sensu* Ricken non Rea.	50-100 mm., **pale- or clay-ochraceous to deep ochraceous** or rusty-buff, ± **tonientose-scaly** or silky-shiny in places, almost zoned by white silky-smooth margin, finally ± smooth and cracked.	Clay or clay-ochraceous, often remaining pale for a long time, finally rusty-clay, subdistant, broad, edge very uneven.	50 -80/20-35mm., ± **ventricose with ± rooting** often incurved **base,** whitish thei rusty-ochraceous with whit' liase, floccose-scaly becoming smooth, sometimes with ± fugacious ring-zone, hard am solid.
†121. *pseudocrassus.* Joss. (= *Hebeloma crassum* *sensu* Ricken	40-100 mm., **ochraceous then rusty-** or almost **tawny-ochraceous** (tobacco-brown *sec* Moser) when old, often with paler patches, finely fibrillose-tomentose or **Innately brown -fibrillose,** margin strongly incurved and tomentose-fibrillose at first, often becoming tern and incised.	Whitish then clay-ochraceous, finally rusty-clay or pallid-buff, crowded, often narrow, edge paler ± uneven.	40-80/10-20 mm. (15-28 mm. at base), clavate-bulbous or fusiforin-ventricose, sometimes ± equal, white then dirty ochraceous or pallid-reddish in places, silky-fibrillose striate or streaky, apex white pruinose, white cortina forming sometimes fugacious ring-zone near apex, base white tomentose.
31. Anomali	Gills at first blue-violaceous (but whitish or clay in *tabularis,* 128, sometimes sl. decurrent with very marked atomate silky sheen when dry, sometimes sl. viscid when fresh and Stem ± equal, less commonly clavate-bulbous, slender or robust. (Spp. 122-129.)		
122. *anomalus* (Fr. ex Fr.) Fr. *sensu* Lange, Cooke, Kauffmann, Rea	32-6(5 mm., cvx. then exp., ±broadly or obtusely umbonate, **gen. thick-fleshed at disc,** ashy-sepia or **pallid-grey gradually discolouring dirty ochraceous,** olive-grey or pallid-• buff, disc then sometimes with sl. reddish-brown tinge, finally ± unicolorous pallid-tan or rusty-buff, entirely minutely adpressedly grey-silky at first and with strong atomate silky sheen, margin with traces of cortina or veil at first.	**Blue-violaceous or bluish-grey then** clay-bluish gradually changing to **pale milky-coffee,** pallid-clay or **pallid-buff,** finally ± rusty-buff, f. crowded, L 48-60 l 1-3, adnate with tooth or sl. decurrent, sometimes emargin-ate, edge concolorous or sl. paler, ± uneven or sl. flocculose-denticulate.	60-100/5-13rnm., ± equal with sl. thickened or clavate base, whitish with bluish apex at first, discolouring pale ochraceous yellowish from base up, silky striate, cortinal zone visible near apex at first, **yellowish or pallid veil** forming sometimes fugacious ring-zone and patches below this, base white tomentose, stuffed then hollow.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Whitish or pale, hard, thick in cap.	Smell strong, like *Tricholoma album (sec.* Ricken).	**(11½)12-13/7½-8½µ, ± limoniform,** ± rough (from spore-print collected by Pearson). (13-15/8-9µ *sec* Ricken).		Deciduous woods. Uncommon. (Description from Ricken.)	Distinguished by pale colours, hard flesh, large spores and smell. Fries does not mention any smell in his descriptions of this species. Not well known from Britain and needs further study. (See notes)
Pale ochraceous or dirty whitish unchanging, often marbled in cap and horny over gills, sometimes sl. deeper coloured in stem, **v. thick and firm.**	Smell none or faint, fungussy. Taste mild.	**7-9/4-5µ, elliptic-amygdaliform,** or fusiform-elliptic, apiculus small, v. faintly punctate.	**Marginal cystidia** ± lageniform, 40-64/5-7µ, 3-4µ at apex: **facial cystidia** ± cylindric or awl-shaped, 30-80/5-9µ.	Decid. and conif. woods (under beech *sec* Josserand). Uncommon. Found under birch and pine, Glen Affrir, Scotland, 6/9/57.	Immediately recognisable by colours, microscopical characters (relatively small ± amygdalifonn spores and presence of facial and marginal cystidia) , robust habit and dry ± minutely tomentose cap-Distribution in Britain not known.
	when expanded. Spores subglobose or broadly ovate. Cap ± smooth (sometimes with darker scales in *spilomeus,* 129), moist, often thin-fleshed and becoming ± plane and orbicular but sometimes thick-fleshed and umbonate at disc.				
'allid grey or ochraceous in cap, blue-violaceous in centre of cap and stem-apex, creamy in base of stem, drying bluish-grey in centre of cap, gradually discolouring ochraceous-yellowish from base of stem upwards.	Smell none or faint, sickly-sweet.	**8-10/6-7½µ,** subglobose or broadly ovate, punctate-rough, apiculus small.	Gill-edge fertile.	Decid. woods (e.g. birch, oak, beech). Probably not uncommon.	Distinguished by peculiar grey-silky nature of young cap, gen. rather dull colours and larger spores; *azureovelatus,* 123. is more robust and more ochraceous-buff and has a stronger smell; *lepidopus,* 127, is gen. thinner-fleshed and has darker cap and smaller spores; *tabularis,* 128, is never blue-violaceous in any part and *caninus,* 124. and *epsomiensis,* 125. are soon brighter coloured as to cap; past records of this species must be treated with suspicion unless accompanied by descriptions, paintings and material. (See notes.)

SPECIES	CAP	GILLS	STEM
† 123. *azureovelatus* *sp. nov.*	45-80 mm., cvx. then exp. often broadly umbonate or flattened at disc, pale bluish-clay or pale ochraceous-buff, deepening sl. with age, finally ± unicolorous **ochraceous-buff, margin often retaining bluish tinge** longer or paler than disc (whitish-ochraceous), sl. viscid when moist, with well-marked silky-atomate sheen when dry, sometimes becoming wrinkled-rugulose, margin at first with remnants of whitish or pale ochraceous veil, often remaining incurved for some time.	**Blue-violaceous,** soon pale- or clay-violaceous then clay-buff or milky-coffee, finally rusty or rusty-buff, f. crowded, L 00-70 l 3-7, adnate or sl. decurrent, rather narrow, not or hardly ventricose, edge concolorous or sl. paler, ± even or sl. uneven.	50-115/12-18 mm. (17-30 mm. at base), clavate-bulbous or gradually attenuated upwards, sometimes ± equal when old, whitish or sl. yellowish then pale pallid ochraceous, apex blue-violaceous when young, **whitish, yellowish or pale ochraceous veil** forming well marked ring-zone near apex and scattered patches below this, silky-fibrillose striate esp. at apex.
124. *caninus* (Fr.) Fr. *sensu* Fries, Ricken, Lange, Henry (*non sensu* Cooke = *epsomiensis* *sp. nov.)*	25-100 mm., cvx. then exp. often broadly umbonate or gibbous, clay-brownish or violaceous-foxy, **soon** rather **bright tawny-reddish or rusty-brown,** margin sometimes paler, very silky atomate when dry, sometimes cracked into scales when old, margin with remains of veil at first.	Pale **grey-violaceous or clay-lilac** then watery-buff, finally rusty-buff, subdistant.	55-100/7-20 mm., ± clavate, ± robust, whitish, apex tinged blue-violaceous at first, becoming pallid or pale pallid-tawny, fibrillose siriate, **veil forming pallid or dirty brownish ring-zone** below cortinal zone, penmate at first, gen. fugacious but sometimes forming a few scattered patches below ring-zone
125. *epsomiensis* *sp. nov.* (=coninus *sensu* Cooke non al.)	15-75 mm., cvx. soon cvx.-exp. or exp. ± plane with incurved margin, sometimes sl. umbonate, ochraceous-buff, tawny-buff or date-brownish at first, **soon bright tawny-buff to tawny-rusty,** margin often paler when large, matt with atomate silky-sheen when dry, margin sl. white-silky at first.	Pale violaceous-clay then **clay-buff but soon rather bright rusty-buff,** later deeper rusty, f. crowded, L 40-56 l 1-3, adnate to almost free, often emarginate, ± ventricose, edge paler at first, even.	23-100/3-10 mm. (up to 18 mm. at base when bulbous), ± equal to sl. clavate or rounded bulbous, **white then tinged pallid,** apex ± white pruinose and sometimes striate from gills, white cortina forming a well-marked zone at stem-apex at first which may disappear with age, white silky-striate below this, base white silky-tomentose.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Whitish, blue-violaceous in upper part of stem at least when young, tinged ochraceous in bulb and under cap cuticle, often horny over gills, thick at disc of cap.	Smell faint, pleasant, often stronger when cut, rather sickly-aromatic, or of 'burnt turnip.'	**8-10/7-8µ,** subglobose or broadly ovate, apiculus f. large, punctate-rough (Fig. 9)	Gill-edge fertile. (Cap cuticle tough, of narrow interwoven hyphae 1-4(5) µ in diam. Basidia 4-spored but 2-spored form may exist.)	Decid. woods (esp. oak and birch). Probably uncommon. (Type material, 30-8-56, Burrator, Devon in Herb. Kew.; also recorded from Rothiemurchus, Inverness-shire. 12.9.57.)	Differs from *anomalus* (No. 122) in more robust habit, more ochraceous-buff cap and stronger smell, and from *caninus* (No. 124), which is similarly robust, in different colours and possibly in stronger smell. (See notes.)
White or whitish, sometimes tinged blue-violaceous at stem-apex, becoming pallid or dirty yellowish, thick at disc of cap.	Smell none or faint, (distinct, 'camphrée' *sec* Henry).	**8-9/7-8µ** subglobos *sec* Rickei ; 8-8J/6µ subglobosi or ovate, verrucose *sec* Lange.	(Gill-edge with ± clavate sterile cells about 6µ in diam. *sec* Henry.)	Woods, esp. fir (also beech *sec* Fries). Uncommon. (Description from Ricken and L-mge.)	Distinguished by robust habit and tawny or reddish coloured cap; *azureovelatus* (No. 123) is similarly robust, but has more pronounced blue- violaceous ints and possibly a stronger smell as well as different cap colours ; *epsomiensis* (No. 125) has similar colours but is more slender and has no second veil. Not authentically British and needs confirmation.
White, discolouring sl. ochraceous or pallid esp. towards base of stem, rather firm, often rather thick in cap esp. at disc.	Smell faint, pleasant.	**8-ll(12)/6-8(8)** µ broadly ovate or sl. pruniform, apiculus rather large, faintly to moderately punctate-rough, (Fig. 10).	Gill edge fertile. (Hyphae of rather tough cap cuticle closely knit, 1-6µ in diam. Basidia 4-spored.)	In grass on chalk downs, probably also in woods. Locally common. (Type material 13-10-54, Epsom Downs, Surrey in Herb. Kew.)	Blue- violaceous tints restricted to young gills and soon disappearing. Distinguished by bright-<oloured mature cap, white or pale stem and flesh and rather large spores. When growing in short grass it may be quite dwarf but in long grass it is often much larger. Has occurred regularly in recent years on Epsom Downs near the grandstand (hence the name) but I have also found it on other chalk downs in Surrey.

SPECIES	CAP	PKKPKGILLS	STEM
126. *azureus* Fr. *sensu* Ricken, K.M. *non* Henry	30-70 mm., cvx. then exp.-cvx. often unibonate, sometimes broadly so, **f. deep blue-violaceous** or lilac becoming yellowish-grey-violaceous or **pallid-buff with blue-violaceous margin,** sometimes entirely pallid-buff or with sl. tawny tinge at disc when old, sl. viscid when young and moist, with silky sheen when dry, sometimes ± innately-nbrillose near margin.	**Rather bright blue-violaceous** then violaceous-umber (blue-violaceous colour persisting for some time), finally ± rusty, f. crowded, L about 36 1 3-7, often becoming sl. decurrent, edge paler or not, even or sl. uneven.	60-120/8-10 mm. (up to 20 mm. at base when bulbous), ± equal to sl. clavate or rounded bulbous, **blue-violaceous,** discolouring pale pallid from base up, **apex rather persistently bluish,** cortina bluish forming f. well-marked zone, silky striate or sl. whitish silky-scaly below this, no distinct second veil present, stuffed then hollow.
127. *lepidopus* Cooke	25-67mm., cvx then exp. either sl. umbonate or sl. depressed at disc but generally ± orbicular, often thin-fleshed at disc, **pale dirty ochraceous with sl. reddish-brown tinge soon date-brown or umber,** sometimes tinged blue-violaceous esp. near margin, often ± uniform rusty-ochraceous or dull date-brown-rusty when old, with marked silky sheen when dry, rarely sl. viscid when fresh and moist, margin with traces of veil at least at first.	Bluish-clay or blue-violaceous then **clay-violaceous** or clay-ochraceous finally ochraceous-rusty or rusty-umber, crowded, L 40-50 1 3 (7), edge concolorous ± even.	50-80/4-12 mm., attenuated upwards or ± equal with sl. clavate base, **blue-violaceous above, whitish or pale dirty yellowish below,** becoming entirely whitish or dirty yellowish, cortinal zone ± evident esp. when powdered by spores, **yellowish veil** forming sometimes fugacious zones or ± concentric adpressed scales below cortinal zone, stuffed becoming ± hollow.
128. *tabularis* (Bull, ex Fr.) Fr. (= *decoloratus sensu* Lange)	30-60(80) mm., convex often umbonate 'or sl. truncate becoming exp. ± plane, occ. sl. depressed at disc, **pallid whitish or pale buff then yellowish- or dirty ochraceous-buff** to pullid-ochraceous, sl. viscid when fresh and moist, ± shiny and smooth with marked silky sheen when dry, often innately fibrillose around disc, margin with traces of veil and cortina.	**Whitish or pale clay** then watery- or pallid-buff finally rusty-buff, ± crowded, L 32-50 1 1-3 (7), edge paler then concolorous, often even.	35-120/4-9 mm. (6-15 mm. at base), ± equal with gradually thickened or clavate base, **white or whitish discolouring pallid or pale yellowish** from base up, apex rarely with very vague grey-blue-violaceous tinge when quite young, white silky striate, white cortina forming rather vague zone near apex, sparse whitish, yellowish or pallid veil forming sometimes fugacious scattered patches below this, base white tomentose, stuffed then hollow.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Entirely, blue-violaceous at first, then whitish or sl. yellowish in cap and lower part of stem, blue colour persisting at stem-apex, often f. thick at disc.	Smell none or faint, pleasant.	**(7½)8-10/6-8µ,** subglobose or broadly ovate, apiculus rather large, punctate-rough.	Gill-edge fertile.	Decid. woods, esp. beech. Uncommon.	All parts blue-violaceous at first, this colour persisting longer than in other species of this section esp. in gills, stem-apex and margin of cap. Differs also from *anomalus,* 122, and *lepidopus,* 127, in lack of second veil and sl. larger spores and from *azureovelatus,* 123, in lack of second veil, more slender habit and fainter smell.
Whitish, blue-violaceous at stem-apex, sl. coloured like cap under cap cuticle, sl. ochraceous in bulb, almost entirely whitish when dry.	Smell none or faint, pleasant.	**6½-8½/5½-7µ,** subglobose or broadly ovate, apiculus small, punctate-rough (Fig. 6).	Gill-edge fertile.	Decid. and conif. woods (esp. birch and pine). Common. Solitary or gregarious.	Distinguished by relatively small spores, veil remnants on stem and by being blue-violaceous in parts when young; nos. 122-126 all have larger spores and are either more robust or differently coloured; *tabularis,* 128, with similar spores differs in being without blue-violaceous tints from the first and almost entirely pale buff or dirty yellowish or brownish; in *spilomeus,* 129, the scales on the stem are much smaller, more fibrillose and darker or brighter coloured; *anomalus,* 122, has paler cap, larger spores and often thicker flesh at cap disc.
White or whitish, often sl. pallid-buff under cap cuticle, horny over gills sometimes also in centre of stem-apex, becoming sl. yellowish in lower part of stem.	Smell none or faint, pleasant.	**7-9(9½)/5½-6½(7) µ broadly elliptic-ovate** or sl. Pruniform, apiculus moderate or ratehr small, moderately to distinctly punctate-rough. (Fig. 7)	Gill-edge fertile.	Decid. woods esp. birch, also conif. woods. Common. Solitary or gregarious.	Differs from other species in this section by being entirely without blue-violaceous tints even when quite young, only very occasionally is a vague grey-violaceous tinge perceptible at the stem-apex : also distinguished by being entirely dull or whitish in colour and in having spores slightly less round than the other species. On account of the, at times, sl. viscid cap this species might be sought for in *Phlegmacium.*

SPECIES	CAP	GILLS	STEM
129. *spilomeus* (Fr. ex Fr.) Fr.	18-45 (70) mm., cvx. or cvx.-exp. then ± plane often with sl. incurved margin, **pinkish-clay-white** then pale reddish-bufi or pallid-reddish, **with or without scattered** often fugacious rather small adpressed **reddish or reddish-brown fibrillose squamules** esp. around margin, sometimes also about disc, margin ± white-silky at first.	Grey-violaceous or bluish-grey then pallid ochraceous or watery-buff to rusty-clay, f. crowded, L 30-50 1 (1) 3, edge often paler and ± uneven.	50-80/5-10 mm., ± equal or attenuated upwards from sl. thickened base, **white or whitish,** apex and sometimes also lower part with grey-violaceous tinge at first, white cortina forming zone near apex, below this with **scattered reddish or reddish-brown fibrillose squamules,** base white tomentose.
Species of uncertain position.			
130. *myrtillinus* Fr. *sensu* Cooke, Quélet	30-75 mm., cvx. gibbous becoming plane, **fuliginous tinged with lilac (not turning reddish** scr Fr.), becoming white silky hoary (margin with dense silky white fibrils *sec* Quélet).	**Amethyst-blue then clay-bluish** (not turning purplish *sec* Fries), **hardly discolouring,** subdis-tant, adnate (edge whitish-denticulate *sec* Rea).	50-70/6-12 mm., ± clavate-bulbous, whitish, white-silky **(without peronate veil** *sec* Fries), stuffed or hollow (cortex tough *sec* Quélet).
IV. CORTINARIUS	Cap not hygrophanous, dry, ± scaly or minutely tomentose, sometimes ± smooth and then distinct concolorous or darker scales. Colours often bright: e.g. violaceous, yellow, umbonate or conical. Spp. 131-143.)		
32. Violacei.	Robust, stem ± clavate-bulbous. Entirely dark-violaceous at first. Cap velvety-scaly.		
131. violaceus (Linn, ex Fr.) Fr.	36-150 mm., **dark blue-violaceous,** purplish-violet or blackish-violet, discolouring dark brown with sl. violaceous tinge, **entirely velvety-scaly** or villose-tomentose, sometimes becoming cracked-scaly, margin incurved for a long time, often becoming torn or incised.	**Dark blue-violaceous** or blackish-violet, then powdered rusty from the spores, finally rusty-bay or purplish-umber, ± distant, sometimes connected by veins and rather thick, broad or not, edge concolorous, ± even	50-120/10-20 mm. (20-35 mm. in bulb), ± clavate-bulbous often markedly so, **dark blue-violaceous** discolouring like cap, tomentose-fibrillose, violaceous cortina woolly then fugacious.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Clay or whitish, stem-apex ± grey-violaceous when young, becoming pallid in stem when older.	Smell none or faint, pleasant.	**6-8(9)/5-6½ (7) µ,** subglobose or broadly ovate, apiculus small, rather faintly punctate-rough.	Gill-edge fertile.	Woods, esp. heathy birch or pine. Uncommon.	Very readily recognised by the adpressed fibrillose reddish or chocolate scales on the stem and often also on the cap. According to Fries the scales may also be 'fulvus'. *C. lebretonii* Quél. is probably related. (See notes.)
Watery -brownish at first then whitish, sometimes violaceous at stem-apex.		Elliptic-oblong, 10/4, *sec* Quélet; elliptic-oblong, 10(li)/4½µ *sec* Henry; (7-8/6µ broadly elliptic *sec* Rea).		In woods (beech *sec* Fries). (Description from Fries, Rea and Quélet).	It seems likely that Cooke and Quélet both knew the same fungus under this name and that this corresponds to the Friesian species. Rea's spore measurement^ suggest another species possibly *simulatus* (No. 110). According to Frie this species has th colours and habit of *Tricholoma nudum,* according to Quélet those of *Tr. sordidum* which certainly seems borne out by Cooke's figures.. (See notes.)
bright yellow, tawny-orange or tawny-rusty. Stem clavate-bulbous and robust or ± equal and slender and then with tawny, red, olive-yellow or greenish. (Cap and gill shapes as in *Sericeocybe,* more slender species sometimes acutely					
Spores large, amygdaliform, li-15/7-9µ. Facial and marginal cystidia present. (Sp. 131					
Dark blue-violaceous or blackish-violet, often deeper under cuticle of cap and in stem, soon soft and spongy in stem.	Smell none or faint, pleasant.	**11-15/7-9µ, amygdaliform or elllptic-amygdaliform ,** apiculus small, ± rough.	**Facial and marginal cystidia** fusiform-cylindric or ± lageniform, 40-85/10-20µ, apex 4-10µ, contents ± violaceous sometimes granular.	Woods, esp. birch, beech and pine. Uncommon (probably prefers hilly country).	An unmistakable species, readily distinguished by dark violet colours, velvety-scaly cap, large spores and presence of cystidia, which may however, be rather sparse especially on the gill-face.

SPECIES	CAP	GILLS	STEM
33. Callistei.	Medium to large, often thick-stemmed. Cap, gills and stem bright yellow or lawny at first. Spores subglobose or broadly ovate, not more than 9µ long. (Spp. 132-133.)		
132. *callisteus* (Fr. ex Fr.) Fr.	27-94 mm., cvx. then cvx.-exp., exp. ± plane or sl. depressed, umbonate or not, bright **tawny-yellow,** rusty-tawny at disc **or almost entirely rusty-tawny,** entirely minutely yellow-fibrillose scaly or innately-fibrillose at first, later sometimes smooth, esp. at disc, margin with remnants of yellow veil at first, thin-fleshed except sometimes at disc.	**Deep yellow,** soon tinged rusty or tawny, finally deep rusty-tawny, subdistant, L 40-48 l (1) 3, edge concolorous or paler often rather thick or uneven.	50-130/0-20 mm., **variable in shape,** from slender and ± equal to robust and ± equal or fusiform and attenuated at base or clavate-bulbous, **golden-yellow often rusty or tawny-rusty in lower part,** fibrillose striate, sometimes yellow fibrillose-floccose where gills join stem, cortina pale yellow rather fugacious, yellow veil forming ring-zone or scattered patches, ± **rusty or tawny fibrillose-scaly in middle part** in larger specimens, sometimes hollow.
133. *tofaceus* Fr.	32-100 mm., **yellow- or golden-tawny** to tawny-rusty, ± entirely **distinctly minutely tomentose-scaly,** scales concolorous or sl. darker, sometimes becoming ± smooth and silky-shiny in places with age, thick-fleshed at disc.	Pale yellowish or **yellowish-ochra-ceous then tawny-ochre,** finally rusty-tawny, subdistant, edge concolorous or remaining .yellow, even or uneven.	50-100/10-20 mm. (20-35 mm. .in bulb), clavate-bulbous, sometimes ± equal when old, **yellow- or golden-tawny, apex paler** and ± smooth, ± fibrillose-scaly up to the cortinal zone, yellow or tawny veil forming ± well-marked ring-zone and often scattered patches below this as well.
34. Orellani.	Medium to f. large; stem ± equal, f. robust. Cap, gills and often also stem tawny-ochre or cut or bruised. Spores broadly ovate, elliptic or sl. amygdaliform, 9µ or more long.		
134. *orellanus* Fr. *sensu* Ricken, KM *non* Quelet, Boudier. *(sensu* Quélet, Boudier= *uliginosus)*	30-70 mm., cvx. then exp. often obtusely or broadly umbonate, **tawny-ochre or orange-tawny** then tawny-umber, **minutely tomen-tose-scaly.**	Ochre-yellow, soon bright **tawny or tawny- orange,** finally rusty-tawny, shining at first, sub-distant, rather thick, sometimes connected by veins, ± ventricose, edge ± con-colorous and even.	30-90/4-12 mm., equal or attenuated downwards, firm, **yellow then tawny-yellowish,** apex more persistently yel-lowish, base becoming deeper tawny, fibrillose-striate or ± smooth, cortina yellowish or tawny-yellowish, fugacious.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Cap tomentose-scaly or innately fibrillose to ± smooth. Flesh not changing colour markedly when cut or bruised.					
Pale **golden-yellow,** often deeper or ± tawny or rusty-tawny under cap cuticle, **deep rusty or tawny at base of stem** and in cuticle of lower part of stem.	Smell none or faint, peculiar, like raw potato.	**6½-8(9)/5½-6½ (7) µ, subglobose** or broadly ovate, apiculus moderate. faintly to distinctly punctate-rough.	Gill -edge sterile, cells cylindric or cylindric-clavate, 6-14µ in diam.	**Coniferous** woods, esp. **pine.** Not uncommon (at least in Scotland). Solitary or gregarious.	Recognised by colours, subglobose or broadly ovate spores and ± scaly cap and stem. Differs from *tofaceus* (No. 133) in entirely yellow or rusty flesh, stem less commonly clavate-bulbous, cap less markedly scaly and habitat; and from *orellanus* (No. 134) in spore shape, smoother cap and duller gills.
White or whitish in cap, often ± yellowish under cap cuticle, ±**ochraceous or tawny in lower part of stem,** firm.	Smell and taste none or faintly radishy.	**7-9/5-7µ, subglobose** or broadly ovate, apiculus small or moderate, punctate-rough.		**Beech** woods. Uncommon. (Description from Ricken, Lange and Rea).	Only likely to be confused with *callisteus* (No. 132), from which it is easily distinguished by pale cap flesh, more distinctly scaly cap and habitat.
orange-tawny. Cap minutely tomentose-scaly or ± smooth, at least at disc. Flesh not changing colour markedly when (Spp. 134-135.)					
Yellowish or tawny-yellowish, sometimes reddish-brown in cap.	Smell **rather strong** of radish.	**9-12/5-6½ (7) µ, elliptic or sl. amygdaliform,** apiculus moderate, faintly punctate, (from spore-print collected by Pearson).	(Gill-edge with ± clavate sterile cells, 10-12µ in diam. *sec* Henry.)	Decid. woods. Uncommon. (Description from KM, Ricken, Rea.)	Distinguished by tawny colours, minutely to-mentose-scaly cap, ± equal firm stem, large spores and smell. Differs from *speciosissimus* (No. 135) in spores of a dif.erent shape, less uniform tawny colours, minutely scaly cap darkening with age and habitat, and from *callisteus* (No. 132) in spore shape and size (most decisive !), smell and habitat.

SPECIES	CAP	GILLS	STEM
†135. *speciosissimus* Kühner and Romagnesi (= *speciosus* Favre *non* Earle)	25-80 mm., cvx. or conico-cvx. then exp., acutely or obtusely umbonate, **tawny-reddish** or tawny date-brown with paler ochraceous or tawny-buff margin, soon ± smooth at disc, elsewhere minutely adpressedly fibril-lose-scaly or almost tomentose (esp. near margin), margin with fragments of veil at first, often sl. wavy-lobed or upturned when old, sometimes becoming sl. torn or incised.	Pale ochre, soon bright ochre, gradually deepening to **tawny-ochre or deep tawny-red-rusty,** subdistant or fairly crowded, L 36-48 1 1-3, rather thick, veined on sides and at base in large specimens, edge concolor-ous or sl. paler, ± even then sl. flocculose.	50-110/5-14 mm. (7-20 mm. at base), ± equal or sl. thickened at base or apex to sl. clavate-bulbous, pale ochra-ceous-yellowish soon tinged deeper **ochre or tawny-rusty** (esp. in middle part), yellowish silky-fibrillose striate, yellowish cortina rather fugacious, **yellowish veil** forming ring-zone(s) and patches on lower part of stem, extreme base white-tomentose, stuffed then hollow.
35. Bolares.	Medium to large; stem equal, ventricose or clavate-bulbous, rather thick. Colours yellow, stem-base turning sulphur- or golden-yellow when cut or bruised. Spores subglobose or		
136. *bolaris* (Pers. ex Fr.) Fr.	30-70 mm., cvx. then exp., sometimes depressed when old, occ. umbonate, with ± adpressed **pinkish-, scarlet-red or red-lead fibrillose scales** on a paler whitish or yellowish background, **bruising deep red, reddish-brown** or copper colour, scales smaller and denser on disc, larger and further apart and often ± concentric towards margin, often thick-fleshed at disc, margin with remnants of cortina at first.	Pale ochraceous-clay or cream colour then milky-coffee or ochraceous-clay, finally rusty-buff, f. crowded, L about 60-70 1 3, adnate to sub-decurrent, edge paler often sl. thick and uneven.	50-80/6-20 mm., ± equal or thickened towards base, some-times sl. fusiform or irregularly shaped, apex white or whitish, remainder with scales coloured **like those on cap** or bright ochre, **bruising ochraceous, deep red or reddish-brown** like cap, base white tomentose, firm at first.
137. *rubicundulus* (Rea) Pearson (= *pseudobolaris* R. Maire, = *bulliardii sensu* Ricken *non al.*)	35-96 mm., cvx. then cvx.-exp. sometimes sl. broadly um-bonate, sometimes exp.-de-pressed when old, **yellow soon orange-tawny-buff** often with golden-yellow margin, bruising ± tawny-rusty, ± innately-fibrillose, sometimes adpressedly fib-rillose-scaly around disc or becoming smooth, margin with remnants of pale yellow cortina at first, often thick-fleshed at disc.	Pale ochraceous then deeper ochraceous finally rusty-ochre, often bruising blood-red or orange-reddish esp. at or near the edge, crowded, L 58-80 1 3-7, often rather narrow, edge paler often rather thick and uneven.	50-80/7-22 nun., shape variable, from ± equal or attenuated downwards to ventricose-fustforin with ± pointed base, sometimes clavate-bulbous (up to 30 mm. in cliatn.) or irregular, **pale yellowish, discolouring bright chrome-yellow then orange-red or rusty-orange** when handled, esp. in lower part, pale yellow cortina forming ± well-marked ring-zone, apex strongly nbrillose-striate or floccose-scaly, base whitish or pinkish tomentose, stuffed often becoming ± hollow but firm.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Yellowish-ochraceous, tinged colour of cap under cap cuticle, becoming tinged tawny-rusty in stem cuticle esp. towards base.	Smell faint to fairly strong, of radish. Taste none or sl. radishy.	9-12(12½)/6½-8½µ, subglobose or broadly elliptic -ovate, apiculus moderate, punctate-rough. (Basidia unusually large, 40-50/12-15µ).	Gill-edge fertile at first, then with cylindric, clavate or sl. fusiform cells 5-10µ in diam. often in bunches, contents brownish - yellow *sub. micr.*	Conif. woods. Uncommon. (Found in *Vaccinium* under pine at Loch-an-Eilean, Inverness-shire, 11-9-57, in some quantity.) (Also in *Sphagnum, Polytrichum* or *Hylocomium sec* Favre.)	A striking species best distinguished by relatively large broadly elliptic-ovate spores, large basidiaancl bright colours, esp. of gills, Differs from *callisteus* (No. 132), also a pine-wood species, in spores, deeper coloured gills and radishy smell, and from *orellanus* (No. 134) in habitat, spores, more uniform colours and smoother cap.
tawny or reddish. Cap either with conspicuous reddish scales or innately-fibrillose to ± smooth. Flesh at least at elliptic-fusiform, less than 9µ, long. (Spp. 130-137.)					
Whitish in cap and stem-apex, pallid-ochraceous or yellowish in stem, turning sulphur-yellow esp. at base of stem when cut or bruised then deep red or reddish-brown like cap.	Smell none or faint, pleasant.	6-7½/4½-5½µ x subglobose or broadly ovate. apiculus small, ± punctate-rough.	Gill edge fertile.	Decid. woods esp. birch and beech. Uncommon. Solitary, in small groups or subcaespitose.	Superficially resembling *spilomeus* (No. 129) but brighter coloured and clearly distinguished by never being blue-violaceous in any part, flesh colour change and smaller spores. Sometimes found with depressed cap and decurrent gills or deformed. Differs from *rubicundulus* (No. 137) in spores and scales on cap and stem.
Pale yellowish or pale ochraceous soon turning deep chrome-yellow when cut or bruised, changing back again slowly to ochraceous-yellowish (cut surface stains paper yellow).	Smell none or faint, pleasant or sl. acid. Taste ± bitter or none	6½-8/3½-4½µ, elliptic-fusiform, apiculus small, f. punctate-rough, (pale yellowish *sub. micr.* in water).	Marginal cystidia ∞, sometimes inconspicuous, clavate, cylindric-flexuose or ± lageniform, 30-40/3-6µ ; facial similar, less ∞, most ∞ in outer half of gill.	Decid. woods, esp. birch and oak. Uncommon. Solitary or gregarious often subcaespitose.	Very readily distinguished by colour-change of all parts and small elliptic-fusiform spores. The cystidia are not always easy to see and may be overlooked. Like *bolaris* (No. 136), which differs in spores and presence of red scales on cap and stem, is sometimes found with depressed cap or deformed.

SPECIES	CAP	GILLS	STEM
36. Cotonei.	Rather small to large; stem ± equal to clavate-bulbous. Cap, gills and stem predominantly (Spp. 138-139.)		
138. *cotoneus* Fr. *(=sublanatus sensu* Boudier, KM *non al.)*	40-105 mm., **yellowish-olivaceous or tawny-olive-brown to dark olive-brown,** brown tints often more prevalent at disc, margin often paler or yellower, **velvety-tomentose-scaly** or ± densely covered with small pilose scales, margin ± smooth or sl. fibrillose to tomentose-scaly like disc, sometimes with remnants of veil, flesh thick at disc of cap at first	Pale olive-yellow then brownish-olive or olive-rusty finally rusty-buff, subdistant to f. crowded, often rather thick at first, edge paler, coarsely denticulate.	65-100/10-26 mm. (up to **36** mm. in bulb), ± **clavate-bulbous,** sometimes ± equal or thickened towards base when full-grown, **pale- or yellowish-olive,** often darker brownish at base when handled, fibrillose-striate, apex paler and ± silky-smooth, cortina yellowish-olive, **ochraceous-olive or olive-brownish veil** forming ring-zone or scattered patches below cortinal zone.
139. *venetus* (Fr.) Fr.	20-60 mm., **greenish-yellow or greenish-olive** then ochraceous- or brownish-olive to yellowish, sometimes more brown at disc, **minutely yellowish to-mentose-floccose punctate-scaly,** sometimes smoother when old, often rather thin-fleshed.	Yellowish-olive then olive-buff or brownish-olive finally rusty-buff, subdistant, sometimes connected by veins, edge often rather thick and denticulate or uneven.	**40-80/5-12 mm.,** ± **equal** or sl. thickened at base, **concolorous or paler** esp. at apex, fibrillose, striate, greenish-yellow cortina fugacious, base pale yellowish tomentose, sometimes becoming hollow.
37. Pholidei.	Small to f. large; stem slender to f. thick, equal or sl. thickened at base. Colours rhrome-Cap and lower part of stem with distinct darker or more rarely ± concolorous fibrillose		
140. *pholideus* (Fr. ex Fr.) Fr.	30-100 mm., shape variable, from cvx. or conico-cvx. to ± plane or sl. depressed, umbonate or not, sometimes with wavy-lobed margin when large, ochraceous-buff to pale date-brown, margin often paler, ± entirely covered with small erect **pointed fibrillose sepia or dark-brown scales,** margin often with remnants of brownish cortina and veil.	**Blue-violaceous** soon fading to clay-violaceous then watery-buff or pale milky-coffee finally rusty-buff, f. crowded, L 40-70 1 3 (7), edge sl. paler or ± concolorous, ± even or sl. uneven.	60-120/7-16 mm. (8-25 mm. at base), ± equal or attenuated upwards from thickened or less commonly clavate-bulbous base, **pallid-buff** or dirty yellowish-brown, often darker almost sepia at base, **apex blue-violaceous then whitish, dark-brown fibril lose scaly** like cap up to ring-zone, pale brownish cortina and veil evident, veil forming well-marked ring-zone, base often whitish tomentose.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
olivaceous or greenish at first. Cap ± tomentose-scaly. Spores subglobose or broadly ovate, not more than *Q/j.* long.					
Pale olivaceous or yellowish-olive, often deeper olive-brownish at base of stem or under cap cuticle, soon soft in stem.	Smell none or faint, pleasant (of radish *sec* KM). Taste mild.	7½J-9/5½-7µ, subglobose or broadly ovate, apiculus moderate, ± rough.	(Gill-edge with ± cylindric sterile cells about *fill* in diam. *sec* Pearson.)	Decid. woods, esp. beech and oak. Uncommon. (Description mainly from notes by Pearson.)	Distinguished by olivaceous colours, tomentose-scaly cap, subglobose spores and veil on stem. Differs from *venetus* (No. 139) in more robust habit, less greenish colour and presence of veil on stem, but both species have similar spores and may occur under beech.
Pale yellowish or greenish -yellow often sl. darker under cap cuticle or almost sulphur-yellow at stem-base, becoming olive yellowish	Smell none or faint. sl. radishy. Taste often sl. bitter or bitterish- rank.	6-8/5-6½µ, subglobose or broadly ovate, ± punctate-rough *sec* KM.		Beech woods, (also fir woods *sec* KM). Uncommon. (Description mainly from KM.)	Distinguished by distinct greenish-tinge when fresh, minutely tomentose-scaly cap and subglobose spores. Differs from *cotoneus* (No. 138) in more greenish colour, slenderer habitat and lack of distinct veil on stem ; *arenatus* sensu Konrad (see Key § 38) and *arenatus* sensu Moser (see key § 40) are less greenish and have different spores.
or golden-yellow to yellow-ochraceous, buff or date-brown, young gills and stem-apex blue-violaceous in *pholideus,* 140. scales. Spore shapes and sizes various. (Spp. 140-143.)					
Pale pallid or ochraceous-buff, often darker at base of stem, **blue-violaceous** in cap and esp. stem-apex at first, fading to whitish then pallid or dirty ochraceous.	Smell none or faint, pleasant	**6½-8½/5-6µ, broadly elliptic,** apiculus small, ± rough.	Gill-edge fertile.	Decid. woods, **esp.** (? always) **under birch.** Locally common (esp. under birch on heathy soil).	Distinguished at once by dark-brown scales on cap and stem and blue-violaceous colour of young gills and stem-apex. When the blue-violaceous colours have faded it is best recognised by the dark-brown scales on the cap and lower part of stem (also with brownish veil) and broad spores; *penicillatus* (No. 142) is perhaps most like this species, but is always slender, generally sl. paler and has different spores.

SPECIES	CAP	GILLS	STEM
141. *humicolus* (Quél.) R. Maire	10-50 mm., **conical or conico-cvx.** then exp.-conical, gen. ± pointed at disc, chrome-or ochraceous-yellow, sometimes with sl. rusty-tawny tinge at disc, ± entirely covered with **reflexed fib-rillose rusty-tawny or golden scales,** margin torn and lacerate often fibrillose at first.	Whitish then pale^ to deeper ochraceous, finally ± rusty-ochre, subdistant, "L about 26 1 1 (3), edge paler or concolorous, ± even.	30-70/3-10 mm., equal or attenuated at base, sometimes sl. thickened towards base, **ochraceous or yellow** with paler apex, base soon darker rusty-tawny, apex ftbrillose-striate often also fibrillose-floccose at base of gills, cortina whitish at first, lower part with **recurved ftbrillose scales as on cap,** stuffed then hollow
142. *penicillatus* Fr. *sensu* Rea *non* Ricken.	15 - 40 mm., cvx. then exp., acutely or obtusely um-bonate, pale tawny-ochra-ceous or **rusty-buff,** ± densely innately-fibrillose-floccose-scaly, **scales darker,** rusty-umber or dark-brown.	Clay- or pallid-ochra-ceous then pale rusty-umber or date-brown-rusty finally rather dark rusty-umber, subdistant, L about 30 1 1 (3), edge paler or concolorotis ± even.	25-75/2-6 mm., ± equal or sl. attenuated at the base, **con-colorous** with paler apex, with **darker scales** like those on cap on lower part up to the ± well-defined ring-zone, apex silky-fibrillose-striate, stuffed then hollow..
143. *psammocephalus* (Bull, ex Merat) Fr.	x!0-50 mm., cvx. then exp., often umbonate sometimes acutely so, **tawny-buff or yellowlsh-ochraceous,** sometimes golden-yellowish, entirely **minutely fibril -lose-scurfy-scaly,** scales concolorous or sl. darker.	Pale ochraceous-rusty or tawny-buff then rusty-buff to umber-cinnamon, crowded.	25-50/2-5(8) mm., ± equal or attenuated downwards, **tawny-buff or yellowish-ochraceous** with paler apex, **scurfy-scaly** like cap up to ± well-marked ring-zone, stuffed.
V. DERMOCYBE	Cap not hygrophanous, dry, typically loosely or innately fibrillose, sometimes fibrillose-in diam., sometimes sl. swollen towards base. Colours often bright: e.g. yellow, tawny, obtusely) more rarely ± conical, sometimes depressed around disc when expanded, or ventricose. (Spp. 144-160.)		
38. Sanguinei.	Gills carmine-red, purplish-blood-red, scarlet-red or dark chestnut at first, hardly changing (Spp. 144-149.)		
144. *sanguineus* (Wulf. ex Fr.) Fr.	20-50 mm., **deep carmine-to dark blood-red,** ± radially silky-fibril lose *sub lente,* often shiny when dry, margin sometimes becoming torn and lacerate or splitting radially, extreme margin often sl. reflexed.	**Deep carmine- or dark blood-red,** finally tinged rusty from spores, f. crowded, L 30-36 1 3-7, often rather narrow and linear.	30-60/3-7 mm., ± equal or sl. thickened at base, often llexuose, sometimes com-pressed, **concolorous or darker** (reddish-bay ± silky-fibrillose-striate, **red cortina** forming zone near apex, base pinkish, yellowish or whitish tomentose, stuffed then hollow.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Whitish or pale yellowish in cap, deeper yellow in stem, ± rusty-tawny at base or in cortex of lower part of stem, often thick at disc of cap, firm.	Smell pleasant, rather like *Pholiaa, squarrosa,* sometimes rather faint.	**8-10/5-6µ,** elliptic or elliptic sl. amygdaliform, apiculus moderate, faintly punctate-rough.	Gill-edge fertile.	Beech woods. Uncommon. Often solitary.	Resembling a small *Pholiota squarrosa* in general appearance and smell but growing on the ground and often solitary. Differs from *psammocephalus* (No. 143) in rather brighter colours, gen. more robust habit, cap gen. more conical, coarser scales, smell, and sl. longer spores.
Concolorous or paler esp. in cap, thin except at disc of cap.	Smell none or faint, pleasant.	**7-10/4-5µ, elliptic sl. amygdaliform,** apiculus rather small, faintly punctate-rough.	Gill-edge fertile.	Under oak, (also pine *sec* Rea). Uncommon	Distinguished from *psammocephalus* (No. 143) by darker scales and narrower spores. This description is based on one collection by myself and one by Pearson, but the species needs further study. Ricken's *penicillatus* with roundish spores is probably another species (see key § 30).
Yellowish or tawny-buff, thin except at disc of cap.	Smell none.	**7-9/5-6µ, broadly elliptic,** apiculus rather small ± punctate-rough. (from spore-print collected by Pearson.)		Conif. and decid. woods. Uncommon.	Differs from other species in this section by being ± unicolorous, the scales not being distinctly darker. This description is compiled from Ricken and Rea since I have no personal notes on this species. Requires further study and its status confirmed versus *penicillatus* and *arenatus* auctt.
tomentose or ± smooth, more rarely tomentose-scaly. Stem typically ± equal and slender, rarely more than 12 mm. red, chestnut or olivaceous, never blue or violaceous in any part. Cap cvx. then exp. often umbonate (acutely or mostly thin-fleshed except at disc; gills narrowly or broadly adnate, sometimes sl. decurrent, eniarginate or not, linear					
colour but tinged ± rusty from spores when mature. Cap and stem red, yellow or ochraceous or coloured like gills.					
Dark blood-red or deep carmine, paler in centre of stem when dry, deeper over gills and in stem-cuticle.	Smell none or faint, pleasant	**7-9/4-5µ, elliptic,** apiculus small to moderate, punctate-rough.		In woods esp. (? always) coniferous. Not uncommon. Generally gregarious. (See notes.)	Distinguished by ± uniform dark blood-red colour of all parts. Differs from *cinnabarinus* (No. 145) and *anhracinus* (No. 140) in colours and in having narrower spores; best distinguished from *puniceus,* 147, by red cortina, and flesh dark blood-red rather than purple-red.

SPECIES	CAP	GILLS	STEM
145. *cinnabarinus* Fr.	20-75 mm., bright scarlet-red or **red-lead** colour, silky-fibrillose becoming ± smooth and silky-shiny.	**Concolorous** or darker, then powdered rusty with the spores, finally deep rusty-red, sub-distant, sometimes connected by veins, edge concolorous or paler, serrulate or uneven.	30-60/4-10 mm. (up to 14 mm, at base), ± equal or sl. thickened at base or clavate-bulbous, **concolorous,** shining silky-fibrillose-striate, **cortina red,** stuffed then hollow, firm at first.
146. *anthracinus* (Fr.) Fr. *sensu* Lange *non al.*	20-40 mm., **deep chestnut** or dark blood-red-brown, silky-fibrillose becoming ± smooth.	**Concolorous** then powdered rusty with the spores, ± crowded.	40-70/3-7 mm., ± equal, often rather slender and flexuose, **concolorous** or sl. paler, base often still paler, silky-fibrillose-striate, stuffed then hollow.
†147. *puniceus sp. nov.*	15-40 mm., cvx. then exp.-cvx. obtusely umbonate or not, sometimes depressed at disc when old, **purplish-blood-red** or purplish-chestnut, sometimes sl. darker or ± bay at disc, at first gen. with paler carmine-rose or ochraceous-reddish margin, adpressedly fibrillose-tomen-tose or radially innately-fibrillose, ± smooth and shiny when old and dry, margin sometimes minutely reflexed fibrillose-scaly.	**Deep purplish-blood-red or purplish-chestnut** with brownish-chestnut sheen when viewed from above, finally deep rusty-chestnut, f. crowded, L 24-32 1 3-7, adnate or witk sl. tooth, not or sl. ventricose, edge concolorous or brighter blood-red, ± even, sometimes uneven when old.	38-70/2-9 mm., ± equal but often with thickened or sl. clavate base, paler than cap or ± concolorous, sometimes sl. darker below, fibril lose-striate, **ochraceous or golden-brown cortina** forming zone near apex, base pinkish-ochraceous or pale purplish-red tomentose, stuffed then hollow.

FLESH	*TASTE AND SMELL*	*SPORES*	*GILL EDGE AND CHEMICAL REATIONS*	*HABITAT*	*OBSERVATIONS*
Concolorous but paler, esp.in centre of cap and when dry, sometimes rather thick at disc of cap	Smell and taste ± radishy.	**7½-9½/4½-5½µ, elliptic or sl. amygdaliform,** apiculus moderate or f. large, punctate-rough or rough.	Gill-edge with cylindrii-clavate sterile cells, 30-60/7-9µ *sec* KM.)	Beech woods. Uncommon. (Description from KM and Lange.)	Distinguished by ± uniform scarlet or red-lead colour and ± radishy smell. Differs from *sanguintus* (No. 144), *puniceus* (No. 147) and *anthracinus* (No. 140) in brighter colours. Spore-measurements given by me are from spore-print collected by Pearson, those given by KM and Boudier are too large.
Concolorous or paler, esp. in centre of cap and stem when dry.	(Not known).	**7½-9½/5-6µ, broadly elliptic** or sl. amygdalifonu, apiculus moderate. ± punctate-rough. (8-11/5-6µ almond-shaped *sec* Lange.)		Woods (conil. *sec* Lange, my collection from birch wood). Uncommon. (Description mainly from Lange.)	Distinguished from *sanguineus* (No. 144) in deeper brown-red colour and broader spores. Examination of two spore-prints, one collected by me and one by Pearson failed to show any spores longer than 9^U, but did show spores corresponding in shape to Lange's figures; ior discussion of other interpretationsof *anthracinus* see notes.
Purplish-red, deeper in cap and stem cuticle, often brighter in stem, drying purplish-rose in centre of cap and stem.	Smell none. Taste none or v. sl. radishv.	**6½-8(8½)/4-4½(5) µ elliptic,** smooth or f. punctate, apiculus small.	Gill -edge fertile. (Cortinal threads 3-6µ in diam. with **yellow-brown** vacuolar or granular pigment (daylight in H_2O); h vphae on cap, stem and in gills with **reddish** vacuolar pigment.)	Decid. or mixed woods. Probably not uncommon. (Type material 21.9.57 Clapham Woods, Clapham, Yorks. in Herb. Kew.)	Distinguished by intense gill colour, ochraceous nr golden-brown cortina and purplish-red colours especially of flesh; has no doubt been confused with *sangnineus,* 144, in the past from which it differs in not having a red cortina and in being more purplish-red esp. internally; C. (*Hydro.*) *purpureobadius* has similar purplish-red flesh but has the gills ochraceous at first and never intense purplish-blood-red, the cap ± hygrophanous and longer spores; *anthracinus,* 140, has larger spores and is more brownish-chestnut. (See notes.)

SPECIES	CAP	GILLS	STEM
148. *phoeniceus* [Bull.] R. Maire (= *miltinus* *sensu* Quélet, Cooke, Boudier *non* Fries, Ricken)	30-60mm., deep **ochre-buff** soon tinged red-brown **then reddish-date-brown to chestnut** or deep red-brown, often bright coppery-reddish when dry, sometimes paler at margin, minutely silky-librillose, silky-smooth or minutely cracked when dry, sometimes with scattered adpressed reddish or tawny ochre fibrillose scales esp. around disc.	**Shining purplish-blood-red** then pow dered rusty with the spores, finally rusty reddish, sometimes-appearing darker when bruised, ± crowded, L 30-42 1 1-7, edge concolor ous or sl. paler, some times thick and mi even.	20-90/4-11mm., ± equal or attenuated downwards, sometimes sl. thicker at base when young, **ochraceous or yellowish,** often paler at apex, with ± adpressed **tawny-ochre or deep red fibrils** (sometimes forming ± concentric scales or patches) below ± apical ochraceous or reddish cor-tinal zone, base yellowish or pinkish tomentose, stuffed then hollow.
149. *semisanguineus* (Fr.) Gillet.	30-80mm., **olive-buff to ochraceous-buff, disc some-times** sl. darker or turning red-brown or tawny-date-brown, often with olivaceous margin when old, matt, minutely fibrillose-scaly, sometimes becoming silky-smooth, scales at or near margin sometimes more marked and sl. relieved.	**Blood-red or purplish-blood-red,** not markedly shiny, then powdered rusty with spores but scarcely changing colour, ± crowded, L 36-44 1 3-7, edge often sl. paler, sometimes thick and ± uneven.	20-110/4-13 mm., ± equal, sometimes with sl. thickened base or attenuated downwards, **ochraceous or yellowish** later often olivaceous with paler or whitish apex, iibrillose-striate, yellowish cortina rather sparse, lower part gen. with a few **scattered brownish or olivaceous fibrils,** base yellowish or more often pinkish or reddish tomeutosc (sometimes turning deeper red when bruised), stuffed then hollow.
39. Cinnamonei.	Gills at first bright-yellow, ochre- yellow or olive-yellow, then changing colour, to golden red.(Nos. 157-160). Cap yellow or olive to tawny, brick-red, bright red-brown or bay-brown		
150. *cinnamomeus* (Fr.) Fr. *sensu* Fries, Sowerby, Bolton, Henry (*non sensu* Kicken, Bresadola, Lange = *cinnomomeo-lutescens*)	12-90 mm., cvx. then exp. often million,ite (obtusely or acutely), olive-yellow or olive-buff with sl. red-brown tinge at disc, soon olive-red-brown to **bright red-brown, coppery** or date-brown, margin often remaining ± ochraceous for some time, innately-fibrillose or -f-smooth, often sl. recurved minutely fibrillose-scaly near margin.	Deep lemon- or chrome-yellow, soon vermilion-yellow, **tawny-orange** or **bright golden-red** from edge inwards, finally deep tawny-amber, f. crowded, L 26-40 1 (1) 3, edge con-colorous, ± even.	25-110/2-10 mm. ± equal or sl. thickened at base to sl. clavate-bnlbous, occ. compressed (and then up to 15 mm. in diam.), often llexuose, lemon- or chrome-yellow soon tinged reddish-brown or tawny-reddish except at apex, ± fibrillose-striate, cortina yellowish, base whitish to pale or deep yellowish tomentose, stuffed often becoming hollow.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Dirty ochraceous, pale buff or yellowish, **reddish under cap cuticle and at stem-apex**, sometimes also in stem-base.	Smell noe or faint, pleasant. Taste none or sl. bitterish.	**6-8/3½-4½µ. elliptic - a mygdalif or m** or elliptic-fusiform, apiculus small, very f. punctate (Fig. 5).	Gill-edge fertile	Conif. and birch woods. Uncommon. Often gregarious.	Frequently confused with the much more common *semisanguineus* (No.149) but readily distinguished by red tints of flesh in parts, reddish fibrils on stem, spores of different shape and cap soon becoming reddish-brown. The peculiar shining colour of the young gills is also characteristic but difficult to paint or describe.
Olive-buff in cap, **dirty ochraceous in stem,** ± unicolorous pallid ochraceous when dry, cuticle at very base of stem often reddish.	Smell none or faintly radishy. Taste ± bitterish.	**6-7½ (8½)/4-4½ (5) µ, elliptic,** apiculus v. small, punctate-rough (Fig. 6).	Gill-edge fertile.	Conif. and birch woods. Common. Solitary or gregarious.	Differs from section *Cinnamomei* in having the gills blood-red from the first. Distinguished from *phoeniceus* (No. 148) by differently shaped spores and lack of reddish fibrils on middle part of stem .ind red tints in flesh; in both species (esp. in *semisanguineus* (No. 149) a reddish tomentum may however, be present at the base of the stem.
(No. 150), tawny, tawny-ochre or rusty-orange (Nos. 151-154), rusty-buff or amber (Nos. 155-156) ± olivaceous . (Pigment masses sometimes present in gill-trama or in some basidia. Spp. 150-160.).					
± uniform **lemon-or chrome-yellow,** drying paler, sometimes sl. horny-yellow or tinged olivaceous over gills.	Smell none or faint, radishy. Taste strong radishy-bitter.	**6½-8(8½)/4-4½ (5) µ,** elliptic or sl. elliptic-amygdaliform, apiculus small to moderate, ± smooth or faintly punctate-rough (Fig. 15).	Gill edge fertile. (Yellow pigment masses present in gills).	Woods, esp. conif. and birch. Probably common (at least in Scotland). Often gregarious or even caespitose.	Recognised by bright coloured gills, cap and stem soon becoming red-brown and medium spores; differs from *croceofolius* (No. 15-) which also has bright coloured gills in more robust habit, larger spores and deeper colours of mature cap and stem; *cinnamomeobadius* lacks bright orange or golden-red tints in the gills at any stage and is usually loss robust. (See notes.)

SPECIES	CAP	GILLS	STEM
151. *malicorius* Fr. *sensu* Kauffmannii, Lange *non* Ricken KM, Pearson. *(sensu* Pearson *olivaceofuscus)*	20-65 mm., cv.x. then cxp. ± plane, umbonate *or* not, olive-brown then tawny-date-browii or **reddish-brown with olive-yellowish, golden-yellow or sl. tawny margin,** silky tomentose or minutely noccose-scaly esp. near margin.	**Bright tawny-yellow** then **tawny-ochre** or orange-tawuy, finally tawny-rusty f. crowded, L 36-48 l 1-3, edge con-colorous, -± uneven.	35-70/3½-12 mm., fairly robust, ± equal, deep lemon- or olive-yellow, **not** becoming **reddish-brown** or only sl. so, silky-fibrillose-striatc with a few darker fibrils below, cortiua olive-yellow, stuffed then hollow.
†152. *croceofolius* Peck (= *cinnamomeus* var. *conformis* Fries = *cinnamomeus* var. *croceus sensu* Cooke, Lange *non* Fries).	15-30 mm., evx. then exp., often acutely or obtusely umbonate, yellow-buff or ochraceous-yellowish often with brownish disc, then **ochraceous-tawny** or deep rusty-orange, minutely fib-rillose or often tomentose-scaly, scales sometimes sl. reflexed esp. near margin.	Bright chrome-yellow soon orange-ochru-ceous or **tawny-ochre,** finally rusty-orange like cap, crowded, L 26-40 l 1-3(7), edge con-colorous even or sl. uneven.	25-80/2-4 mm., ±equal or sl. thickened at base, sometimes flexuose, bright chrome or golden-yellow then dis-colouring rusty-orange from base up, apex ^ persistently yellow, fibrillose-striate, yellow cortina abundant, base yellow tomentose, stuffed then hollow.
†153. *aureifolius* Peck.	13-35 mm., cvx. then exp. or sl. depressed, umbonate or not, **dirty ochraceous-buff,** or sepia-buff then tawny-date-brown, **adpressedly brown fibro-squamulose.**	Chrome-yellow then yellow-orange or **tawny-ochre,** finally rusty, f. crowded, L about 20 l 3, edge concolorous or sl. paler, sl. uneven.	35-85/4-8 mm., ± equal or si, thickened at base, chrome-yellow then ochre-buff to tawny-date-brown, apex per-sistently yellowish, fibrillose-striate, cortina yellow, base yellow-tomentose.
154. *croceoconus* Fr. *sensu* Kauffmann *non* Cooke, Gillet.	10-40 mm., conical or conico-cvx. then exp.-conical, gen. acutely nmbonate, tawny-brick or **tawny-buff sometimes with dark brown disc** or yellower margin, **almost smooth.**	Pale yellow to golden-yellow thru **tawny-ochre** or rusty-buff, f. crowded, L 24-30 l 3, often rather narrow, edge ± un-even.	30-50/2-4 mm. (up to 120/5 *sec* Kauffmann), equal or sl. thickened below, sometimes flexuose, yellowish often with paler apex, soon discoloured tawny-ochre or rusty from base up, brownish fibrillose below **cortinal** zone, stuffed then **hollow.**

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Deep olive esp. in cap when fresh and moist, then paler yellowish-olive, sometimes brighter yellow in stem-cuticle or tinged with colour of cap under cap cuticle.	Smell and taste none or sl. radishv.	(5½)6-8/4-5µ, elliptic or sl. amygdaliform, apiculus small, sl. punctate-rough.	Gill-edge fertile. (Yellow pigment - masses present in gills.)	Conif. woods. Not uncommon, at least in Scotland.	Distinguished by deep olive flesh, small spores, bright-coloured gills and rather robust habit; *croceofolius* (No. 152) has slightly smaller spores, is gen. more slender and has flesh without olive tints; *olivaceofuscus* (No. 159) is more olive esp. in gills, grows in a different habitat and lacks yellow pigment-masses in gills (See notes.)
Chrome- or golden-yellow, brightest iiistem, paler when dry. often sl. horny over gills or tinged rusty orange in cuticle of stem.	Smell none. Taste si radishy-bitter	5-6½ (7)/3½-4½µ, elliptic or sl. elliptic-amygdaliform, apiculus minute, ± punctate-rough (Fig. 14).	Gill-edge with cylindric-clavate sterile cells, 6-1 *'Ifl* in diam. (Yellow pigment masses present in gills at least in dried material.)	Conif. woods. Not uncommon. Solitary or gregarious (generally in small numbers). (Found under pine, 17.10.56. Witley Common, Surrey.)	Has the most consistently small spores in this section; differs from *malicorius* (No. 151), which has spores only slightly larger, in less robust habit and flesh not deep olive at any time; differs from *cinnamomeus* (No. 150) in less robust habit, gills not quite so red in colour and cap and stem paler even when old. (See notes.)
Chrome-yellow to pale olive-yellow.	Smell faint orf. strong, of iodoform. Taste mild.	(8½i)9-12/5-6µ, elliptic or elliptic-oblong to sl. amygdaliform, apiculus small or moderate, ± punctate-rough (Fig. 11).	(Not noted.)	Conif. woods. Uncommon.	Distinguished by rather dirty brownish colours of cap even when young and large spores together with bright coloured gills. This description is from rather meagre material, I shall hope to supplement it eventually.
Pale yellowish in cap, often tinged with cap colour under the cuticle of cap, yellowish or sl. brownish in stem.	(Not noted.)	7½-9½ (10)/4½-5½ (6) µ, elliptic, apiculus small, ± punctate-rough (Fig. 17).	(Not noted.)	Conif. and moist decid. woods. Uncommon. Often gregarious or subcaespitose.	Distinguished by tawny-tinged, almost smooth, apparently constantly ± conical cap and f. large elliptical spores; near *cinnamomeo-badius* (No. 156) which differs in deeper red-brown cap when expanded, sl. amygdaliform spores and variable cap shape. (See notes).

SPECIES	CAP	GILLS	STEM
155. *uliginosus* Berk. (=*concinnus* Karsten = *Quéletii* Bataille = *orellanus sensu* Quélet, Boudier *non al.)*	15-46 mm., cvx. then exp. often ± plane or sl. depressed with upturned wavy margin when old, acutely or obtusely umbonate or without umbo, **bright tawny-orange** or tawny-brick to tawny-bay, occ. with a sl. purplish tinge, margin often paler tawny-red or sl. yellower, minutely yellowish silky-fibrillose or sl. fibril-lose-scaly near margin to innately-fibrillose in places with silky-sheen when dry.	Bright lemon-yellow then **ochre-buff** or tawny-buff, finally rusty-buff, sometimes with sl. olivaceous tinge, f. crowded, l. 24-40 l 3-7, edge often persistently yellow, even or sl. uneven.	25-65(80)/3-9 mm.. fairly robust, ± equal or sl. thickened at base, **concolorous or paler, yellow at apex** and often also towards base, apex ± yellow-floccose, remainder fibrillose-striate, fibrils often ± rusty in middle part, cortina yellow, base yellowish tomentose, stuffed then hollow.
†156. *cinnamomeo-badius* Henry	14-52 mm., cvx. then exp. ± plane or sl. depressed, obtusely or acutely umbonate, ochraceous-buff or rusty-ochre with margin ± chrome- or lemon-yellow when young, **soon reddish-tawny-buff to reddish-bay** or chestnut-umber, **margin rather persist-ently yellow** then pallid-ochre finally concolorous, ± innately-fibrillose, often sl. reflexed fibrillose-scaly towards margin, extreme margin sl. reflexed and torn when old.	**Chrome or golden -yellow** then yellow-ish-ochraceous or **ochre-buff** to rusty-ochre, finally amber, f. crowded, L 24-32 1 (1) 3 (7), edge pale: or more persistentl; yellowish then concolorous, ± even to floccose-dentate.	20-80/2-5 mm., ± equal or sl. thickened at base, often flexuose, chrome- or lemon-yellow discolouring pallid-ochraceous or reddish-brown esp. in middle part, often pallid-olivaceous towards base when old, fibrillose-striate, fibrils discolouring ± dark-brown, lemon-yellow cortina ± fugacious, **base pallid-yellowish or olivaceous tomentose,** stuffed then hollow.
†157. *cinnamomeo-lutescens* Henry (= *cinnamomeus sensu* Ricken, Bresadola, Lange *non* Fries, Henry)	8-50 mm., cvx. then exp. ± plane, gen. acutely or obtusely umbonate, lemon- or olive-yellow then **olive-buff with lemon-yellow** tinge at **margin, sometimes** discolouring tawny-buff or **reddish-brown at** or around **disc,** ± innately-fibrillose or sl. reflexcd-scaly near margin, sometimes smooth with silky sheen at disc.	Lemon-yellow or **olive-yellow, remaining so for a long time,** finally yellow-or olive-rusty, f. crowded, 1. 20-40 1 (1) 3-7, edge concolorous or more yellow, ± even to sometimes rather thick and sl. floccu-lose.	20-110/1½ -10 mm., ± equal or sl. thickened at base, often flexuose, lemon-yellow, later ± olive-yellow, sometimes discolouring sl. rusty from base up, fibrillose-striate. fibrils sometimes discolouring rusty, apex sl. yellou pruinose, lemon- or olive-yellow cortina ± fugacious, **base ± lemon-yellow tomentose,** stuffed then hollow.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Lemon-yellow, very bright lemon- or sulphur-yellow in centre of stem, often tinged tawny or pallid-reddish in cap.	Smell usually distinct, of radish	**8-11/5-6/4µ,** elliptic or elliptic sl. amygdaliform, apiculus moderate, punctate-rough.	Gill-edge fertile but some sterile cylindric-clavate cells 8-10µ in diam. may present in gills. (Yellow pigment- masses may be present in gills.)	In swampy places and wet woods, esp. under willows and alders. 8-10/i in Not uncommon. Gregarious.	Distinguished by bright tawny cap and stem paler gills, habitat and large spores; *orellanus* (No. 134) has cap minutely tomentose and; often darker than the stem and gills bright tawny or rusty. Often found on ground which may be under water for part of the year.
Bright chrome- or lemon-yel-low, paler in centre of cap :and stem, often horny-olive over gills or with olive-pallid tinge just inside yellow s tern cuticle, finally ± pallid- ochraceous	Smell none or faint, radishy	**6½-9/(4)4½-5µ,** elliptic or elliptic sl. amygdaliform, apiculus small, ± punctate-rough (Fig. 16).	Gill-edge fertile. (Yellow pigment- masses present in gills.)	Conif. and decid. woods also occ. In pastures. Common. Often gregarious. (First record 17.10.56, Witley Common, Surrey.)	At first coloured like *cinnamomeo-lutescens* (No. 157) but has cap and stem soon becoming dark coloured and smaller spores than this species; lacks the bright-coloured gills of *cinnamomeus* (No. 150); *malicorius* (No. 151) has deep olive flesh and sl. smaller spores and *sphagneti* and *olivaceo-fuscus* (Nos. 158 and 159) are altogether more olive.
Lemon-yellow sometimes paler in centre of cap and stem.	Smell often f. strong radishy.	**7½-10(11)/4½-5½ (6) µ** elliptic or sl. amygdaliform, apiculus smallor moderate, ± punctate-rough (Fig. 12).	Gill edge fertile but some cylindric-clavate cells 7-9µ in diam. may be present. (Yellow pigment masses present in gills.)	Decid. and conif. woods. Not uncommon at least in the South of England. Often gregarious occ. subcaespitose, sometimes solitary. (First record 21.10.55. Studland, Dorset)	Almost unicolorous lemon- or olive-yellow at first, these colours often persisting in all parts for some time. Has also rather large spores. Differs from *aureifolius* (No. 153) which has similar or sl. larger spores in lack of tawny colours esp. in gills and from *sphagneti* (No. 158) which has spores of similar size but sl. different shape in less marked olive or olive-brown colours; *cinna-momeo-badius* (No. 15(1) has sl. smaller spores and soon discolours reddish-brown and is fundamentally chrome- rather than lemon-yellow. Rather variable in size and shape.

SPECIES	CAP	GILLS	STEM
†158. *sphagneti* sp. *nov.* (= *cinnamomeus* var. *paludosus* FT. *non C. paludosus* Peck *nee* ***Hydrocybe paludosa*** (Fr.) Moser	17-40 mm., cvx. then exp. ± plane obtusely or acutely umbonate or not, olive-yellowish soon **olive-buff or dingy olive-brown,** often discolouring **reddish-snuff-brown** or umber from disc out, sl. tomentose or floccose-scaly or minutely scurfy-fibrillose to ± smooth but matt, margin sometimes more persistently tomentose, occ. cracking radially when dry.	Deep olive-yellow then **pure olive,** finally rusty-olive, f. crowded, L 30-40 1 1-7, edge concolor-ous or sl. yellower, ± even or rather thick and flocculose.	50-120/3-6(8) mm., equal or sometimes sl. thickened or attenuated at base, olive-yellow then olive-buff to reddish-olive or reddish-snuff-brown, fibrillose-striate, fibrils olive-brown, apex sl. olive-yellow floccose, pale olive cortina ± fugacious, **base** whitish or more commonly **olive-yellowish or pale olive tomentose,** stuffed then hollow.
†159. *olivaceofuscus* Kühner (= *malicorius sensu* Pearson *non al.)*	18-40 mm., cvx. then exp. ± umbonate, dark olive-brown then **chestnut or bay-brown with bright olive-yellow or olive-ochre margin,** ± innately and often radially silky-nbrillose then smooth and shiny, sometimes cracking radially or becoming split, margin ften with remnants of ortina at first then often torn and sl. reflexed.	**Olive-yellow then olive-ochre** or olive-rusty, f. crowded, L 24-32 1 1-3, sometimes veined on sides or sl. interveined, **edge** concolorous and ± even or more often **olive-yellow flocculose** esp. when young.	30-70/2-6 mm. (up to 10 mm. at base), equal or with sl. thickened or clavate base, olive-yellow then olive-brownish, sometimes tinged bay or chestnut in the middle part, fibrillose-striate, olive-yellow cortina ± fugacious, base pale olive-yellow tomentose, stuffed then hollow.
160. raphanoides (Pers. ex Fr.) Fr. (= subnototus *sensu* Cooke *non al.)*	**25-100 mm.,** cvx. then exp. olivaceous then ollve-± umbonate, olivaceous or **olive-buff,** later more brown with a rusty tinge, minutely innately- or silky-fibrillose then ± smooth.	Olivaceous then **ochre or olive-buff** finally rusty-buff, subdistant, sometimes connected by veins, edge cfteri paler.	**50-100/5-15 mm.,** equal or thickened at base to ± clavate, pale ochraceous then pallid-olive, fibrillose, cortina pallid-olive, stuffed then hollow (base with yellow mycelium *sec* Moser).

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Olive-yellow to olive, paler in centre of cap and stem, often darker olive in cuticle of stem.	Smell none or faint, pleasant or sl. radish y. Taste sl. radishy-bitter.	**7½-9½/(4)4½-5µ,** rather constantly **elHptic-amygdaliform,** apiculus minute or small, ± smooth or faintly punctate-rough (Fig. 13).	Gill-edge fertile but some sterile cylindric-clavate cells 6-10µ in diam. mav be present. (Yellow pigment masses present in gills.)	**In Sphagnum,** once found also in *Aulacomnium.* Not uncommon at least in Scotland. Often solitary. (Type material, 6.9.55 Tarfside, Glenesk, Kincardineshire in Herb. Kew.)	Distinguished by ± persistent olive tints of gills, stem and flesh, habitat and rather characteristic spores; more olive than either *cinnamomeolutescens* (No. 157) or *cinnamomeo-badius* (No. 156); *malicorius* (No: 151) has smaller spores and a different habitat and *olivaceofuscus* (No. 159) is brighter olive-yellow in parts, has smaller, differently shaped spores and a different habitat. (See notes.)
Olive-yellow to olive-greenish.	Smell and taste **none** or faintly radish y.	**(5½)6-8/(3¾)4-5µ, elliptic,** apiculus small, punctate-rough.	Gill-edge fertile. (No pigment masses in gills).	**Under beech and yew on chalk soil.** Uncommon. Often gregarious.	First described from Britain as *C. malicorius* by Pearson fro m material collected by me, but it lacks the golden-tawny colour and robust stature attributed to *malicorius* by Fries. This description from personal notes does seem to agree reasonably well with Kuhner's species, however. Differs from *raphanoidcs* (No. 160) in lack of strong smell and bitter taste, sl. narrower spores and brighter cap and gill colours.
Pale olivaceous or olive-brownish.	Smell **strong radishy,** taste ± **bitter.**	**6½-8/4½-5½µ,** elliptic or **broadly elliptic,** apiculus minute, punctate-rough. (Spores measured from specimen of (*C. subnotatus* illustrated by Cooke.)	(Not known.)	Typically in **beech woods** also fir. Uncommon.	Almost entirely olive-brown and with strong smell and taste, differing from *olivaceofuscus* (No. 159) also in sl. broader spores, duller colours and more robust habit. This description is from Kicken, Lange and Kca. Not will known in Britain and needs further study. (See notes.)

Index and Notes

albocyaneus Fr. - not known. Cke 771(748) has been quoted by Henry for *kauffmannianus,* 104: I feel the plate is not good enough to quote, however, especially as there is no material in Herb. Kew to check spore size and shape.

alboviolaceus, 103. (*Icon.* L 92 A: Ri 44[5]: Maubl. 61; Cke 749(747) (could representbold specimens): KM 142 is not good, colours wrong and veil not shown) - no doubt *kauffmannianus,* 104 has been recorded under this name in the past.

amethystinus Quél. = *hircinus,* 111

anomalus, 122. (*Icon.* L 94 C: Cke 772(776) (moderate, but originals in Herb. Kew. show a duller more convincing colour); Ri 47[1] and KM 150 I are possible but L 94 C[1] is doubtful and best disregarded) - since Fries in *Systema,* Vol. i, p. 220, states 'squamuloso' for the stem I propose to regard the fungus with veil well described and portrayed by Lange as such as *C. anomalus* sensu Fries. After careful examination of a number of collections of *anomalus* sensu lato with a view to separating out this critical group (i.e. measurement of spores from spore-print, exact colour sequence of cap and gills, presence or absence of veil when young) I have come to the conclusion that there are two series of species differing in spore size - (a) a smaller-spored group (6-9/5-7µ) including *lepidopus, tabularis* and *spilomeus,* all normally slender species and (b) a larger-spored group (8-11/6-8µ) including *anomalus* s. str., *azureus* sensu Ricken and K & M, *caninus* sensu Ricken and Lange and two new species, *epsomiensis* and *azureovelatus,* of which *caninus* and *azureovelatus* are normally relatively robust. In my experience the generally slender fungus with the cap reddish- or date-brown almost from the start but sometimes bluish at the margin at first, and yellowish veil on the stem, i.e. *C. lepidopus* Cke., always has the smaller type of spore and should be maintained as a separate species from the paler, duller-coloured and larger-spored *C. anomalus* sensu Lange and after some trial and error these two species should be separable in the field. The separation of the other two smaller-spored species from *lepidopus* is reasonably clear-cut, *tabularis* being quite without blue-violaceous colours and relatively pale and *spilomeus* having characteristic darker reddish-brown scales at least on the lower part of the stem. The larger-spored group can be separated by presence or absence of yellowish veil on the stem *(anomalus, caninus* and *azureovelatus* with veil, *azureus* and *epsomiensis* without veil) and colours and size. I have not yet found *C. diabolicus* Fr. (clearly described by Ricken) but suspect it should be in this larger-spored group and being without veil on the stem would be near *azureus.* It should be remembered that the veil-scales are only too easily washed or eaten off the stem and may be apparently absent when fresh young specimens would show a distinct veil. Furthermore most of the species in this group darken with age and lose their blue tints, becoming ochraceous, rusty or reddish-brown and may be indistinguishable one from another when old (which is also unfortunately only too true of other groups of species of *Cortinarius}.* In *caninus* and *epsomiensis,* however, this change takes place when quite young and often to a rather brighter colour.

There is also another fungus which I have so far found only in Scotland but which is no doubt present in suitable localities elsewhere, which I have in the past variously considered as *azureus, anomalus, lepidopus* and *myrtillinus* but which has relatively narrow elliptic or broadly elliptic spores and a smell of radish. I have described this as a new species, *C. simulatus,* since I cannot find it convincingly in any book, and placed it temporarily in section *Alboviolacei* because I prefer to keep section *Anomali* restricted to those species with sub-globose or broadly oval spores. For discussion of *C. lebretonii* Quél. and *C. lepidopus* see notes on *lebretonii.* As there is no accurate modern description of what I regard to be C. *myrtillinus* sensu Fries I have left this species as being of uncertain position for the moment (see notes on *myrtillinus). I* hope these observations and the provision of two keys may help in clearing up some of the confusion which has prevailed amongst this group in the past.

anthracinus, 146. (*Icon.* L 94 A) - there has undoubtedly been a confusion of three or four species under this name in the past. After reading through descriptions and looking at plates I find it difficult to place most of them with certainty owing to one or more essential details being lacking; however, I propose to take *anthracinus* sensu Lange to be also that of Fries on account of its colours and there is fortunately a spore-size difference as well to help

distinguish it from *sanguineus* and *puniceus;* it seems probable that Grevillea 111[1] (by Quélet) and Cooke (776/787) represent the species I have described as *C. puniceus* sp. nov., characterised by golden-brown cortina and purplish-red flesh and which has probably been misnamed either *sanguineus* or *anthracinus* in the past; Bres. 6442 to my mind illustrates *C. (Hydro.} purpureo-badius* but his description may be a composite one and *C. subanthracinus* Henry, for which this plate is quoted, I take to be a synonym of *C. purpureo-badius* (see notes on *purpureo-badius}.* The fungus named by Quélet *C. anthracinus* var. *violascens* Quél. (1879) which is described as hygrophanous and coloured rather like *purpureo-badius* may, however, be another at present unrecognised species if the spore details are correct

('pruniformes allongées (12-14/4), un peu en virgule'). *C. anthracinus* sensu Fries and Lange is not well known on the Continent and does not appear to be at all common, *C. puniceus* and *C. purpureo-badius* on the other hand are relatively common (at least in Britain) but have not been recognised as British in the past; *C. purpureo-badius* is, however, a hygrophanous species and must be included in subgenus *Hydrocybe* - as correctly done by Kühner and Romagnesi (1953) - and will be described fully in Part III, but is included in key 1, § 47.

**arenatus* (Pers.) Fr. - according to the descriptions there are two interpretations of this name, that of Konrad (*Icon. Bull. Soc. mycol. Fr.* 39 (1923), 39, PL II, Fig. 6-12) with larger spores 9-11/5-6µ, and that of Moser with smaller spores 6-7/4-5µ; Konrad's species is not recorded for Britain but there is a drawing by Phillips in the British Museum, Nat. Hist., S. Kensington, of *C. arenatus* with a quoted spore size the same as that given by Moser; Cke 762(763), *arenatus* was referred by Rea to *C. pholideus,* but may quite likely be authentic, unfortunately no material was preserved; as I have collected neither species myself and in the lack of authentic British material I am not prepared to say which interpretation may be that of Fries; in the lack also of good modern descriptions I have not sufficient information to attempt to delimit *arenatus* against *penicillatus* (also with two interpretations) and *psammocephalus*; further study of this group is required - the essential feature of *arenatus* seems to be an olive tinge in the cap not present in the other species; see key § 38 for *arenatus* sensu Konrad and § 40 for *arenatus* sensu Moser.

argentatus, 114. (*Icon.* Cke 745(745).) - this is *argentatus* sensu Ricken and Cooke, a species not collected by me and needing a good up-to-date description; for *argentatus* var., Kauffmann with gills blue-violaceous at first see *kauffmannianus,* 104.

argutus, 120. (*Icon.* Fr. 151[2]) - Ricken has described a species under this name which has characteristic large limonoform spores and which he says smells like *Tricholoma lascivitm,* but the fungus described by Ricken as T. *lascivum* is that which has been called *T. album* in this country. Rea gives a smaller spore size as well as Ricken's measurements and examination of an unpublished plate shows Rea's species to have been another at present unidentifiable species. It seems strange that Fries made no mention of smell if his species was indeed the same as that of Ricken, but without perosnal data I am not prepared to, discuss this matter further; I suspect confusion between this species and *turgidus,* 113, in this country in the past.

†*aureifolius,* 153. (*Icon.* no authentic plate known.)

†*azureovelatus* sp. nov., 123. *(Icon,* no authentic plate known; Cke 770(766), *azureus,* is doubtful, but may represent old specimens of this species) - this seems likely to be *azureus* sensu Henry (*Bull. Soc. my col. Fr.* 53 (1937) 151, with fig.) which differs in being brighter blue-violaceous and in having sterile cells on the gill-edge, I suspect that further collection of *azureovelatus* may prove these characters to be sometimes true also for *azureovelatus', azureus* sensu Henry cannot be *azureus* sensu Fries however, since Fries underlines 'stipite glabro striatulo' and Henry shows a distinct ring-like veil on the stem as in *azureovelatus,* the cap colour of which is more ochraceous or buff and the blue-violaceous colours less presistent than in my collections of *C. azureus* sensu Fries. See also notes on *anomalus.*

azureus, 126. (*Icon.* KM 150 II (moderate, colours rather faded); non Cooke 770(766), doubtful, possibly old *azureovelatus)* - see notes on *azureovelatus* and *anomalus.*

bolaris, 136. (*Icon.* L 93 A: Cke 759(760): Boud 110 *Bull. Soc. my col. Fr.* 39 (1923) PL 7, Fig. 1.)

bulliardii (Pers. ex Fr.) Fr. - since this species is slightly hygrophanous I prefer to include it in subgenus *Hydrocybe* and shall describe it in Part III; *bulliardii* sensu Ricken non al.= *rubicundulus,* 137.

callisteus, 132. (*Icon.* L 92 B: Bres 639: non Cke 755(774) and 756(864) doubtful) - this non-hygrophanous species is quite abundant in Scottish pine-woods and quite distinct from the less common *C.* (*Hydro*.) *limonius* which is hygrophanous and without darker flesh in the lower part of the stem and will be dealt with in Part III. On account of these differences I do not think *limonius* can be regarded as a synonym of *callisteus,* as done by some authors, despite similar spores, but that it must be regarded as a distinct species nearer to *C.* (*Hydro*.) *gentilis* than to *C.* (*Cort*.) *callisteus.* I suspect confusion in the past in Britain between *callisteus, orellanus* and *speciosissimus* and probably also *tofaceus.*

**camphoratus* (Fr.) Fr. (*Icon.* Fr I52[2]: Lucand 143: Gillet, *Champ. Fr.)* - Moser (1953) and Kuhner & Romagnesi (1953) have used this name for the species known as *C. hircinus* in Britain; I am not convinced, however, that these species are really the same; examination of plates of both species by Lucand (1910) (143, *camphoratus* and 221, *amethystinus - hircinus*) and of Fries I52[2], *camphoratus* shows distinct colour differences especially of the flesh as indicated by Fries in *Monographia;* furthermore the description of *C. camphoratus* by Henry in *Bull. Soc. my col. Fr.* 60 (1944), 64, indicates a different smell from *hircinus* (also noted by Fries) and a different spore shape; since Fries carefully tabulates the differences between *camphoratus* and *hircinus* in *Monographia,* I prefer to leave them distinct for the present; there is no authentic record for *camphoratus* sensu Fries for Britain however, Cke 751(771) being doubtful and no material having been preserved; see key § 8; *camphoratus* sensu Ricken non al. is a species of *Phlegmacium,* see *mairei* var. *juranus,* 36a, Part I, p. 34.

camurus Fr. - probably a *Hydrocybe,* not known in Britain in recent years.

caninus, 124. (*Icon.* L 93 C: Ri 46[5]) - this is the ± robust species with cap becoming bright coloured and a second veil described by Ricken, Lange and Henry most likely to be *caninus* sensu Fries, who describes the stem as 'subperonato (passim cortina fusco zonato)'; for *caninus* sensu Cooke (Cke 768(765)) see *epsomiensis,* 125, which has a similarly bright coloured cap when mature but is relatively slender and has no second veil and very fugacious blue-violaceous colours; see also notes on *anomalus.*

cinereoviolaceus Fr.=violaceocinereus (Pers. ex Fr.) Fr. - see key § 25; this species is described by Fries as *violaceocinereus* in *Epicrisis* but he changed the name in *Monographia* to *cinereoviolaceus* which is therefore a synonym; *cinereoviolaceus* sensu Lange is a different species and may possibly be the same as *simulates,* no, which, however, I have not yet found in beech woods.

cinnabarinus, 145. *(Icon.* Cke 774(785) B: L 94 E: KM 146 I (except for spore size): Boud 113 (except for spore size).)

**cinnamofulvus* Hry. - see notes on *cinnamomeus.*

†*cinnamomeo-badius,* 156. (*Icon.,* no authentic plate known) - see notes on *cinnamomeus.*

†*cinnamomeo-lutescens,* 157. (*Icon.* L 95 F, *cinnamomeus:* Cke 778(778), *cinnamomeus* var.: Ri 47[6], *cinnamomeus)* - see notes on *cinnamomeus',* Cke 777(777), *cinnamomeus* may also represent this species, in the original the gills are not shown coloured tawny-reddish, but buff with slight rusty tinge as in old *cinnamomeo-lutescens;* my impression is that specimens of this species growing in the open, e.g. amongst heather, show the cap discolouring reddish-brown more than those in shady places, which are more persistently lemon- or olive-buff, a point I hope to investigate further, since I suspect I may have confused this species with *cinnamomeus* sensu Kauffmann in the past.

cinnamomeus, 150. (*Icon.* Sow 205, Bolton 150 (both quoted by Fries): probably also Cke 779(779). var. *semisanguineus)* - in sorting out this critical group one must, as Henry rightly says in his discussion in *Bull. Soc. my col. Fr.* 55 (1939) 284, refer to the original descriptions of Fries in *Systerna,* Vol. I (p. 229) where Fries gives the following six varieties, of which we can to-day recognise four in Britain:

(a) *semisanguineus,* 'lamellae colore sanguineo'; now known as *C. semisanguineus* (Fr.) Gillet; although easily recognised by the blood-red gills there appears to have been confusion in the past between this species and var. (b), e.g. Cke 779(779); see notes on *semisanguineus.*

(b) *cinnamomeus,* 'firmior, pileo lamellisque rubro-cinnamomeo: Bolt. 150: Sow. 205[1]; reference to the two plates cited shows a rather robust fungus with cap and stem both coloured brownish-red and rather bright coloured gills, 'a strong golden-red' to quote Bolton's apt description. I have had no difficulty m recognising this sometimes rather robust fungus in

the field and have accordingly described it as *C. cinnamomeus* (Fr.) Fr.; it is apparently quite common in Scotland especially under pine and birch; unfortunately I have not been able to make as many collections in England of this group as I would have liked in recent years, but I suspect it may prove to be quite common in the south also. The bright gill-colour is very striking but quite different from the blood-red of *semisanguineus* and the gills are bright yellow at first as in other members of this group. It does not appear to be well-known on the continent.

(c) *conformis,* 'pileo helvolo cinnamomeo lamellis nitidis croceofulvis'; I have no hesitation in describing this as *C. croceofolius* Peck; it has been well figured also by Lange and Cooke as var. *croceus,* older authors for some reason did not use the name *conformis;* the originals of Cke 780(780) A, var. *croceus* match in colour particularly well with Peck's plate and my collections. The stem-colour and smell distinctions given by Henry (*loc. cit.,* 295) for *croceus* and *croceifolius* (as he spells it) do not seem to me sufficiently distinct to warrant the separation of these two since the stem-colour may change from one to the other with age and the smell is rather faint and difficult to define.

(d) *croceus,* 'medius, lamellis iiavocroceis (pileo colore variat): Schaeff. 4'; the colour of the plate quoted is more lemon- or olive-yellow without the tawny tints of *croceus* sensu Cooke and Lange, and I suspect this may have been *cinnamomeo-badius* or *cinnamomeo-lutescens',* the critical word is 'croceis' and in view of the uncertainty arising out of this the name *croceus* is best abandoned; Bresadola has described and figured as a new species a fungus corresponding to that portrayed by Schaeffer under the name *C. schaefferi* Bres. *(Icon.* Bres 648), which represents a rather dull-coloured unfamiliar fungus which may well have been that of Schaeffer and Fries, but there is no record of this from Britain; I do not think this is the same as Fries' var. *paludosus* (i) because Fries himself separated *paludosus* from *croceus* and (2) Bresadola does not quote it as growing in swamps.

(e) 'pileo stipiteque luteis, lamellis flavis' (without a name), suggesting *cinnamomeo-lutescens* but being nameless is without taxonomic value.

(f) *paludosus,* 'pileo squamuloso olivascente, lamellis stipiteque olivaceis'; since there does exist an olivaceous *'cinnamomeus'* growing in *Sphagnum* in swamps I have described this rather characteristic Friesian variety as a new species, *C. sphagneti,* the name *C. paludosus* being preoccupied (Peck, 1890); it is quite common in Scotland at least, but does not seem to be known to continental authors; see also notes on *paludosus* for discussion of *Hydrocybe paludosa* (Fr.) Moser.

In addition to these four species from Fries' diagnoses there are three other Friesian species in this group included in this work: *croceoconus, malicorius* and *uliginosus* and to these must be added *C. aureifolius* Peck, first recognised as European by Henry and two of Henry's species, *C. cinnamomeo-badius* and *C. cinnamomeo-lutescens*; the latter is *cinnamomeus* of many authors, including Ricken and Lange and probably most British authors; I have not yet been able to recognise *C. cinnamofulvus* Henry and the plate quoted by Henry for his species seems to me near *cinnamomeo-lutescens,* unfortunately the colour of the printed plate is rather different from the original, which is buff with a rusty tinge rather than tawny-reddish. From the description *cinnamofulvus* seems close to *cinnamomeo-badius* but with more pronounced olive tinge and with gills tawny from the start. There seems likely to be another species similar to C. *cinnamomeo-lutescens* but with smaller spores and with a cap tending to become rusty or reddish rather quickly, but with stem remaining ± yellow, this is possibly *C. cinnamomeus* sensu Kauffmann; I have, I think, found this in Scotland but since a new name will be required if it is a distinct species, I wish to gather more material before taking this step; brief details are included in the main key § *68,* and alternative key § 10.

I have also included *C. raphanoides* and *C. olivaceofuscus* in section *Cinna-momei* since it is difficult to separate them on convincing characters. I have not been able to use the presence or absence of pigment masses in the gills as a diagnostic character because I have not yet examined enough material, but I think this may well be a useful character as suggested by Kühner & Romagnesi (I953) - Critical examination of spore-size and shape and colour changes of cap, gills and stem (I believe the young gills to be some shade of yellow or olive in all species that it is permissable to include in this section) has shown that besides the two interpretations of *C. cinnamomeus* (Nos. 150 and 157) there are other definitely recognisable

species in this section, but the arrangement I have adopted must be considered provisional and I suspect further study may necessitate a few additions or alterations. I hope that by the use of the alternative key to this section as well as that in the main key some help may be given to those prepared to make a critical study of these fungi.

**colymbadinus* Fr. - not known in Britain at the present time; according to Moser (1955) this is a species resembling *raphanoides* with subglobose spores, 7-8/6-7µ.

concinnus Karsten = *uliginosus,* 155 - see notes on *uliginosus.*

conformis as var. of *cinnamomeus* - *croceofolius,* 152 - see notes on *cinnamomeus.*

cotoneus, 138. (*Icon.* L 93 E: Cke 783(749): KM 143, *Sublanatus* (colours poor)).

croceoconus, 154. (*Icon.,* no authentic plate known; Cke 780(780) B, Quélet, *Grevillea* 111[3] Gillet, *Champ. Fr.* do not represent this species) - although I am doubtful of the value of a species based on cap shape in this genus I have made two collections of a fungus corresponding to *croceoconus* as described by Kauffmann from Sweden; all my specimens had the cap ± conical but one must be prepared to find this character variable, fortunately there are other critical characters (spore size in particular) to help separate it out; *croceoconus* sensu Cooke, Gillet and Quélet, however, is a different species not, I think, corresponding to *croceoconus* sensu Fries.

†*croceofolius,* 152. (*Icon.. N. Y. State Mus. Bull.* 150 (1911), PI. VI, Figs. 1-8: 1,95 G, var. *croceus:* Cke 780(780) A, var. *croceus)* - see notes on *cinnamomeus.*

croceus as var. of *cinnamomeus* - see notes on *cinnamomeus.*

cyanites, 109. (*Icon..* Bres 636: Ri 442: Fr I52[1]).

decumbens, 117. (*Icon.,* no authentic plate known; Cke 765(816) A is doubtful.)

depauperatus Lange as var. of *spiloineus* - see notes on *spilomeus.*

**depexus* (Fr. ex Fr.) Fr. (*Icon.,* no authentic plate known) - not known in Britain at the present time; according to Moser (1955) this is a species resembling *venetus,* 139, but less distinctly green and with spores 6-7/5½-6µ, whereas *venetus* sensu Moser has spores 7-8/5-6µ; further study of British material of *venetus* is required.

**diabolicus* (Fr.) Fr. (*Icon.,* no authentic plate known; Cke 765(816) B is almost certainly a *Hydrocybe,* either *duracinus* or an allied species) - not known in Britain at the present time but well described by Ricken.

†*epsoniiensis* sp. nov., 125. (*Icon.* Cke 768(765), *caninus)* - see notes on *caninus* and *anomalus.*

finitimus Weinm. as var. of *traganus* - doubtfully distinct from *traganus.*

**fucatophyllus* (Lasch) Fr. (*Icon.,* no authentic plate known) - has never been recorded for Britain and is not well known on the continent either; according to Fries it is a pinewood species with gills yellow spotted with scarlet.

fuscotinctus, 118. (*Icon. Trans. Brit, mycol. Sbc.,* 5 (1917), PL 8.)

†*hillieri,* 115. (*Icon.,* no authentic plate known.)

hircinus, in. (*Icon.* KM 149: Bres 638: Lucand 221, *amethystinus*)- see notes on *camphoratus.*

humicolus, 141. (*Icon. Schw. Zeitschr. f. Pilzk.* 1945, Taf. 1: L 90 B: KM 138).

†*kauffmannianus,* 104. (*Icon.,* no authentic plate known; Kauffmann quotes Cke 751(771), *camphoratus* and Henry, Cke 771(748), *albocyaneus* for this species, but in my opinion neither of these plates are convincing and are best disregarded.)

**lebretonii* Quél. (*Icon. Bull. Soc. sci. nat. de Rouen* 35 (1879), PL II, Fig. 5) - some authors have synonymised this species with *C. lepidopus* Cke.; reference to the original descriptions and paintings leads me to dispute this: in *lebretonii* the scales on the stem are said to be small, weeping and 'safranes', in *lepidopus* they are concentric darker fibrillose bands: cap colour is also different, in *lebretonii* it is whitish-lilac then pale chamois, in *lepidopus* it is umber with a tinge of violet near the margin becoming rufescent at the disc; *C. lepidopus* is described in *Grevillea* 16 (1887-88) 43 and figured in Cke 773(850) which shows the scales to be larger
dirty yellowish or brownish adpressed patches quite different from the small brightly-coloured scales of *lebretonii.* I therefore regard *lebretonii* as a species probably different from but near to *spilomeus* and *lepidopus* I regard as a distinct species. C. *lebretonii* is not recorded for Britain but according to Quélet has cap 30-50 mm. gills lilac-amethyst then ochraceous, stem bulbous and rooting, whitish-lilac then yellowish at base, with thick white cortina spores ovoid, 10µ, and grows m woods on clay-sandy soils

lepidomyces (A. & S.) Schroeter = *pholideus,* 140.

lepidopus (*Icon.* Cke 773(850) - see notes on *lebretonii* and *anomalus,*

limonius (Fr. ex Fr.) Fr. - a hygrophanous species to be described in Part III It has been quoted sometimes as a synonym for *C. callisteus,* for reasons why I do not think this is so see notes on *callisteus.*

†*malachioides* sp. nov., 106. (*Icon.* L 91 E, *malachius;* non Cke 750(756), *malachius* which may represent this species, but in the absence of material for checking spore-measurement is best disregarded; Ri 44[3], *malachius* is very poor) - see notes on *malachius.*

malachius, 105. (*Icon.,* no authentic plate known) - there are three interpretations of this species in recent literature, differing especially in spore size. Of these that of Kiihner & Romagnesi (1953) agrees most closely with my conception of *malachius* sensu Fries with spores of intermediate size (7½-9(10)/4½-5½µ). I regard this as most likely to be the Friesian species because I find it everywhere common in heathy pinewoods and much more common than either of the other two and this fungus also exhibits the most striking colour change of the three, from quite deep blue-violaceous through paler bluish to dirty ochraceous often with quite bright tawny tinge when old (according to Fries then resembling *C. armeniacus);* this colour change seems to fit Fries' 'e caeruleo lilacino albicans . . . sicco testaceo-pallescente' best of the three. The fungus with larger spores, 9½-12/5½~6½µ is on the whole duller coloured and is *malachius* sensu Ricken and Lange, but the spores are so different from those of *malachius,* 105 (see Fisg. 1 and 2) that there can be no doubt that this is a different species, and I have therefore described it as *C. malachioides* sp. nov.; Henry in his description of *C. malachius* gives two spore sizes, one corresponding to *malachius,* 105, and the other to *malachioides,* 106, so that his description may be a composite one. The fungus with much smaller spores, 6-8/3-4µ (see Fig. 3) was described by Pearson in *Trans. Brit, my col. Soc.* 26 (1943), 43. as *C. malachius* but is not strictly a pinewood species and besides the spore difference has gills with very fugacious violaceous colours and cap soon reddish-buff; there is unfortunately no painting of this species amongst Pearson's notes but Dr. Dennis has kindly shown me one of his of a specimen named by Pearson and I have examined dried material from the same collection and found the spores to be the correct small size; since Pearson found this species more than once in the neighbourhood of his last home at Hindhead, Surrey, I have much pleasure in naming this species after him and describing it as *C. pearsonii* sp. nov. with the above- mentioned collection as the type.

malicorius, 151. (*Icon.* L 95 D, D[1]: Fr I55[1]; non KM 147, doubtful) - the descriptions and varied spore sizes attributed to this name are rather puzzling; I have, however, little doubt that Kauffmann and Lange have interpreted this species in the Friesian sense; since Konrad & Maublanc give a larger spore size (7-9/5-6µ.), also approximated by Ricken (8-9/4-5µ), I suspect they were dealing with different fungi; I have not yet collected any fungus with spores and characters corresponding to the descriptions of these authors and prefer to refrain from further comment for the present; *malicorius* sensu Pearson, described in *Trans. Brit, mycol. Soc.* 35 (1952), 115, was gathered originally by me and corresponds very convincingly with Kühner's recently described species *C. olivaceofuscus* and is included in this work as such; it is typical of beech woods on chalk soil, a very different habitat from *malicorius* sensu Fries and Lange (coniferous woods, heathy ones in my experience).

**melanotus* Kalchbr. *(Icon.* Kalchbr. 27) - see key § 33, I have been unable to find any details of spore shape in the descriptions available to me: not yet recorded for Britain.

**miltinus* Fr. *(Icon,* no authentic plate known) - not known in Britain at the present time; *miltinus* sensu Ricken, Moser has spores sugblobose, 6-8/5-7µ, stem with orange-red fibrils, gills yellowish-buff then reddish-rusty and cap 30-60 mm. dark red-brown with paler margin and grows under firs sec Ricken: it therefore differs from *phoeniceus,* 148, in gill-colours, and spore-size and shape; *miltinus* sensu Quélet, Cooke, Boudier = *phoeniceus,* 148.

muricinus, 108. (*Icon.* Cke 748(815): Ri 45[2].)

myrtillinus, 130. *(Icon.* Cke 769(817): Quélet, *Grevillea* no[2]) - according to Henry *(Bull. Soc. mycol. Fr.* 62 (1946), 208) *myrtillinus* sensu Fries is represented by Fr 161[2], *saturninus;* although there are cases of Fries' Icones depicting a species other than the one orginally described by him under the same name, I feel it unlikely this is so in this case since, apart from the unlikeliness of Fries illustrating one of his own species under a different name in a different subgenus, there seems little resemblance between Fr. 161[2] and the original

description of *myrtillinus,* where Fries states 'p. non rufescit', but Fr. 161[2] shows a distinct reddish tinge at the disc and Henry says 'subtestace par temps humide'. Henry himself first named this fungus *C. subsaturninus* and it is most likely a *Hydrocybe* and will be discussed in Part III. Henry has also described another fungus as *C. myrtillinus* sensu Quélet, Bataille *(loc. cit.* 210) with spores elliptic-oblong 9.9-10(11)/4.5-4.6µ, and this I think is much more likely to be the Friesian species (Quélet gives spores elliptic-oblong, 10µ). There is yet another interpretation of *myrtillinus,* that of Moser (1955) who gives spores 7-9/5-6µ, which

suggests *simulatus,* no, and Rea also gives spores broadly elliptic, 7-8/6µ, possibly also referring to *simulatus,* although his description is mostly a translation of Fries' diagnosis. Probably *myrtillinus* sensu Quélet should be placed in section *Alboviolacei* despite being customarily placed near *anomalus,* but pending the collection of authentic British material I prefer to leave it unplaced; I do not feel justified in removing *myrtillinus* altogether from the British list, however, both on account of Cooke's plate and the Bolton plate (147) quoted by Fries.

obtusus Lange as var. of *uliginosus* = *uliginosus* - not worth separating.

ochroleucus, 20 - transferred to *Myxacium,* see Part I, p. 26.

†*olivaceofuscus,* 159. (*Icon.,* no authentic plate known; description in *Bull. Soc. Linn. Lyon* 24 (1955), 48, Fig. 12, also *Trans. Brit, mycol. Soc.* 35 (1952), 115, *C. mali-corius* sensu Pearson.)

opimus, 119. (*Icon.* Ri 45[4]: Fr 151[1]) - there are two interpretations of this species differing especially in spore shape; that of Ricken and Lange (not illustrated by him however) has subglobose spores and that of Bresadola *(Icon.* 634), possibly the same as that of Henry, has oblong spores 7-9/5µ; Henry gives spores 7.7-9(10)/5.5/µ (Kühner & Romagnesi (1953), 282) without however quoting Bresadola's plate; since Rea quotes Ricken's spore details I have included Ricken's species in the tabular notes, but I have no personal data and Pearson left no data on this species so that I prefer not to express an opinion as to which fungus is that of Fries, which is a matter for further study; for *opimus* s. Bres. see key § 77.

orellanus, 134. (*Icon.* KM 148: Cke 776(787) B) - Quélet and Boudier described *uliginosus,* 155, erroneously as *C. orellanus,* therefore Quélet described this species as a new species, C. *rutilans,* but the generally accepted interpretation of *C.orellanus* is that described and figured by Konrad & Maublanc.

paludosus as var. of *cinnamomeus - sphagneti,* 158 - see notes on *cinnamomeus;* Moser (1955) has adopted the name *paludosus* (as *Hydrocybe paludosa*) for a fungus which he first described as *Hydrocybe palustris* (*Bull. Soc. nat. d'Oyonnax* 7 (1953), 122) but this is a hygrophanous species with a well-marked veil quite contrary to Fries description of *cinnamomeus* or var. *paludosus*; the habitat is certainly similar, being given as in *Sphagnum,* but I find several species of *Hydrocybe* commonly growing in *Sphagnum* and I do not agree that Moser's description can possibly be applied to a member of the section *Cinnamomei;* the valid name for Moser's fungus is in any case C. *palustris* if quoted as a species of *Cortinarius,* since *C. paludosus* is pre-occupied (Peck, 1890).

**pavonius* Fr. (*Icon.,* no authentic plate known) - not recorded for Britain but see see key § 5.

†*pearsonii,* sp. nov., 107. (*Icon.,* no authentic plate known) - see notes on *malachius.*

penicillatus, 142. (*Icon,* no authentic plate known; in the absence of material to check spore shape and size, Cke 763(764) must be considered doubtful) - there are two interpretations of this species differing in spore shape and size, that of Rea with spores pip-shaped, 7-8/5µ, which I think is identical with my collections, and that of Ricken with spores subglobose 6-7/5µ (see key § 36) not yet recorded for Britain; for the present I leave the *penicillatus* I have collected named as such pending rediscovery of Ricken's fungus, without attempting to determine which is *penicillatus* sensu Fries.

phoeniceus, 148. (*Icon.* KM 144 (but does not show reddish flesh): Boud 112, *miltinus:* Cke 774(785) A, *miltinus* (moderate); non L 93 B doubtful.)

pholideus, 140. (*Icon.*. KM 139: Cke 760(761): L 93 F)

**phrygianus* (Fr.) Fr. (*Icon.* Fr 153[3]) - no authentic British record, see key § 9.

psammocephalus,143 (*Icon.*. L 99 F: Cke 818(839A) (colours rather dark))

pseudobolaris R. Maire - *rubicundulus,* 137.

†*pseudocrassus,* 121. (*Icon.*. Ri 33[4], *Hebeloma crassum;* see also Josserand, *Bull. Soc. mycol. Fr.* 54 (1948), 19, Fig. 4.)

†*puniceus,* sp. nov., 147. (*Icon.,* no authentic plate known; *Grevillea* 111[1], *anthracinus* and Cke 776(787) *id.* may possibly represent this species - this fungus is described from collections made from under ash and beech at Clapham Woods, Yorkshire, on the Yorks. Nat. Union foray in September 1957 and also under oak and larch at Surlingham Wood, Norfolk, in October 1957. It differs from *sanguineus* in that the cortina is ochraceous or golden-brown and not red and in being more purplish-red especially inside the stem, and from *anthracinus*

sensu Fries, Lange (of which I possess only a spore-print collected by myself and named by Pearson, but no personal notes so that I do not know the exact colour of the cortina and would be grateful for information on this point) in being purplish-red rather than chestnut-brown and in having smaller spores, and I am therefore describing it as a new species. It has probably been passed over as or misnamed *sanguineus* or *anthracinus* in the past and indeed may well be *anthracinus* sensu Cooke and Rea and also the quoted plate by Quélet (in *Grevillea}. C. purpureo-badius* Karsten has similar purplish flesh but gills ochraceous at first and never intense blood-red, although sometimes becoming reddish-rusty, longer spores, ± hygrophanous cap and traces of a red veil are sometimes present.

†*purpureo-badius* Karsten = *anthracinus* sensu Bres. non. Fr., Lange = *subanthra-cinus* Henry. (*Icon.* L 94 D (moderate); Bres. 644[2], *anthracinus (Icon,* only-moderate)) - having had the opportunity to study a fair number of collections of this species in recent years, I am quite convinced this fungus is a *Hvdrocybe,* since the cap dries out rapidly at least in larger specimens and especially at the disc, to a pale ochraceous colour; nevertheless it is variable in colour and the extent of the red veil on the stem; since the chief differences given by Kühner & Romagnesi (1953) for *sub anthr acinus* and *purpureo-badius* are colour of stem and gills and presence or absence of veil traces on stem, and I have found specimens without traces of veil with colours corresponding to *sub anthr acinus* growing in the same clump as others with strong traces of veil and colours corresponding to *purpureo-badius, I* have no hesitation in combining these two species as one; this species will be described fully in Part III, but see key § 47. First British record: 22/11/55, Kilmington Woods, Kilmington, Devon.

quéletii Bataille = *uliginosus,* 155.

raphanoides, 170. (*Icon.* L 96 A: Cke 784(832), *subnotatus;* non Cke 786(833) A, doubtful) - I have no personal data on this species, the fungus I have called *C. raphanoides* in the past being a *Hydrocvbe, H. betulorum* Moser (1955), particularly common under birch, very probably recorded as *C. raphanoides* by others in the past and to be described in Part III; meanwhile I have accepted the view of various French authors that *C. subnotatus* sensu Cooke is C. *raphanoides* sensu Fries and made spore measurements from material in Herb. Kew. from which Cooke's plate was painted. Perhaps further search in beech woods will enable me to give a better description of *raphanoides* in the future. I have placed it in section *Cinnamomei* for the present, since it seems to have strong affinities with some members of this section, e.g. radishy smell and olive colours.

riculatus Fr. - not known at the present time.

rubicundulus, 137. (*Icon. Bull. Soc. mycol. Fr.* 39 (1923), PI- 7- Fig. 2 *pseudobolans:* Ri 46[3], *bulliardii*) - see also Pearson, *Trans. Brit, mycol. Soc.* 29 (1946). 197.

rutilans Quélet = *orellanus,* 134.

sanguineus, 144. (*Icon.* L 94 F, F[1]: KM 146 II: Cke 775(786)) - it seems that there are two species likely to have been referred to this name: (a) the true *sanguineus,* with blood-red cortina and (b) *puniceus* sp. nov. with ochraceous or golden-brown cortina and stronger purplish-red colour especially in the flesh of the stem; this latter species is also likely to have been referred to *anthracinus* at times (see notes on *puniceus*). I suspect that *sanguineus* may be a pine-wood species but further observations are needed on the habitats of these two species before this can be stated as a fact. Past records of *sanguineus* should be treated with suspicion unless exact colour of cortina and stem-flesh is known; the colour differences of the cortina of this species and *puniceus* are usually obvious in the field.

**schaefferi* Bres. (*Icon.* Bres 648) - see notes on *cinnamomeus,* and key 3 § 8.

semisanguineus, 149. (*Icon.* L 95 E: Holland 66, Fig. 146; non KM 145 nee Cke 779(779), doubtful, the latter and Quelet in *Grevillea* 111[2] may represent *cinnamomeus* sensu Fries, Sowerby,

150) - it is probable that specimens of *C. phoeniceus* and *C. cinnamomeus* sensu Fries and Sowerby may have been referred to this name in the past; the clearly blood-red and hardly changing colour of the gills of *semisanguineus* is quite different from the yellow then golden-red colour of *cinnamomeus,* 150, however, (it is on account of this colour difference together with a darker cap colour that the Cooke and Quélet plates quoted above are regarded as doubtful); the cap and stem of *semisanguineus* are much more persistently yellowish- or olive-buff than in *phoeniceus* besides flesh colour and spore shape differences; it should be

noted, however, that the stem-base of *semisanguineus* is frequently pinkish or reddish tomentose.

†*simulatus,* sp. nov., no. *(Icon,* no authentic plate known, but L 91 C, *cinereovio-laceus* is possibly this species) - this puzzling species has been known to me for some years from Scotland and I have referred it to the *anomalus* group each time, first as *tazureus,* then as *anomalus* sensu lato, then as *lepidopus* and finally as *myrtillinus* sensu Moser ! Each time, however, I have been put off by the elliptic spores which are wrong for the *anomalus* group. Since I prefer to restrict section *Anomali* to those species with subglobose or broadly ovate spores I have placed this species in section *Alboviolacei* for the present. The most recent determination as *myrtillinus* sensu Moser may be correct (at least the spore size is right) but Moser does not give sufficient information for me to be sure whether his *myrtillinus* is that of Fries or my fungus. Another possibility is *cinereovio-laceus* sensu Lange, which would require renaming anyway since *cinereoviolaceus* Fr. is a synonym of *violaceocinereus* (Pers. ex Fr.) Fr. a fungus different from that of Lange; Lange found his species in beech woods and does not mention any smell, but perhaps further field work may enable me definitely to accept Lange's fungus as the same. I have also considered *C.* (*Tela*.) *umidicola* Kauffmann which has spores of the same size but according to Kauffmann's description does not quite agree in other characters, e.g. cap colours and surface and gill colours.

**sordescens* Henry. *(Icon,* no authentic plate known) - not recorded for Britain but see key § 73.

†*speciosissimus,* 135. *(Icon.* Favre, *Hauls Mar. Jur.,* PI. 3, Fig. 1) - I am very pleased to record the collection of this very bright coloured and striking fungus under pine at Loch-an-Eilean, Inverness-shire, nth September, 1957, by D. M. Henderson, Esq., and R. Watling, Esq.; it may have been passed over as *orellanus* or *callisteus* in this country in the past. *speciosus* Favre = *speciosissimus,* 135 - renamed on account of *C. speciosus* Earle (1904).

†*sphagneti,* sp. nov., 158. *(Icon,* no authentic plate known) - see notes on *cinnamomeus.*

spilomeus, 129. *(Icon.* L 96 D: Ri 47[2]: Bres 643 (stem rather too blue); non L 96 B, var. *depauperatus,* doubtful) - according to Fries the scales on the stem may be 'rufis vel fulvis'; I have taken the fungus with red scales to be the Friesian species this being the only one I have met myself; L 96 B, var. *depauperatus* depicts a fungus with larger spores and lacking blue tints and may be another species; *C. lebretonii* Quélet is evidently similar but with golden-yellow scales. I should hesitate to say that this was the same as *spilomeus* or not without seeing fresh specimens but suspect it is different; Fr I54[3] is to my mind a mixture of *spilomeus* (smaller specimens) and *bolaris* (larger specimens without blue tints) although it is difficult to understand how this came about.

subanthracinus Henry - *C.* (*Hydro*.) *purpureo-badius* Karsten - see notes on *purpureo-badius* and *anthracinus.*

sublanatus (Sow. ex Fr.) Fr. sensu Fries, auctt. non Boud., KM = *pholideus,* 140; sensu Boud., KM = *cotoneus,* 138.

subnotatus Fr. = *Agaricus notatus* Pers. Syn. p. 296 = *raphanoides,* 160.

suillus 116. (*Icon*.) L 90 A: Ri 52[3], *subferrugineus*: Fr I52[3].)

tabularis, 128. (*Icon. I.* 94 B: L 86 D *decoloratus:* non Cke 766(783), doubtful)

tofaceus 133. (*Icon.* L 91 D: Cke 753(772): Fr 1531) I have altered the spelling back to Fries' original which is in agreement with that in my Latin dictionary (only tofus is given the alternative spelling 'tophus').

traganus, 112. (*Icon.* L 92 D: Cke 752(757): Ri 451.)

turgidus, 113. (*Icon.* L 92 C) - after studying various plates and descriptions I feel there has probably been confusion in the past between this species and *argutus* on the one hand and *suillus* on the other, past records of these species should therefore be treated with suspicion unless accompanied by descriptions and material.

uliginosus, 155. (*Icon.*. Cke 781(851): Boud 115, *orellanus:* L 95 C, var. *obtusus:* L 95 A (moderate)) - as cap shape is almost the only difference between *con-cinnus* Karsten and this species I have no hesitation in regarding them as the same species, having found specimens with caps acutely umbonate, obtusely umbonate and quite plane growing in one small area many times. Quélet has used this name for a variety of *cinnatnomeus,* since, however, this was 27 years after *uliginosus* was validly published there is no reason whatever for rejecting *uliginosus* as suggested by Kiihner & Romagnesi (1953). P-2Q[1]note 24.

**urbicus* (Fr.) Fr. (*Icon.* L 97 B) - not authentically British, the fungus recorded under this name in *Trans. Brit, my col. Soc.* 38 (1955). 394- seems likely to have been a *Hydrocybe,* possibly not Lange's fungus and awaits further investigation. Without having collected *C. urbicus* myself I am not prepared to say whether it is to be placed in *Hydrocybe* or *Sericeocybe.* See key § 82.

valgus Fr. - not known at the present time; Cke 785(750) is doubtful but may be *raphanoides,* 158.

venetus, 139. (*Icon.* KM 151: L 95 B: Cke 786(833) B: Fr 155 .)

**violaceocinereus* (Pers. ex Fr.) Fr. *(Icon.* Lucand 118, perhaps doubtful) - the fungus described by Ricken under this name has not been recorded for Britain;

violaceofuscus Cke & Massee = *Inocybe obscura* sec Pearson & Dennis (1948)

violaceus, 131. (*Icon.* KM 141: Maubl 59; non Cke 747(770) doubtful)

vinosus Cooke = C. *(Phleg.) rufo-olivaceus,* 57, see Part I, p. 46.

Latin Diagnoses

Sericeocybe, *subgen. nov.:* - *Pileus* non hygrophanus, siccus, subinde paulum viscidus, laevis raro subtiliter tomentosus, interdum fibrillis innatis praeditus, saepe fibrillis sericeis albis canescens. Stipes plerumque clavato-bulbosus, interdum ± cylindraceus, saepe carnosus.

C. (Seric.) azureovelatus, *sp. nov.:* - Pileus 45-80 mm., e convexo vel convexo-truncato explanatus saepe late umbonatus, ex argillaceo-caeruleo ochraceo-luteus vel pallide-ochraceus, ad marginem tinctura caerulea denique persistens vel pallescens, siccus sericeo-nitidus interdum rugosus, udus saepe paulum viscidus, prime- circa marginem fragmentis veli sericei ornatus; lamellae e caeruleo-violaceo argillaceo-pallidae demum i ferrugineae, adnatae vel paulum decurrentes, subconfertae fere angustae, vix ventricosae; stipes 50-70/12-18 mm. (ad basim 17-30 mm.), clavato-bulbosus vel sursum attenuatus, ex albido pallido-ochraceus, ad apicem primo caeruleo-violaceus, velo albido lutescente cingulato vel squamuloso; caro albida, ad apicem stipitis caeruleo-violacea, ad basim stipitis pallido-lutescens; odor suavis, sectus magis olet; sporae 8-10/7-8µ, subglobosae vel late ovatae, punctatae (Fig. 9); in silvis frondosis, e.g. quercetis betulestisque. Statura C. *canini* sed a coloribus pilei carnisque dirlert; robustior et quam C. *anomalus* magis olens. (Typus 30/8/50. Burrator, Devon in Herb. Kew.)

G. (Seric.) epsomiensis, *sp. nov.:* - Pileus 15-75 [mm]- [e] convexo explanatus interdum umbonatus, ex ochraceo-pallido vel fuligineo-rubido fulvo-ochraceus vel fulvo-ferrugineus, siccus sericeo-nitidus, margine pallidiore; lamellae argil-laceo-violaceae demum ex argillaceo-pallido lucide vel obscure ferrugineae, adnatae vel fere liberae, saepe emarginatae, subconfertae, ± ventricosae, acie primo pallidiore plana; stipes 23-100/3-10 mm. (ubi bulbosus ad 18 mm. pervenit), ± cylindraceus vel clavatus, ex albo albidus, sericeo-striatus, cortma alba primo ad apicem cingulata; caro alba ad basim stipitis paulum pallido-lutescens; odor vix notabilis; sporae 8-11(12)/6-8(8½)µ, late ovatae vel leviter pruniformae, ± punctatae (Fig. 10); in pratis solo calcareo, probabiliter etiam in silvis. *C. canino* coloribus similis sed sine velo et tenuior est; a *C. anomalo* velo nullo et coloribus pilei carnisque differt. (Typus 13/10/54, Epsom Downs, Surrey, in Herb. Kew.).

C. (Seric.) malachioides, *sp. nov.:* - Pileus 40-100 mm., e convexo explanato um-bonato, primo griseo-lilacinus vel argenteo-violaceus, argillaceo-pallescens, saepe tinctura rubro-fusca praeditus, disco minus colorato, fibrillis sericeis albis obsitus dein circa marginem innato-fibrilloso lineatus; lamellae primum ali-quanto obscure violaceae turn lurido-lilacinae vel violaceo-umbrinae postremo ferrugineae, adnatae ± emarginatae, acie concolore ± undulata; stipes 40-75/8-11 mm. (ad basim 15-25 mm.), clavato-bulbosus, primum argenteo-violaceus turn e pallido-lilacino albicans vel pallescens, ad apicem tinctura violacea obscuriore, cortina veloque albis vel argenteo-violaceis, velo ± cingulato; caro albida vel pallida, ad apicem

stipitis ± violacea, ad basim ochraceo-pallescens; odor nullus vel debilis; sporae (9)9½-12/5½-6½µ, elliptico-amygdaliformae punctatae (Fig. a); in silvis coniferis (frondosis quoque sec Ricken). A speciebus scctionis *Albocyanei* reliquis sporis magnis differt, exceptione *C. muricini,* a quo coloribus pallidioribus et sporis formae dissimili differt. (Typus 29/9/55, Loch-an-Eilean, Rothiemurchus, Inverness-shire in Herb. Kew.).

C. (Seric.) pearsonii, *sp. nov.:* - Pileus 40-150 mm. e convexo gibbo explanato, ex ochraceo-luteo rubro-ochraceus, saepe rubro-maculatus, sub lente tomentosus, circa marginem fragmentis veli pallido-azurei ornatus; lamellae adnatae anguste emarginatae, purpureo-caeruleae mox purpureo-brunneae, subconfertis, acie ± undulata; stipes 100-140/10-25 mm., ± cylindraceus deorsum irregulariter bulbosus, persistentius azureus denique pileo concolor discoloratus, velo azureo cingulato interdum deorsum squamulosus; caro pallido-azurea denique ochraceo-lutea; odor hand ingratus; sporae 6-8(8½)/3-4µ, ellipticae leviter amygdali-formae, manifeste laeves (Fig. 3) ; in silvis mixtis. A reliquis speciebus *Sericeo-cybarum* sporis molto parvioribus et tincturis violaceis fugacioribus insignis est. (Typus 8/10/43, Englefield Green, Surrey, in Herb. Kew.).

C. (Seric.) simulatus, *sp. nov.:* - Pileus 24-60 mm., e convexo explanatus saepe late umbonatus, margine incurvo, e lilacino vel caeruleo-violaceo fuscescens vel fulvescens, interdum ad marginem tinctura lilacina persistente, ± innato-fibrillosus, ad marginem cano-fibrillosus vel squamulosus; lamellae lilacinae vel caeruleo-violaceae demum e violaceo-fusco ferrugineo-umbrinae, adnatae emarginatae, subconfertae, baud ventricosae; stipes 40-90/5-10 mm. (ad basim 10-16 mm.), ± bulbosus vel ventricosus, e lilacino vel caeruleo-violaceo pileo concolor vel pallidius decoloratus, velo lilacino mox albido cingulato peronatoque: caro lilacina mox albida vel pallido-ochracea, ad apicem stipite persistentius lilacina, firma mox spongiosa; odor raphani; sporae 7-8½(9)/5-6µ, late ellipticae, punctatae (Fig. 8); in silvis praecipue pinetis betuletisque. A speciebus sectionis *Anomali* odore, velo lilacino sporisque differt. (Typus 31/8/55, Loch-an-Kilean, Rothiemurchus, Inverness-shire in Herb. Kew.).

C. (Dermo.) puniceus, *sp. nov.:* - Pileus 15-40, e convexo fere explanatus vel paulo depressus, saepe paulo late umbonatus, purpureo-sanguineus vel badius, primitus circa marginem vulgo roseo-carmineus, nbrilloso-tomentosus vel radiali-ter innato-fibrillosus, interdum laevis, ad marginem saepe subtiliter squamulosus; lamellae intense purpureo-sanguineae vel purpureo-castaneae dein obscuriore ferrugineo-castaneae, adnatae, hand ventricosae, subconfertae, acie concolore vel lucido-sanguinea; stipes 38-70/2-9 mm., pallidior vel concoloris, ad apicem saepe tinctura ochracea, fibrillis purpureo-sanguineis obsitus, cortina ochracea, ad basim roseo-ochraceovel pallido-purpureo-tomentosus; caro purpurco-sanguinea siccitate purpureo-rosea; odor nullus; sporae 6½-8(8½)/4-4½(5)µ, ellipticae, laevae vel vix punctatae; in silvis. A *C. sanguineo* coloribus et cortina ochracea, a *C. anthracino* sporae et coloribus differt. (Typus 21/9/57, Clapham Woods, Clapham, Yorkshire, in Herb. Kew.).

C. (Dermo.) sphagneti, *sp. nov.:* - Pileus 17-40 mm., e convexo explanatus acute vel obtuse umbonatus vel planus, olivaceo-luteus mox olivaceo-ochraceus vel olivaceo-brunneus, ad marginem versus rubro-brunnescens, leviter tomentoso- vel furfuraceo-fibrillosus saepe glabrescens, circa marginem persistentius tomentoso-fibrillosus; lamellae ex obscure olivaceo-luteo pure olivaceae denique olivaceo-ferrugineae, subconfertae, adnatae vel leviter decurrentes, acie concolore vel magis lutea, integra vel flocculosa; stipes 50-120/3-6(8) mm., ± cylindraceus vel deorsum attenuatus, ex olivaceo-luteo olivaceo-ochraceus vel rubro-brunneus, librilloso-striatus fibrillis olivaceo-brunneis, ad apicem olivaceo-luteus paulum locculosus, cortina fugace pallide ochracea, ad basim ±_ olivaceo-tomentosus; ;aro olivaceo-lutea vel olivacea in centro pilei stipitisque pallidior; odor nullus el vix raphanoideus; sapor paulum raphanoideus; sporae 7½-9½/(4¼)4½-5µ. elliptico-amygdaliformae, haud punctatae (Fig. 13); plerumque in *Sphagna,* raro in *Aulacomnio.* A reliqtiis speciebus sectionis *Cinnamomei* tinctura persistentius olivacea, habitu et forma sporarum ditfert. (Typus 6/9/55, Tarfside, Glenesk, Kincardineshire in Herb. Kew.)