CORTINARIUS I

BY

P. D. ORTON

(Reprinted Supplement to The Naturalist July-September, 1955,
Copies obtainable from The Editor, 'The Naturalist'
The University, Leeds, 2),

7/6

1955

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**
I. MYXACIUM AND PHLEGMACIUM

P. D. ORTON

GENERAL NOTES

THIS PAPER is founded on notes left by the late A. A. Pearson, F.L.S., now in the Herbarium of the Royal Botanic Gardens at Kew. These consist of a preliminary sketch of a key and tabular notes on the species, and numerous descriptions and paintings. Neither the sketch of a key nor the tabular notes contain any new species and most of those recorded as new to Britain by Pearson himself are not included, so I have completely revised and extended them to include many details and some extra species from both my own and Pearson's notes. All the relevant extant descriptions and paintings of Pearson have been studied and taken into account. Since it will be necessary to deal with a large number of species—at least 250—it is proposed to produce this paper in three parts, each part dealing with two Friesian subgenera—Part I, *Myxacium* and *Phlegmacium* and some General Notes; Part II, *Inoloma* and *Dermocybe*; Part III, *Telamonia* and *Hydrocybe*—and it is hoped to produce parts II and III in 1956. Our knowledge of this genus is so incomplete however that this cannot be regarded as more than a preliminary effort to tackle this problem.

The genus *Cortinanus* is the largest genus of agarics in Britain and indeed in Europe and North America and probably of the world as a whole. Whilst it includes many of the most beautiful of all the toadstools and is therefore very satisfying from the aesthetic point of view, it is one of the least satisfying to the systematist; this is partly because so many species are seldom seen and cannot in any case be studied unless they are young and in fresh condition, and partly because there have been so many different interpretations of the Friesian species, often well described by Fries macroscopically but lacking the microscopic details now regarded as essential for more accurate species determination. When old most of them turn more or less rusty brown and are then often practically indistinguishable from one another; to quote Fries, "after becoming discoloured in age or dry weather even the large well-marked species are scarcely separable"; old material is therefore worthless and should be firmly rejected unless accompanied by younger specimens. Furthermore,, when they do appear they often do so in considerable numbers, so that given favourable conditions many species can be found in quite a small area. The unfortunate collector of Cortinarii then finds himself gathering far more material than he can satisfactorily deal with and some species inevitably get neglected (especially the smaller insignificant brownish specimens). A good *Cortinarius* flush is a very satisfactory sight but also a sharp reminder of one's limitations and the value of patience, particularly as many species of other genera will almost certainly be seen at the same time.

HABITAT. Cortinarii are essentially fungi of the woods, comparatively few-being found out in the open. Many species are only found in the vicinity of one kind of tree, thus some are typical of coniferous or deciduous woods in general, others of beech, oak, birch, alder, pine, fir, larch, etc., in particular. Some—particularly the Scauri group of *Phlegmacium*—are characteristic of chalk soil, others—particularly the subgenus *Telamonia*—of sandy, heathy or acid soils. Some are known to be mycorrhizal, but our knowledge of this subject is as yet very incomplete.

WORLD DISTRIBUTION. The greatest number of species has so far been found in the Temperate Zones of both Europe and North America and especially in hilly or mountainous districts where this may be the dominant agaric genus. They have been incompletely studied but appear less numerous in species in the Southern Hemisphere and very few species are as yet recorded from the Tropics.

EDIBILITY. No species are known to be truly poisonous and many species are known to be edible, but many are too small or too scarce, especially some of the larger species, to be of great value, and many have unpleasant tastes of various kinds so that the genus is not of very great importance from this point of view. A few of the larger Phlegmacia are however regarded as very good to eat on the continent and are indicated as such in the tabular notes.

1955 July-September

RECOGNISED SPECIES. Elias Fries was the first person really to tackle *Cortinanus* and laid very solid foundations for its study, especially in Monographia *Hymenomycetum Sueciae* (1863)—which no person studying *Cortinanus* critically can afford to ignore_and his six subgenera have been maintained by m any authors up to the present day. Ricken in *Die Bldtterpilze* (1915) raised these subgenera to generic rank and has had some followers in recent times, as for instance Moser in Austria, who, however, has joined *Telamonia* to *Hydrocybe*. Although there may at first sight appear to be considerable difference between a large *Phlegmacium* and a small *Hvdrocybe* these agarics are quite a homogeneous group and there would seem to be' less reason to split *Cortinanus* than some of the other genera of brown-spored agarics, and it is proposed to keep the genus as such in this work. Any modifications to the Friesian concept of the subgenera will be given in the notes at the beginning of each part. Valuable contributions to our knowledge of *Cortinanus* since Fries have been made by Cooke in this country: Ricken, Bresadola, Lange and Konrad & Maublanc on the continent: Kauffman in North America: and in more recent times by Henry in France, Moser in Austria and A. H. Smith in North America. Fries took particular care over his descriptions but in the absence of microscopical details these have not always proved sufficient and there have been many cases of different authors using one Friesian name for two or more species. As a result of this there is a considerable amount of nomenclatural confusion and many new names have been or will be necessary. Henry and Moser have made a start in this process and have also described numbers of new species, some of which will be found in this paper, either in the tabular notes or in the case of some of those not yet recorded for Britain in the key only. Some taxonomic problems are discussed in the notes in the index.

BRITISH SPECIES. Many of the British species were well illustrated in Cooke's invaluable series of coloured plates, although often without accurate microscopical details, and some species are included in the British list solely on the evidence of these plates. Although earlier workers of the present century added a few names, no critical review of British species was made until the publication in 1948 of the *Revised list of British Agarics and Boleti* by Pearson and Dennis. In the making of this list many of the doubtful or unauthentically recorded species were weeded out but very 4ew new names were added and the majority of species left were Friesian species. Some of the names in this list have however been found to be collective and allowance has been made for this where there is no evidence as to the proper identity of previous British collections. Pearson recorded a few more in *New Records and Observations,* V (1952), but left many others in his notes either named but not recorded or given provisional names. I shall hope to include most of these in this paper, some as new species, but although many fresh names will be found this must not be regarded as a complete account of British species, the true number of which is probably over 350, but it is hoped that this may be one step further towards our knowledge of this rather formidable genus.

SUMMARY OF GENERIC CHARACTERS

Cortinanus FT.—Cap small to large, rarely very large, viscid or dry, smooth or innately-silky or -fibrillose or with distinct scales, hygrophanous or not, typically convex then expanded, often umbonate, colours various; gills typically adnate, often emarginate, sometimes with tooth or almost decurrent, of very varied colours when young but often becoming more or less deep rusty and powdered with spores when old; stem slender or robust, equal or ventricose to clavate or marginatcly bulbous, or attenuated downwards; flesh fibrillose but sometimes hard and compact; taste mild or bitter, smell often characteristic; spores subglobose, ovate, elliptic, pruniform, amygdaliform, limoniform. or fusiform, typically rough but sometimes almost smooth, ochraceous-rusty to deep rusty in the mass, rusty to pale yellowish *sub micr.*; basidia 4-spored, very rarely 2-spored; gill-edge fertile, or sterile with cystidia, facial cystidia very rarely present; stem with a cortina most commonly attached to apex more rarely to base, often also visible on the edge of the cap, later often dusted with rusty spores;'sometimes a second outer veil is also present (viscid in the subgenus *Myxacium*) nagments of which may entirely cover the lower part of the stem or form one or more well-marked ring-zones or leave volva-like remains at the base or be present on the cap; always growing on the ground mostly under trees less commonly m the open; often in troops or subcaespitose.

CHARACTERS OF FRIESIAN SUBGENERA.

I. Myxacium Fr.—cap and stem viscid from glutinous general veil.

II Phlegmacium Fr.—cap viscid, stem dry with arachnoid cortina.

III. Inoloma Fr.—cap dry, not hygrophanous, at first floccose, fibrillose, velvety or silky, then becoming somewhat smooth; typically with robust, clavate or bulbous stem and flesh thick at disc.

IV. Dermocybe Fr.—cap dry, not hygrophanous, silky or velvety floccose then smooth: typically with more slender, equal or attenuated stem and cap thinly and equally fleshy.

V. Telamonia Fr.—Cap dry, hygrophanous, smooth or with superficial fibrils or fragments of veil; stem with outer general veil forming one or more ring-zones or peronate scales as well as cortina.

VI . Hydrocybe Fr.—Cap dry, hygrophanous, smooth or with white superficial fibrils; stem without second outer veil, cortina rarely forming an arachnoid ring.

(A key to the subgenera will be found preceding the key to the species of Myxacium and Phlegmacium.)

Part I.—Myxacium and Phlegmacium.

CLASSIFICATION.—The classification 1 have used is based largely on the work of Henry and Moser, both of whom have given special attention to Phlegmacium. The species are grouped for convenience in sections which are often artificial or tentative, sectional names being in most cases derived from the species most typical of that section. There is no attempt at a natural classification, since I feel our knowledge of the species is as yet much too incomplete for this. Myxacium is divided up into three fairly well-marked sections partly based on Friesian lines, but separating out the bitter-tasting species and including in this section three species placed in Phlegmacium by Fries and one from Dermocybe, all first transferred by Lange. There are probably a few other uncommon species yet to be worked out, but Myxacium does not present the same taxonomic problems as Phlegmacium, except in the elatior group. Phlegmacium is divided primarily into two groups along Friesian lines, but combining Cliduchi and Elastici into one group, since their division solely on whether the stem is equal or clavate is not very satisfactory nor necessary. In the Scauri the colour of the young gill is used for further subdivision but I have combined the yellowish-gilled species (Xanthophylli Henry) with the greenish-gilled species (Chloro-phylli Henry) into one group (Xanthophylli Henry em.) since I find the dividing line between these two groups sometimes difficult to determine. The Cliduchi-Elastici are on the whole not so well known as the Scauri, especially the sections Claricolores and Sebacei which need more study in the field, but there are still many problems to solve in both groups. The descriptions are based wherever possible on notes on British material studied since 1946 either by the late A. A. Pearson or myself. In order to make these descriptions as short as possible characters common to all or nearly all the species in one subgcnus are not repeated for each species but will be found in the classification summary preceding the tabular notes.

HABITAT.—Myxacia and Phlegmacia are found in all types of woods but very rarely in the open, although some species may especially be found along the edges of woods. Woods on chalk soil may be rich hunting grounds for Scauri (if conditions are right !): in some ways these plants are to the agaricologist what orchids are to the phanerogamist, some of them are just as elusive and difficult to find and some are also amongst the most attractive of toadstools.

Characters of particular importance in studying these sub-genera are as follows:

CAP. The colour of the young cap is always of importance and many species undergo varied and often striking colour changes as they mature. It is therefore important and sometimes essential to have at least one young specimen so that the complete range of colour change can be seen. All species are more or less viscid at first, some, especially Myxacia, very much so; evidence of previous viscidity in a dry specimen can often be inferred from leaves or other debris which may have stuck to the young cap. A number of species are innately-fibrillose, i.e. they appear streaky, having darker often radially arranged fibrils in the surface of the cap. Only a few are truly scaly but some have remnants of the cortina or veil attached to the cap which should be carefully looked for. Shape is of less importance in these subgenera; most are convex, then expanded or slightly depressed, comparatively few are conical or umbonate.

GILLS. The colour of the young gill is an essential character and it is often impossible to name a specimen unless this character is known; many species show a series of colour changes as they mature often different to those of the cap. Most species have aclnate more or less emarginatc, linear or slightly ventricose gills so that shape is not so important as a diagnostic character. The edge of the gill is often strikingly uneven or denticulate but this character may vary with age and too much stress should not be laid on it. Sterile specimens are very rare but are occasionally met, e.g. of calochrous, when the gills.appear very pure bright violet.

STEM. Shape is of considerable importance in the stem. The Scauri differ from almost all other agarics in having a more or less pronounced marginate bulb whilst in the Cliduchi-Elastici the stem is clavate or with less conspicuous bulb or ventricose or in comparatively few cases equal. Colour is perhaps less important, but again colour changes may take place (generally a darkening with age). The colour of the cortina and^its abundance or otherwise should be noted and some species have in addition fragments of the general veil adhering to the lower part of the stem or bulb or elsewhere, in some Myxacia these are viscid at first and give the stem a varnished appearance when dry. Most species have a fibrillose stem which is usually solid, but this character has not much diagnostic value.

FLESH. Again colour is of considerable importance and changes may take place with age or in a few cases when bruised or exposed to air. In some Phlegmacia the flesh is very hard and firm at least when young; (see also Chemical Reactions).

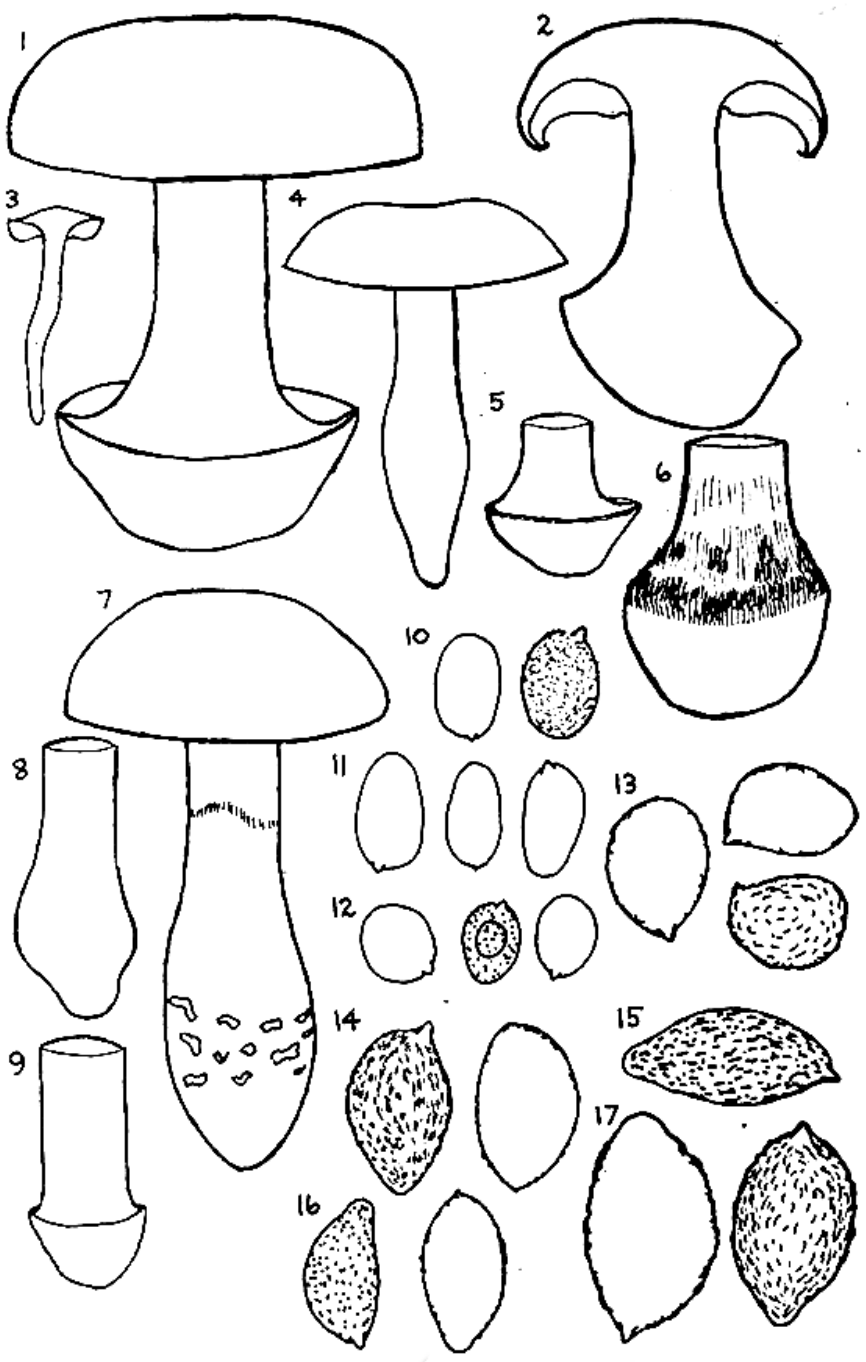
TASTE AND SMELL. Some few species have all parts bitter, in others only the cap cuticle or the gluten covering it may be so. Smells are more varied and difficult to deal with, but a sensitive and discriminating nose is a very useful asset when studying Phlegmacia.

SPORES. Although it is often possible to determine Myxacia and Phlegmacia in the field, especially after a little experience, it is always advisable and often essential to examine spores for size and shape. A lot of time can be wasted if this is not done when examining the more critical species. These data should always be obtained from a spore print if possible, since examination of a portion of gill is always liable to show a proportion of abnormally sized or immature spores. All that it is necessary to do is to place the cap or a portion of it over a slide for 15 minutes or more and then examine the spores on the slide in water. If spores from an older and therefore dry spore print are examined, strong ammonia is a useful medium. These characters often show remarkably little variation in one collection, but specimens of one species from different localities may show moro variation, although this is often within quite small limits. Examples of all shapes from subglobose to elliptic, amygdaliform or limoniform can be found (see figs. 10-17). A length of io// is often a useful point at which to divide spores into ' large ' and ' small ' categories. Degree of roughness and the colour of the spore print should also be noted but enough is not yet known about these characters to be sure of their diagnostic value. There are many cases of macroscopically similar species having been confused in the past because the spores were not examined.

CYSTIDIA. True facial cystidia are only present in one species described in this part (subtortus) and indeed are very rare in the whole genus, but a number of species have sterile cells (sometimes called cystidia) on the gill edge, the shape and size (especially width) of which may be useful for species determination, although their shape may not be constant. Many species have the gill edge fertile.

OTHER CHARACTERS. It is useful to note the width and shape of the hyphae of the cortina and cap surface, but from what little is known of these characters they do not appear to be particularly important diagnostic characters in these subgenera.

CHEMICAL REACTIONS. Various reagents have been used, both on the flesh and the cap cuticle. Perhaps the most useful, especially for Phlegmacia, is strong NaOH (30-4°%) (KOH usually gives similar results). Others for use in special cases are $AgNO$, and strong ammonia. Among reagents used extensively on the continent the following may be mentioned—phenolaniline, tincture of Guaiacum and $FeSO_4$, which are of general use, and a special reagent called Tl-4 by Henry (a mixture of thallium oxide, HC1, HNO_3 and sodium bicarbonate which gives a characteristic lilac or violet colour on the flesh with the section Purpurascentes and also on scaurus and subvirenlophyllus). Many species have not yet been properly tested for their chemical reactions.



Figures of various species of *Cortinarius* belonging to the sub-genera *Myxacium* and *Phlegmacium* illustrating shapes of cap, gills and stem (x 1in original publication) and characters of spores (X 1800 in original publication).

1. *C. caroviolaceus*, expanded-convex cap and large wide marginate bulb. 2. *C. subturbinatus* (section), emargiuate gills, incurved margin of cap and oblique marginate bulb. 3. *C. pluvius* (section), broadly umbonate cap and ventricose subdecurrent gills. 4. *C. croceocaeruleus*, sl. depressed cap and ventricose pointed stem. 5. *C. calochrous*, flattened marginate bulb. 6. *C. amoenolens*, patches of general veil adhering to cortina on stem and edge of rounded marginate bulb. 7. *C. olidus*, cortinal ring-zone and patches of veil at base of stem. 8. *C. subpurpurascens*, immarginate bulb. 9. *C. parherpeticus*, narrowly marginate bulb. 10. *C. livido-ochraceus*, elliptic punctate spore. 11. *C. emollitus*, elliptic-amygdaliform smooth spore. 12. *C. crystallinus*, subglobose or broadly ovate punctate spore (sometimes 1-guttulate). 13. *C. turbinatus*, ovoid-pruniform rough spore. 14. *C. subturbinatus*, amygdali-forrn rough spore. 15. *C. mucosus*, elongate sublimoniform rough spore. 16. *C. splendens*, subli-moniform rough spore. 17. *C. elegantissimus*, limoniform coarsely warted spore.

CONCLUSION. One of the difficulties in studying this genus is the great importance of colour, and good illustrations are of particular value. Quotations are given from standard works in the notes in the index, but there are still not a few species for which there is no authentic published plate. It is impossible to do more than give approximate indications of the frequency of occurrence of the species in Britain, since past lists are liable to be inaccurate and insufficient critical work has been done on these fungi. Out of 102 species included in the notes, 80 are British with reasonable certainty, 12 need confirmation and 10 are not British but are included because they may have been recorded under another name. A few additional European species have been included in the key only, since they may well occur in this country. Some 20 species which I hope to record more fully at a later date are here recorded for Britain for the first time. These are indicated in the Index and Notes by a dagger (†) preceding the species name. I should be very glad to hear of any authentic additional records or to help with puzzling discoveries (and there are certain to be some), which should be accompanied by a description (and spore print if possible) even if fresh specimens are sent, since Cortinarii do not keep their colours long after being picked. Communications should be addressed to ' Department of Botany, The University, Reading, Berks.' It is hoped that the key will assist in more accurate determination of species and will thereby increase our knowledge of these rather attractive toad-stools, but it must not be expected that the key will enable all collections to be named. May I once again emphasise the importance of examining young and fresh material and checking field work by spore measurement whenever possible. Finally I should like to record my very grateful thanks to Dr. K. VV. G. Dennis of The Royal Botanic Gardens, Kew, who has not only allowed me to have very free access to specimens and papers in the Herbarium, but has also given me much very valuable and helpful advice.

Principals works consulted: For illustrations:

Boud BOUDIER, E. (1904-1909). Icones mycologicae; Paris.
Bres BRESADOLA, G. (1927-1933). Iconographia mycologica; Milan.
Britz BRITZELMAYR, M. (1879-1894). Hymenomyceten Sudbayerns; Berlin.
Cke COOKE, M. C. (1880-1890). illustrations of British Fungi; London.
Favre FAVRE, J. (1948). Les associations fongiques des hauts-marais jurassiens et de quelques regions voisines; Berne.
Fr FRIES, E. (1877). Icones Selectae Hymenomycetum; Holmiae.
Gillet GILLET, C. (1877-1895). Les champignons de la France, Hyménomycètes; Alençon.
Henry HENRY, R. (1935) (1936). Bull. Soc. mycol. Fr. LI, LII.
KM KONRAD P. ET MAUBLANC, A. (1924-1935). Icones selectae fungorum; Paris.
L LANGE, J. E. (1935-1940). Flora Agaricina Danica; Copenhagen.
Maire MAIRE, R. (1910) (igii), Bull. Soc. mycol. Fr., XXVI XXVIL
Maubl MAUBLANC, A. (1952). Les champignons de France (4? edition); Paris.
Ri RICKEN, A. (1915). Die Blatterpilze (Agaricaceae); Leipzig.
Rolland ROLLAND, L. (1910). Atlas dcs Champignons de France, Suisse et Belgique; Paris.

For text and notes :

FRIES, E. (1874). Hymenomycetes Kuropaci; Uppsala.
(1863). Monographia Hymenomycetum Sueciae; Uppsala.
HENRY, R. (1933-1950- Etudes de quelques Cortinaircs etc. Bull. Soc. mycol. Fr XLIX-LXVII.
(1943)- Essai d'une cle . . . du groupe des Scauri. Rev. de Mycol. (Paris), VIII, no. 2, supplement, p. 1-56.
(1945) Essai d'une cle . . . du groupe des Myxacia, id. X, no. i supplement P- 9-39-
(1945) Essai d'une cle . . . du groupe des Phlegmacia (Cliduchi et Elastici). id. X, no. 2, supplement p. 4-42.
KAUFFMAN, C. H. (1918). The Agaricaceae of Michigan.
MOSER, M. (1951, 1952). Cortinarien-Studien I. Phlegmacium. Sydowia Annales Mycologici, Ser. II, V, p. 488-544; VI, p. 17-161.

MOSER, M. (1953) Bribes Cortinariologiques. *Bull. Soc. Nat. Oyonnax* No. 7, p. 113-127. PEARSON, A. A. (1952). New Records and Observations, V. Trans. Brit. Myc. Soc., XXXV, p. 97-122. PEARSON, A. A. & DENNIS, R. W. G. (1949). Revised list of British Agarics and Boleti. *Trans. Brit. Myc. Soc.*, XXXI, p. 145-190.
REA, C. (1922). British Basidiomycetes; Cambridge.
SCHAEFFER, J. (1949). Bestimmungstabelle der Scleimkopfe (Phlegmacium-Arten). *Zeitschrift f. Pilzk.*, XXI, h.2.

Some few abbreviations have been used in the key and tabular notes of which the following is a list:

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

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

Key to the Friesian subgenera of Cortinarius

1. Cap and sometimes also stem viscid, at least when young 2
1. Cap and stem dry 3
2. Cap and stem viscid I. *Myxacium*
2. Cap viscid, stem dry II. *Phlegmacium*
3. Cap not hygrophanous 4
3. Cap hygrophanous 5
4. Cap innately scaly, fibrillose or silky, flesh rather thick; stem typically stout, ± clavato-bulbous III. *Inoloma*
4. Cap innately silky at first (rarely velvety-scaly), generally becoming smooth, flesh thin; stem typically slender, ±equal or attenuated upwards IV. *Dermocybe*
5. Stem peronate or annulate from the remains of the veil in addition to the cortina V. *Telamonia*
5. Stem with cortina ± fugacious, more rarely leaving traces near base, without veil in addition VI. *Hydrocybe*

Key to the species *Myxacium* and *Phlegmacium*

1. Cap and stem viscid, at least at first; flesh soon soft — (I. MYXACIUM) 2
1. Cap viscid at least at first, stem dry; flesh firm or soft (II PHLEGMACIUM) 21

I. MYXACIUM

2. Taste immediately bitter, at least in cap cuticle; spores less than long, punctate to almost smooth, if subglobose, smaller, 4½-6/3½-4½µ 3
2. Taste mild (rarely with sl. bitter after taste) ; spores rough to very rough, mostly over 10µ long, or subglobose, 6½ -10/6-8µ 9
3. Cap pale to deep violaceous at first, soon discolouring pale ochraceous; (stem ventricose-fusiform ± pointed at base; under beech) *croceo-caeruleus* (14)
3. Cap never violaceous 4
4. Cap bright orange-yellow or golden-tawny with paler non-striate margin; cap cuticle and flesh bitter; stem white, ventricose-fusiform or clavate, ± pointed at base; spores elliptic- to ovate-pruniform, 6½-8/4½-5½µ *vibratilis* (15)
4. Cap paler in colour, white to ochraceous or buff, or if tinged tawny or orange, cap margin striate or cap cuticle only bitter or stem coloured slightly or spores different shape 5
5. Flesh mild, cap cuticle bitter; stem firm; flesh and gills becoming rather deep coloured (yellowish or ochraceous-buff) *causticus* (16)

5. Both flesh and cap cuticle bitter; stem often soon soft (except *ochroleucus* (20)); flesh on the whole paler 6
   6. Cap and stem nearly always dry; stem firm and tough; cap with white silky sheen; (spores elliptic-pruniform, 7-8/4-5µ; esp. under oaks) *ochroleucus* (20)
   6. Cap and stem viscid at least when young; stem soon ± soft; cap with or without white silky sheen 7
7. Cap small, 12-30(40) mm., disc often tinged tawny, margin striate when moist; gills rather broad and distant, very pale; stem equal or sl. swollen below, often flexuose, very soft and slender, often remaining viscid; (spores elliptic or sl. amygdaliform, 6½ -8/4-5µ) *pluvius* (17)
7. Cap medium to large, rarely small, (15)30-100 mm., paler, margin never striate; gills often narrower and more crowded or darker; stem equal to fusiform with ± pointed base, often firmer at first and more robust, soon dry 8
   8. Spores subglobose to broadly ovate, 4½-6/3½-4½µ; stem often fusiform or attenuated downwards; gills often narrowly adnate and narrow *cristallinus* (19)
   8. Spores elliptic-amygdaliforrn, 7-9/4-5µ; stem equal or sl. swollen near ± pointed base; gills often emarginato-adnate and ± ventricose *emollitus* (18)
9. Spores subglobose or broadly ovate, 6½-io/6-8µ; viscid veil on stem smooth making the stem look varnished when dry 10
9. Spores ± amygdaliform to limoniform, more than 10µ long (rarely less than 10µ and then elliptic); viscid veil on stem often floccose . 13
   10. Cap bright blue or violaceous at first; (stem ventricose or clavate-acuminate, blue at first *salor* (12)
   10. Cap without distinct blue or violaceous tints at first (sometimes with sl. violaceous flush in *epipoleus* (13)) 11
11. Gills deep blue or blue violaceous at first; common species; (cap ± yellow sometimes tinged tawny; stem ± clavate, white, often smeared with yellowish veil below cortinal zone) *delibutus* (10)
11. Gills not blue or violaceous at first; uncommon species 12
   12. Cap pale- to golden-yellow; gills pinkish- or ochraceous-clay, then buff; stem clavate or swollen at base, white, or tinged ochraceous below; (resembling a slender *delibutus*, but without blue tints) *illibatus* (11)
   12. Cap ochraceous-grey with olive-violaceous flush then dingy white with livid ochre centre; gills clay at first; stem clavate or fusiform, ± pointed at base *epipoleus* (13)
13. Gill edge with conspicuous balloon-shaped, pyriform or clavate cystidia, 10-30µ wide; cap with markedly striate or wrinkled margin or smooth; spores amygdaliform to limoniform 14
13. Gill edge without such conspicuous cystidia, but sterile 4- clavate cells about 8-12µ wide resembling basidia may be present; cap with smooth or more rarely sl. striate or grooved margin; spores elliptic to limoniform 17
   14. Gills violaceous at first, then violaceous rusty or purplish-umber, always rather dark coloured, often interveined and veined on the sides; cap remaining conical or conico-exp. for a long time, margin strongly wrinkled-striatc; stem often rather long and robust, ± ventricose *elatior* (6)
   14. Gills never violaceous, paler in colour, ochraceous-clay to rusty- buff, rarely interveined but sometimes veined on the sides; cap often expanding, if ±- conical margin smooth or sl. wrinkled-striate or colours paler; stem slender or robust, equal or ventricose 15
.15. Cap pale to deep yellowish or ochraceous, often with tawny tinge at disc, margin smooth or almost so; stem rather long, almost pure white, sometimes with sl. violaceous tinge *pseudosalor* (8)
15. Cap never so brightly coloured, at least disc not ochraceous but livid or olivaceous, margin smooth or not; stem short or long, ± violaceous or bluish at least in part 16

16. Stem rather slender and soft; cap often small, 18-50 mm., at first covered with blue-violaceous gluten then greyish- or livid-brown with smooth margin; gills subdistant, ± ventricose *stillatitius* (9)
16. Stem often stouter and firmer;cap generally larger, 30-110 mm., livid- or olive-brown, never violaceous, margin often striate or grooved; gills f. crowded, not or sl. ventricose *mucifluus* (7)
17. Stem with conspicuous whitish or pale bluish scales on a darker (tawny, chestnut or bay-brown) background 18
17. Stem without pale scales on a darker background, white, violaceous or tinged ochraceous 19
18. Cap bright coloured, ± tawny; spores 12-15/7-8μ or larger; stem apex and gills sometimes bluish at first; typically under conifers, also under beech *collinitus* (1)
18. Cap duller coloured, clay- or bay-brown but sometimes with tawny tinge at margin; spores 10-13/6-7μ; no blue tints anywhere; under deciduous trees, generally in wet places *trivialis* (2)
19. Cap becoming greyish with silky sheen at least in part; stem violaceous in part; spores elliptic, 7½ -9/4½-5μ *livido-ochraceus* (4)
19. Cap never greyish with silky sheen; stem not violaceous; spores elliptic-amygdaliform to sublimoniform, 10½-16/5½-7μ 20
20. Cap ± chestnut, then yellow-brown esp. at margin; gills not violaceous at first; stem equal, white; spores elongate sublimoniform, 13-16/6-7μ. *mucosus* (3)
20. Cap egg- or orange-yellow; gills pale violaceous at first; stem ± clavate, whitish sometimes tinged yellowish in part; spores elliptic-amygdaliform, 10½-11/5½-6 ¾ μ. *Metrodi* (5)

II. PHLEGMACIUM.

21. Gills and flesh discolouring ± deep violet or purplish when bruised or rubbed; (spores 8-11/5-6μ) 22
21. Not so 24
22. Gills at first pale to pallid-buff (rarely with sl. lilac tinge); cap yellow-buff to pallid date-brown, not violet *subpurpurascens* (54)
22. Gills at first deep violet; cap pale yellowish to dark umber, sometimes ± violaceous esp. near margin 23
23. Cap tawny-buff to dark umber, margin often deep violet at first; stem with varia *purpurascens* (53)
23. Cap pale yellowish to pale date-brown, sometimes with sl. violaceous tinge, margin never deep violet; stem less robust, equal or sl. clavate; small to medium, rarely larger *porphyropus* (55)
24. Stem with well-marked wide marginate (Fig. 1) or rounded marginate (Fig. 6) bulb, more rarely variable and then sometimes immarginately bulbous (SCAURI) 25
24. Stem not marginately bulbous, equal, clavate or irregularly bulbous (CLIDUCHI-ELASTICI) 84

A. SCAURI. (See also § 22)

25. Young gills white, whitish or clay (LEUCOPHYLLI) 26
25. Young gills lilac, bluish or violaceous (CYANOPHYLLI) 41
25. Young gills yellow to olive or greenish (XANTHOPHYLLI) 66

a. LEUCOPHYLLI

26. Smell strong and persistent, fragrant, of orange blossom; (cap yellowish-buff with yellower margin; spores amygdaliform, 9-10/5-6μ) *evosmus* (30)
26. If smell strong, not of orange blossom 27
27. Cap at first white, whitish, clay or pale creamy-ochre 28
27. Cap at first pale yellow to chestnut 32
28. Stem with conspicuous wide marginate bulb; flesh sometimes with bluish tinge 29

28. Stem with ± rounded or narrow free-edged marginate bulb, rarely almost immarginate; flesh never bluish 30

29. Spores amygdaliform to sublimoniform, 10-12/6-6½µ-,a; cap white at first discolouring to ochraccous-buff; flesh of stem apex with fugacious bluish tinge; generally robust *caroviolaceus* (34)

29. Spores elliptic-pruniform, 7¼ -9/4-5µ; cap whitish or pale clay to pale buff; flesh not bluish at stem apex; generally less robust *rapaceus* (33)

30. Spores elliptic-amygdaliform, 10-11/5½-6µ cap almost unicolorous pale creamy-ochre; (stem with f. conspicuous but rounded marginate bulb; taste mild) **ochropallidus* (23)

30. Spores elliptic-amygdaliform to sublimoniform, less than 10µ, long; cap pale clay to ochraceous or buff, disc often darker 31

31. Cap pale clay to pale ochraceous or buff; cap cuticle often bitter; stem bulb narrow marginate to rounded marginate, often inconspicuous; spores elliptic-amygdaliform, 8-10/4½-5½µ *amarescens* (25)

31. Cap creamy-ochre, often tinged tawny-ochre at disc; taste mild; stem bulb f. conspicuous, rounded marginate; spores amygdaliform to sublimoniform, 6-7½/4-4½µ; (cap 30-50 mm.; stem 40-60/5-8 mm. (8-12 mm. in bulb); mixed woods) . * (*minus* Vel.)

32. Cap unicolorous tawny-reddish at first, then paler at disc; spores ±elliptic 8½-10/4½-5½µ; (stem with conspicuous ± rounded marginate bulb, becoming tinged with colour of cap) *allutus* (24)

32. Cap from yellow to chestnut at first, if with a tendency to be tawny-reddish spores more than 10µ long or differently shaped 33

33. Cap at first pale primrose or chrome-yellow, then deeper yellow with disc generally tinged ochraceous; gills for a long time white; stem with ± conspicuous wide marginate bulb; flesh soon tinged ochraceous-yellow, very firm at first; spores elliptic-amygdaliform 8-10(11)/5-6µ *Langei* (29)

33. If cap pure yellow at first characters otherwise 34

34. Stem with variable sharply marginate, rounded marginate or almost immarginate never wide marginate bulb; cap yellow-ochraceous or buff generally with yellower margin; flesh soon soft and ± yellowish 35

34. Stem with wide marginate bulb, or if less marked, then cap with marked orange tints, or stem with violaceous veil when young; if cap yellowish or ochraceous, flesh firmer and often white 36

35. Spores ± limoniform, 10-11/5½-6½µ; smell often strong, of apples or acid *multiformis* (21)

35. Spores elliptic to elliptic-amygdaliform, 8-9/4½-5µ; smell faint or strong of honey *melliolens* (22)

36. Spores subglobose to ovatc-pruniform, 8-12/6½-8µ; cap ochraceous or rusty, margin often with olivaceous tinge *turbinatus* (31)

36. Spores amygdaliform to limoniform, rarely elliptic fusiform, sizes various; cap rarely with olivaceous tints 37

37. Spores broadly amygdaliform, punctate-rough, 7-8/4-5µ; (cap 40-70 mm., bright orange-yellow to orange-brown, sometimes with yellower margin; stem 30-60/13-25 mm. (20-30 mm. in bulb), with distinct or almost immarginate bulb; flesh pale yellowish-white, very hard; in fir and mixed woods) * (*aurantiacus* Moser)

37. Spores elliptic fusiform, almost smooth, 7½ -9/3 ½-4µ; (cap pale ochraceous to brick-red, innately fibrillose; stem white, discolouring when touched; flesh white; under conifers) *(*roseo-limbatus* Secr, var *marginatus* Bres.)

37. Spores more than 9µ, long, ± rough; (stem bulb generally well marked) 38

38. Stem with remains of violaceous veil at base at least when young, sometimes sl. bluish or glaucous at apex; (cap yellowish-ochraceous or bufi with innate reddish-brown fibrils, margin sometimes reddish- or tawny-brown; under pines) **pinetorum* (32)

38. Stem never with violaceous veil or bluish tints 39

39. Cap chestnut or date-brown-tawny to smoky-brown, very viscid, smooth; spores amygdaliform to ± limoniform, 12-15/7-9µ; in coniferous woods *napus* (26)
39. Cap paler, either soon dry and flocculose, or less viscid and with scattered whitish patches of veil at first; spores smaller 40
    40. Cap rusty or pallid clay-brown often with darker spots, soon dry, opaque and flocculose; spores sublimoniform to almost fusiform, 9-12/4-5(6)µ; mountainous conifer woods *corrosus* (27)
    40. Cap ochraceous-, tawny- or rusty-buff, at first with whitish patches of veil and yellowish margin; spores ± limoniform, 10-14/6-7½µ beech woods, often on chalk . *subturbinatus* (28)

(b) CYANOPHYLLI.

41. Cap bluish, lilac or violaceous, at least in part or when young 42
41. Cap without bluish or violaceous tints 51
    42. Smell strong, of orange blossom or of meal 43
    42. If smell strong, not of orange blossom or meal 44
43. Smell strong, persistent, fragrant, of orange blossom; cap 50-80 mm., pale ochraceous or milky-coffee with lilac margin; stem 90-100/20 mm. • (30 mm. in bulb), with wide marginate bulb, lilac above, pale yellowish below; flesh whitish-lilac under the cuticle, pale yellowish elsewhere; spores ± limoniform, 12-13½(15)/6½-7(8)µ; under beeches *(*suaveolens* Bataille & Joachim)
43. Smell strong of meal, esp. when cut; cap 40-60 mm., grey-blue, ochraceous, olivaceous or clay-brown; stem 40-100/5-13 mm. (12-20 mm. in bulb), with wide marginate to almost immarginate bulb, blue-violaceous above, paler or yellowish below; flesh whitish in cap, violaceous in stem apex, ochraceous in bulb; spores ± limoniform, 9½-12/4¾-7µ; in deciduous or coniferous woods, esp. beech on chalk *(*Dionysae* Hry.)
    44. Flesh bitterish to very bitter, + NaOH rose-red; (gill edge with ± conspicuous sometimes characteristically shaped sterile cells; spores amygdaliform to sublimoniform, 12-14/6-6½µ 45
    44. Flesh mild, + NaOH never rose-red; (cap cuticle sometimes bitter) 46
45. Both flesh and cap cuticle very bitter; sterile cells on gill edge cylindric clavate to irregular or pistol-shaped; generally robust; under conifers *dibaphus* (40)
45. Flesh bitterish, cap cuticle mild; sterile cells cylindric clavate or forked at apex; often less robust; under deciduous trees *nemorosus* (41)
    46 Cap cuticle bitterish, + NaOH bright red to purplish-red (cap pale to deep blue-violaceous discolouring ochraceous or buff from disc outwards, not innately fibrillose; spores amygdali form to sublimoniform, 10-12/5½-6½µ) *sodagnitus* (39)
    46. Cap cuticle bitterish, + NaOH wine-red; (cap 40-60 mm., grey or bluish-grey becoming pale ochraceous from disc out, with darker innate fibrils; stem 60-70/15 mm., with oblique marginate bulb, pale violaceous above, yellowish below; flesh whitish in cap, dirty violaceous in stem, yellowish in bulb; smell faint, fruity; spores amygdaliform, 9-10/5-5½µ under conifers) *(*caesio-stramineus* Hry.)
    46. Cap cuticle mild, + NaOH ± nil to brownish 47
47. Spores elliptic-amygdaliform, 8-10(11)/4-5µ (entirely pale blue or greyish-blue at first, cap discolouring pale ochraceous from disc out, margin innately fibrillose; smell often strong, musty; under beech) *caesiocyaneus* (37)
47. Spores more than 10µ long 48
    48. Cap grey-blue at first, then ± olivaceous at disc, finally tan, finely streaky or spotted; gills blue-violaceous, then smoky-blue, finally clay-cinnamon; spores amygdaliform to subfusiform, 11-16/6½-7½µ; (cap 50-80 mm.; stem 40-50/20 mm., ± violaceous, paler below; flesh pale bluish, yellowish below; inodorous ; mountainous conifer woods) * (*herpeticus* Fr. sensu Hry.)

1955 July-September

48. No olive tints in cap; gills never smoky-blue; spores ± amygdali-forin, 10-12/4½-7μ. 49
49. Gills ± deep blue-violaceous at first, finally clay- or rusty-brown; cap dingv violet or grey-blue-violaceous at first, not innately fibrillose; smell faint or stronger when old, unpleasant *caerulescens* (35)
49. Gills pale bluish, lilac or grey-bluish at first, finally ochraceous or milky coffee; cap pale to deeper blue-violaceous at first, innately fibrillose; smell faint, or strong ± fruity 50
50. Cap deep violet at first, becoming paler with ± ochraceous disc; stem distinctly blue-violaceous when young; smell none or faint of radish; (if cap and stem somewhat deeper violet and smell often strong fruity var.* *Juranus* Hry (36a)) *Mairei* (36)
50 Cap greyish-white or greyish-violet then ± ochraceous; stem at most greyish-blue when young; smell none or faint fruity **Boudieri* (38)
51. Smell ± strong of meal; taste bitterish; (cap 80-120 mm., whitish, then pale ochraceous; gills pale lilac at first; stem 50-70/10-20 mm. (up to 40 mm. in bulb), white; flesh white; spores amygdaliform 10-I2/6-7μ; mountainous conifer woods) *(*aleuriosmus* Maire)
51. Smell ± strong of meal; taste mild; (cap ochraceous or clay-brown; see §43, *Dionysae*).
51. Smell none or not mealy; taste generally mild, less commonly cap cuticle bitter, or flesh with sl. bitter after taste 52
52. Spores less than 9μ long; young cap ochraceous to buff or tawny, often with greenish or olive tints esp. near margin; flesh in bulb rather deep yellow or ochraceous 53
52. Spores more than 9μ long; young cap rarely with greenish or olive tints; flesh in bulb white to paler yellowish or ochraceous 55
53. Cap olive-brown then hazelnut or dirty buff; gills at first grey-blue then sooty-blue; stem with conspicuous wide marginate bulb *herpeticus* (51)
53. Cap paler or brighter coloured; gills pale bluish-lilac to grey-blue at first, never sooty-blue; stem bulb variable, from wide marginate to almost immarginate 54
54. Robust; cap pale tawny or buff often tinged olive with greenish margin, then unicolorous tawny-buff and conspicuously innately fibrillose; stem bulb from wide to barely marginate; typically under conifers, also under deciduous trees *glaucopus* (50)
54. More slender; cap pale ochraceous with greenish margin then rusty-buff with olivaceous margin, not so conspicuously in nately fibrillose; stern with narrow marginate bulb; under beech on chalk *parherpeticus* (52)
55. Cap whitish or pale yellowish at first 56
55. Cap ± deep yellow or ochraceous to orange-brown or chestnut at first . 59
56. Cap cuticle ± bitter, flesh mild; stem with yellowish patches of veil at base and on ± rounded marginate bulb; smell at first faint but distinct, fruity (of plums); spores ± limoniform, very rough (10-13/6-7μ) *amoenolens* (49)
56. Cap cuticle and flesh mild; smell none or faint, of radish; stem without patches of yellowish veil at base; spores ± amygdaliform, rough 57
57. Cap whitish, then pale buff; stem white with abundant pale bluish or lilac cortina and conspicuous marginate bulb, often bluish on the edge; (cap 70-100 mm.; gills pale clay-bluish or lilac at first; stem 60-70/15-20 mm. (30-35 mm. in bulb); inodorous; spores 10-11/5-6μ under deciduous trees) *(*Rickenianus* Maire)
57. Cap pale straw-yellow or ochraceous at first; stem blue-violaceous at first, soon, whitish, discolouring yellowish or ochraceous from the base up, bulb not so conspicuously wide marginate 58
58. Slender with ± regular and orbicular soon cvx.-exp. cap; stem with small but distinct marginate bulb, pale lilac then whitish or ochraceous at base; cortina whitish, rather sparse; spores 9-10½/5-6μ *parvus*(43)

58. More robust with less regular cap, not expanding so soon; stem with variable ± rounded marginate to immarginate bulb blue-violaceous discolouring yellowish or ochraceous from the base up; cortma abundant, blue-violaceous; spores 10-14/6-7μ *cyanopus* (48)

59. Cap chestnut or reddish-brown with olive-yellow margin- olive-yellow veil forming patches on stem and bulb; (cap 50-80 mm.; stem 50-70/12-15 mm. (up to 25 mni. in bulb), pale with violaceous tinge bulb top-shaped; spores ± amygdaliform, 12-15/7-8μ; esp. in coniferous woods) **(subatkinsonianus* Hry.)

59. Cap paler at first or spores smaller, margin not olive tinged (but see §70 *montanus,* which has gills rarely grey-violaceous at first); golden- or pale-yellow veil present or absent; spores smaller 60

60. Cap orange- to reddish-brown at first; stem often short, with inconspicuous marginate or almost non-existent bulb, often flattened at base; (cortina pale ochraceous to yellowish; spores 10-12/6-6-μ *pansa* (47)

60. Cap yellow or ochraceous at first; stem short or long, often with ± conspicuous wide marginate bulb 61

61. Bulb with golden-yellow or yellowish patches of veil; cap bright yellow then ochraceous or tawny-buff at disc 62

61. Bulb without patches of veil (sometimes white-tomentose beneath); cap pale to bright yellow, ochraceous or buff 63

62. Bulb with golden-yellow veil; flesh pale violaceous esp. under cap cuticle and in stem apex, then whitish, ± yellowish in bulb; NaOH -f cap cuticle immediately bright orange-red then blood-red, finally purplish-brown; often rather small; spores 11-13/6-6½μ *aureopulverulentus* (44)

62. Bulb with yellowish veil; flesh pale ochraceous-yellow; NaOH + cap cuticle variable, ± brick-red to reddish-brown; generally more robust; spores 9-11(12)/4½-5μ **arquatus* (45)

63. Stem blue-violaceous, at least at apex; generally rather small 64

63. Stem white or tinged yellowish or rusty, without blue tints externally; small to large 65

64. Cap pale ochraceous to yellowish then ± rusty in places; stem slender, pale violaceous then whitish or pale ochraceous below; flesh pale violaceous in stem, rather thin at disc *parvus* (43)

64. Cap ochraceous-buff with paler margin; stem rather stouter, apex pale violaceous when young, soon ochraceous-buff from base up; flesh white, sl. bluish in stem apex, tinged ochraceous in bulb, thicker at disc **subarquatus* (46)

65. Gills bright violet at first; flesh white or whitish, often yellowish under cap cuticle or in bulb, without blue tints; gill edge sterile with f. conspicuous ± clavate cells, 6-14/22μ wide *calochrous* (42)

65. Gills pale bluish or lilac at first; flesh white in cap and bulb, greyish-blue in stem; gill edge fertile; (cap 60-80 mm., tawny-yellow with yellower margin; stem 80/20 mm. (40 mm. in bulb), white or yellowish, cortina bluish-white; spores elliptic-amygdaliform, 10/5½μ; deciduous or mixed woods (*Cookeianus* Hry.)

c. XANTHOPHYLLI

66. Blue or violaceous tints in cap, stem or flesh 67

66. Without blue or violaceous tints 71

67. Cap sulphur or lemon-yellow at first, discolouring rusty; gills pale olive-sulphur at first; stem greenish-yellow or sulphur discolouring ± rusty below; flesh rather deep azure-blue in centre of cap and stem apex (whitish when old) *cedretorum* (56)

67. Not combining azure-blue flesh with yellow cap, gills and stem 68

68. Cap reddish-copper to purplish or lilac, sometimes yellowish in part; stem with wide marginate bulb, greyish-lilac to reddish or sulphur with reddish-purple apex 69

68. Cap from ochraceous to chocolate brown, umber, olive or greenish; stem with variable rarely wide-marginate often inconspicuous bulb, often bluish or greenish at apex and ochra ceous or brownish below 70

69. Cap reddish-copper to reddish purple; gills greenish-olive or lemon-yellow .it lirst; attorn greyish lilac to ± reddish, rarely sl. yellowish; flesh lilac or violaceous under cuticle, ± reddish-purple in bulb, white or greenish-yellow elsewhere, + NaOH sulphur-yellow; spores 11-14/7-8µ *rufo-olivaceus* (57)

69. Cap purplish, then lilac and yellowish mixed; gills ± sulphur-yellow ai first; stem sulphur-yellowish with narrow purplish-red zone at apex. flesh whitish, violaceous under cap cuticle, yellow at periphery of stem; spores 10½-11½/6-6½µ *xanthophyllus* (58)

70. Cap olive- to date-brown with darker smoky-brown or chocolate generally spotted margin; gills olive-bistre to olive-cinnamon; spores 10-13/6-8µ; damp conifer woods or moorlands *s caurus* (59)

70. Cap pale ochraceous or buff with olive-yellow to chocolate or umber not spotted margin; gills typically olive-yellow at first, occ. pale grey-violaceous; spores 9-11/5½-6½µ; in damp conifer woods; (cap 35-80 mm.; stem 40-70/10-20 mm., bluish or greenish above, brownish or purplish below; flesh pale dirty brownish, sometimes bluish in stem apex) **(montanus* Kauff. ssp. *europaeus* Moser)

70. Cap ochraceous or buff with darker streaks and olive or greenish margin; gills dark greenish-olive then rusty-olive; spores 10-12/5-6½µ ; deciduous and coniferous woods; (cap 50-80 mm.; stem 60-80/10-15 mm., pale greenish with grey-bluish apex, becoming ± ochraceous below; flesh pale, greenish or bluish at stem apex) **(subvirentophyllus* Hry.)

71. Cap, gills and stem straw-, chrome- or golden-yellow to ochraceous, tawny or rusty, without distinct sulphur, lemon yellow, olive or greenish tints (except sometimes gills becoming olivaceous when old). 72

71. Cap *or* gills *or* stem with some distinct sulphur, lemon-yellow, olive or greenish tints at least when young 76

72. Cap with distinct darker scales at least on disc 73

72. Cap smooth or innately fibrillose or with whitish scales from veil but without darker scales 74

73. Spores 8-12/5-6½µ ; stem golden-yellow to rusty-orange with white or pale yellow apex *fulmineus* (62)

73. Spores 13-14/7-8µ or larger; stem yellow or golden-yellow tinged rusty in places, apex yellow *parafulmineus* (63)

74, Gills pale straw-yellow then pale cinnamon, sometimes tinged olivaceous when old ; cap straw then ochraceous or buff with pale yellowish margin, sometimes with whitish scales from veil; (spores 11-12/6-7µ) *lutescens* (64)

74. Gills pale or deep yellow then rusty-buff, -golden or -orange; cap golden-yellow to orange-tawny or darker, smooth or innately fibrillose 75

75. Cap with conspicuous darker innate fibrils; spores 9-12/6-7µ *fulgens* sensu Fries (60)

75. Cap smooth; spores 9-10/5 6µ *fulgens* sensu Cooke (61)

76. Cap predominantly green, sometimes with" olive tinge but without yellow tints; spores 10-12/5-7µ 77

76 Cap pale sulphur or lemon-yellow to reddish-copper, sometimes olivaceous but then also with yellow tints; spores 10-17/5-10µ 78

77. Cap dark- to olive-green with paler margin; gills, stem and flesh at first sulphur yellow *atrovirens* (73)

77. Cap olivaceous to grass-green, disc sometimes with sl. brownish tinge; gills and flesh never sulphur-yellow *prasinus* (72)

78. Almost unicolorous sulphur- or lemon-yellow at first, except sometimes disc of cap may be olive-brown; mycelium at base of bulb sulphur or lemon-yellow; spores 9-11/5-6µ 79

78. Cap, gills and stem not unicolorous at first, or if almost so spores larger; mycelium at base of bulb white or whitish; spores 10-16/6-10µ 81

79. Entirely sulphur-yellow at first; disc of cap sometimes becoming tinged reddish-brown or with scattered reddish-brown scales; cap cuticle + NaOH deep red or red-brown or purplish-brown; typically rather small, less commonly large *splendens* (65)

79. Unicolorous ± deep lemon-yellow, or pale lemon-yellow with olive-brown cap except for margin ; cap cuticle + NaOH deep olive or olive-brown ; typically medium to large 80

80. Entirely ± deep lemon-yellow; disc of cap later sometimes tinged sl. olivaceous, ± smooth; cap cuticle + NaOH rather deep olive *citrinus* (66)

80. Gills and stem pale lemon-yellow at first, gills later olive-yellow; cap olive-brown with pale lemon-yellow margin, often spotted or streaky; cap cuticle + NaOH ± olive-brown *sulphureus* (67)

81. Cap reddish-copper or tawny-brick, with yellowish, greenish or glaucous (rarely sl. bluish) margin, disc sometimes with darker scales; smell often strong, either of fennel or anise; spores amygdaliform to + limoniform, rough, 10-13/6-8µ 82

81. Cap straw yellow, sulphur or tawny-orange to rusty-buff, sometimes with olivaceous tinge, with pale- to sulphur-yellow margin, smooth or innately fibrillose, sometimes spotted but not distinctly scaly; smell none to rather sickly sweet (aromatic), sometimes resembling fennel; spores limoniform, very rough, 12-17/8-10µ 83

82. Smell of fennel; flesh white or whitish with yellowish or greenish-yellow outline, often becoming reddish-brown in bulb; stem pale greenish-yellow *orichalceus* (70)

82. Smell of anise; flesh bright greenish-yellow or sulphur, sometimes greener in stem or reddish-brown in bulb; stem rather bright greenish-yellow, sometimes yellower or browner in places **odorifer* (71)

83. Cap straw-yellow to tawny-buff often with olive tinge, innately fibrillose, margin paler; flesh pale yellowish or whitish then darker (tawny-rusty) in bulb; smell none, or faint, pleasant; in coniferous or deciduous woods *elegantior* (68)

83. Cap sulphur-yellow, disc ± rusty-buff or tawny-tinged, smooth; flesh white with sulphur outline, or sulphur in bulb; smell often strong, aromatic, sickly sweet; under beech *elegantissimus* (69)

B. CLIDUCHI-ELASTICI

84. Young gills white whitish or clay 85

84. Young gills blue or violaceous 107

84. Young gills yellow or olive 117

85. Cap bluish or violaceous at least at margin; stem sometimes with violaceous or whitish scales from veil near base 86

85. Cap whitish, yellowish, tawny or brown, without blue tints; scales from veil, if present, white, yellowish, ochraceous or brown (violaceous only in *roseo-limbatus*—see § 105) 89

86. Very large and robust; cap 75-200 mm. chestnut or chocolate with grey- or darker-violaceous margin, often with thick whitish patches of veil at first, later paler with ± sulcate margin; similar patches of violaceous or whitish veil on stem; spores ± limoniform, 13-18/8-10µ *praestans* (90)

86. Slenderer species with smaller spores and other characters 87

87. Cap soon dry and felty-fibrillose, cuticle not peeling easily, dull (cork- or tobacco-) brown with narrow sometimes fugacious lilac or violaceous zone at margin; (generally under conifers) *balteatus* (89)

87. Cap smooth and shiny or sl. matt when dry, sometimes innately fibrillose at margin, cuticle peeling or not, with wider or deeper violet marginal zone to almost entirely violaceous or with brighter (ochraceous or wine-red) disc 88

88. Cap cuticle peeling easily, reddish brown or wine-red with narrow but often bright violet marginal zone; stem with patches of rather fugacious or inconspicuous blue-violaceous veil; spores ± amygdaliform, 10 12/5 ½- 6 ½ µ; decid. woods, esp. beech *balteato-cumatilis* (88)

88. Cap cuticle not peeling easily, grey-blue to violet, disc becoming ochraceous, wine-red or sepia-tinged; patches of violaceous veil on stem often conspicuous; spores elliptic-fusiform, 9-12/4 ½ -6/µ; coniferous and mixed woods *cumatilis* (87)

89. Taste bitter, at least in cap cuticle; colours generally pale, or rather dull. white to ochraceous or buff; stem ± viscid at first but often soon9 drying smooth or striate, less commonly sl. floccose; (spores less than 10µ long, often pale in mass (ochraceous to ochraceous-rusty)) 3

89. Taste mild; colours various but often brighter; stem smooth or scaly, never viscid ; spores various, often longer and darker rusty in mass 90

90. Stem often clavate at first *either* with white, yellowish, ochraceous or brownish floccose scales forming ring-like zones or scattered near base *or* cortina forming thick white floccose ring-zone near apex 91

90. Stem equal to clavate or irregularly, rarely rounded bulbous, smooth or striate (rarely with traces of violaceous veil at base), cortina not forming thick ring-zone 102

91, Scales on stem soon coloured yellowish, ochraceous or olive-brown; cap margin never white floccoso-scaly but sometimes appendiculate with remains of cortina 92

91 Scales on stem white or sl. coloured at tips, or cortina forming thick white ring-zone; cap margin often white floccoso-scaly or silky hoary 97

92. Scales on stem thick, woolly, ± persistent, forming ± conspicuous ring-like zones below cortinal zone; cap yellow to ochraceous or tawny, generally rather bright in colour; usually robust and ± inodorous 93

92. Scales on stem thinner, less conspicuous, often reduced to a few near the base, sometimes fugacious; cap generally dull in colour, pale yellow or ochraceous to reddish-brown; medium to large, often with strong smell 95

93. Spores elliptic-fusiform, 12-15/6-7 ½ µ; cap yellow- to ochraceous-tawny with ± bright yellow margin, disc often with small adpressed crowded scales; under conifers and birch; (NaOH + flesh bright or golden yellow) *triumphans* (74)

93. Spores ± amygdaliform, 9-12 ½/5-7 ½µ; cap pale to bright yellow or tinged tawny, margin pale yellow or ochraceous, with or without scales at disc; coniferous or deciduous woods 94

94- Cap pale to bright yellow, disc sometimes tinged tawny or butt, it smooth except sometimes for small scales on disc from veil; gills creamy-white or grey-blue at first; scales on stem often rather thin, yellowish or yellow-tawny; typically under birch *crocolitus* (76)

94- Cap ochraceous to orange-yellow, sometimes with olivaceous tinge, with distinct reddish-brown innate fibrils, margin yellow or sL olivaceous; gills never bluish; scales on stem 'thick, woolly, ochraceous or olivaceous; conifers or mixed woods **subtriumphans* (75)

95. Smell of new-mown hay when cut; cap and stem often with olive tints; flesh white; spores 8-10½ /4½-5½µ **cephalixus* (78)

95. Smell unpleasant often strong, rank or foetid; cap and stem without olive tints; flesh white or pale yellow-brown; spoils 9-12/5½-6µ 96

96. Cap ochraceous, yellow or butt with paler margin, smooth or with small darker adpressed scales at disc; stem base with scattered yellowish or butt scales at least when young; flesh white, some-times yellowish under the cuticle; smell rank; spores ± amygdaliform 10-12/5½-6µ; decid. or mixed woods often under beech *olidus*(77)

96. Cap reddish-brown with pale yellowish-brown margin which is fibrillose at first ; stem with cream-ochraceous floccose scales at first; flesh pale yellowish-brown, white at first in stem; smell foetid; spores elliptic, 9-11/5½-6µm,; under conifers or in *Sphagnum;* (cap up to 125mm; stem 70-110/15-23 mm. (up to 35 mm. below) *(*validus* Favre)
97. Smell strong, unpleasant, rank; cap red-brown with conspicuous white silky marginal zone; spores elliptic-amygdaliform to sublimoniform I2-14/7-8µ (under beech, esp. on chalk) *albomarginatus* (80)
97. Smell none, or faint pleasant ; cap or spores otherwise 98
98. Stem equal or attenuated downwards, hard and rigid white, white-floccose at first, then silky striate below ± thick per-sistent, floccose cortinal ring-zone; (cap yellowish or ochraceous with darker disc; flesh white; spores elliptic-amygdaliform, 8-10/4-4-½ µ) *turmalis* (83)
98. Stem with ± persistent white or whitish floccose scales below rather thin often fugacious cortinal zone, equal to clavate or fusiform-bulbous; (spores often larger) 99
99. Spores subglobose or broadly ovate, 8-9/6½ -8µ; cap ± bright yellow at least in part; (stem robust, clavate or fusiform-bulbous ; flesh white, ± ochraceous in base of stem). *saginus* (82)
99. Spores elliptic-pruniform to ± limoniform, larger or smaller; if cap yellow, not so bright 100
100. Spores elliptic-fusiform to ±limoniform, 7-9(10) /3½-5µ; (cap 50-90 mm., ochraceous or yellowish with darker often reddish- *qj* brown disc, silky-hoary; stem 60-70/12-15 mm., equal or sl. thicker or thinner at base, hard and firm, with some whitish later ochraceous-buff zones below; flesh white; coniferous and deciduous woods) **(subclaricolor* Moser)
100. Spores larger, elliptic-pruniform to sublimoniform 10-15/6-8µ 101
101. Spores elliptic-pruniform, 10-14/7-8µ; cap small to medium, pale buff to reddish-brown with darker disc; stem ± equal, f. firm at first *fraudulosus* (81)
101. Spores amygdaliform to sublimoniform, 11-15/6-8µ; cap medium to large, yellowish, ochraceous or pale reddish; stem more robust, clavate or ventricose, sometimes attenuated at base, hard and firm *claricolor* (79)
102. Cap pure white then creamy or sl. yellowish at disc; smell strong of meal; spores small, elliptic-oval, 6-7/3½-4µ *lustratus* (86)
102. Cap never so pale in colour; smell none or not of meal; spores mostly more than 7µ long 103
103. Spores very small, elliptic-oval, 4-5/3-4µ (cap 30-70 mm., tawny yellow, redder at disc, with paler sl. white pruinose margin; gills whitish clay then pale milky-coffee to ochraceous; stem 30-60/7-15 mm., ± clavate, white or whitish ; flesh whitish ; under conifers) *(microspermus* Lange)
103. Spores more than 7µlong 104
104. Spores subgloblose 7-9/5-7µ; (cap 20-50 mm. pale ochraceous-buff or tan, margin often sl. streaky; gills whitish then clay-cinnamon often with uneven edge; stem 35-70/5-8 mm- (7-14 mm. below), ± clavate, white discolouring yellowish from base up, apex occ. with vague bluish tinge ; flesh white sometimes yellowish in places; deciduous (more rarely coniferous) woods (*C.* (*Dermo.*) *tabularis* Fr.)
104. Spores elliptic fusiform 7-10/3-4µ; (see notes on *sebaceus*) 105
104. Spores elliptic, amygdaliform or ± limoniform, broader, 8-11/4½-6½µ 106
105. Cap pale ochraceous or sl. yellowish to almost brick-red, ± conspicuously innato-fibrillose; stem equal or thicker at base (marginately bulbous in var. *marginatus* Bres.), white at first, sometimes with fugacious violaceous patches of veil at base; flesh pure white; in coniferous woods; (cap 50-100 mm.; stem 50-90/10-15(30) mm.; gills white then pale ochraceous to clay-buff) * *(roseo-limbatus* Secr.)

1955 July-September

105. Cap ochraceous-yellow or buff, white silky hoary or sl. innato-fibrillose ;stem attenuated upwards with ± clavate (rarely attenuated) base, white, discolouring yellowish from base up, without patches of veil; flesh whitish to ochraceous or buff; coniferous and deciduous woods *sebaceus* (84)
106. Cap ochraceous to reddish brown, smooth or with yellowish patches of veil margin sometimes ± fibrillose; stme firm, ± equal or sl. Ventricoseor bulbous, pallid or buff with paler apex; flesh white, sometimes pallid or watery in centre of cap; smell none or fain rank; (spores amygdaliform, 9-10/5-6μ) **crassus* (85)
106. Cap ochraceous or buff often with darker disc and yellower margin either white silky hoary or with whitish adpressed fragments of veil or smooth, sometimes innately fibrillose; stem soon rather soft with variable normally ± marginate sometimes immarginate bulb white soon yellowish or tinged rusty; flesh white soon yellowish at least in stem ; smell faint or strong of apples, acid or honey 35
107. Cap bluish or violaceous at least in part or when young 103
107. Cap whitish, yellowish, tawny or brown 111
108. Very large and robust; cap 75-200 mm., chestnut or chocolate with grey- or darker-violaceous margin, often with thick whitish patches of veil at first, later paler with ± sulcate margin; gills whitish or pale clay, sometimes tinged lilac or violaceous at first; spores ± limoniform, 13-18/8-10μ . *praestans* (90)
108. Cap rarely so large, never with whitish patches of veil or sulcate margin; gills bluish-grey-clay to deep violet at first; spores smaller, ± amygdaliform, 9-12/5-7μ 109
109. Cap pale lilac or blue-violaceous, disc soon ± buff or reddish-brown, soon dry and shiny ; flesh firm at first but soon soft, + NH4OH slowly pale yellowish (occ. *slowly* deeper yellowish) ; smell faint, pleasant or sl. rank when old *largus* (93)
109. Cap at first either entirely violet, or date brown to sepia with violet margin, soon dry, smooth or strongly innato-fibrillose; flesh esp. of stem persistently hard and firm, + NH_4OH deep chrome or golden yellow; smell often strong, rank 110
110. Often robust; cap rarely entirely violet at first, usually date-brown or sepia with violet margin, ± smooth; in coniferous woods especially in hilly countr *variicolor (91)*
110. Less robust, cap often entirely violet at first, discolouring to dirty buff or date:brown with violaceous or bluish margin, often finally entirely livid brpwn, innately fibrillose often strongly so, in deciduous or coniferous woods, esp. in low-lying country *nemorensis* (92)
111. Stem with ± persistent yellowish or yellow-tawny scales forming con-spicuous ring-like zones below cortinal zone; (see § 94) *crocolitus* (76)
111. Stem without coloured scales forming ring-like zones 112
112. Cap straw-yellowish or pale buff then yellowish-clay to pale milky coffee; spores ± amygdaliform, 10-14/6-7/μ; (mature gills rusty cinnamon to almost chocolate; stem blue-violaceous soon whitish and discoloured yellowish from base up, with variable bulb, rounded to almost clavate) *cyanopus*(48)
112. ochraceous to rusty-tawny or orange-brown, rarely so pale, if so, spores different 113
113. Spores subglobose, 8-9/-7μ cap predominantly yellow; stem whitish or discoloured ochraceous at base with lilac or bluish apex *decolorans*(95)
113. Spores ± amygdaliform or elongate elliptic; cap predominantly ochra-ceous to rusty-tawny, not yellow except in part 114
114. Spores elongate elliptic or subfusiform, 13-15/6-μ (cap ochra-ceous to tawny-yellow; stem lilac then ochraceous with bluish apex) *Reideri*(96)
114. Spores ± amygdaliform, not more than 12μ long 115

115. Spores 7-10/4-6µ; flesh bluish-grey in periphery of stem; cap pale ochraceous-buff sometimes with reddish-brown disc; (stem rather slender, equal to sl. clavate, whitish to ochraceous buff with bluish or greyish apex) *decoloratus* (97)
115. Spores to 12/6-7µ; flesh without blue tints; cap darker and often brighter in colour 116
116. Stem clavate or with rounded bulb, often attenuated upwards, pure white, discolouring pale yellowish, rarely pale bluish at apex; cap yellow-ochre to rusty-tawny, disc sometimes darker and margin yellower *varius* (94)
116. Stem ± equal with inconspicuous marginate to almost non-existent bulb, often flattened at base, yellowish or ochraceous with whitish or violaceous apex; cap orange- to rusty-brown with paler ochraceous or yellowish margin *pansa* (47)
117. Young gills sulphur or lemon.yellow; taste mild or bitter; spores ±amygdaliform, 12-15/6½-8µ 118
117. Young gills pale to sooty-olive; taste bitter; spores subglobose, broadly ovate or elliptic pruniform, 7-12/5-7µ 120
118. Taste bitter; smell strong, disagreeable, of gas-tar (like *Tricholoma sulphureum)*; (cap ± coppery-red with yellowish to olive margin) *russeus* (100)
118. Taste mild; smell either strong, aromatic, of marjoram, or faint, of raw apples 119
119. Smell strong, aromatic, of marjoram; flesh sulphur yellow; cap ochra-ceous-buff to golden-yellow, disc sometimes tinged rusty, margin more lemon-yellow *percomis* (98)
119. Smell faint of raw apples; flesh pale sulphur-yellow, darker under cap cuticle and at base of stem; cap reddish-copper or chestnut with greenish-yellow or orange margin . **Nanceiensis* (99)
120. Spores elliptic pruniform, 10-12/5-7µ; (cap 40-50 mm., olive-bistre with paler margin; gills pale olive then olive-bistre; stem with yellow base; flesh violaceous then reddish; damp conifer woods or in *Sphagnum)* **(olivascens* (Batsch) Fr. sensu Bataille)
120. Spores subglobose or broadly ovate, 7-10/5-7µ 121
121. Facial and marginal cystidia present; cap pale straw-yellow then bright yellow-buff or tinged tawny, finally tawny-buff; gills, flesh and stem pale olive at first, gradually discolouring ± rusty; in damp woods or in *Sphagnum* esp. on high ground *subtortus* (102)
121. No facial or marginal cystidia present; cap chestnut or olive-brown, sometimes tinged greenish or violaceous; gills sooty-olive to dark olive-rusty then umber; flesh and stem whitish, sometimes tinged greyish, ochraceous or olivaceous, rarely violaceous; in deciduous woods esp. beech, also in coniferous woods . *infractus* (101)

SUMMARY OF CLASSIFICATION

Subgenus I.—**MYXACIUM.** Cap and stem viscid at least when young. Flesh soon becoming soft. (Spp. 1-20).

11. PHLEGMACIUM. Cap viscid at least when young, generally convex then expanded or slightly depressed. Gills adnate ± emarginate or with tooth, generally ± crowded. (Spp. 21-102.)

1 MYXACIUM.

1. *Colliniti.*—Stem peronate with smooth to ± floccose viscid veil (if smooth, spores more than 10µ long, rarely less and then not subglobose or broadly ovate). Taste mild. (Spp. 1-9.)

a. *Nudi.*—Edge of gill fertile or sterile, without conspicuous balloon-shaped or clavatc cystidia (sterile cells when present ± clavate, about 8-12 µ wide resembling basidia). (Spp. 1-5.)

(continued on page 68)

SPECIES	CAP	GILLS	STEM
MYXACIUM 1. Colliniti (a) Nudi	Cap and stem viscid at least when young. Flesh soon becoming soft. (Spp. 1-20.) Stem peronate with smooth to ± floccose viscid veil (if smooth, spores more than 10µ long). Edge of gill fertile or sterile, without conspicuous balloon-shaped or clavate cystidia		
1. *collinitus* (Sow. ex Fr.) Fr. *sensu* Lange (= *collinitus* var. *caeruliipes* Smith)	36-100 mm., cvx. then exp. with obtuse umbo, **tawny-orange** to olivaceous-tawny, umbo often darker (chestnut), very glutinous, shiny when dry: margin smooth or sl. grooved, incurved at first.	Clay, amethyst-grey or pale violaceous, then ± rusty, subdistant, adnate emarginate, ± linear, edge sometimes white.	50-120/7-20 mm., often rather long, **equal** or **attenuated downwards,** apex whitish or pale bluish often striate or grooved from base of gills, veil forming **whitish or pale bluish bands of scales** below cortinal zone on a **background concolorous** with the **cap.**
†2. *trivialis* Lange = *collinitus* var. *repandus* Ricken)	35-110 mm., cvx. then exp., broadly umbonate or not (sometimes sl. depressed around umbo when old), clay- to **date-** or **bay-brown** with paler (sometimes sl. tawny-tinged) margin, very glutinous; margin smooth, incurved at first and with remnants of whitish cortina.	Whitish or pale clay, then rusty clay to dull rusty, f. crowded, adnate barely emarginate, sl. ventricose near stem, edge whitish at first, ± even.	50-120/11-23 mm., ±-**ventricose fusiform,** rarely-cylindrical, apex whitish or pale pallid ± striate, veil forming **whitish** or pale pallid **netlike** scales below cortinal zone on a background ± **concolorous** with the cap.
3. *mucosus* (Bull.) Fr.	40-100 mm., cvx. then exp., generally broadly umbonate, **chestnut** or tawny brown, very glutinous; margin paler, smooth or striate, incurved at first.	Whitish, then pale ochra-ceous to cinnamon, sub-distant, adnate, ± emarginate or with tooth, often rather narrow, edge denticulate.	50-150/15-25 mm., **cylindrical,** often sl. attenuated .at base, **white,** viscidly silky, sometimes striate but surface not becoming disrupted into scales.
4. *livido-ochraceus* Berk.	20-50 mm., cvx. then exp., broadly umbonate, ochraeous or clay colour, drying paler **whitish silky and rather shiny,** cuticle rather thick; margin thin but not striate, often with traces of veil.	Whitish, then cinnamon or dull rusty, f. crowded, adnate or narrowly adnate, rounded near stem, ± ventricose, edge paler, ± even	25-60/5-10 mm., ± attenuated at both ends, **violaceous, often paler** or ± ochraceous at base and apex, silky striate above cortinal zone, **silky viscid** below, stuffed.
5. *Metrodi* Hry. = *illibatus sensu* Metrod)	40-70 mm., cvx. truncate, then cvx.-exp. with centre often sl. depressed, **bright yellow** or tinged tawny with paler margin, smooth.	**Pale violet,** then ± cinnamon, f. crowded, adnate or subdecurrent, f. narrow.	80-90/9-15 mm., clavate with or without pointed base, whitish, clothed with viscid veil up to yellowish fibrillose cortinal zone, becoming hollow.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
rarely less and then not subglobose or broadly ovate). Taste mild. (Spp. 1-9). (Sterile cells when present, ± clavate, about 8-12µ wide resembling basidia). (Spp. 1-5)					
White then whitish or yellowish -white, often ± rusty from base up, occ. tinged bluish at apex of stem	Mild. Inodorous.	Elliptic amygdali-form or sublimoniform, v. rough. **12-15(20)/7-8(9)µ**		Usually under conifers some-times under decid. Trees (e.g. beech). Fairly common.	Easily recognised by conspicuous bands on stem, bright colours and large spores. Differs from trivialis (No. 2) in colours, larger spores and habitat.
Yellowish - white, darker brown undcr cap cuticle, becoming yellowish- to darker date- brown in lower part of stem.	Mild. Inodorous.	Elliptic-amygdali-form to amygdaliform, rough, **10-13/6-7µ**	Gill edge with some sterile ± clavate cells 8-12(14)± wide.	In decid. woods (e.g. alder, willow) es-pecially when wet, or along ditch banks. Fairly common.	Distinguished from collinitus (No. 1) by duller colours, smaller spores and habitat. According to Henry the gills are rarely bluish when young.
White or whitish tinged tawny or chestnut under cuticle of cap and sometimes also at base of stem.	Mild. Inodorous.	**Elongate-sublimoniform**, rough, **13- 16/6-7(7½)µ** (fig. 15)		Conifers, esp. pine, on sandy or heathy soils. Uncommon.	Distinguished by white ± cylindrical silky-viscid, non-scaly stem and bright coloured cap, also narrower spores.
Whitish or pallid, ± violaceous in stem	Mild. Smell faint, pleasant.	**Elliptic,** punctate to almost rough, **7½-9/4½-5µ** (fig. 10)	Gill edge fertile. (Hyphae in cap 3-5± wide over ± sausage- shaped cells 40-90/12-20±).	Deciduous woods. V. uncommon (recently found under beech).	Not well known in Britain and not recorded in recent years from any other country. Distinguished by spore size and shape, peculiar cap colours and ± violaceous stem. (Cap colours appear to be similar to those of epipolens (No. 13) but spores are different.)
Whitish then sl. Yellowish, esp. at base of stem	Mild. Inodorous.	Elliptic-amygdaliform, rough, **10½-ll/5½-6¾µ** sec Metrod.	NaOH+flesh orange-yellow.	Conifers. Rare.	Very like delibitlus (No. 10) but with very different spores. Included on the strength of spore shape and measure-ments given in 'Handbook' (Ed. II.), 1891, of Cke., but its presence in Britain needs confirmation.

SPECIES	CAP	GILLS	STEM
(b) **Cystidiosi**	Edge of gill sterile with conspicuous balloon-shaped or clavate cystidia 10-30µ wide. (Spp6-9)		
6. *elatior* Fr. *sensu* stricto	50-120 mm., campanulate or **conico-cvx.** then conico-exp., often with upturned edge when old, clay- or olive-brown, disc often tinged umber; margin paler, sometimes sl. violaceous, strongly **wrinkled-sulcate.**	**Clay-violaceous** or pallid violaceous esp. at the edge, always rather dark, finally **rusty-violet or umber,** emarginato-adnate, fairly crowded, rather thick and broad, often strongly veined on the sides and inter-veined, edge paler, uneven.	**60-80/9-15(40)mm., often long, fusiform** or ventri-cose with f- pointed base, apex whitish or pale violaceous and silky stri-ate, covered with viscid silky or floccose 4±-violet veil below cortinal zone.
7. *mucifluus* Fr. *sensu* Ricken, Konr. & Maubl. (*non sensu* Fr.)	35-110 mm., cvx. soon cvx.-**exp.,** generally f- umbonate, **olivaceous or pallid with darker disc** (umber or smoky brown) and paler margin; margin ± wrinkled-striate, sometimes smooth when really wet.	**Pale ochraceous clay,** then rusty clay or pallid buff, adnate, sometimes with slight tooth, often f- emarginate, f. crowded, not or rarely sl. interveined, edge paler, uneven.	45-100/9-22 mm., often com-paratively **short** (about same length as diameter of cap), often **equal** with f- pointed base, sometimes attenuated down-wards or sl. ventricose, apex white silky-striate, white or blue-violaceous below cortinal zone, silky smooth or sometimes sl. floccose-scaly when old, esp. near base.
†8. *pseudosalor* Lge. (=mucifluoides Hry.)	30-70 mm., **conico-cvx.** then conico-exp. or exp. ± umbonate, sometimes with upturned margin, **ochraceous yellow or buff,** disc often tinged tawny, margin paler, ivory ochraceous (sec Lange sometimes tinged livid violaceous) ; margin quite smooth or only sl. wrinkled-striate.	**Ochraceous clay,** then dirty buff, adnate or adnato-decurrent (sometimes narrowly so), 4; ventri-cose, f. crowded, often veined on the sides, edge paler or sl. violaceous, f- even.	80-100/7-15 mm., often **long,** sl. fusiform with f-pointed base or attenuated downwards, white or tinged sl. blue-violaceous, apex silky striate, silky viscid below cortinal zone, discolouring pale pallid with age.
9. *stillatitius* Fr. *sensu* Bres.	**18-50 mm.,** cvx. then exp. broadly umbor.ate, covered with **blue-violaceous gluten** at first then **livid-brown** or olivaceous or greyish white; margin **smooth.**	Pallid or pale violaceous then rusty cinnamon, adnate, emarginate or with tooth, subdistant, ventricose, often broad (up to 15 mm.) edge paler, rather thick and f- uneven.	50-80/3-8 mm., fusiform or ventricose or attenuated downwards, covered with **blue-violaceous gluten** like cap, then **whitish,** esp. at base and apex, smooth with striate apex, very soft, stuffed or hollow.
2. Delibuti	Stem smoothly viscid below cortinal zone. Spores less than 10 I long, snbglobose to broadly		
10. *delibutus* Fr.	30-90 mm., cvx. then cvx.-exp. or broadly umbonate, pale yellow, disc often darker or brighter **yellow** or more rarely tinged tawny, tawny buff here and there with age, v. viscid, sl. streaky or (in larger specimens) wrinkled when dry.	**Deep blue or violaceous blue at first,** quickly lilac or pale clay-blue, then yellowish, clay-brown or cinnamon, adnate ± emarginate or with tooth, subdistant to f. crowded, edge paler, denticulate.	50-100/6-15 mm. (8-22 mm. below), clavate or swollen at base, **white** often smeared with **yellow** viscid veil up to cortinal zone, base white-tomentose often with white mycelial strands.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
6-9)					
Whitish or yellowish, thin, except at disc.	Mild. Inodorous.	Broadly amygdaliform, very rough, 12-17/7-9µ	Cystidia balloon-shaped or pyri-fonn, 35-40/18-µ.	D ec i d. (e s p. beech) and conif. Woods. Common.	Recognised by wrinkled ± conical cap, interveined often violaceous dark gills and ± ventricose stem. Typically of largo size. (See notes.)
White or whitish, thick at disc, gradually thinner towards margin.	Mild. Inodorous	Amygdaliform, rough, 12-15½/7-9µ	Cystidia balloon-shaped to clavate, 30-60/16-30µ.	Decid.and conif. woods Common.	Differs from *elatior* (No. 6) by not having a conical cap, no blue in gills, and stem generally short and not fusiform or ventricose. The spores appear also to be slightly less rough. C.pumilus (Fr.) Lge. may well be a small form of this species. (See notes.)
Whitish or pale pallid, tinged yellow below umbo and sometimes at base of stem, f. thick at disc, thinner towards margin.	Mild, Inodorous.	Amygdaliform, rough, 12-14/7-9µ	Cystidia balloon-shaped to clavate 30-40/10-22µ	Decid. woods (e.g. beech, hazel or birch). Fairly common.	Has the ± conical cap and long stem of *elatior* (No. 6), but differs in paler colours, smaller size and often pure white stem. (British specimens so far found have not shown any violaceous tints in the cap).
Pale yellowish or pale rusty, f. thick at disc.	Mild, Inodorous,	limoniform, v. rough, 12-15/6-8µ	Cystidia balloon-shaped or pyri-form, 30-50/12-20µ.	In damp woods (deciduous or coniferous). Uncommon. (Found recently in Sphagnum under birch.)	Not well known and needs further study. Like a small pale *elatior* (No. (i) but with smooth cap and stem.
ovate. Taste mild. (Spp. 10-13).					
Whitish, yellowish in cap (esp. at disc), bluish all through when young, blue colours sometimes persisting in places, thick at disc	Mild (or sl. bitter after mastication) Inodorous, or faint, sl. radishy.	Subglobose to broadly ovate, rough, 7-10/6-8µ	Gill edge fertile.	Decid or mixed woods (esp birch and beech). Common, often gregarious or subcaespitose.	Easily recognised by colours and spore shape. The commonest member of this section. (Two uncommon species resemble delibutus - *Metrodi* (No. 5)) distinguished by spore shape, and *decolorans* s. Cke. (No. 95), which is generally smaller and has a dry stem).

SPECIES	CAP	GILLS	STEM
11. *illibatus* Fr. *sensu* Henry (= *fulvoluteus* Britz.) (*non sensu* Metrod = Metrodi Hry.)	20-60 mm., cvx. then cvx.-or exp.-umbonate, **ochra-ceous or pale golden yellow,** often tinged tawny or later with sl. olive tint, v. viscid, smooth.	**Pinkish or ochraceous clay,** then ochraceous-buff or tinged rusty, adnate emarginate or with tooth, f. crowded, edge paler, uneven.	60-70/5-10 mm., ventricose or clavate or with base sl. swollen, silvery white or ± pale violaceous, tinged ochraceous below, apex silky striate, viscid below fugacious cortinal zone, soft.
12. *salor* Fr.	40-80 mm., cvx. then exp., umbonate or not, **bright azure blue or blue-violaceous** (at least on margin), then grey or livid brownish, glutinous, in-nately fibrillose below gluten.	**For a long time** lilaceous or **bluish,** then rusty-clay, adnate emarginate, subdistant, edge often bluish, crenulate or not.	60-100/10-20 mm., ventricose or clavate-acuminate, azure blue or blue violaceous at first, becoming whitish from base up, smooth and shiny (glutinous when moist) below cortinal zone.
13. *epipoleus* Fr. (=*liquidus* Fr. Hry.)	40-80 mm., cvx. then exp., umbonate or not, **ochrac-eous-grey with olive-violaceous flush** then dingy white with livid ochre disc, **innately silky hoary** when dry; margin thin, striate.	Clay, then ± cinnamon, **(never violaceous),** adnate or subdecurrent, subdistant, broadest near stem, edge even	50-90/7-15 mm., clavate or fusiform, ± pointed at base, whitish or violaceous, apex striate, soft.
3. Amarescentes	Taste bitter (at least in cap cuticle). Colours often pale, esp. of gills and spore print, some (In some species the stem may become ± dry and in No. 20 the cap also.) (Spp. 14-20).		
14. *croceocaeruleus* (Pers. ex Fr.) Fr.	20-50 mm., cvx. then exp.-cvx., often with disc sl. depressed, **pale to deep violaceous at first,** discolouring pale ochraceous from disc out or in patches, smooth.	Whitish or with faint blue tinge at first, soon clay ochraceous or with sl. saffron tint, finally rusty yellow or cinnamon, ad-nate, emarginate or not, f. crowded, often ventricose, edge paler, ± uneven.	40-60/5-13 mm., ventricose fusiform-pointed at base (fig. 4), white or tinged pallid or yellowish above, often persistently viscid below cortinal zone but sometimes ± dry.
15. *vibratilis* (Fr.) Fr	20-60 mm., cvx. then exp. ± umbonate, bright **orange-yellow** or **golden tawny** with **paler margin,** yellower and shiny when dry,	Cream, then ochraceous or cinnamon-ochraceous, ad-nate, ± emarginate, crowded, not or sl. ventricose, edge even or uneven.	40-60/4-12 mm., ventricose fusiform or clavate, base often pointed, white, apex ± pruinose, viscid or shiny and becoming discoloured sl. pale pallid below cortinal zone.
16. *causticus* Fr.	mm., cvx. broadly umbonate then expanded umbonate or sl. depressed, pale ochraceous or tinged tawny at disc, drying paler and with conspicuous **white silky sheen,** esp. noticeable at or near margin, viscid when moist but often found ± dry. (Continental authors give colours deeper, tawny or orange.)	Pale ochraceous, then yellow-ish-buff or rusty cinnamon, adnate to adnato-decurrent, emarginate or not (sometimes deeply so), f. crowded, often broad, ± ventricose, edge paler, even to sl. uneven.	30-80/4-12 mm., ± equal, but often pointed at base, white, whitish or tinged ochraceous, apex ± striate, sl. viscid at first below sparse cortinal zone, **firm,** stuffed then ± hollow, cortex almost cartilaginous.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
White, sometimes tinged yellowish, sometimes sl. violaceous at apex of stem.	Mild. Inodorous.	Subglobose to broadly ovate, rough, 6½-9/7½µ sec Hry.	Gill edge fertile.	Conif. woods (mountainous spruce sec Hry.). Rare.	Not well known and doubtfully British. Like a slender delibutus with no blue tints in gills and viscid veil on stem not yellow.
White or whitish, bluish under cap and stem cuticles.	Mild. Inodorous.	Subglobose, rough, 8-9(10½)/7-8(8½)µ	Gill edge fertile.	Decid. woods. esp. beech. v.uncommon.	Colour of young cap and gills and spore shape characteristic.
White or whitish, sl. darker under cap cuticle.	Mild. Inodorous.	Subglobose or pruniform, punctate, 7-9/6½µ sec Hry.	Gill edge fertile	Under spruce,or in moss and leaves in wet places. Rare.	Not well known and rather doubtfully British. Differs from *salor* (No. 12) in absence of blue in gills and duller cap colour; *livido-ochraceus* (No. 4) is similar in colours but has different spores.
times also cap. Spores less than 10µ long, subglobose to elliptic or elliptic-amygdaliform.					
White or yellowish, sometimes tinged lilac or bluish under cap cuticle.	Bitter. smell often strong, unpleasant, sour.	Elliptic-amygdaliform, smooth or almost so, 7½-9/4-5µ	Gill edge fertile.	Beech. Fairly common.	Taste and colours quite characteristic.
White, - ochraceous in stem.	Very bitter. Smell none or faint, unpleasant.	Elliptic or ovate-pruniform, punctate, 6½-8/4½-5½µ	Gill edge fertile.	Conif. or mixed woods. Uncommon.	Recognised by taste and bright coloured cap; the brightest coloured member of this section.
Yellowish or ochraceous in stem and under cuticle of cap, sometimes whitish in centre of cap and stem.	Flesh mild, **only cuticle bitter.** Smell **often strong**, peculiar, pungent.	Elliptic or sl. elliptic-amygdalifrm, smooth or almost so, 6-8/4-4½µ	Gill edge fertile	Decid. (esp. oak and beech) and conif. woods. Common some years, often in circles or gregarious	Readily distinguished by mild flesh, bitter cuticle, firm stem, pale outside coloured within, and silky sheen on cap; also, perhaps less reliably, by smell. Nos. 17, 18 and 19 have bitter flesh and softer stem and No. 20, although having a firm stem, has bitter flesh and is drier and lacks smell

SPECIES	CAP	GILLS	STEM
17. *pluvius* (Fr.) Fr. *sensu* Fries	12-30 (40) mm., conico-cvx. or cvx. then exp. ± broadly umbo.iate (fig. 3), pale ochraceous or buff, disc generally darker (tinged tawny), drying paler (almost white) with silky sheen at least at margin; **margin** often sl. **striate** when moist.	**Very pale,** whitish or clay then pale ochraceous ± yellowish to pallid clay adnate to adnato-decur rent, often narrowly so einarginate or not, rather distant, ventricose, edge even or sl. flocculose.	30-60 (80)/2-3 mm., **slender,** equal, flexuose, sometimes swollen more often pointed at base, pure white at first, discolouring pale pallid or yellowish, often white silky striate, esp. at apex, very soft, viscid when fresh, cortina sparse, fugacious.
18. *emollitus* Fr	35-100 mm., cvx. broadly umbonate or truncate then exp. umbonate or irregular, **almost white at** first, disc soon pale ochraceous or buff, often streaky or innately fibrillose about disc, very viscid, shiny when dry.	Creamy then pale ochraceous or ochraceous-clay, finally cinnamon-ochre, adnate einarginate, ± crowded, often broad and ± ventricose, edge concolorous, even.	40-80/7-20 mm., equal or sl. swollen near ± pointed base, sometimes compressed, white discolouring sl. pallid at apex, pure white and ± viscid below fugacious cortinal zone, later discolouring yellowish, rather soft, stuffed, then hollow.
19. *crystallinus* Fr. *sensu* Kuhner & Komagnesi	(15) 30-70 mm., cvx. or rvx. truncate then cvx.-exp. ± umbonate, **pure white** at first, disc discolouring ivory or pale pallid yellowish but margin generally remaining white, sometimes innately streaky here and there near margin; margin sometimes remaining incurved for a long time.	Whitish or creamy, then pale dingy- or ochraceous-buff adnate or adnato-decurrent, often narrowly so ± crowded, generally, **narrow** but sl. ventrirc-near stem, edge paler or not, often sl. uneven.	55-100/4-13 min., **fusiform or attenuated downwards,** more rarely ± equal and flexuose, apex attenuated or not, base ± pointed, pure white discolouring pale pallid yellowish, apex white pruinose, viscidly white-tomentose below fugacious cortinal zone, soon ± smooth, firm at first then rather soft.
20. *ochroleucus* (Schaeff. ex Fr.) Fr.	30-80 mm., cvx. then exp, umbonate or broadly umbonate, pale whitish, then **pale pallid** with i ochraceous disc, with **white silky sheen** at least at first, dry (but sl. viscid when very wet sec Lange); margin sometimes abruptly incurved. (The white silky sheen rubs off showing darker colour below.)	Whitish then clay, pallid or ochraceous, adnate or al most free, broadest near stem, ± crowded.	25-90/5-12 mm., ventricose with ± pointed base, white silky, cortinal zone present near apex, firm and rather tough, solid then ± hollow. The Naturalist

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Concolorous in cap, drying whitish, often pure white in lower half of stem and pale yellowish at apex of stem.	Bitter. Inodorous	Elliptic or v. sl. elliptic-ainygdaliform, punctate, . pale sub micr. and **ochre** in mass, 6½-8(8½)/4-5µ	Gill edge fertile.	In damp places, e. g. under heather in pinewood, or in wet leaves in ditches. Uncommon, often single specimens.	Recognised by small size, striate edge of cap when moist and soft stem; *emollitus* (No. 18) is larger and less viscid with non-striate cap and appears to have darker more elliptic-amygdaliform spores : *crystallinus* (No. 19) is also usually larger arid has quite different spores. (See notes.)
Whitish, pure white in base of stem, tinged yellowish at apex of stem and under cap cuticle, often with horny line over gills, firm at first but soon soft.	Bitter. Smell faint to f. strong, peculiar, or sour.	**Elliptic-amygdaliform,** ± smooth, rusty ochre in mass, 7-9/4-5µ (fig. 11)	Gill edge fertile.	Decid. Woods (esp. beech); aksi conif. sec Ricken. Fairly common, often in small numbers or single specimens, sometimes gregarious.	Very similar microsopically to No. 19 but readily distinguished by spores: never so small as *pluvius* (No. 17) nor with striate cap edge and spores apparently darker. Much softer and generally paler than Nos 16 or 20. (see notes.)
White, soon tinged yellowish -white at apex of stem, finally darker (yellowish -buff), f. firm then soft and spongy.	Bitter. Smell faint to f. strong, sour.	**Subglobose to broadly ovate,** finely punctate or almost smooth, often 1-guttulate, (fig. 12) 4½-6½/3½-4½µ	Gill edge fertile.	Decid. Woods (esp. beech) Fairly common some years, often gregarious.	Distinguished from all other members of this section by spore shape. Similar to *emollitus* (No. 18) macroscopically but appears to have narrower gills, a less equal stem and paler colours. (See noteson emolitus.)
Whitish	Bitter. Inodorous	Elliptic-pruniform, ± smooth, 7-8/4-5µ	Not known..	Decid. Woods esp oak. Sometimes caespitose. Uncommon	Rarely seen viscid but included here because of its bitter taste, pale colours and spores, resembling Nos.16-19. Most closely resembles causticus (No.16) in firm stem and cap with silky sheen, but is drier, not so bright coloured, lacks smell and the flesh is bitter.

SPECIES	CAP	GILLS	STEM
II. PHLEGMACIUM	Cap viscid at least when young depressed. Gills generally		
A. Scauri	Stem with marginate or rounded marginate (rarely immarginate) bulb or gills and flesh		
(a) Leucophylli	Young gills white, whitish or clay coloured (rarely v. sl. Bluish in amarescens (No. 25)).		
4. Multiformes	Stem bulb variable, sharply marginate, rounded marginate or almost immarginate, never, often becoming ochraceous or yellowish. Smell sometimes strong, either of apples (acid)		
21. *multiformis* Fr.. *sensu* Konr. & Maubl., Henry (=polymorphus Hry. (*non sensu* Ricken, Bres., Lange)	45-100 mm., cvx. then cxp. with margin often **strongly abruptly Incurved, yellowish or ochraceous,** disc often darker (tinged tawny), margin generally yellower, sometimes with whitish ad-pressed fragments of veil; margin even or sl. wrinkled, often innately fibril-lose when older.	Whitish or clay, then pallid or ochraceous, finally rusty tinged, often with sl. tooth, barely ventricose, edge almost even to serrulate.	70/10-25 mm. (16-40 mm. in bulb), bulb **variable,** from sharply marginate to rounded mar-ginate or clavate-immar-ginate, white soon yellowish or tinged rusty, white silky fibrillose, cortina white, base white-tomen-tose.
22. *melliolens* J. Schaeffer (= *multiformis sensu* Ricken, Bres.)	40-100 mm., ± **bright yellow ochraceous** or tawny yellow-buff, **white silky hoary** from veil at least when young (thus resembling Rozites caperatus); margin thin, incurved at first.	Whitish or clay, then clay cinnamon or tinged rusty, edge serrulate.	50-80/10-14 mm. (20-25 nun. in bulb), shape **variable,** ± clavate with immarginate bulb to equal with ± marginate bulb, white becoming ± yellowish or ochraceous, cortina white, base white-tomentose.
*23. *ochropallidus* Hry.	60-70 mm., almost **uni-colorous** pale creamy- ochre, sl. innately fibril-lose, soon dry and opaque; margin smooth, rather thin, soon expanded.	Whitish, then pale ochraceous to buff, edge almost even to sl. serrulate.	70-90/10-15 mm. (up to 20 inni. in bulb), ± equal with **f. constant, rounded** but distinctly marginate bulb, white then ± ochraceous or yellowish, esp. below, cortina fugacious.
24. *allutus* Fr. *sensu* Lange	25-55 mm., **unlcolorous tawny reddish** or reddish brown at first, disc becoming paler (yellowish pr buff), margin remaining darker, sometimes ± appendiculate with white	Whitish, then ochraceous clay or pallid, edge serrulate, paler or not	40-60/4-11 mm. (up to 25 mm. in bulb), equal or sl. attenuated upwards with **conspicuous** ± rounded marginate bulb, white, becoming yellowish or tawny ochraceous or tinged with cap colour, bulb white below.
f25. *amorescens* Moser (=*talus sensu* Lange)	35-70 nun., sometimes sl. umbonate, pale clay, then **pale ochraceous** to yellow ochraceous or buff, viscid then dry and shining, sometimes sl. innately fibrillose; margin soon straight, often paler.	Pale clay (rarely v. sl. bluish) then clay brown or rusty, ± linear, edge ± uneven or sl. serrulate.	40-75/5-13 nun. (12-23 mm. iu bulb), ± equal with **rather small** ± **rounded** marginate bulb, white, becoming sl. brownish below, white silky fibro-striate, cortina white. The Naturalist

FLESH	TASTE AND SMELL	**SPORES**	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
adnate – emarginate or with tooth, ± crowded. Stem never viscid. (Spp. 21-102.)					
turning purplish when bruised or rubbed. (Spp. 21-73.)					
(Spp. 21-34.)					
widely marginate. Cap at first ochraceous, yellow, buff or tinged tawny, rarely paler. Flesh soon soft, white at first, or of honey. (Spp. 21-25.)					
White then whitish to ± yellowish esp. in centre of cap and stem, f. firm at first, then soft.	Smell often strong of apples or acid.	Amygdaliform to **sublimoniform,** rough, **9-11(12)/5½-6½µ**	Gill edge sterile with cylindric-clavate cells 5-8µ wide. NaOH + flesh yellowish, + cap cuticle reddish- or purplish-brown.	Decid. woods, esp beech (also con if. Sec KM.). Uncommon.	Fries' *multiformis* is a collective species; this is the species with ± limoniform spores more than 10µ. long typical of beech woods, distinguished from other Leucophylli by cap colours and variable bulb. (See notes.)
Whitish or sl. yellowish.	Mild. Smell of honey, faint or strong.	Elliptic to **elliptic-amygdaliform**, almost smooth, **8-9/4½ -5µ** sec Moser.	Gill edge fertile. NaOH + flesh and cap cuticle ± brownish.	Decid. and conif. woods. (Distribution not known in Britain.	Recognised by its small ± elliptic spores less than 10µ long, f. bright coloured cap, variable bulb and smell of honey. (See notes.)
White then whitish or creamy, tinged ochraceous in bulb.	Mild. Inodorous.	Elliptic-amygdaliform, punctate, **10-11/5½-6µ** sec Hry.	Gill edge sterile. NaOH + flesh and cap cuticle µ nil.	Decid. woods, often solitary.	Differs from *multiformis* (No. 21) in dull almost unicolorous cap, with straight thin margin, lack of smell and distinct rounded marginate bulb. Not yet recorded from Britain. (See notes.)
White, then tinged with colour of cap in upper part of stem and in cap.	Mild. Smell none or faint, pleasant.	**Elliptic,** minutely punctate, **8½ - 10/4½-5½ µ** sec Hry.		Conif. Woods v. uncommon.	Not well known in Britain, nor found in recent years, but readily recognized by cap colour, small size and small ± elliptic spores. (See notes.)
White, then whitish or tinged buff in lower part of stem; (with horny line over gills sec. Lange.)	Flesh mild, cap cuticle ± bitter. Smell none or faint, pleasant.	Elliptic-amygdaliform, punctate, 8-10/4½-5½µ	Gill edge fertile.	Conif. Or mixed woods (British record beech and yew). Uncommon.	Recognised by its ± uniform pale or rather dull cap colour, small spores and bitterish taste of cap cuticle. Included in this section because of the rather small stem bulb.

SPECIES	CAP	GILLS	STEM
5. Napi.	Stem with conspicuous wide free-edged marginate bulb. Cap at first yellow, buff, tawny lowish or ochraceous esp. under cap cuticle, in bulb or when eaten by grubs. Inod-		
26. *napus* Fr. *sensu* Konr. & Maubl. (*non sensu* Vel., Henry)	50-100 mm., **chestnut** or date-brown-tawny to smoky-brown, **very viscid**; margin smooth, often abruptly incurved.	Whitish then pale clay cinnamon to ± rusty, subdistant, ± ventricose, often rather broad, edge serrulate.	30-60/10-25 mm. (up to 40 m.m. in bulb), rather short and thick, equal or sl. attenuated upwards with **large** ± obconic often oblique bulb, white, silky shiny at first, firm, cortina white, fugacious, bulb white then tinged yellowish or rusty
27. *corrosus* Fr.	50-100 mm., rusty brown, then **pallid clay-brown** often with darker reddish-brown spots, **soon dry,** opaque and flocculose	Whitish then clay- or darker-rusty, ± linear, sometimes very narrow, edge uneven.	20-50/10-25 mm. (up to 30 mm. or more in. bulb), short and robust with conspicuous (occasionally less well-marked) marginate bulb, whitish then tinged ochraceous or rusty below, cortina white.
28. *subturbinatus* Hry. (=*sulphurinus sensu* Lange)	35-100 mm., **tawny- or rusty-buff,** often darker (date-brown) when older, margin yellowish at first, often with adpressed **whitish patches** from veil, esp. at or near margin; margin for a long time incurved, from sl. to rather conspicuously innately fibrillose when older.	Pale clay then ochraceous clay finally rusty buff, not or sl. ventricose, edge even	35-100/7-20 mm. (18-45 mm. in bulb), ± equal with **very wide** sometimes oblique marginate bulb (fig. 2), white, discolouring yellowish or ochraceous, esp. near base and upper side of bulb, cortina white, bulb white-tomentose below.
†29. *Langei* Hry.	50-105mm., cvx. or cvx. umbonate then exp. ± umbonate (often broadly so) to sl. depressed, **pale primrose** or chrome yellow, becoming deeper yellow with age, disc often tinged ochraceous or buff, with scattered white ad-pressed patches of veil esp. on disc, sometimes sl. innately fibrillose when old; margin incurved at first but soon expanded.	**White** then pale clay **(remaining pale** for a long time), finally cinnamon ochre or pallid rusty clay, adnate emarginate or with tooth, crowded, sl. ventricose, edge paler, ± uneven.	40-80/10-22 mm. (20-35 mm. in bulb), ± equal above rather wide often oblique marginate bulb (sometimes rounded-marginate when older), white soon tinged ochraceous-yellow or pallid, esp. at base, white cortina rather sparse, bulb white thenochraceous-buff esp. on the edge.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
or chestnut. Flesh firm, often hard at first, generally ± persistently white or whitish but sometimes tinged yellowish or with strong aromatic or rank smell. (Spp. 26-32).					
White or whitish, often horny over gills or under cap cuticle, firm at first, thick at disc.	Mild. Inodorous.	Amygdaliform to ± limoniform, rough, **12-15/7-9µ** sec K & M.		Conif. woods, esp. pine. Uncommon.	Like many Phlegmacia of coniferous woods not well known in Britain. More robust and viscid than section Multiformes with more pronounced stem bulb. Distinguished from other Leucophylli by dark cap colour and large spores (and, presumably, habitat).
Hard and white, sometimes sl. yellowish orochraceous under cuticle of disc of cap or in bulb, thick at disc.	Mild. Inodorous.	Sublimoniform to almost **fusiform**, f. rough, 9-12/4-5(6)µ sec Moser.	Gill edge sterile. cells 6-7µ wide. NaOH + flesh, sl. Reddish brown. + cap cuticle darker reddish brown.	Mountainous conif. woods. V. uncommon in Britain.	Not well known in this country and needs further study. Drier, rather paler and with smaller spores than *napus* (No. 26); napus sensu Hry. (=*pseudonapus* Hry.) may be identical.
White, very firm at first, discolouring yellowish or pallid at base of bulb, under cap cuticle and esp. where eaten by grubs.	Mild. Smell faint to rather strong, rank or sour (but occ . sl.fruity when young).	Amygdaliform to sublimoniform, f. rough to rough. **(10)11-14/6-7½(8) µ**	Gill edge fertile. NaOH + flesh ± nil, +cap cuticle slowly ± sepia or purplish brown.	Beech woods. Fairly common on chalk.	Variable in size, often rather large and robust. Distinguished from Nos. 26 and 27 by patches of veil on cap, smell and spore size and shape. (See notes.)
Whitish soon tinged ochraceous yellow, esp. under cuticle of cap and in lower part of stem and bulb, very hard at first.	Mild. Smell none or slight (rank).	Elliptic amygdaliform, punctuate **8-10(11)/5-6µ**	Gill edge fertile. NaOH + flesh sl. Darker (pallid buff) + cap cuticle sl. Reddish brown.	Beech woods. Uncommon (so far only on chalk soil).	Readily distinguished by the yellow cap, pale gills, hard flesh when young which, however, turns yellowish and becomes softer with age, and relatively small spores. This description is based on British material, but agrees reasonably well with the fungus described under this name in *Bull. Soc. Mycol.* Fr. LV (1939), p. 169, by Henry. (See notes).

SPECIES	CAP	GILLS	STEM
†30. *evosmus* Joachim	40-70 mm., yellowish buff or ochraceous, sometimes tinged tawny, margin brighter yellow when young, disc and margin becoming spotted reddish-brown in places when older, smooth; margin incurved at first, finally expanded.	White or whitish, sometimes tinged yellowish, then ochraceous clay or pale cinnamon-buff, sometimes **deeply emarginate** and rather broad near stem, sometimes sl. emarginate with tooth and sl. ventri-cose near stem, edge paler, ± uneven.	30-40/7-12 mm. (20-30 mm. in bulb), ± equal with conspicuous wide sometimes oblique marginate bulb (which is sometimes almost square or oblong in section), white, soon discolouring pallid or yellowish, finally ± rusty buff, white silky striate below white cortina, bulb white tomentose below.
31. *turbinatus* (Bull, ex Fr.) Fr. *sensu* Bataille, Hry. (*non sensu* Cooke nee Ricken)	40-120 mm., cvx. broadly or sl. umbonate then exp. or sl. depressed, ochraceous to tawny rusty, margin yellower or with **olive tinge,** viscid then ± dry and opaque, smooth but in-natelv fibrillose sub lente.	White or whitish then ochraceous-clay, finally ± rusty, ± linear, generally narrow, edge ± serrulate.	35-100/12-25 mm. (18-50 mm. in bulb), equal with ± conspicuous wide marginate bulb, whitish or sl. greyish then yellowish or pale buff, apex often persistently white, white fibro-striate below white cortina.
*32. *pinetorum* Moser (= *multiformis sensu* Boudier) (non Boudieri Hry.)	60-120 mm., cvx. then exp. or sl. irregular, ochraceous-yellow or buff, rarely tinged olive, sometimes spotted or with margin j reddish or tawny brown, with -± conspiciuous darker **reddish-brown innate** fibrils.	Clay-whitish (sometimes sl. flesh-coloured), then milky coftee, adnate emarginate, crowded, about width of flesh of cap, edge serrulate.	50-110/20-30 mm. (up to 40 mm. in bulb), ± equal with wide marginate bulb, dirty whitish, ochraceous towards base, apex sometimes with sl. bluish or glaucous tinge, cortina whitish to ochraceous, bulb often sl. violaceous from remains of **violaceous veil.**
6. Rapacei	Stem with conspicuous wide free-edged inarginate bulb. Cap at first white or whitish-		
33. *rapaceus* Fr. *sensu* Bre.	35-70 mm., whitish, creamy white or **clay-white,** then **pale** yellowish-ochraceous or buff esp. at disc, often appearing spotted, ± innately fibrillose or hoary; margin generally paler.	White or whitish, then ± ochraceous or milky coffee, often narrowly adnate or with tooth, ± linear, edge even to ± uneven.	45-80/8-10 mm. (15-18 mm. in bulb), equal with conspicuous sometimes oblique marginate bulb, white and white silky shiny at first, then yellowish or ochraceous esp. near base, apex sometimes sl. bluish when young.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
White, occ. tinged yellowish in places, f. firm at first.	Mild. Smell very strong and persistent, scented, of orange blossom.	Amygdaliform to sublimoniform, rough, 9-10/5-6µ	Gill edge sterile, cells 6-8µ wide. NaOH + flesh nil or ± yellowish, + cap cuticle sl. reddish-brown.	Beech woods. Fairly common (so far found on chalk soil).	Easily distinguished by its smell. The cap colour is similar to that of *multiformis* (No. 21); this species is in fact a multiformis with strong smell and more pronounced bulb. The gills are sometimes remarkably deeply emarginate.
White and firm at first, then pale cream, sometimes sl. ochraceous under cuticle of cap.	Mild. Smell faint to f. strong, pleasant, (of mush room, sec A. A. Pearson).	Subglobose to ovoid pruniform. very rough, 8-11/6½-8µ (fig. 13)	Gill edge fertile. NaOH + flesh ± ochraceous or buff, + cap cuticle ± reddish-brown.	Beech woods (on chalk). Uncommon.	Best distinguished by spore shape. The olive tinge to the edge of the cap is unusual for this section, but is sometimes also present in *pinetorum* (No. 32) which has very different spores and a ± violaceous veil. (See notes.)
White, firm.	Mild. Smell faint but distinct of raw potato or radish.	Amygdaliform to sublimoniform, rough, 12-14½/6-½µ sec Moser.	Gill edge fertile. NaOH + flesh nil, + cap cuticle reddish -brown.	Under pines.	Its habitat, colours, large spores and violaceous veil should help in recognising this species. Not yet recorded for Britain
clay. (Spp. 33-34).					
White then whitish, sometimes yellowish in stem or with horny line over gills.	Mild. Smell none or faint.	Elliptic-pruniforun, punctate to almost smooth, 7.2-9/4-5µ sec Moser	Gill edge sterile, cells 4-7µ wide. NaOH + flesh sl. ochraceous, + cap cuticle brownish.	Decid. and conif. woods, often on dry ground (not on chalk). Often solitary. Uncommon.	Distinguished by pale colours, conspicuous bulb and small ± pruniform spores Not well known in Britain and needs further study. (See notes.)

SPECIES	CAP	GILLS	STEM
†34. *caroviolaceus* nov. nom. (=*aleuriosmus sensu* Kauffman, Lange)	45-120 mm., cvx. then exp., **white at first,** soon whitish to pale ochraceous, then pale ochre-buff often darker in places, finally ± uniform ochraceous-buff, very viscid at first, often with adpressed white silky scales from veil or with cortinal remnants at edge of cap, sometimes sl. innato-fibrillose when older; margin paler and incurved when young.	White then clay or pale ochraceous clay, later ochraceous- or rusty-buff, adnate emarginate, ± crowded, ± linear, often rather narrow, edge sometimes paler, even to ± uneven.	50-80/11-15 mm. (32-40 mm. in bulb), equal with conspicuous white wide mar-ginate bulb (fig. 1), white at first, then yellowish or ochraceous esp. at base and on upper side of bulb, rarely tinged sl. Bluish at apex when young, white silky striate, cortina white, bulb white-tomentose below
(b). Cyanophylli	Young gills blue, violaceous or lilac. (Spp. 35-55).		
7. Caerulescnetes	Young cap grey-blue, lilac or violaceous at least in part. Cap cuticle mild, or if bitter		
35. *caerulescens* Fr. *sensu* Konr. and Maubl. (*non sensu* Lange = *caesiocyaneus*)	50-100 mm., grey-blue-violaceous or **dingy violet** then ochraceous buff or brownish esp. at disc, often with pale yellowish ochraceous ish esp. at disc, often with pale yellowish ochraceous adpressed patches of veil at first; margin paler and incurved at first, later ± violaceous, not innately fibrillose	**Blue-violaceous** (often deeply so), then clay- or rusty-brown, ± linear to sl. ventricose, edge ± denticulate, often remain sl. ventricose, edge ± denticulate, often remaining violaceous for a long time	50-80/10-20 mm. (30-50 mm. in bulb), ± attenuated upwards with conspicuous marginate often obconic bulb, lilac-violaceous or marginate often obconic bulb, lilac-violaceous or blue-violaceous like the gills, sometimes becoming ± ochraceous at base, cortina lilac or violaceous, bulb white at first then ± ochraceous
36. *Mairei* Moser (= *caesiocyaneus sensu* Maire, Konr. and Maubl., Rea *non sensu* Britz.)	35-100 mm., at first deep violet, then **pale** blue-violaceous or grey-violaceous to lilaceous, disc soon ±; ochraceous or sl. tawny tinged and often with whitish adpressed remains of veil; margin pale or grey blue at first, later ± ochraceous, conspicuously **innato-fibrillose**	Whitish then **pale bluish** (never darker blue or violet), soon clay or milky-coffee, finally rusty tinged, linear to sl. ventricose, edge even to sl. uneven.	40-100/10-15 mm. (20-30 mm. in bulb), ± attenuated upwards with distinct but not very large marginate bulb, pale blue violaceous, apex sometimes darker, then whitish or ± ochraceous esp. at base, cortina bluish, bulb white often with whitish or ochraceous patches from veil
*36a. var. *Juranus* Hry. =*comphorotus sensu* Ricken)	40-80 mm., **darker** and brighter violet at first; margin less strikingly innato-fibrillose, remaining violaceous.	**Lilac or grey-blue** at first, edge often eroded.	40-65/10-16 mm. (30-35 mm. in bulb), equal or attenuated upwards with conspicuous marginate bulb, **rather deep** blue-violet with whitish or ochraceous bulb.

FLESH	TASTE AND SMELL	**SPORES**	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
White then tinged pallid or yellowish, esp. under cuticle of cap and at base of bulb, often with µ **fugacious blue-violaceous** tinge in centre and apex of stem.	Mild. Smell **strong,** esp. when young, peculiar, **rank.**	Amygdaliform to ± limoniform, rough 10-12(13)/6-6½µ	Gill edge fertile. NaOH + flesh sl. yellowish, + cap cuticle sl. brownish.	Beech woods on chalk. Uncommon	Distinguished by being entirely white at first later discoloring ± ochraceous, and often of large size with very conspicuous bulb, also by smell and fugacious blue tinge in flesh of stem. Spores larger and rougher than *rapaceus* (No. 33), but the larger-spored rapacens of some authors is very close (see notes on rapaceus and aleuriosmus).
turning red with NaOH.	Flesh mild + NaOH nil or yellowish to brownish, never red. (Spp. 35-39).				
Pale violaceous, sometimes sl. darker under the cap cuticle and in upper part of stem, white in bulb, becoming tinged pallid or ochraceous esp. in bulb or where wounded.	Mild. Smell faint of new meal, sometimes stronger when old.	Elliptic-amygdaliform to amygdaliform, punctate, 9-11/5-6µ	Gill edge sterile, cells 9-10µ wide. NaOH + flesh and cap cuticle ± yellowish or brownish.	Decid. and conif woods, esp. on chalk. Uncommon.	Recognised by its dark colours, smooth cap, spores over 10µ long and ± negative sodium reaction. (Bres 618 shows a darker variety (var. cyaneus Bres.) not recorded for Britain.) (See notes.)
Whitish, ± pale bluish in stem. yellowish or ochraceous in bulb.	Mild. Smell none or faint of radish.	Elliptic-amygdaliform to amygdaliform, punctate, 10-12/5-7µ sec Konr. & Maubl.	Gill edge fertile, NaOH + flesh and cap cuticle ± brownish or whitish.	Decid. and conif woods, on chalk. Uncommon	Recognised by its pale colours (esp. gills), innately fibrillose cap, spores over 10µ long and ± negative sodium reaction. Not recorded from Britain in recent years, but well described by Rea.
Whitish, bluish in stem, pallid in bulb.	Mild. Smell often strong, fruity (like Inocybe pyriodora).	± amygdaliform, rough, 10-11/4.5-4.7µ sec Hry.	Gill edge fertile, NaOH + flesh and cap cuticle ochraceous or brownish.	Under conifers on heathy soil (also decide. sec Ricken)	This variety (or species?) has not yet been recorded for Britain. It has a different smell from Nos. 35 and 36, but cap colour rather like No. 35 and pale gills like No 36.

SPECIES	CAP	GILLS	STEM
†37. *caesiocyaneus* Britz. *sensu* Britz. (= *caerulescens* sensu Lange) (*non sensu* Maire, Konr. & Maubl., Rea=Mairei Moser)	32-85 mm., **entirely pale blue** or violaceous or greyish blue at first, then **discolouring** pale straw or dirty ochraceous from centre outwards or in patches, often with scattered whitish adpressed patches of veil on disc; margin conspicuously **in-nato-fibrillose,** incurved at first.	**Concolorous** then-ochraceous or clay-buff, finally ± rusty, ± linear, edge often remaining bluish, later concolorous and ± uneven.	25-70/9-19 mm. (22-40 mm. in bulb), equal or ± attenuated upwards with conspicuous wide marginate bulb, concolorous then yellowish or ochraceous esp. below, bluish cortina often abundant, bulb concolorous at first then yellowish or ochraceous often with yellowish or ochraceous volva-like remains of veil above, whitish or yellowish below.
*38. *Boudieri* Hry.	40-80 mm., at first **greyish** - white, **greyish-violet or** tinged flesh colour, then creamy-ochraceous to och-raceous-buff from the disc out, with distinct ochraceous **innate** fibrils; margin creamy-white to greyish or bluish-white.	**Bluish-white** to pale or deeper lilac-blue then ochraceous, edge concolorous, ± denticulate.	50-60/10-15 mm. (up to 30 mm. in bulb), ± equal with pointed sometimes oblique strongly marginate bulb, greyish-blue or whitish then yellowish below, apex pruinose then shiny, very firm, bulb becoming ochraceous above.
39. *sodagnitus* Hry.	27-100 mm., at first entirely paler or deeper violaceous blue or **violet,** then **discolouring** yellowish or pallid buff from centre outwards, sometimes forming spots, fading to silvery-lilac or grey blue particularly around the margin, cuticle smooth or disrupting into small scales when old.	**Concolorous** then rusty umber or date brown, edge often remaining violaceous for alontg time, sl. ventricose or not, edge ± even.	25-100/5-18 mm. (12-30 mm. in bulb), equal or sl. thicker at apex with well-marked but sometimes small mar-ginate bulb, **concolorous discolouring** yellowish or ochraceous like the cap from base up, finally yel-lowish or rusty except for a **persistent** often narrow violet zone at apex, cortina violaceous, bulb violaceous- or whitish-tomentose below.
8. Dibaphi.	Young cap lilac or violaceous at least in part. Cap cuticle bitter or not, +NaOH± nil,		
40. *dibaphus* Fr.	50-120 mm., often broadly umbonate, **lilac-violaceous** soon **discolouring** ochraceous or tawny-brick colour from disc outwards, sometimes spotted, smooth or sl. innately fibrillose; margin remaining violaceous for a long time, incurved at first, later often reflexed at extreme edge.	Lilac-violaceous then ochra ceous, finally ± rusty tawny, edge ± even, often paler or tinged lilac.	40-80/10-15 mm., ± equal with widely marginate bulb (rarely narrowly so), lilac-violaceous then ochraceous or buff from the base up, except for a narrow persistently violaceous zone at apex, cortina pale violaceous, bulb ± ochraceous, extreme base often whitish.

FLESH	TASTE AND SMELL	**SPORES**	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Bluish or grey-bluish, then whitish in cap, bluish in stem and yellow-ish in bulb.	Mild. Smell often **strong,** disagree-able, musty.	Elliptic-amygdaliform, punctate, **8-10(11)/4-5µ**	Gill edge fertile. NaOH + flesh buff to Van-dyke brown, + cap cuticle ± nil.	Beech woods, esp. on chalk. Fairly common.	Entirely pale bluish at first. Recognised by its characteristic colour change, innately fibrillose cap and spores 8-10µ long. Lange's picture is very good.
White in cap, creamy under cap cuticle, greyish in stem, yellowish - ochraceous where wounded.	Mild. Almost inodorous (or sl. fruity).	Ovoid-amygdaliform, rough, 9½-il/6-6½µ sec Hry.	Gill edge fertile, NaOH + flesh nil, + cap cuticle lilac-buff then pale brown.	Beech and oak woods, often in large circles.	Recognised by innately nbrillose cap ± greyish at first, pale bluish gills and spores more than 10µ long. Not recorded from Britain (See notes.)
Whitish, violaceous in stem apex, becoming yellow-ish in cap and ± ochraceous - b u ff in bulb, generally rather soft.	Flesh mild, cap cuticle ± **bitter** Almost inodourous, or smell faint, of mushrooms.	Amygdaliform to sublimoniform, rough, (8)10-12/(5)5 ½ -6 ½µ	Gill edge **markedly** sterile with ± clavate cells 6-20µ wide. NaOH + flesh ± nil or sl. Pallid. + cap cuticle **bright red** to purplish-red.	Beech woods. Fairly common on chalk soil.	Entirely violet at first. Well characterized by cap colour change, ± bitter cap cuticle, sodium reaction and sterile gill edge. (The sodium reaction is brightest on the violet parts of the cuticle, sometimes hardly showing in old specimens.) Often small but also found quite large.
never red, Flesh bitterish to very bitter, + NaOH rose red. (Spp. 40-41)					
White then yellowish in cap, sl. Violaceous at apex of stem, ochraceous -yellow in stem base and bulb, ± ochraceous when wounded.	Both flesh and cap cuticle **very bitter.** Inodorous.	Amygdaliform, rough, 12-13/6-6½µ sec Hry.	Gill edge sterile, with cylindric clavate or **pistol**-shaped cells 4-8µ wide. NaOH + flesh (and stem cu tide) **rose-red,** + cap cuticle ± nil or pallid	Mountainous **conifer** woods.	Differs from *sodagnitus* (No. 39) in bitter flesh, sodium reaction and narrower differently shaped sterile cells on the gill edge; and from *nemorosus* (No. 41) by bitter cap cuticle, sl. darker colours, larger size, habitat and differently shaped sterile cells on the gill edge. Not definitely recorded for Britain.

SPECIES	CAP	GILLS	STEM
41. *nemorosus* Hry.	60-80 mm., **lilac** or pale violaceous, **discolouring** paleochraceous or pinkish cream in places, often with whitish or ochraceous remains of veil, esp. on disc margin paler, sometimes whitish.	Pale lilac-violaceous (sometimes almost whitish) then clay or rusty brick colour, edge ± uneven often tinged lilac.	50-80/10-20 mm. (up to 40 mm. iu bulb), ± equal with ± conspicuous mar-ginate bulb, often pointed at base, lilac or violaceous then paler and finally yellowish-buff from base up, apex with persistent violaceous zone and ± prninose, cortina pale violaceous, bulb becoming orhraceous.
9. Calochroi.	Young cap yellow, ochraceous or tawny. Stem with well larked marginate bulb. Spores		
42. *calochrous* (Pers. ex Fr.) Fr.	150 mm., often sl. to broadly umbonate, margin becoming lobed and irregular in large specimens, **bright chrome yellow,** sometimes almost unicol-orous but generally with darker pallid or tawny-buff disc (esp. in larger speci metis) and paler yellow or ochraceous margin, smooth or in larger specimens sl. innato-fibrillose around disc.	**Bright violet,** then clay-violaceous or purplish pallid, finally rusty umber, narrow, linear or tapering to a point at the cap edge; edge often remaining violet for a long time, even to sl. uneven.	40-80/6-24 mm. (20-40 mm. in bulb), ± equal with conspicuous margin-ate bulb often flattened below (fig. 6), **white** then tinged **yellowish** or pallid tawny from the base up, cortina whitish, bulb whitish, soon yellowish on the edge, white-tomentose below.
†43. *parvus* Hry.	20-50 mm., consistently **small,** shallowly cvx. then exp. ± regular and orbicular, rather thin-fleshed pale ochraceous or **yellowish,** then darker in patches or with rusty spots, esp. on disc, smooth, matt, margin incurved at first	**Lilac** or pale violaceous, then watery milky-coffee to rusty-tawny, narrow, ± linear, edge concolorous or paler, often serrulate.	40-60/5-11 mm. (10-20 mm. in bulb), equal or thicker above with rather small but wide marginate bulb, **pale lilac,** becoming whitish or pale ocbraceous below, cortina sparse whitish, bulb becoming brownish above, white-tomentose below.
†44. *aureo-pulverulentus* Moser (= *herpeticus sensu* Cooke)	25-60 mm., sometimes sl. umbonate, **bright yellow,** almost golden, then ochraceous buff or tinged olive, esp. on disc, smooth or with a few remnants of veil on disc, margin incurved, often brighter golden tinged	**Pale violaceous** then dirty brownish or olive-buff, ± narrow and linear, edge even or sl. uneven	20-50/7-12 mm. (15-30 mm. in bulb), equal with conspicuous wide marginate bulb, whitish or yellowish at first, apex sometimes bluish, then ± buff, cortina yellow, stem base and bulb edge with ± conspi cuous **golden yellow** vol valike remains of veil, bulb white-tomentose fallow.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
White or whitish tinged violaceous in cuticle of stem, becoming spotted ochraceous in bulb or where wounded.	Flesh **bitter-ish,** cap cuticle **mild.** Smell none, or faint of Iris.	Amygdalifonn to sublimoni form, rough (less so than in No. 40), 13-14/6½µ sec Hry.	Gill edge sterile, with cylindric-clavate cells often forked at **apex (Y-shaped),** 10-60/4-7/4 NaOH + flesh **rose red,** + cap cuticle ± nil.	**Decid.** woods, esp. beech and oak. Uncommon	Distinguished from all species (except No. 40) by colours and sodium reaction; and from *dibaphus* (No. 40) by mild cap cuticle, paler colours (esp. gills), smaller size, Y-shaped sterile cells on edge of gill and habitat. Often quoted as a var. of dibaphus. Not well known in Britain
mostly over 10µ long;. (Spp. 42-46).					
White or whitish, often yellowish under cap cuticle, over gills, or in bulb when old, fairly thick at disc.	Mild or with sl. bitterish after-taste. Inodorous.	Amygdalifonn, rough, 9-12/5-6µ	Gill edge sterile with ± clavate cells 6-14(22)µ wide. NaOH + flesh yellowish, + cap cuticle variable from blood red to reddish brown.	Typically under beech, (sometimes in other woods, decid. or conif. sec Moser). One of the commonest Scauri.	Violet colour confined to gills. Differs from all other members of this section in bright yellow cap, bright violet young gills and white to yellowish stem without blue or violet tints. Appears to vary much in size and also in sodium reaction on cap cuticle. (See notes.)
Whitish in cap, sl. yellowish below cuticle, pale violet or lilac in stem, whitish or brownish in bulb, rather **thin** at disc.	Mild. Smell none or faint, pleasant.	Amygdaliform, rough, 9-10½/5-6µ	Gill edge with some sterile cells 6-13µ wide. NaOH + flesh reddish-buff, + cap cuticle paler or deeper reddish-brown.	Beech on chalk (also conif. woods sec Moser). Uncommon.	Like a small *calochrous* (No. 42) but with lilac gills and stem and paler thinner- fleshed cap. Sodium reaction on cap cuticle rather variable.
Pale violaceous esp. under cap cuticle and in stem apex, then whitish, ± yellowish in bulb, rather thick at disc.	Mild. Inodorous.	Elliptic-amygdaliform to amygdaliform, rough, 11-13/6-6½µ	Gill edge with some sterile cells 8-17µ wide. NaOH + flesh pale reddish-purpleor smoky grey, + cap cuticle **immediately bright brick red** then blood red, finally purplish-brown.	Beech on chalk, also in conif. or mixed woods. Uncommon.	Like a small rather thick-fleshed *calochrous* (No. 42) but with paler gills, violaceous tinge to flesh, conspicuous golden-yellow veil when young and striking sodium reaction on cap cuticle. (See notes.)

SPECIES	CAP	GILLS	STEM
*45. *arquatus* Fr. *sensu* Moscr (*non sensu* Lange, Ricken)	50-80 mm., at first entirely **bright yellow** (or almostcitron yellow) becoming ochraceous, **tawny -bin** or chestnut from the disc outwards, sometimes spi: ted, smooth; margin incurved at first, remaining ± bright yellow.	Lilaceous or **pale violaceous,** soon milky-coffee often with reddish-lilac tinge, adnate sl. emargi-nate or adnato-decurrent, very crowded, edge uneven.	50-75/10-15 mm. (20-25 mm. in bulb), ± equal with inarginate sometimes flattened bulb, pale ochraceous or buff, **apex often lliac** or violaceous, rortina pale, bulb often with **yellowish** volva-like remains of **veil** above, white-tomeutose below.
*46. *subarquatus* Moser (= arquatus sensu Lange)	45-60 mm., **ochraceous buff** with paler ochraceous-yellow margin, son times also with paler spi here and there, smool .ilmost matt when dry	**Pale blue violaceous,** then tinged rusty, edge conco-lorous, sl. uneven.	40-50/12-16 mm. (20-30 mm. in bulb), attenuated upwards with widely inarginate bulb, **whitish, apex pale violaceous** when young, soon ochra-ceous-buff from the base up and on bulb-margin, bulb white-tomentose below, **without** remnants of veil.
10. Pansae	Young cap orange- or ni± Town.	Stem short, bulb from barely to rounded marginate	
†47. *pansa* Fr.	47-100 mm., cvx. then exp . or sl. depressed, sometimes lobed at the margin, **orange-brown** to reddish or rusty brown with paler ochraceous or yellowish-buff margin, sometimes spotted, veil forming whitish patches, esp. near margin when young; margin incurved at first, almost tomentose.	**Lilac-violaceous,** often re-maining so for a long time, then rusty or rusty-buff with lilac tinge esp. on the edge, adnate or adnato-decurrent, not or sl. emar-ginate, edge ± even.	25-40(70)/9-15 mm. (12-25 nun. in bulb), short, equal or thicker at apex, with small rounded often **inconspicuous** inarginate or almost non-existent **bulb,** yellowish or ochraceous with whitish or sometimes violaceous apex, cortina pale ochraceous or yellowish, bulb yellow to buff above, white-tomentose below, sometimes oblique, often flattened below.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REACTIONS	HABITAT	OBSERVATIONS
Pale ochraceous-vellovvish.	Mild. Smell faint.	Rather **narrowly** amygdaliform, rough, 9-11(12)/4½-5µ sec Moser.	Gill edge ster.le with cylindric to clavate or vesiculose cells 6-l5µ wide. NaOH + cap cuticle variable, bright red to reddish-brown	Coniferous woods	Differs from *calochrous*, (No. 42) in paler gills when young, cap becoming dark from disc outwards, stem often with lilac tinge and narrower spores. Not recorded from Britain but included since this may be *calochrous* sensu Cooke (707(713)). (See notes.)
White, sometimes sl. bluish in apex of stem and tinged pallid ochraceous in bulb.	Mild. Smell faint, pleasant.	Arnygdaliform to ± limoniform, rough, 8½-11/5-6½µ sec Moser.	Gill edge ster.le, cells ± cylindric about 6µ, wide. NaOH + cap cuticle slowly ± rose-red or bright red.	Decid., mixed or coniferous woods..	Most closely resembling *aureopulvrulentus* (No. 44) but lacking the golden-yellow veil, with duller coloured cap and less striking sodium reaction : *calochrous* (No. 42) is brighter coloured in cap and gills. Not yet recorded from Britain.
Often flat below. Spores more than 10 ± long. (Sp. 47).					
Whitish, pale yellowish under cuticle of cap, sometimes with horny line over gills, f. firm.	Mild, (cap cuticle v. sl. bitter sec Moser) Smell none or faint, pleasant.	Amygdaliform, rough, 10-12(14)/6-6½µ	Gill edge fertile. NaOH + flesh reddish-tawny buff to pinkish buff, ± cap cuticle wine-red fading to reddish-brown	Beech woods, (beech and pine sec Fries, fir *sec* Moser). V. uncommon.	Recognised by short squat stem with rounded or inconspicuous often flattened bulb, yellowish cortina and gill colour. British record needs confirmation since no really young specimens were seen, but seems to agree reasonably well with descriptions - under beech on chalk, Hertfordshire.

SPECIES	CAP	GILLS	STEM
11. Cyanopodes.	Young cap whitish to ochr raceous-buff. Stem with fairly conspicuous but ± rounded		
48. *cyanopus* (Secr.) Fr. *sensu* Ricken, Konr. & Maubl. (*non sensu* Lange = *amoenolens* Hry.)	50-100 mm., straw-yellowish or pale buff, then yellowish-clay, olive-clay or pale milky-coffee, smooth, ±; shiny when dry; margin incurved at first, sometimes innately fibrillose when ol	Pale or grey blue-violaceous, then milky-coffee to **rusty-cinnamon** or almost chocolate colour, not or sl. ventricose, edge ± serrulate.	45-70/8-20 ram. (20-35 mm. in bulb), equal or sl. thickened upwards or downwards with r{: **rounded** sometimes oblique mar-ginate to almost **immarginate** bulb, blue-violaceous, esp. at apex, soon whitish, becoming yellowish or rusty-buff below, cortina violaceous, abundant at first, bulb often almost rhomboid, whitish then pallid **without** remains of veil.
49. *amoenolens* Hry. sensu Lange)	27-130 mm., variable in size and shape, sometimes cvx.-truncate or broadly umbonate, pale straw-yellow or pale ochraceous then ochraceous-buff, sometimes with sl. olive tinge, sometimes spotted, often with adpressed whitish scales from veilesp. near margin, then smooth or sl. innato-fibrillose near margin; margin often paler, incurved at first and with fragments of cortina or veil.	Bluish-grey-clay, then clay or ochraceous-clay, finally **milky-coffee** (never truly rusty or chocolate), not or sl. ventricose, edge con-colorous or sl. paler, often sl. uneven.	5-140/8-22 mm. (18-45 mm. in bulb), equal with rather conspicuous but **± rounded** marginate (rarely im-marginate) bulb, blue-violaceous at first, soon white or whitish, then often tinged yellowish esp. near base, cortina bluish or whitish, bulb with ± conspicuous **yellowish** patches from **veil** which become darker with age, white-tomentose below, sometimes with white myceliai strands.
12. Glaucopodes.	Young cap ochraceous uff or tawny-tinged, often with greenish or olive tints esp in bulb. (Spp. 50-52.)		
50. *glaucopus* Fr. (*non sensu* Rea)	50-120 mm., **pale tawny,** ochraceous or buff, often tinged olivaceous, margin at first greenish, later becoming almost unicolo-rous orange-buff, with **± conspicuous** darker radial innate fibrils, hard and fleshy, soon dry; margin at first often abruptly incurved or wavy	**Pale bluish -lilac** or greyish lilac, then clay-cinnam not or sl. ventricose, edge ± uneven.	40)60-120/10-24 mm. (20-35 mm. in bulb), equal or thickened upwards with **wide** or rather **rounded** marginate bulb, short and firm at first, bluish-lilac or glaucous then pale yellowish or whitish esp. in lower part, apex persistently bluish, cortina pale bluish, bulb whitish then yellowish or ochraceous-buff, sometimes not much thicker than stern

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
marginate bulb. Spores over 10µ long. (Spp. 48-49).					
Whitish in cap and bulb, ± ochraceous under cap cuticle or in stem, violaceous in upper half of stem.	Entirely mild. Smell none or faint of radish.	Amygdaliform, rough, 10-14/6-7µ sec Moser	Gill edge sterile, cells about 10µ wide. NaOH + flesh ± nil, + cap cuticle chocolate or umber-brown.	Decid. woods, esp. beech and oak. A good edible fungus.	Distinguished from *amoenolens* (No. 49) by mild taste of cap cuticle, smell, mature gill colour and absence of volva-like remains of veil on bulb. In some respects resembling the section Variicolores but with di± ferent sodium reaction and no blue tints in cap. Not definitely recorded from Britain. (See notes.)
Pale bluish or whitish in cap and bulb, often deeper blue -violaceous in stem esp. at apex, ± yellowish under cuticle of cap and later in bulb, often with horny line over gills.	lesh mild, cap cuticle bitter. Smell not strong but distinct,pleasant at first (of plums), later rankish	± limoniform, v. rough, (9)10-13/6-7µ	Gill edge sterile, cells 4-8µ wide. NaOH + flesh ± nil, + cap cuticle sl. reddish- brown, sometimes becoming orange- brown.	Beech woods, (particularly on chalk). Common (at least in S.E. England).	Recognised by the patches of veil on the bulb, bitter cap cuticle, faint but distinct fruity smell (not, however, perceptible by all) and rough, ± limoniform spores. After *calochrous* one of the commonest *Scauri* under beech. (This seems to be *glaucopus* sensu Rea and has probably been recorded under this name in the past.)
near margin. Stem from wide to rounded marginately bulbous. Spores less than 10± long. Flesh often yellowish					
White then yellowish, bluish-grey in upper part of stem, often **deeper yellow** in bulb.	Mild. Smell none or slight of new meal	Elliptic sl. amygdaliform, punctate, 7-9/4½-5½µ	Gill edge sterile, cells 4-8µ wide NaOH+ flesh greyish-brown, + cap cuticle dark violet sec Henry.	Typically under conifers, also in deciduous woods.	A robust species, well characterised by small spores, strongly innately fibrillose cap and yellow flesh in bulb, typical of conifer-ous woods.

SPECIES	CAP	GILLS	STEM
51. *herpeticus* Fr. *sensu* Ricken (*non sensu* Cooke = *aureopulverulentus* sec Moser)	35-80 mm., **olive-brown,** then hazelnut brown or dirty buff, sometimes paler on disc, often spotted, innately fibrillose, soon dry, margin incurved for a long time.	For a long time dorp gro blue or **sooty-blue,** then dirty violaceous-cinnamon or sooty-olive, edge colorous ± uneven.	40-80/10-15 mm. (25-30 mm. in bulb), ± equal with conspicuous **wide** margin-ate bulb, at first bluish, then pale clay-brownish, cortina pale bluish, bulb whitish then ochraceous or buff, often napiform.
†52. *parherpeticus* Hry.	40-84 mm., **pale ochrace-ous** to pale rusty-buff, margin **greenish** at first, then ± persistently olivaceous, disc becomingrusty-buff in places, finally almost unicolorous, disc often with whitish patches of veil, remainder with darker rusty innate fibrils, not very viscid; margin soon expanded, smooth	**Grey-blue,** soon clay-pur lish, then deep yellow-brown or cinnanion-umber adnate emarginate (in larger specimens deeply so), crowded, ± linear, edge concolorous, even to sl. uneven.	50-60/10-16 mm. (18-28 mm. in bulb), equal or sl. thicker upwards, with sharply marked but often **narrow** marginate bulb (fig. 9), upper half grey-blue at first, lower half whitish then discolouring yellowish or pallid from the base up, extreme apex only remaining ± persistently bluish, bulb white-tomen-tose below
13. Purpurascentes	Gills, flesh, and often stem, turning ± deep purple wher uised or rubbed (in dry condi-		
53. *purpurascens* Fr. (=*subpurpurascens sensu* Cooke, Ricken: =*porphyropus sensu* Ricken)	50-150 mm., sometimes broadly umbonate or with wavy margin, esp. when large, tawny-buff or **date brown** to olivaceous or dark umber, sometimes with violet tinge, often spotted or marked with darker patches or streaks; margin often **deep violet** at first, later paler, buff to ± concolorous, very viscid at first, smooth	Paler or darker **purplish violet,** then clay-buff cinnamon to rusty-umber violaceous tinge sometimes persisting, bruising deep purple, not or ventricose, edge ± uneven.	50-120/15-24 mm. (20-30 mm. in bulb), ± equal or sl. thicker upwards with **variable** bulb (immargin-ate to distinctly marginate), violet, darker when touched, sometimes becoming pallid below, cortina purplish, firm at first then softish, bulb sometimes disappearing as stem lengthens

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Violaceous in cap and apex of stem esp. under cuticle, **ochraceous - buff** in rest of stem, white in bulb at first.	Mild. Inodorous.	Amygdaliform, punctate, **8-9½/4½ -6µ** sec Moser.		Conif. woods. Uncommon.	Differs from *glaucopus* (No. 50) by darker cap, gills and flesh and constantly wide inarginate bulb. Its presence in Britain needs confirmation. (See notes.)
Bluish or grey-bluish at apex of stem, deepest near gills, bluish-white to yellowish in cap, soon yellowish -ochraceous or **deeper yellow** in bulb, paler yellow above bulb.	Mild. Smell none or faint, pleasant.	Elliptic or sl. elliptic-amygdaliform, punctate or sl. rough, **7-8½ / 4-5µ**	Gill edge fertile. NaOH + flesh slowly sl. brownish, + cap cuticle reddish brown.	Beech woods on chalk. V. uncommon	Resembling *glaucopus* (No. 50) but paler, with cap not so strongly innato-fibrillose and smaller and softer. Habitat may be characteristic. This description is based on a British collection which seems to agree reasonably well with Henry's description in *Bull. Soc. Mycol.* Fr., LXVIII (1951) except that Henry says 'not growing in circles' which was the case with the British collection.
tions this reaction may be less marked.) Stem variable in shape, -j- equal to marginately bulbous. (Spp. 53-55).					
Violaceous then pale, turns ± deep purple or violet when exposed to air or bruised.	Mild. Smell none or faint, pleasant.	Elliptic sl. amygdaliform, punctate, 8-10/5-6µ	Gill edge fertile.	Decid. or conif. woods (not generally on chalk soil). Common, sometimes subcaespitose.	One of our commonest Scauri, often at the edge of woods or along paths, recognised by dark colours and colour change of gills and flesh when bruised; stem shape, however, is variable; *subpurpurascens* (No. 54) differs in gills not being violet when young and paler cap and stem; porphyropus (No. 55) is paler and generally smaller with ± equal or clavate stem. (See notes.)

SPECIES	CAP	GILLS	STEM
54. *subpurpurascens* [Batsch] Fr. *sensu* Lange, Henry (*non sensu* Ricken, Cooke =*purpurascens*)	50-110 mm., cvx. or rvx.-urabonate then exp. broadly umbonate to sl. depressed, **yellow-buff** to pallid date-brown, margin in sometimes paler, **not** violet, often spotted or streaky (esp. near margin). -	Pale to **pallid buff** (sometimes sl. tinged lilac sec Lange), then rusty pallid, bruising purplish or violet, not or sl. ventricose, edge even.	50-70/10-13 mm. (17-25 mm. in bulb), equal with **clavate** immarginate (fig. 8) or sl. rounded niarginatc bulb, whitish or pale pallid, apex almost white when young (sometimes with a sl. bluish tinge sec Lange), becoming slowly purplish when bruised.
55. *porphyropus* [A. & S] Fr. (*non sensu* Ricken =*purpurascens*)	25-80 nun., cvx. then exp., umbonate or not, clay, **pale yellowish** or pale date-brown, sometimes with sl. violaceous tinge, very viscid at first, often innately streaky.	**Deep violet** at first, then clay-brown or watery cinnamon, bruising purplish, not or sl. ventricose, edge concolorous ± even.	30-100/5-10 mm. (up to 15 mm. below), **equal** or attenuated upwards from **sl. clavate** base, violet at first, then whitish from the base upwards, bruising purplish, cortina whitish.
c. Xanthophylli	Young pills straw-yellow to sulphur- or lemon-yellow, olive to greenish. (Spp. 56-73).		
14. Xanthocyanei	Blue or violaceous tints present in cap, flesh or stem (see also odorifer (No. 71) which may		
†56. *cedretorum* Maire	40-100 mm., entirely sulphur or **lemon-yellow** at first, then rusty-buff to reddish-copper from the disc outwards **often in patches,** margin remaining yellow for a long time, sometimes innately fibrillose near margin when older; margin soon expanded.	Pale **olive-sulphur** or greenish-olive then olive-cinnamon or olive-rusty, - rather narrow, not or sl. ventricose, edge paler ± uneven.	30-70/8-15 mm. (20-30 mm. in bulb), ± equal with conspicuous wide margin-ale bulb, sulphur or **green ish-yellow,** apex sonn-times tinged glaucous, cortina ± olivaceous, bulb and base of stem pah greenish-yellow, then spotted to entirely rusty-buff or reddish copper, white-omentose below.
57. *rufo-olivaceus* (Pers. ex Fr.) Fr. (= *testaceus* Cooke: = *vinosus* Cooke)	60-100 mm., often umbonate, **reddish-copper to** reddish-purple, disc often more reddish, margin at tirst lilac or greyish-violet then concolorous but paler, smooth, shiny when dry; margin incurved at first.	**Greenish-olive** or lemon-ycllow at first, then olivaceous-rusty, finally dark rusty, often ventricose when cap expands, edge denticulate.	50-90/12-20 mm.(22-40 nun. in bulb), ± equal with distinct wide tuarginate bull' whitish or **greyish-lilac** or lilac-violaceous, rarely pale greenish yellow, be coming tinged reddish (colour of cap) from basi upwards, apex often re maining lilac, cortina pale lilac, bulb whitish becom ing reddish or purplish

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
White in cap, tinged pallid in places in stem, turning ± deep purple or violet when bruised.	Mild. Smell none or faint, pleasant	Elliptic sl. ainygdaliform, punctate to rough, 9-10/5½-6µ (8½-11/5-6½ µ sec Hry.)	Gill edge fertile.	Beech woods. Uncommon.	As thus describeil (from a Scottish collection) very distinct from *purpurascens* (No. 53), differing in paler colours, esp. of gills which are never violaceous until bruised. Further observations are, however, needed to prove its specific status.
Violaceous, sometimes whitish or pallid in rap, turns purplish when bruised or exposed to the air.	Mild. Smell none or faint, pleasant.	Elliptic sl. ainygdaliform, rough, 9-11/5½ -6½µ	Gill edge fertile.	Decid. or ixed Woods (esp. birch). Fairly common.	Originally included by Fries in Elastiri owing to stem shape, this species is now included in this section owing to its obvious affinities. Smaller anil paler than *purpurascens* (No. 53), but with violet gills at first and rather slender equal or clavate never inar-ginato-bulbous stem
show a sl. violaceous tinge at margin of cap.)		(Spp. 56-59.)			
Azure blue (whitish when old) in centre of cap and apex of stem, greenish-yellow under cuticle of cap and in lower part of stem, pale to deep sulphur in bulb, with horny line over gills.	Mild. Inodorous.	± amygdaliform rough, 10-12/6-7µ	Gill edge fertile. NaOH + flesh ± nil or slowly pale purplish-red, + cap cuticle reddish –brown deepening to purplish.	Beech woods (decid. or mixed sec Henry). Probably local (f. common on chalk in Surrey)	A very striking and beautiful species; no other British Phlegmacium combines azure blue flesh in cap with greenish-yellow gills and stem. The blue flesh shows when the cap is peeled (or if bitten by animals).
Lilac or violaceous muter cuticle of cap, white or sl. greenish-yellow in centre of cap and stem apex, ± reddish purple in bulb, esp. at base.	Bitterish. Smell none or faint.	Ainygdaliform to ± limoniform, rough, 11-14/7-8µ sec Moser.	Gill edge sterile, cells 5-10µ wide. NaOH + flesh **sulphur-yellow** then olive-brown to dark purple, + cap cuticle olive to dark brown.	Decid. or mixed woods (esp. beech on chalk).	Well characterised by contrasting colours of cap and gills, large spores and sodium reaction on flesh. According to Moser, Cke 758 (759) *vinosus* also represents this species.

SPECIES	CAP	GILLS	STEM
58. *xanthophyllus* (Cooke) Hry	**55-105 mm., purplish** then spotted with lilac and becoming yellowish on disc.	Pale to deep **sulphur yellow** at first.	50-70/20-25mm. (up to 45 mm. in bulb), equal or attenuated at apex with conspicuous wide margin-ate bulb, bright **sulphur-yellow** with narrow purplish-red zone at apex.
59. *scaurus* (Fr.) Fr. *sensu* Favre Lange, Hry (*non sensu* Bres. =*montanus* Kauff. subsp. *europaeus* Moser: nec Rickcn *subvirentophyllus* Hry.)	30-80 mm., often umbonate, **olive to date-brown,** often tinged **greenish,** with **darker** smoky-brown or chocolate-brown **spots** esp. near margin, innately nbrillose; margin at first incurved	Olive-bistre then pale **olive-cinnamon,** not or sl. ventricose	60-100/5-15 mm., **varying** in shape, ± equal with clavate or irregular to rounded marginate bulb, lilac-blue orgreenish-bluc above, yellowish buff (sometimes tinged lemon colour) be'ow, then darker yellow-buff or tinged rusty, bulb occasionally almost absent, whitish at first
15. Fulgentes	Young gills pale to deeper-yellow, not distinctly sulphur yellow or olive. Cap ± yellow		
60. *fulgens* (A. & S ex Secr.) Fr *sensu* Fries, Kauff., Moser (*non sensu* Cooke, Lange)	60-150 **mm., golden-yellow** or **orange-tawny** to orange rusty or bronze brown, sometimes spotted, with **conspicuous** darker (almost chestnut) **innate fibrils** esp. on disc; margin incurved at first.	**Pale yellow,** then deep rusty-orange, rather broad, edge even at first, later uneven and often remaining yellowish.	35-70/15-25 mm. (30-40 mm. in bulb), ± equal with conspicuous sometimes lique wide marginate bulb, yellowish or ochraceous, paler above, soon tinged rusty below, at first densely fibrillose from plentiful pale yellowish or ochraceous cortina.
61. *fulgens* (A. & S. ex Secr.) Fr. *sensu* Cooke, Lange (*non sensu* Fr., Kauff., Moser)	60-100 mm., **orange-tawny** to tawny-buff, margi: yellow, golden or orange yellow, **smooth;** margin incurved at first.	Soon **deep yellow** then rusty golden or rusty-buff, ± linear, edge even.	40-70/15-25 mm. (30-50 mm. bulb), ±equal with conspicuous wide marginate bulb, yellowish-ochre or buff, apex paler or yellowish, tinged tawny or rusty towards base, cortina yellowish, bulb yellow then tinged tawny or rusty, sometimes flattened below.
62. *fulmineus* (Fr.) Fr. Sensu Bres. (*non sensu* Hry., Rea =*parafulmineus* Hry.)	40-100 mm., tawny or **rusty tawny,** margin paler, golden to orange-yellow, disc with dense agglutinated **rusty scales,** margin incurved at first	Chrome or golden yellow, then yellow or tawny-rusty, linear or ventricose	20-50/12-20 mm. (25-30 mm. in bulb), equal with ± conspicuous wide marginate bulb, often rather short and thick, golden or tawny-yellow to rusty-orange, paler upwards, apex white to pale yellow, cortina white or pale yellow, bulb often rooting.

FLESH	TASTE AND SMELL	**SPORES**	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Whitish, violaceous under cap cuticle, yellow at periphery of stem.	Not known.	Amygdaliform to sublimoniform, punctate, 10½-12½/6-6½µ (measurements from Cooke's original specimens now in Kew Herbarium).	Not known.	Mixed woods. V. uncommon.	Not known in recent years; based on Cooke 's plate, which shows a characteristic-look-ing species resembling *rufoolivaceus* (No. 57) but with sulphur-yellow gills and smaller spores. Needs further study. (See notes.)
Yellowish-buff, darker under the cuticle of cap and at base of stem, greenish - blue in apex of stem.	Mild. Inodourous.	Elliptic to elliptic-ainygdaliform, rough, 10-13/6-8µ sec Favre, (9-10/5½-6µ sec Lange).	Gill edge fertile.	Damp conif. woods or moorlands. V. uncommon.	An uncommon species found once in recent years in a damp fir wood in Scotland, recognised by cap colours and darker spots near margin, ± olive gills and bluish stem-apex : the stem shape is anything but typical of the Scauri! (See notes).
orhraceous, tawnv, or rusty, also without pronounced sulphur or olive tints. (Spp. 00-64).					
Whitish or yellowish, then buff or tinged rusty, firm at first.	Mild. Smell faint, pleasant.	Amygdaliform to sublimoniform v. rough, 9-12/6-7µ sec Kauff.	Gill edge sterile, cells 4-8µ wide. NaOH + flesh pale pink or purplish, deep-er in bulb, of stem, cap cuticle reddish-brown sec Moser	Conif., decid. or mixed woods. Uncommon (not authentically British).	Differs from No. 61 in streaky, innately fibrillose cap, pale gills, ± uniformly coloured flesh and larger spores: from Nos 62 and 63 in lack of scales on cap and from No. 64 in brighter colours, especially gills. (See notes.)
Yellowish or pale ochraceous, becoming darker, tawny-buff (ochraceous- or rhubarb-yellow sec Lange) in base of stem and bulb.	Mild. Inodourous.	Sublimoniform, rough , 9-10/5-6µ sec K. & K.		Decid. woods. Uncommon.	Recognised by smooth bright-coloured cap, deep yellow gills when young and darker flesh at base of stem and in bulb. Appears to have sl. smaller spores than No. 60 (See notes.)
White with yellow outline, often becoming yellow or tawny-buff at base, or some-times yellow all through, firm, thick at disc.	Mild. Inodourous.	Amygdaliform, rough, 8-10(12)/5-6½µ sec Henry. (Cke's specimen 9-11/6-6½µ)		Decid. or mixed woods (occ. in conif. woods). Uncommon	Not known in Britain in recent years; resembling *fulgens* sense Lange (No. 61) in colours, but with scaly cap and white flesh when young; *fulmineus* sensu Rea (No. 63) has larger spores. (See notes.)

SPECIES	CAP	GILLS	STEM
63. *parafulmineus* Hry. (=*fulmineus sensu* Hry., Rea)	50-120 mm., **tawny-rusty** or tinged bronze, margin yellow or orange-yellow, disc with numerous large **darker rusty** or purplish-brown **scales;** margin strongly inrolled at first, innately fibrillose.	Pure yellow (chrome), then yellow- or tawny-rust edge concolorous, enti: or sl. serrulate.	Up to 70/20-25 mm. ± equal with conspicuous wide marginate bulb, yellow or golden-yellow then tinged rusty in places, apex remaining yellow, bulb yellow, becoming ochraceous-buff or whitish in places, often pointed at base.
†64. *lutescens* (Rea) Hry.	50-90 mm., cvx. then exp. or sl. depressed, pale straw-yellow, then ochraceous-yellow or **buff** with **paler yellowish margin,** often becoming rusty buff from disc outwards, disc often with adpressed whitish scales from veil, otherwise smooth; margin often abruptly incurved for a long time, ± innately fibrillose and with remains of cortina.	**Pale straw-yellow,** then pale- or rusty-cinnamon, sometimes sl. olivaceous when older (like Pholiotu squarrosa), adnate, emar-ginate, crowded, f. narrow. ± linear, edge concolor-rous, ± even.	35-50/10-15 mm. (22-32 nun. in bulb), equal or sl. thickened at base or apex with conspicuous wide marginate bulb, almost uniform **pale** or very pale **straw-yellow,** sometimes tinged rusty below, bulb white then ± straw-yellow or tinged rusty, white - tomentose below.
16. Splendentes	Young gills and cap at least at margin, sulphur or lemon-yellow, olivaceous only when		
†65. *splendens* Hry.	30-80 mm, **bright sulphur-yellow,** sometimes with sl. reddish-brown or tawny-rusty tinge on disc or with scattered darker reddish- or purplish-brown scale margin soon expands remaining sulphur-yellow.	**Bright sulphur-yellow,** then olive- or sulphur-rusty, rather narrow, ± uneven when older.	25-60/7-12 mm. (15-25 mm. in bulb), ± equal with conspicuous wide margia-ate bulb, **bright sulphur-yellow,** then sometimes tinged rusty in places (esp. at base), cortina sulphur-yellow, bulb sl. paler underneath, sometimes flat tened below, with sulphur yellow mycelium.
66. *citrinus* (Lge.) Hry.	40-60 mm., **deep lemon yellow,** then greenish or ilivaceous, typically **uni - colorous,** but disc sometimes with sl. rusty or tawny tinge or sl. spotted or streaky, otherwis. .inooth, margin incurved at first.	Deep sulphur-greenish or **lemon-yellow** then olive-buff or rusty-olive, rather narrow, ± linear, edge even to sl. uneven.	70-80/7-12 mm. (12-30 nm. in bulb), ± equal with conspicuous wide margin ate bulb, deep sulphur greenish or **lemon-yellow,** sometimes paler with age, esp. at apex, cortiua lemon-yellow, bulb sometimes flattened below with lemon-yellowish mycelium.

FLESH	TASTE AND SMELL	**SPORES**	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Whitish or pale sulphur with **deeper sulphur outline,** deeper in stem and bulb, becoming darker when exposed to air and brownish in centre of cap.	Mild. Smell none or faint. faint.	amygdaliform, very rough, **13-14/7-8µ** sec Rea, (14½-15½ (17)/7-8¾µ sec Hry.)	Gill edge fertile. NaOH + flesh rose or rose-buff then cream + cap cuticle reddish-brown.	Decid. woods sec Rea. (Mountainous con if. woods sec Hry.).	Included on the strength of Rea's spore measurements but its presence in Britain requires confirmation. Differs from *fulmineus sensu* Bres. (No. 62) mainly in much larger spores. (See notes.)
V. pale yellowish, white in centre of stem when young, then **pale yellowish,** sometimes pallid or ochraceous here and there (esp. when eaten by grubs).	Mild. Smell pleasant	Amygdaliform to sublimoniform, rough, (10)11-12/6-7µ (12-13/7-8µ sec Hry.)	Gill edge fertile. NaOH + flesh and cap cuticle ± nil.	Beech on chalk, (edge of woods sec Hry.).	This description is from British specimens and agrees reasonably well with that of Henry in Butt. Soc. mycol. Fr. LV (1939), p. 171, except for sl. smaller spores, but the flesh is hardly 'bright yellow' as given by Rea. Has the cap and stem colours and scales on cap like the multiformis group, but with characteristic pale yellow gills.
older or not at all. Spores rarely more than 11/6/z. Mycelium at base of stem –± sulphur or lemon-yellow. (Spp 65-67.)					
Unicolorous, **bright sulphur yellow.**	Mild. Inodorous	Amygdaliform or narrowly sublimoniform, ± rough, 10-11 (14)/5-6(6½)µ (fig. 16)	Gill edge fertile. NaOH + flesh sl. reddish or brownish, ± cap cuticle **dark red or** red-brown. (See notes.)	Beech on chalk. Fairly common (at least Surrey).	Entirely bright sulphur at first and typically rather small, cap often becoming ± reddish - brown from centre out. Differs from Nos. 66 and 67 in absence of lemon or greenish -yellow tints and sodium reaction on cap cuticle.
Unicolorous, sulphur-greenish or **lemon-yellow**	Mild. Smell none or faint, pleasant.	± limoniform, rough, 9-11/5-6µ	Gill edge fertile. NaOH + flesh and cap cuticle ± **deep olive** or olive-brown.	Beech on chalk. Uncommon.	Entirely sulphur - greenish or lemon-yellow at first; differs from *splendens* (No. 65) in pronounced green tinge and different sodium reaction: *sulphureus* (No. 67) has the cap in part olive-brown from the start and paler gills and stem

SPECIES	CAP	GILLS	STEM
†67. *sulphureus* (Kauff.) Lge.	50-100 mm., **pale-sulphur** or olive-yellow, covered except at margin with **olive-brown gluten** which often dries into spotlike scales or streaks, margin incurved at first, remaining pale sulphur or lemon-yellow for a long time.	**Pale lemon-yellow,** then olive -yellowish, ochraceous • cinnamon or olive-rusty, ± linear, edge even then ± uneven.	30-80/8-20 mm. (up to 35 mm. in bulb), equal or sl. attenuated upwards with conspicuous wide margin -ate bulb, **pale lemon-yellowish,** cortina ; ± olive, bulb pale lemon-yellow, lemon-yellow tomentose below often with lemon-yellow or pale sulphur mycelial strands, often flattened below
17. Elegantiores.	Young gills suphur-yellow to ochraceous. Cap often tawny, rusty or reddish in centre,		
68. *elegantior* Fr. *sensu* Ricken, Konr. &Maubl.. Moser (*non sensu* Hry. = *elegantissimus* Hry.) (= *turbinatus sensu* Cooke, ?Rea)	50-150 mm., **straw-yellow to tawny-buff often** tinged **olive** esp. at disc which is usually darker, sometimes spotted, always **innately fibrillose;** margin paler, sometimes abruptly incurved at first.	**Straw-yellow** or ochraceous-straw, then olive-yellow to olive-rusty, ± ventricose, edge serrulate.	50-100/12-25 mm. (22-50 mm. in bulb), equal with ± conspicuous wide (so metimes rounded) marginate bulb, **pale yellowish** or ochraceous then ± rusty from base up, cortinn abundant, yellowish or ochraceous at first, bulb whitish below, often pointed at base
†69. *elegantissimus* Hry. (=*elegantior sensu* Hry: =*sulphurinus sensu* Ricken: = *aurantio-turbinatus sensu* Lange)	45-100 mm., **sulphur-yellow,** disc soon ± bright tawny-orange, **rusty-buff** or rusty (varying in amount from only the very centre to all except the extreme mal-gin), some-times spotted, **smooth;** margin incurved at first, remaining ± sulphur-yellow for a long time.	**Sulphur-yellow** to deep lemon-yellow, then olive-yellow to olive-rusty, rather narrow, ± linear, edge sometimes sl. paler, even to sl. uneven.	60-125/10-18 mm. (22-38 mm. in bulb), equal or sl. thicker at apex with con-spicuous wide marginate to almost immarginate bulb, lemon -yellow or **sulphur-yellow,** often becoming pallid or tinged rusty at base, cortina lemon-yellow, bulb often becoming tinged rusty, white-tomentose below
70. *orichalceus* (Batsch ex Secr.) Fr. *sensu* Maire, Konr. & Maubl. (*non sensu* Bres. = *odorifer*)	40-130 mm., **reddish-cop-per** colour, with **yellowish-olive,** bluish -green or glaucous **margin,** disc often with **darker reddish-brown scales;** margin incurved at first and paler then expanded and ± concolorous.	Greenish-yellow, then olive to rusty-olive, linear or sl. ventricose, edge ± denti-culate.	50-120/12-20 mm. (up to 30 mm. in bulb), equal or sl. thicker at base or apex with ± conspicuous wide marginate bulb, **pale greenish-yellow,** cortina whitish or very pale greenish –yellow.

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Pale to deeper lemon - yellow, sometimes almost unicolorous, sometimes darker near the cuticle.	Mild. Inodorous or almost so.	Amygdaliform to sublimoniform, f. rough, 9½ -11/5-6µ	NaOH + flesh and cap cuticle **± olive-greenish** to olive brown.	Beech woods. Uncommon (British collection on chalk).	Recognised by the pale lemon-yellow colour of all parts except disc of cap. Resembles *citrinus* (No. 66) rather closely, but is not so uniformly coloured as that species. Further study is needed to prove its specific status. (See notes.)
with yellow or olive margin. Spores mostly more than 11/6µ. Mycelium white or whitish. Often strong smelling (Spp. 68-71).					
Pale yellowish (sometimes whit -ish when cut) often **darker** (rhubarb or **tawny-rusty)** at base of stem and in bulb.	Mild. Smell none or faint, pleasant. Uncommon.	Limoniform, v. rough, **12-16/7-9µ** sec K. & M.	Gill edge sterile, cells 6-12µ wide. NaOH + flesh (esp. at base of stem) ± rose (inconstant), + cap cuticle reddish -brown.	Mostly under conifers, also in decid. woods (com moner in mountainous country).	Recognised by large spores, ± olive cap with pale yellowish margin and rather pale young gills: *elegantissimus* (No. 69) is brighter sulphur-yellow in parts and has white flesh with sulphur outline and an often strong ± aromatic smell. (See notes.)
White with sulphur outline or sulphur in bulb, sometimes with horny line over pills.	Mild. Smell faint to rather strong, characteristic, **aromatic,** sometimes rather over-powering (sickly sweet).	Limoniform, very rough, **12-15/8-10µ** (fig. 17).	Gill edge fertile. NaOH + flesh, almost nil or sl. olive grey, + cap cuticle reddish to purplish-brown then purple-black.	Beech woods. Fairly common on chalk.	Recognised by sulphur cap margin, white flesh with sulphur outline, peculiar smell and large spores. Varies in stem shape and the amount of brown on the cap. Differs from *elegantior* (No. 68) in brighter colours and white flesh with sulphur outline.
White or **whitish** in centre, yellowish or **greenish-yellow** in outline, often becoming reddish-brown in bulb, with horny line over gills.	Mild. Smell ± strong, aromatic, of **fennel.**	Amygdaliform to sublimoniform, rough, 10-13/6-8µ sec K. & M.		Conif. and mixed woods, especially in mountainous country (or on chalk under beech sec Rea). Uncommon.	Recognised by contrasting colours of cap and pale greenish - yellow stem, darker flesh at base of stem and smell: *elegantissimus* (No. 69) is more sulphur coloured and has different coloured flesh and larger spores. (See notes.)

SPECIES	CAP	GILLS	STEM
71. *odorifer* Britz.	30-110 mm., **reddish-copper** or tawny-brick in centre, **margin variable** from yellowish or greenish to glaucous- or greenish-or bluish-grey (bluish tints rare), ± unicolorous brownish when old, sometimes with darker spots in centre but not scaly; margin incurved at first.	Greenish lemon-yellow or olivaceous, then tawny- or rusty-olive, linear or lanceolate, edge even then ± serrulate.	35-80/8-20 mm. (15-34 mm. in bulb), equal or sl. thicker above with wide margin-ate or immarginate bulb, **rather bright greenish -yellow,** sometimes olive at apex or yellower at base, becoming reddish -brown at base, cortina pale yellowish-green, bulb, esp. the margin, becoming reddish-copper like cap.
18. Prasini.	Young gills sulphur or olive-yellow. Cap predominantly green or ochraceous, never yel-		
72. *prasinus* [Schaeff.] Fr. *sensu* Konr. & Maubl., Cooke (*non sensu* Bres., Lange)	45-80 mm., sometimes umbonate, **olivaceous to grass-green,** disc often tinged **dirty rusty-tawny** or urnber, innately fibril-lose or with darker spots; margin incurved at first, often remaining green.	**Olive-yellow,** then darker olive to rusty-olive, often sl. ventricose, edge uneven or not.	30-80/10-20 mm. (20-35 mm. in bulb), equal or attenuated upwards with wide marginate bulb, **yellowish-or olive-green.often** paler than cap, cortina yellowish-green at first, bulb yellowish-green,sometimes becoming tinged rustv
73. *atrovirens* Kalchbr. (= *prasinus sensu* Bres.)	50-80 mm., **dark green or** dark olive-green, margin often paler, smooth or innately fibrillose, margin incurved at first.	**Sulphur-yellow,** then olive-sulphur or tawny-olive , finally tawny-cinnamon, linear or sl. ventricose.	40-80/10-20 mm. (20-25 mm. in bulb), equal or thicker above or below, with rounded marginate or im-marginate bulb, **sulphur-yellow** then greenish, cortina abundant sulphur-yellow then tinged rusty, bulb with yellow mycelium.
B. Cliduchi-Elastici.	Stem never marginately bulbous, from equal to clavate or irregularly bulbous, more		
19. Triumphantes.	Cap yellow, tawny or brown.	Stem with yellowish, ochraceous or olive-tinged scales	
†74. *triumphans* Fr. *sensu* Henry, Kauff. (*non sensu* Ricken, Moser, Cooke, Konr. & Maubl., Lange, Rea)	30-120 mm., **yellow-tawny to ochraceous-tawny,** darker or almost orange at disc, rarely tinged sl. olive, margin brighter yellow, with small adpressoil crowded tawny scales esp. on disc.	Clay-cream or clay-ochraceous thenochraceous-buff, sl. ventricose, edge even to ± serrulate.	80-120/10-20 mm. (20-40 mm. below), clavate, at first sheathed by whitish veil which becomes broken up into yellowish-ochraceous ring-like zones on a paler background, yellowish white and ± striate above cortinal zone.

FLESH	TASTE AND SMELL	**SPORES**	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Bright greenish -yellow or more green in cap or in periphery of stem, sometimes ± sulphur-yellow in centre of stem or throughout, or reddish-brown in bulb.	Mild. Smell faint to ± strong, of **anise.**	Amygdaliform to ± limoniform, rough. (9)12-13/(5)6-7µ sec Moser.	Gill edge fertile. NaOH + flesh reddish-brown, + cap cuticle purplish-black	Mountainous conifer woods.	Differs from *orichalceus* (No. 70) in smell and brighter coloured flesh and stem. Not recorded for Britain
ow-olchraceous. Spores 10-12/5-7µ. (Spp. 72-73.)					
Pale greenish - yellow, sometimes sl. darker in outline.	Mild. Inodorous.	Elliptic-amygdaliform, punctate to almost rough, 10-12/5-6½µ sec K. & M.	Gill edge sterile, cells 4-8µ wide. NaOH + flesh olive-green, then reddish or purplish-brown.	Decid. (esp. beech) and mixed woods. Uncommon	Cap truly green, at least in part, gills, flesh and often stem more yellow-ish-green: *atrovirens* (No. 73) has the cap darker green and flesh sulphur-yellow at first. (See notes.)
Unicolorous **sulphur-yellow,** then olive-sulphur	Taste sl. acid. Smell faint, of fennel	± amygdaliform, punctate to almost rough, 10-12/5-7µ sec K. & M		Mountainous conifer woods. V. uncommon.	Colours very charac-teristic. Rare in Britain and not known in recent years.
rarely with roundish immarginate bulb. Flesh and gills never turning purplish when bruised or rubbed. (Spp. 74-102.)					
forming –± ring-like zones. No blue tints except sometimes in the young gill of crocolitus (No. 76). (Spp. 74-78)					
White or pale yellowish, firm then soft.	Mild. Smell faint.	**Elongate sublimoniform** to elliptic fusiform, sometimes almost oblong, punctate, **12-15(17)/6-7(7½) µ**	Gill edge sterile, cells 8-9µ wide. NaOH + flesh bright- to gold-en-yellow.	Coniferous woods (esp. pine); also under birch. Uncommon.	A robust species best" characterised by large elongate sublimoniform spores and sodium reaction. Recently found in Britain both under pine and birch. (See notes.)

SPECIES	CAP	GILLS	STEM
75. *subtriumphans* Hry. (=*triumphans sensu* Ricken, Moser)	50-120 mm., **ochraceous to** orange-yellow with distinct reddish- or date-brown **Innate fibrils,** sometimes spotted, margin paler, yellowish or sl. ochraceous, disc sometimes also with ochraceous or reddish-brown scales or patches from veil; margin often appendiculate with remains of cortina.	Pale clay or clay-ochraceous, then darker rusty-clay to rusty-ochraceous, ± linear, about half the depth of flesh of cap, edge paler or not, even or sl. denticulate.	65-100/10-20 mm.(20-30 mi below), equal above, som times thinner at base wh young, ± clavato-bultxn, pale yellowish, ochraceous or buff, sometimes darker below, at first with thick woolly ochraceous or olivaceous patches of veil which disappear with age, cortina ochraceous-buff
76. *crocolitus* Quél. (=*triumphans sensu* Cooke, Konr. & Maubl., Lange, Rea)	50-120 mm., pale to bright **yellow,** disc sometimes tinged tawny or tawny-buff, margin paler, straw-yellow or pale ochraceous, sometimes with fine scales on disc from veil, otherwise **smooth;** margin sometimes with fragments of cortina.	Creamy-white, sometimes **tinged grey-blue** or lilaceous at first, then clay-cream or clay-cinnamon, finally rusty-buff, not or sl. ventricose, edge paler ± denticulate. .	70-170/10-25 mm., often long, ± equal above clavato-bulbous base, pale straw-yellow, apex white or whitish silky striate, veil forming rather thin yellowish or yellow-tawny scales in ± ring-like zones, cortina white at first
†77. *olidus* Lange (= *cliduchus sensu* Ricken, Konr. & Maubl: = *cephalixus sensu* Henry non Moser)	48-100 mm., sometimes flattened at disc or broadly umbonate, **ochraceous-yellow** or buff, disc often tinged tawny, margin paler, disc often with small sl. darker adpressed scales. Zones	Clay-whitish then pale ochraceous or buff, ± linear or sl. broader near stem, edge paler or not, ± uneven.	50-80/10-15 mill, (up to 25 mm. below), elongate clavate, sometimes pointed at base, **white above, yellowish below,** apex silky or sl. pruinose, cortinal zone well marked, cortina whitish yellow, sometimes becoming yellow-buff, base with scattered ± adpressed yellow, ochraceous or yellow-buff often fugacious scales at base (fig. 7), which sometimes form ring-like zones. .
*78. *cephalixus* (Secr.) Fr. *sensu* Moser non Henry (=*papulosus* Fr. *sensu* Bres.)	40-100 mm., sometimes umbonate, **ochraceous-yel-low,** clay-buff or sometimes with greenish or **olive** tinge, disc generally darker often granular-rough or cracked into small scales, margin soon straight, thin, sometimes radially split.	Pale whitish-clay, then ochraceous clay or buff, ± ventricose, edge	50-100/10-20 mm. (17-20 mm. below), equal with bulbous base, sometimes almost romided-marginato, **ochraceous yellow to olive-brown** below cort inal zone, apex whitish, with yellowish or brownish patches of veil near base, cortina whitish or with sl. greenish tinge

FLESH	TASTE AND SMELL	**SPORES**	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Whitish or pale, firm, often thick at disc.	Mild. Smell none or faint, mouldy.	Amygdaliform, rough, **9-11/5-6µ** sec Moser.	Gill edge sterile, cells 4-8µ wide. NaOH + flesh buff or sl. orange-brown.	Coniferous or mixed woods.	Differs from *triumphans sensu* Hry. (No. 74) in smaller spores and cap with darker innate fibrils, probably also sodium reaction: *crocolitus* (No. 76) is paler and yellower and has no innate fibrils on cap. Not definitely recorded from Britain.
Cream, pale yellowish or ± ochra-ceous, often be-coming rather soft.	Mild. Smell none, or faint, mouldy.	Elliptic-amygdaliform to amygdaliform, punctate to almost rough, **10-12½/6-7µ**	Not yet investigated.)	Decid. woods, esp. birch. Fairly common.	Differs from No. 75 in yellower colours and ± smooth cap, and from No. 74 in smaller spores arid sodium reaction presumably ± nil. Past records of *triumphans* in Britain may well have been this species. hv smell
White, sometimes tinged yellowish orocbraceous under cuticle of cap and stern, often thick at disc.	Mild. Smell often strong, esp. when cut, **unpleasant,** rank.	± amygdaliform, punctate to almost smooth, often 1-guttulate, **10-12/5½-6½** 9-10/5µ sec Lange)	Gill edge with some sterile basidiiform cells. NaOH + flesh ± nil or sl. yellow, + cap cuticle sl. brownish.	Decid. or mixed woods (often under beech). Uncommon.	Recognised by smell, rather dull yellowish colours and spores: the veil patches on the stem are much thinner and often less conspicuous than those on Nos. 74-76: differs from *cephalixus sensu* Moserin smell and larger spores.
White, not very thick at disc	White, not very thick at disc. Mild. Smell often strong, esp. when cut, of **new-mown hay** or unripe maize.	Elliptic-amygdaliform to amygdaliform, f. rough, **8-10½/4½-5½µ** sec Moser.	Gill edge sterile, cells 4-7µ wide. NaOH + flesh ± nil, + cap cuticle olive-brown.	Coniferous and deciduous woods.	Nearest to *olidus* (No. 77) but with different smell, smaller spores and darker colours with a tendency towards olive shades. Not yet authentically recorded for Britain (Cke 731 (718) *papulosus* is doubt-ful.)

SPECIES	CAP	GILLS	STEM
20. Claricolores.	Cap yellow, tawny or brown.	Stem and sometimes also cap margin with white fioccose	
79. *claricolor* Fr. *sensu* Konr. & Maubl (*non sensu* Lange, Bres.)	80-120 mm., **yellowish-cream,** tawny-ochraceous or pale reddish, silky pruinose, esp. near margin, then smooth, cuticle of disc often splitting into small scales; margin pale, incurved at first, ± silky-fibrillose.	Whitish-cream, then pale flesh colour or rusty-clay, ± linear, edge denticulate.	30-90/10-25 mm. (up to 50 mm. below), clavate or ventricose, sometimes attenuated at base, white then pale yellowish-ochraceous, apex white pruinose, with concentric white **fioccose** fugacious **scales** below white cortinal ring-zone
†80. *albomarginatus* nov. nom. (=*claricolor sensu* Lange)	50-105 mm., cvx. then exp. generally umbonate, deep rusty or **red-brown** (fox colour), sometimes paler towards margin, disc smooth or with a few white silky patches, sometimes cracking into small scales when old; margin often remaining abruptly turned down, with a conspicuous **rather thick white silky zone** up to 10 mm. in.	Clay whitish then clay-buff, pale rusty or rusty-buff, adnate emarginate or with tooth, subdistant to f. crowded, broadly linear or sl. ventricose, edge white or pale, ± uneven, sometimes rather thick.	55-140/8-18 mm., equal or clavate at base (up to 25 mm.), white then discoloured yellowish from base up, apex white, striate from base of gills and often whi te-pru inose, white cortina forming a conspicuous ring-zone near apex, below this with Jk concentric **white silky scales,** which become tipped with yellowish brown and finally disappear
†81. *fraudulosus* Britz. *sensu* Moser	**25-45(65)** mm., cvx. then exp., sl. umbonate with margin regular or sl. wavy, **pale buff or pinkish-buff**(Hebeloma colour), then darker almost date-brown at disc with yellower tinge at margin, ± innately fibrillose towards margin but disc ± smooth, soon dry; margin at first very white silky from veil, which disappears gradually leaving small ± concentric, adpressed scales around disc, often splitting when old.	White then whitish-clay to pale milky-coffee, finally ochraceous-clay, adnate, emarginate or with tooth, subdistant to f. crowded, often **rather thick,** ± ventricose, edge ± uneven.	25-40(80)/17-11(14) mm. (11-24 mm. below), equal or sl. thinner at apex or base (or rounded bulbous at base sec Moser), pure white then discolouring pallid, apex white silky striate, cortina white forming ring-zone near apex, below this with conspicuous **fioccose white** or sl. brownish tipped **scales,** which disappear with age.
82. *saginus* (Fr.) Fr. *sensu* auct. new Ricken	40-125 mm., sometimes sl. umbonate, **yellow or yellow-buff**,disc often tinged rusty or tawny, margin more yellow, smooth or with remains of white veil at first; margin incurved at first.	Pale clay or pale ochraceous then clay-cinnamon or ochraceous, adnato- or subdecurrent, ± ventricose, edge uneven.	70-120/10-25 mm. (13-30 mm. below), ± clavate or fusiform-bulbous at base, white then yellow or yellowish-buff at base, apex white, striate, cortina white, **white** veil at first forming **floccose scales** or zones.

FLESH	TASTE AND SMELL	**SPORES**	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
scales at least when young (occ. coloured at tips), or cortina forming thick white floccose ring-zone. No blue tints. (Spp. 79-83.)					
Pale whitish-cream, sometimes reddening slightly when exposed to air, **hard** and firm.	Mild. Inodorous.	Amygdaliform to sublimoniform, punctate or **almost smooth, 10-15(17)/6-8(9)µ** sec K. &M.		Mountainous conifer woods.	Distinguished by pale colours, hard flesh, large almost smooth spores and stem white floccose-scaly when young. Doubtfully British and probably not *claricolor* sensu Fr. (See notes.)
White or sl. brownish in base of stem or when eaten by grubs.	Mild. Smell **strong, unpleasant,** rank.	**Elliptic amygdaliform to sublimoniform,** often with large apiculus, punctate to almost rough, 11-14/7-7½µ	Gill edge fertile.	Beech woods, esp. on chalk. Uncommon.	Well characterised by reddish-brown cap with thick white marginal zone, unpleasant smell and large sub-limoni-form spores.
White then whitish, tinged pallid under cuticle of cap and at base of stem, f. thick at disc, gradually thinner towards margin, firm at first.	Mild. Smell **faint,** pleasant (esp. when cut), sl. sour when old.	**Elliptic-pruniform** or sl. amygdaliform, rough, **11-13(14)/7-7 ½ µ**	Gill edge fertile. NaOH + flesh and cap cuticle ± nil. $AgNO_3$ + flesh slowly rose (up to 30 mins.), later brownish.	Beech woods, (also under con ifers sec Moser). Uncommon.	Near *albomarginatus* (No. 80) but much smaller, with less striking white zone-at edge of cap, different smell and differently shaped spores. This des-cription is from a British collection, with details of maximum size of cap and stem added from Moser.
White, ± ochra-ceous at base of stem, cream be-neath cuticle of cap.	Mild or sl. bitter after much chewing. Smell none or faint, pleasant.	**Subglobose** to broadly ovate, rough, 8-9/6 ½ - 8µ sec Hry.	No specific chemical reactions, sec Hry.	Mountainous conifer woods. Uncommon. Often sub-caespitose.	Recognised primarily by its subglobose-spores, also by yellow colours and stem wh ite floccose-scaly at first. Not well known in Britain. (See notes.)

SPECIES	CAP	GILLS	STEM
83. *turmalis* Fr. *sensu* Cooke, Ricken	50-100 mm., cvx. then exp. ± umbonate or sl. depressed, remaining ± cvx. for a long time, **yellowish-ochraceous** with darker ± tawny or reddish-brown disc, disc sometimes with remains of white veil; margin incurved for a long time, at first white silky and ± appendiculate from veil.	Pale clay, then clay-ochraceous, milky-coffee or clay-cinnamon, rather narrow, ± uneven.	40-120/10-25 mm., ± equ; or often attenuated dowi wards, shining white, apt-silky striate, white cortina forming a **thick ± persistent floccose ring like zone** near apex, below this with white floccose scales from veil, very **hard** and rigid.
21. Sebacei.	Cap white, yellowish, tawny brown.	Stem from smooth to fibrilloso-striate but not	
84. *sebaceus* Fr. (=*sericellus* Moser.)	Cap white, yellowish, tawny 50-120 mm., often umbonate, pale to deep **ochra-ceous-yelloworbuff, disc** mostly ± **reddish-brown, white silky hoary** at first, later sl. innato-fibrillose, ± matt when dry; margin sometimes ± appendiculate at first, often upturned when old.	Pale clay or ochraceous then ochraceous milky-coffee or pale cinnamon, edge even or sl. uneven.	70-120/10-25 mm., equal or attenuated upwards with ± clavate base, rarely-attenuated at base, **pure white**,then dirty white or pale yellowish, white silky striate, white cortina abundant but not forming floccose scales.
*85. *crassus* Fr. *sensu* Bres., Lange (*non sensu* Ricken = *C. (Inoloma) pseudocrassus* Josserand)	35-100 mm., generally umbonate, ochraceous to **red-brown,** smooth or spotted with ochraceous-yellowish downy patches of veil, matt when dry; margin 'somewhat filirillose' sec Lange, remaining incurved for a long time.	Pale whitish, then clay to pale cinnamon, adnate scarcely emarginate, crowded, sl. ventricose near stem, edge sl. uneven.	35-100/10-25 mm., equal or sl. ventricose or clavate, **pale dirty whitish,** ochraceous or buff, apex paler, almost white, sl. pruinose, ± fibrilloso-striate below cortinal zone
86. *lustratus* Fr.	30-60 mm., cvx. then exp., ± umbonate with incurved margin, **pure white** then creamy white, disc finally tinged sl. yellowish or ochraceous (resembling Entoloma prunuloides, as mentioned by Fries himself), smooth, margin ± appendiculate.	Whitish then pale ochraceous milky-coffee, adnate, emarginate or not, very crowded, **very narrow** (up to 2½(3) mm. wide for cap 40 mm. in diam.), edge even.	40-60/5-10 mm. (up to 13 mm. below), equal orsl. clavate. **pure white** then tinged pallid below or where wounded, almost smooth, cortina sparse, white.

FLESH	TASTE AND SMELL	**SPORES**	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Pure white, fairly thick at disc.	Mild. Inodorous.	Elliptic-amygdaliform, almost smooth, **8-10/4-4µ** sec Moser.	Gill edge sterile, cells 4-lOµ wide. NaOH + flesh ± yellow-brown, sec Moser.	Coniferous, mixed or deciduous woods. Uncommon	Well characterised by thick floccose cortinal zone, hard white stem, and small spores.
floccose- scaly, nor with thick floccose cortinal ring-zone. No blue tints. (Spp. 84-86.)					
Whitish to ochraceous or buff.	Mild. Inodorous.	**Elliptic-fusiform**, punctate, usually pale yellowish sub. micr., **7-9/3½-4µ** sec Moser		Coniferous and deciduo us woods. Uncommon.	Recognised by small elliptic –fusiform spores, yellowish-buff white hoary cap and stem at first pure white and silky striate. Not well known in Britain and needs further study. (See notes.)
White, sl. darker or watery in centre of cap, thick and firm.	Mild. Smell none, or faint, 'rather rankish' sec Lange.	± **amygdaliform,** punctate to almost smooth, 9-10/5-6µ sec Moser	Gill edge fertile. NaOH + flesh and gills µ yellowish; NH_4OH + flesh –± yellowish, + gills chrome to golden yellow, sec Moser.	Coniferous and dec id nous woods (mostly larch and fir, sec Moser).	Recognised by ± reddish-brown cap, rather thick dirty pallid stem, pale gills and ± amygdaliform spores. No authentic British record. *C. validus* Favre resembles this species but has elliptic spores and stem cream-ochra-ceous floccose at first. (See Key § 96 and notes.)
White, discolouring brownish here and there under cuticle, firm.	Mild, **smell strong, mealy.**	Elliptic-oval, punctate to almost smooth, pale yellow-ochraceous in mass, **6-7/3 ½ - 4µ** sec Moser.	Gill edge sterile with cylindric or sl. lageni-form,cells 4-8µ wide. NaOH ± nil.	Mixed woods (e.g. beech and fir). Rare.	A characteristic species distinguished by whitish colours, narrow gills, mealy smell and small spores. Included in British list on strength of Cooke's plate, but apparently not recorded since, and has only been recorded on very few occasions in other countries

SPECIES	CAP	GILLS	STEM
22. Cumatiles	Cap violaceous or bluish, at least in part or when young. Young gills whitish or clay, somc-		
87. *cumatilis* Fr.	40-120(200) mm., sometimes broadly umbonate, watery lilac or greyish-blue to deeper **violet,** disc becoming **ochraceous,** wine red or tinged sepia, sometimes spotted, matt to sl. shiny when dry; margin remaining ± violet or bluish with darker innate fibrils, cuticle not peeling easily.	**Pale clay,** then clay-ochraceous or cinnamon, finally rusty-clay, rather narrow, ± linear or sl. ventricose, edge uneven.	50-100/10-40 mm., equal or clavate, white, then whitish to ochraceous-buff from the base up, at first covered with **blue-violaceous patches** of veil below cortinal zone which later form scattered scale-like patches, cortina whitish to pale violaceous, abundant.
†88. *balteato-cumatilis* Hry. (=*balteotus sensu* Cooke, Lange)	50-150 mm., reddish-brown, wine-red or date-brown, sometimes tinged tawny or violaceous with rather **narrow** but often rather bright **violaceous margin,** shining and smooth when dry; margin for a long time incurved, ± innately fibrillose, cuticle peeling ± easily.	**Pale clay** (rarely with sl. lilac tinge), then pale clay-buff or ochraceous, f. narrow, ± linear, about 3-5 mm. wide for cap 60-85 mm. in diam., edge paler ± uneven.	50-70/18-30 mm., robust, clavate or clavato-bulbous, often rather short, white or whitish, becoming tinged rusty from the base up, sometimes tinged violaceous in places, with a few often fugacious **violaceous patches** from veil near base when young, apex white-pruinose; base white-tomentose.
89. *balteatus* Fr. *sensu* Konr. & Maubl., Moser (*non sensu* Cooke, Lange = *balteato-cumatilis*)	50-150 mm., sometimes urn-bonate or with wavy margin when old, clay-, **cork-or tobacco-brown** sometimes with sl. reddish or olivaceous tinge, **margin** generally **narrowly lilac** or violaceous, paling to whitish or pallid (rarely so from the first), soon **dry, felty fibrillose** except at margin, disc sometimes cracking into patches, cuticle not, or hardly, peeling.	**Pale whitish or clay-whitish,** then clay-rusty, rather narrow, linear to sl. ventricose, edge whitish, uneven. .	40-90/12-30 mm. (16-35 mm. below), equal to clavate or bulbous at base, often short, white then discoloured pallid or rusty from base up, silky shiny to fibrilloso-floccose below white cortinal zone, apex pruinose.

FLESH	TASTE AND SMELL	**SPORES**	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
times with faint violaceous or lilac flush. Stem (except No. 89) with violaceous or whitish scales near base from veil. (Spp. 87-90).					
Whitish, sometimes sl. violaceous under cap cuticle, becoming pale ochraceous or pallid in stem, very firm at first.	Mild. Smell none, or faint, pleasant.	**Elliptic-fusiform,** punctate, 9-12/4½-6µ sec Moser.	Gill edge ± fertile. NaOH and NH_4OH + flesh, sl. yellow. (Not constant.)	Coniferous and mixed woods. Uncommon.	Often large and showy; recognised by blue violaceous tints of cap margin and veil fragments on stem, pale gills and stem and elliptic-fusiform spores: *balteato-cumatilis* (No. 88) differs in smell, brighter and narrower violaceous cap margin, spores and habitat. Not well known in Britain.
White or whitish, sometimes sl. violaceous under cuticle, hard and compact, thick at disc.	Mild. Smell ± **strong, rank** or earth	Elliptic-amygdaliform to **amygdaliform,** weakly punctate, 10-12(13)/5½-6½µ	Gill edge sterile, cells 6-8fA wide. NaOH + flesh almost nil, NH_4OH + flesh ± tan with yellow edge.	Decid. woods, esp. beech. Uncommon	Differs from *cumatilis* (No. 87) in more ronounced violet margin to cap, smell, spores and habitat; from *balteatus* (No. 89) in shinier smoother cap with peeling cuticle, narrower gills, violaceous scales on young stem and habitat.
Pure white, discoloured brownish when eaten by grubs or under the cap cuticle, hard at first, thick at disc (up to 40 mm.), abruptly thinner at margin.	Mild. **Smell faint,** pleasant or earthy.	Amygdaliform to sublimoniform, punctate to almost rough,10-12/5½ -6µ sec Moser	Gill edge sterile, cells 6-8µ wide. NaOH + flesh brownish with yellow margin; NH_4OH + flesh ± yellow.	Coniferous and mixed woods. Uncommon. (Common, esp. under fir and larch early in season in Central Europe.) A good edible fungus.	Distinguished by rather dull brown dry ± felty fibrillose cap with violaceous margin, whitish gills and stem. British records need confirmation, some or all of these may be *balteato-cumatilis* (No. 88).

SPECIES	CAP	GILLS	STEM
90. *praestans* (Cordier) Sacc. (=Berkeley)Cke.: = *variicolor sensu* Ricken: =*torvus sensu* Quélet)	**75-200** mm., chestnut or chocolate-brown, often tinged violaceous or coppery, then dirty buff or tan, innately fibrillose, veil forming rather **thick** scattered **whitish patches** (like an Amanita); **margin** for a long time incurved, becoming radially wrinkled or **sulcate,** often **grey-violaceous** to darker violet	Whitish or pale clay tinged lilac or violaceous, then pale clay-ochraceous to clay-cinnamon or ochra-raceous-rusty, rather narrow, sl. ventricose, edge becoming paler and ± denticulate	**70-200 20-60** mm., **often** very robust, ventricose, clavate or bulbous, at first violaceous then dirty white or yellowish or pale pallid from the base up with apex white, whitish or lilac, at first coloured with **thick silky violaceous veil** which breaks up into violaceous, later whitish or ochraceous patches, whitish cortina forming ring-zone near apex.
23. Variicolores	All parts except sometimes centre of cap lilac to violaceous when young. (Spp. 91-93).		
91. *variicolor* (Pers. ex Fr.) Fr. *sensu* Konr. & Maubl., etc. (*non sensu* Ricken = *praestans*)	50-150 mm., **robust,** date-brown, or sepia with reddish tinge, **margin violet** at least when young, rarely entirely violet, robust, soon dry, cuticle sometimes cracking, margin tomentose at first.	Lilac then ochraceous-clay or cinnamon, rather narrow, ± denticulate.	40-90/12-30 mm. (20-35 mm. below), clavate or ± bulbous, lilac or bluish, then whitish or tinged pallid at base, apex more persistently bluish, villose or fibrilloso-floccose, pale bluish cortina forming ring-zone near apex, very firm.
92. *nemorensis* (Fr.) Lge.	35-95 mm., from **entirely violet** or blue-violaceous to dirty buff or **date-brown with ± violaceous margin** at first, soon entirely pallid, livid brown or date-brown, **innately fibrillose** at least near margin when young, often later entirely and strongly so, disc often becoming dry, cracked and floccu-lose	Violet or lilac-violaceous, often persistently so, esp. near edge of cap, then clay-violet or clay-cinnamon, finally rusty-buff to rusty umber, sl. ventricose, edge sometimes paler at first, ± even.	45-80/9-30 mm. (14-37 mm. below), 4; clavate, sometimes thicker at apex or pointed at base, violet or blue-violaceous, then whitish or pallid esp. near base, apex often remaining violaceous for some time and often pruinose, blue-violaceous cortina abundant at first, base often bluish-or violaceous-toinentosf, very firm.
93. *largus* Fr	32-120 mm., pale lilac or blue-violaceous, **disc** soon pale to darker **buff,** ochra-ceous or reddish-brown, margin mostly remaining pale bluish or violaceous, soon dry and **shiny** or sl. innately fibrillose or tomentose when old, margin sometimes remaining incurved for a long time.	Lilac or deeper violaceous, then bluish-grey-clay, clay-buff or cinnamon, finally ± rusty, sometimes persistently bluish near margin of cap, linear or sl. ventricose, edge paler ± denticulate.	48-100/10-20 mm. (14-35 mm. below), equal with ± pointed bulbous base or clavate, blue-violaceous then whitish or ± pallid below, apex often pruinose, whitish or pale bluish cortina forming ring-zom-near apex, base whitt-tomentose, firm at first

FLESH	TASTE AND SMELL	SPORES	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
White to pale ochraceous, sometimes darker under cap cuticle or tinged lilac in apex of stem, fairly firm.	Mild. Inodorous	± limoniform, rough, **13-18/8-10µ** sec Moser.	Gill edge sterile, cells rather pointed clavate, 4-6µ wide.	Dec id. and con if. woods on chalk. V. uncommon. (often in circles). An excellent edible fungus.	One of the largest Cortinarii, readily distinguished by size, thick veil, dark coloured cap with characteristic sulcate margin when old and large spores. Unfortunately rare in Britain.
Lilac, paling to whitish esp. in entre of cap and stem, **very hard** and compact.	Mild. Smell often **strong, rank,** earthy (esp. if left in a confined space).	Amygdaliform to limoniform, rough, 10-12/5½-7½µ sec K. & M.	Gill edge fertile or almost so. NaOH + flesh chrome yellow; NH_4OH + flesh **quickly** (15 to 30 sees.) **deep golden-yellow**.	Mountainous conifer woods. Uncommon. (often in circles). A good edible fungus.	Not so common in Britain as *nemorensis* (No. 92) which differs in being less robust, cap always innately fibrillose and often strongly so, apex of stem ± pruinose and habitat : *largus* (No. 93) is altogether softer and paler.
Blue-violaceous, whitish in centre of cap and stem or sometimes sl. pallid in stem, **very firm**, esp. in stem.	Mild. Smell often **strong, rank,** earthy, esp. when cut.	Elliptic-amygdaliform to amygdaliform, punctate to almost rough 9-12/5-6½µ	Gill edge fertile or almost so. NaOH + flesh ± yellow ; NH_4OH + flesh **quickly deep chrome** or golden-yellow.	Decid. (esp. beech), mixed or coniferous woods, generally in lowly ing country. Solitary or subcaespitose. F. common.	Close to *variicolor* (No. 91) and regarded by some authors as a variety of this species; differs in being typically more slender and having the cap innately fibrillose, often strongly so; it is also often entirely violet at first (except part of flesh), and appears to have sl. different spores - this latter point, however, needs further study.
Blue violaceous or lilac becoming whitish in centre of cap and stem when cut, firm at first, but soon **soft.**	Mild. Smell none, or **faint,** pleasant (sl. fruity), sometimes rankish when old.	Amygdaliform to sublimoniform punctate to almost rough. 10-12/5½-6½µ	Gill edge fertile. NaOH + flesh slowly ± yellowish ; NH_4OH+ flesh, **pale yellowish** or almost nil (occ. slowly darker yellow).	Decid. woods (esp. beech and oak). F. common. Often caespitose.	Differs from Nos. 91 and 92 in paler bluish colours of cap and gills, softer flesh and ammonia reaction (also smell possibly less reliably).

SPECIES	CAP	GILLS	STEM
24. Varii.	Cap yellow, orhraceous, tawny or brown. Young gills distinctly lilac or blue-violaceous.		
94. *varius* (Schaeff. ex Fr.) Fr.	50-100 mm., **yellow ochre to rusty-tawny,** disc sometimes darker (reddish-brown), margin paler (more yellow), shiny smooth or sl. matt when dry, margin often appendiculate.	**Lilac or violaceous-blue** for a long time, then lilac-buff to watery or ochra-ceous - cinnamon, ± linear, edge concolorous, even.	40-90/7-20 mm. (16-35 mm. below), often rather short and thick, clavate or with rounded bulb, often attenuated upwards, **pure white,** then discolouring pallid or pale yellowish, rarely pale lilac at apex, white cortina forming ring-zone near apex, firm
95. *decolorans* (Pers. ex Seer.) Fr. *sensu* Cooke (*non sensu* Fr., Ricken, Bres. = *varius*)	20-60 mm., sometimes umbonatc, **pale ochraceous-yellow** to lemon-yellow, sometimes with olive-brown spots or streaks, shining when dry, margin remaining incurved for a long time.	**Pale purplish-lilac,** then clay-brownish to cinnamon or almost umber, linear or sl. ventricose near stem, edge even or uneven.	25-70/4-7 mm. (4-12 mm. below), clavate or sl. ventricose, rarely equal, **whitish** then pallid or ochraceous from the base up, **apex ± lilac,** cortina sparse, fugacious
96. *Riederi* (Weinm.) Fr.	50-100 mm., generally umbonate, often depressed round umbo when old, **ochraceous** to tawny-yellow, shining when dry. smooth.	**Lilac** or bluish then rusty-cinnamon to pale chocolate, edge uneven.	70-100/10-30 mm., -£ clavate, **lilac then ochraceous,** apex ± persistently lilac and silky striate, fibrilloso-striate when old, cortina sparse, fugacious.
97. *decolorotus* (Fr.) Fr. *sensu* Gillet, Moser (*non sensu* Gooke, auct. plur. = *tabularis*)	30-70 mm., ± umbonate, margin sometimes incurved and wavy, **ochraceous-buff** (resembling Hebeloma spp.),disc sometimes more reddish-brown, margin sl. greyish-blue when young, soon drv	**Bluish-grey-lilac,** then clay-whitish or clay-buff, edge ± uneven. 70-75/10 mm.(12-13 mm.below), equal or sl. clavate, **whitish** to ochraccous buff, **apex bluish-lilac to** greyish, fibrilloso-striate, sometimes twisted, cortina sparse, fugacious.	70-75/10 mm. (12-13 mm. below), equal or sl.clavate, **whitish** to ochraceous buff, **apex bluish-lilac** togreyish, fibrillose-striate, sometimes twisted, cortina sparse, fugacious.
25. Percomes.	Young gills and often cap lemon to sulphur-yellow. (Spp. 98-100.)		
98. *percomis* Fr. (=*aromaticus* Vel.) (*non sensu* Ricken, Vel. = *percomium* Hry.: *nec sensu* Bres. = *russeus*)	30-80 mm., ochraceous **yellow or buff** to golden-yellow, disc sometimes tinged rusty or tawny, margin paler (more lemon yellow), smooth and shiny except sometimes some adpressed yellowish at margin.	Paler or darker **sulphur-yellow** then dirty yellowish to olive-buff, finally rusty-olive, rather narrow, ± linear to sl. ventricose, edge concolorous, ± uneven.	40-120/10-25 mm.(15-30 mm. below), clavate or ± equal with roundish bulb, **sulphur-yellow** then tinged rusty or dirty ochraceoi buff from base up, api often pruinose, fibrillos striate, cortina pale yellowish, base whin tomentosc and sometime pointed.

FLESH	TASTE AND SMELL	**SPORES**	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
(Spp. 94-97).					
White, then some-times tinged creamy or yellow-ish in stem, often thick at disc (up to 10 mm.), firm.	Mild. Inodorous or almost so.	Amygdaliform, rough, 10-12/6-7µ sec K. & M.	Gill edge fertile or almost so. NaOH + flesh chrome to orange-yellow.	Coniferous woods (esp. on chalk). Uncommon. An excellent edible fungus.	Distinguished by con-trasting colours of cap and gills and white stem and flesh. (See notes.)
Whitish to pale ochraceous – buff with sl. lilac tinge at apex of stem.	Mild. Inodorous.	Subglobose, rough, 8-9/6-7µ -		Deciduous (esp. beech and oak) or coniferous woods. Uncommon.	Resembling a small *delibutus* (No. 10) but with dry stem and bluish stem apex. (See notes.)
Whitish, tinged ochraceous under cap cuticle and at base of stem, bluish at apex of stem.	Mild. Inodorous.	Elongate elliptic or subfusiform, punctate, 13-15/6-7µ (Cooke's specimen) (15-17/7-8µ sec Ricken)		Coniferous and deciduous woods. V. uncommon.	Should be readily recognised by cap, gill and stem col-ours and large spores. Not known in recent years in Britain
White in cap, bluish-grey in periphery of stein, ochraceous - buff in centre and base of stem.	Mild. Smell none, or faint, pleasant.	**Amygdaliform,** rough, **7-10/4-6µ** sec Moser.	Gill edge sterile, cells 6-12µ wide.	Coniferous and deciduous woods.	Resembles *C.* (*Dermo*) *tabularis* but with grey-blue gills and stem apex and different spores. No authentic British record for this species - for what has usually been called *decoloratus* see notes.
Sulphur - yellow, darker in periphery of stem.	Mild. Smell **strong, aromatic,** pleasant, of marjoram, persistent.	Elliptic-amygdaliform to amygdaliform, punctate to almost rough, 12-13½/6-7½ (8)µ	Gill edge fertile. NaOH + flesh ochraceous or brownish, then sometimes purplish-red.	Coniferous or mixed woods, generally on chalk (recently found under beech and yew). Uncommon	Easily recognised by strong persistent aromatic smell, sulphur gills and flesh and rather large spores. (See notes.)

SPECIES	CAP	GILLS	STEM
***99.** *Nanceiensis* Maire	30-100 mm., sometimes umbonate, **reddish-brown,** reddish-copper or chestnut, paler outwards to **greenish-yellow** or och-raceous **margin,** then ± reddish-brown, disc sometimes spotted, smooth and shiny when dry.	**Pale sulphur** or greenish-yellow, then clay-yellowish or rusty, finally rusty-buff, sometimes sl. de-current, narrow, ± linear to sl. ventricose, edge often remaining sl. greenish yellow, ± denticulate.	40-75/6-10 mm. (12-22 mm. below), equal with rounded (often conspicuous) bulb, pale to deeper greenish-yellow or yellow, then paler and tinged rusty from base up, cortina pale lemon-yellow, fugacious, bulb sometimes with remains of greyish or lilac- rusty veil.
100. *russeus* Hry. (= *russus sensu* Ricken, Metrod non *sensu* Fr.)	45-100 mm., generally umbonate, **coppery-red to** date-brown, sometimes darker in places, margin yellowish to olive, cuticle very viscid and peeling easily.	**Sulphur-yellow,** then och-raceous -cinnamon or olive to rusty, rather wide, ± ventricose.	50-75/7-25 mm., equal m attenuated upwards with bulbous or clavate base, often curved, whitish or **pale yellowish,** then sometimes tinged brownish from base up, fibrilloso-striate, rather soft and sometimes hollow.
26. Infracti.	Young gills paler or darker olive, without yellow tints. Taste often bitter. (Spp. 101-		
101. *infractus* (Pers.ex Fr.)Fr. (= *anfractus* Fr.)	30-120 mm., **variable in shape and colour,** ± cvx. then uinbonate or depressed, often with abruptly incurved or irregular wavy margin, chestnut or olive-brown, sometimes grey- or bluish-green or blackish- or violaceous-olive, sometimes spotted, disc often paler becoming ochraceous buff .smooth but with darker innate fibrils; margin often darker, sometimes sl. striate and almost hygrophanous.	**Constantly dark olive-rusty to sooty-olive** when young, finally ± umber, often rather broad, sl. ventricose, edge sl. paler, ± uneven or denticulate.	30-80/6-25 mm. (15-30 mm. below), equal, ventricose, clavate or rounded bulbous, whitish or tinged grey, olive or ochraceous esp. at base, sometimes darker olive-brown, apex sometimes violaceous, fibrilloso-striate, cortina grey or olive-brownish, fairly abundant.
†102. *sobtortus* (Fr.) Fr.	25-65 mm., umbonate or not, sometimes sl. depressed when old, **pale straw-yellow** or straw-olive, then bright yellow tinged tawny or buff or pale golden,finally **tawny-buff,** often streaky in places esp. near margin, silky shiny to ± matt when dry; margin appendiculate or with fragments of cortina near edge when young, sometimes abruptly incurved.	**Pale olive,** then rusty-olive, finally brightgolden-brown or deep rusty-cinnamon, ± linear or sl. ventricose near stem, edge paler then concolorous, minutely floc-rulose to ± even.	40-100/5-11 mm. (5-15 mm. below), equal or attenuated upwards or ± clavate, occ. thickened at apex, base pointed or not, whitish tinged yellowish or olive to pale olivaceous pallid, often yellower or tinged rusty when old, apex yellowish- or pale olive-pruinose at first, then ± striate, occ. with vague bluish tinge when young, pale olive cortina forming ring-zone near apex, and sometimes patches below this, base white- or pale vellow-tomentose-

FLESH	TASTE AND SMELL	**SPORES**	GILL EDGE AND CHEMICAL REATIONS	HABITAT	OBSERVATIONS
Pale sulphur-yellow, darker under cap cuticle and at base of stem, sometimes sl. glaucous over gills, brownish where wounded	Mild. Smell **faint** of raw apples, especially when cut.	Elliptic-amygdaliform to sublimoniform, rough, 12-15/6-7½ µ sec K. & M.	Gill edge sterile, cells cylindric or sl. lageniform, 4-lOµ wide. NaOH + flesh purplish-red.	Beech (or mixed) woods on chalk.	Differs from *percomis* (No. 98) in lack of strong aromatic smell, more reddish-brown cap and paler flesh and from *russeus* (No. 100) in different smell and mild taste. Not yet recorded from Britain.
Sulphur-yellow, paler in cap brownish in bulb and under cuticle.	Bitter. Smell **Strong, disagreeable**, of gas-tar or *Tricholoma sulphureum*	± aimygdaliform, rough, 13-15/7-8µ sec Metrod		Coniferous or mixed woods. Uncommon.	Readily distinguished by disagreeable smell, coppery cap, sulphur- yellow young gills and large spores. Not known in Britain in recent years. (See notes.)
102).					
Whitish, greyish or ochraceous - buff, sometimes tinged olive or violaceous, often f. thick in cap.	**Very bitter**, Smell none, or faint, of radish.	**Subglobose,** rough, 7-9(10)/5-7µ	Gill edge sterile, cells 4-8µ wide. $AgNO_3$ + flesh and gills immediately greenish black to black, weaker on cuticle.	Deciduous (esp. beech) and conifer o u s woods. Fairly common.	A very variable and f. common species readily distinguished by bitter taste, dark olive young gills and subglobose spores. A number of forms have been described, which however are of doubtful value owing to the great variability of this species. (See notes.)
Pale whitish-olive or yellowish then yellower and finally rusty-tawny, often paler in centre, s o in e t i in e s vaguely violaceous in stem, soon soft and spongy.	± bitter, sometimes rather slowly so. Smell faint to **rather strong, aromatic,** pleasant, (cedar-oil).	**Subglobose** to broadly ovate, rough, 7-9/5-6½µ	Facial and marginal cystidia numerous , cyliridric-clavate or awl-shaped to ± lageniform, rather thick-walled, often incrusted below apex (walls yellowish in NH_4OH), 50-80/6-1 2µ (apex 4-8µ wide)	In Sphagnum and bog-myrtle tufts near or under birch or in wet d e c i d. woods, esp. on high ground. (Also under conifers sec Moser) Uncommon.	Easily distinguished by its cystidia, roundish spores, pale olive -yellowish colours when young and smell. The colour change of cap and gills is very deceiving - when old the characteristic pale olive tinge of young specimens disappears completely.

II. PHLEGMACIUM.

A *Scauri* - Stem with marginate or rounded marginate (rarely immarginate) bulb, or gills and flesh turning purplish when bruised or rubbed. (Spp.21-73)

a. *Leucophylli.* - Young gills white, whitish or clay coloured (rarely very sl. bluish in *amarescens* (No. 25). (Spp. 21-34.)

b. *Cyanophylli.* - Young gills blue, violaceous or lilac. (Spp. 35-55.)

c. *Xanthophylli.* - Young gills yellow, olive or greenish. (Spp. 56-73.)

B. *Cliduci-Elastici.* - Stem never marginately bulbous, from equal to clavate or irregularly bulbous, more rarely with roundish immarginate bulb. Gills and flesh never turning purplish when bruised or rubbed. (Spp.74-102)

A. Scauri.

a. Leucophylli.

4. *Multiformes.* - Stem bulb variable, sharply marginate, rounded marginate or almost immarginate, never widely marginate. Cap at first yellow, ochraceous, buff or tinged tawny, rarely paler. Flesh soon soft, white at first, often becoming ochraceous or yellowish. Smell sometimes strong, either of apples (acid) or of honey. (Spp. 21-25.)

5. *Napi.* - Stem with conspicuous wide free-edged marginate bulb. Cap at first yellow, buff, tawny or chestnut. Flesh firm, often hard at first, generally ± persistently white or whitish but sometimes tinged yellowish or ochraceous, esp. under cap cuticle, in bulb or when eaten by grubs. Inodorous or with strong aromatic or rank smell. (Spp. 26-32.)

6. *Rapacei.* - Stem with conspicuous wide free-edged marginate bulb. Cap at first white or whitish clay. (Spp. 33-34.)

b. Cyanophylli.

7. *Caerulescentes.* - Young cap grey-blue, lilac or violaceous at least in part. Cap cuticle mild, or if bitter turning red with NaOH. Flesh mild, + NaOH nil or yellowish to brownish, never red. (Spp. 35-39.)

8. *Dibaphi.* - Young cap lilac or violaceous at least in part. Cap cuticle bitter or not, +NaOH ± nil, never red. Flesh bitterish to very bitter, + NaOH rose-red. (Spp. 40-41.)

9. *Calochroi.* - Young cap yellow, ochraceous or tawny. Stem with well-marked marginate bulb. Spores mostly over 10µ, long. (Spp. 42-46.)

10. *Pansae.* - Young cap orange- or rusty-brown. Stem short, bulb from barely to rounded marginate, often flat below. Spores more than 10µ long. (Sp. 47.)

11. *Cyanopodes.* - Young cap whitish to ochraceous-buff. Stem with fairly conspicuous but ± rounded marginate bulb. Spores over 10µ long. (Spp. 48-49.)

12. *Glaucopodes.* - Young cap ochraceous to buff or tinged tawny, often with greenish or olive tints, esp. near margin. Stem from wide to rounded marginately bulbous. Spores less than 10µ. long. (Flesh often yellowish in bulb.) (Spp. 50-52.)

13. *Purpurascentes.* - Gills, flesh and often stem turning ± deep purple when bruised or rubbed (in dry conditions this reaction may be less marked). Stem variable in shape, ± equal to marginately bulbous. (Spp. 53-55.)

c. Xanthophylli.

14. *Xanthocyanei.* - Blue or violaceous tints present in cap, flesh or stem (see also *odorifer* (No. 71) which may show a sl. violaceous tinge at margin of cap). (Spp. 56-59.)

15. *Fulgentes.* - Young gills pale to deeper yellow, not distinctly sulphur-yellow or olive. Cap ± yellow, ochraceous, tawny or rusty, also without pronounced sulphur or olive tints. (Spp. 60-64.)

16. *Splendentes.* - Young gills and cap at least at margin sulphur or lemon-yellow, olivaceous only when older or not at all. Spores rarely more than 11/6µ. Mycelium at base of stem ± sulphur or lemon-yellow. (Spp. 65-67-.)

17. *Elegantiores.* - Young gills sulphur-yellow to olivaceous. Cap often tawny, rusty or reddish in centre with yellow or olive margin. Spores mostly more than 11/6µ. Mycelium white or whitish. (Often strong smelling.) (Spp. 68-71.)

18. *Prasini.* - Young gills sulphur or olive-yellow. Cap predominantly green or olivaceous, never yellow or ochraceous. Spores 10-12/5-7µ. (Spp. 72-73.)

B. Cliduchi-Elastici.

19. *Triumphantes.* - Cap yellow, tawny or brown. Stem with yellowish, ochraceous or olive-tinged scales forming ± ring-like zones. No blue tints except sometimes in the young gill of *crocolitus* (No. 76). (Spp. 74-78.)
20. *Claricolores.* - Cap yellow, tawny or brown. Stem and sometimes also cap-margin with white floccose scales at least when young or cortina (occ. coloured at tips) forming thick white floccose ring-zone. No blue tints. (Spp. 79-83.)
21. *Sebacei.* - Cap white, yellowish, tawny or brown. Stem from smooth to fibrilloso-striate but not floccoso-scaly nor with thick floccose cortinal ring-zone. No blue tints. (Spp. 84-86.)
22. *Cumaliles.* - Cap violaceous or bluish, at least in part or when young. Young gills whitish or clay, sometimes with faint violaceous or lilac flush. Stem (except No. 89) with violaceous or whitish scales near base from veil. (Spp. 87-90.)
23. *Variicolores.* - All parts except sometimes centre of cap lilac to violaceous when young. (Spp. 91-93.)
24. *Varii.* - Cap yellow, ochraceous, tawny or brown. Young gills distinctly lilac or blue-violaceous. (Spp. 94-97.)
25. *Percomes.* - Young gills and often cap lemon- to sulphur-yellow. (Spp. 98-100.)
26. *Infracti.* - Young gills paler or darker olive, without yellow tints. Taste often bitter. (Spp. 101-102.)

Index and Notes

†*albomarginatus* nov. nom., 80 (*Icon.* L 85 A, *claricolor*) - see notes on *claricolor.*

* *aleuriosmus* Maire, see key § 51. *(Icon. Bull. Soc. my col. Fr.,* XXVI (1910), PI. VII, f.4-5) - one of the very few species of Cortinarius with a mealy smell, easily recognised by pale colours, bluish gills and bitterish taste. This name has also been used for two apparently different species not smelling of meal; *aleuriosmus sensu* Kauffmann and Lange which is described as *caroviolaceus,* 34 - and *aleuriosmus sensu* Ricken which has been renamed *Rickenianus* Maire, for which see key § 57 and notes on *caroviolaceus.*

allutus 24. *(Icon.* L 81 B: Cke 704(752)) - Fries had not seen this species himself, but that described and figured by Lange seems distinct and is included here. This corresponds to *allutus* var. *rufescens* Hry.; but Henry has also described another variety, var. *luteus* which is yellower in colour and has larger spores. (11½/6µ) and corresponds to *allutus* sensu Quelet and to which he refers Cke 705(711) *talus.* It would seem undesirable to have two varieties with such different'sized spores under one species name, but since var. *luteus* is not known in Britain as such and Cooke's plate is doubtful it is not included in this paper; see also notes on *talus.*

†*amarescens,* 25. *(Icon.* L 82 *5, talus) - see* notes on *talus.*

amioenolens, 49. (*Icon*. L 84 D, *cyanopus* (good).) *anfractus* Fr. = *infractus,* 101.

**arquatus,* 45. (*Icon.* no authentic plate known) - this is sensu Moser and may well be *alochrus* sensu Cooke. Henry has described a species *Cookeianus* (see key §65) with flesh bluish in the stem to which he refers Cke 707 713), *calochrous.* Reference to the original plates at Kew has shown no such blue tints but has shown a yellow cortina which seems to point more towards *arquatus* sensu Moser. In any case further study on fresh material is needed; *arquatus* sensu Ricken woukfseem distinct in having larger spores and an olive-yellow cortina and has been renamed *subatkinsonianus* Hry., (see key § 59); for *arquatus* sensu Lange see *subarqtiatus,* 46.

arvinaceus Fr. = *mucosus*, 3, but Cke 732(73?) looks more like *delibutus,* 10. *atrovirens,* 73. (*Icon*. Cke 720(736): KM 125: Bres 624*, prasmus).*

**aurantiacus* Moser = *napus* sensu Vel. - see key § 37 and notes on *napus. aurantioturbinatus* Seer, sensu Lange = *elegantissimus,* 69.

†*aureopulverulentus,* 44. (*Icon*. Cke 722(849), *herpeticus)* - Moser has recently shown this to be *herpeticus* sensu Cooke after taking colour into account and measuring spores from an original specimen of Cooke's collection at Kew - see *Bull. Soc. Nat. Oyonnax,* No. 7 (1953)

†*balteato-cumatilis,* 88. (*Icon*. Cke 686(696), *balteatus:* L 87 D, *id.), balteatus,* 89. *(Icon.* KM 128: Bres 604: Fr 142[2]) - this is sensu Konr. & Maubl.

and Moser; for *balteatus* sensu Cooke and Lange see *balteatocumatilis,* 88. *Berkeleyi* Cke. = *praestans,* 90.

**Boudieri,* 38. (*Icon.,* no authentic plate known) - according to Moser (*Bull. Soc. Nat. Oyonnax,* No. 7 (1953)) Boud 104, *multiformis* is not the species described by Henry as *Boudieri,* but a distinct

larger-spored species with ochraceous or brownish cap and gills at first clay-whitish characteristic of pine-woods, which he has renamed *pinetontm.* Inspection of Boudier's plate seems to confirm this and *pinetorum* is included since it may possibly occur in Scottish or other pine-woods. *Boudieri* Hry. is also included but owing to the young gills being blue-tinged is placed in section Caerulescentes of Cyanophylli.

caerulescens, 35. (*Icon*., Cke 709(722): KM 116: Maubl 57 II: Maire - *Bull. Soc. my col. Fr.* XXVI (1910), PI. VIII, f. 1-2) - this is sensu Konr. & Maubl., whose interpretation is now generally accepted; some past British records may well have been either *sodagnitus,* 39, (= *caerulescens* sensu Cjuelet) or *Mairei,* 36; Cke 708(721) has been referred to *nemorosus,* 41, by French authors, whilst *caerulescens* sensu Lange (L 82 D) is *caesiocyaneus,* 37. *caeruliipes* Smith as *var.= collinitus,* 1..

†*caesiocyaneus,* 37. (*Icon*.L *82* D, *caerulescens)* - this is sensu Britzelmayr with smaller spores well described and figured by Lange as *caerulescens;* the larger-spored *caesiocyaneus* sensu Maire, Konr. & Maubl. and Rea has been renamed *Mairei* Moser.

**caesio-stramineus* Hry., see key § 46. *(Icon,* no authentic plate known) - has the bitter cuticle of *sodagnitus,* 39, but less striking sodium reaction, sl. smaller spores and a grey or grey-blue cap at first. I believe I have seen this under beech and yew in Surrey but need to study more material before recording it.

calochrous, 42. (*Icon*.L 81 C: KM 118: Bres 616: Ri 37^ (poor)_typically of medium size but large specimens with cap up to 150 mm. have been found apparently not differing in any other way from smaller specimens. Cke 707(713) is doubtful and certainly does not look very typical; it has been referred to *Cookeianus* by Henry, but see notes on *arquatus.* Some of the other species of the section Calochroi may well have been recorded as *calochrous* in Britain in the past.

camphoratus Fr. sensu Ricken =f *Mairei* var. *Juranus, 363. - camphoratus* sensu Fries belongs to the subgenus *Inoloma* (see part II).

†*caroviolaceusnov.* nom., 34. (*Icon*.L 199 B, *aleuriosmus,* except that it does not show the blue tinge in the flesh, but the specimen is fairly well expanded) - except for small points British specimens described under this name agree with *aleuriosmus* sensu Kaurf (except smell) and Lange (except blue tinge in flesh and mild taste); but the blue tinge is often fugacious and the sl. bitter taste noted by Lange may br more noticeable in an older specimen or to another person; these differences do not seem of major importance, however, and a new name

seems desirable since *aleuriosmus* sensu Maire has bluish gills when young smell of meal and bitterish taste whilst *aleuriosmus* sensu Ricken *(Rickenianus* Maire) also has bluish gills, but is mild and inodorous and with a pale bluish cortina. Although these three species have some points in common it is perhaps convenient for the present to have a separate name for this rather striking white-gilled fungus, since three years' observations have shown the blue tints to be confined to the flesh or occ. the stem apex. Further study may show that this species is also conspecific with *rapaceus* as described by some authors (see notes on *rapaceus).*

causticus, 16. (*Icon*. KM 137: Maire - *Bull. Soc. my col. Fr.,* XXVI (1910) PI V f. 1-4: Ri 40^2 (but colours rather dark).)

†*cedretorum,* 56 *(Icon.* Maire - *Bull. Soc. my col. Fr.,* XXX (1914), PL VI).

**cephalixus,* 78. (*Icon*.. Bres 629, *papulosus)* - this is sensu Moser, which on account of a tendency towards olivaceous colours is taken to be *cephalixus* sensu Fries; *cephalixus* sensu Henry is *olidus,* 77.

citrinus, 66. (*Icon*. L 84 E, *sulphureus* var. *citrinus.)*

claricolor, 79. (*Icon*.KM 126) - this is sensu Konr. & Maubl., but is probably not that of Fries, since he says of the cap " luteus, immutabilis"; Ri 41^1 and Cke 683(693) are doubtful (the latter may be *saginus);* a new name *(albomarginatus)* has been used for *claricolor* sensu Lange differing in red-brown cap with white silky marginal zone and strong smell; *claricolor* sensu Bres. has small spores and has been renamed *subclaricolor* Moser (see key § 100).

cliduchus Fr. sensu Ricken and Konr. & Maubl. = *olidus,* 77 - the Friesian species is not known at the present time.

collinitus, 1. (*Icon*.L 88 B, (good): Cke 733(738): Maubl 51: Ri 34^1: Cke 735(740), *mucifluus)* - there has been confusion in the past between this species and a smaller-spored species with duller cap colours first separated by Lange as *trivialis* Lange. Both species have been given varietal names: *collinitus* var. *caeruliipes* Smith = *collinitus,* i and var. *repandus* Ricken = *trivialis,* 2.

**Cookeianus* Hry. - see key § 65 and notes on *arquatus* and *calochrous. corrosus,* 27. (*Icon*.Cke 715(715)-)

corruscans Fr. - not known; Cke 730(733) is sometimes referred to *sebaceus,* 84.

**crassus,* 85. (*Icon*. Bres 603: L 88 A) - this is sensu Bres and Lange; Cke 684 (695) is doubtful and *crassus* sensu Ricken has a dry cap and prominent cystidia, see part II, *C. (Inoloma) pseudocrassus* Josserand.

cristallinus, 19. (*Icon*.? Bres 626, but spores 6-9/4½-6µ; non Cke., Lange = *emollitus)*- - see notes on *emollitus.*

cyoceo-caeruleus, 14. *(Icon.* Cke $7^{2}9(73^{2})'$- ^{L} 9° C.)

crocolitus, 76. (*Icon*.. Ri 414 (poor): Cke 682(692), *triumphans:* KM 129, *id.:* L 85 C, *id.)* - this is sensu Ricken and corresponds to *triumphans* sensu auct. Brit.; French authors do not recognise *crocolitus* Quel. at the present time but see notes on *triumphans.*

cumatilis, 87. (*Icon*.. Cke 723(726): Rolland - *Atlas* PL 63: Gillet - *Champ. Fr.:* Ri 41^{3} (poor).)

cyanopus, 48. (*Icon*.. KM 119: Ri 3&^{2}; non Cke 690(699) = *nemorensis)* - this variously interpreted name is taken sensu Ricken and Konr. & Maubl.; British authors appear to have given different interpretations in the past, both Cooke and Rea used the name for a species of the section Variicolores and past records under this name should therefore be treated with suspicion; *cyanopus* sensu Lange = *amoenolens,* 49.

decolorans, 95. (*Icon*.Cke 727(730)) - some authors (e.g. Ricken and Bresadpla) have used this name for smaller yellower specimens of *vanus,* 94, and this is probably Fries' species; the fungus described here is *decolorans* sensu Cooke with subglobose spores *(varius* has larger ± amygdaliform spores).

decoloratus, 97. (*Icon*.Gillet - *Champ. Fr.*) - this name has been used by many authors (including Pearson and myself !) for a dull-coloured fungus with sub-globose spores which would seem to be *C. (Dermocybe) tabulans* (Bull.) Fr., which is sometimes rather viscid but has no blue tints; there appears to be another similar species with ± amygdaliform spores and bluish tints in the stem and flesh which is included here as *decoloratus* sensu Gillet; Cke 726(729) and L 86 D should be referred to *tabularis.*

dibutus, 10. (*Icon*.L 90 E (very good): KM in: Cke 74*(743): Ri 35^{4}).*dibaphus,* 40. *(Icon.* Britz 256; non Bres 620 = *nemorosus).*

**Dionysae* Hry., see key § 43 (*Icon*.Henry - *Bull Soc. my col. Fr.,* LI (1935), PI. II, f 5)one of the very few Cortinarii with a mealy smell and should be easily recognised by this and its bluish gills and cap colours, which are, however, variable; also smelling of meal are *aleuriosmus* with no blue in cap or flesh and a bitterish taste and *lustratus* entirely without blue tints and very pale in colour and with an equal or sl. clavate stem.

elatior, 6. (*Icon*.L 89 B: Maubl 53: Cke 737(742) (rather poor): Ri 35^{1}: Fr 149^{1}; non Cke 736(741) = *pseudosalor) - elatior* sensu lato (which is sensu auct. Brit, in most cases) includes Nos. 6, 7 and 8 and probably 9 of the present work, but it is perhaps more useful to keep these often rather different looking fungi apart until there is definite evidence that they are or are not all one species; *elatior* sensu stricto is therefore used for the rather robust fungus with ± conical or conico-exp. strongly wrinkled-striate cap and dark often strongly interveined gills.

elegantior, 68. (*Icon*.. KM 121: Ri 38*: Cke 714(714), *turbinatus*) - a much disputed species here taken sensu Ricken and Konr. & Maubl. which seem to be identical and to which *turbinatus* sensu Cooke and probably also Rea should be referred; Konr. & Maubl. state that Cke 702(709), *multiformis* var. *flavescens* is probably the same as their *elegantior,* which I think seems very likely despite the fact that Lange quoted this plate for his *sulphureus* (No. 67 in this work); Cooke's specimen is not in the Herbarium at Kew so this plate is perhaps best disregarded; *elegantior* sensu Henry is different and has been renamed *elegantis-simus* Hry. (No. 69); *elegantior* sensu Kauff. has yellowish mycelium and brighter colours and appears to be different again.

†*elegantissimus,* 69. (*Icon*.. *L,* 84 C, *aurantioturbinatus:* Ri 38^{1}, *sulfurinus)* - this is *elegantior* sensu Henry.

emollitus, 18. (*Icon*.Cke 724(727): L 86 B: Ri 44^{1}: Cke 725(728), *cristallinus:* L 87 A, *id.)* - in the past this species and *cristallinus* have been separated chiefly on cap colour or stem shape, but having found these characters rather variable and difficult to work on, I have separated them on spore shape following Kuhner & Romagnesi (*Flore Analytique,* 1953) which seems to me more satisfactory; both species may be white at first but the round-spored species (*cristallinus*) does seem to be paler on the whole, although I have not yet examined enough material to be sure of the value of macroscopic characters in separating these two species.

1955 July-September

epipoleus, 13. (*Icon*.Fr I50[3]).

**europaeus* Moser as subsp. of *montanus* = *scaurus* sensu Bres., *(Icon.* Bres 625, *scaurus}* - see key § 70 and notes on *scaurus.*

†*evosmus,* 30. (*Icon*., no authentic plate known.)

flavescens (Cke.) Hry. - in *Bull. Soc. my col. Fr.,* LV (1939), p. 180, Henry described a species under this name for which he quoted Cke 702(709), *multiformis* var. *flavescens* as an illustration; since then he has renamed this species *flavescentium* on account of a bluish tinge present at the stem apex which is not shown on Cooke's plate; since this much disputed plate has also been quoted by Konr. & Maubl. for *elegantior* and by Lange for *sulphureus* it is perhaps best disregarded, especially as the original specimen is not in the Herbarium at Kew; *flavescens* should therefore be deleted from the British list; *flavescentium,* which is not recorded for Britain, resembles *cedretorum,* 56, but has flesh without blue tints, yellowish-white then pale lemon and the stem with a ± fugacious bluish tinge at the apex, spores ± amygdaliform 10-12/6-6µ and is found under deciduous trees.

**flavescentium* Hry., see notes *on flavescens.*

†*fraudulosus,* 81. (*Icon*.Britz 18.)

fulgens, 60 and 61 - a much disputed and differently interpreted species; since Fries says the cap is " sericeo-fibrilloso " I have taken *fulgens* sensu Kauff. and Moser as the Friesian species (No. 60 - *Icon,* no authentic plate known) and kept *fulgens* sensu Cooke and Lange with smooth cap and smaller spores separate (No. 61 - *Icon.* Cke 716(716): L 83 D), but have refrained from giving this species a new name since I have not studied fresh material of either species myself; KM 120, *fulmineus* is sometimes quoted as an illustration of *fulgens* but since their description of *fulmineus* stresses the scaly cap as a distinguishing character this does not seem appropriate.

fulmineus, 62. (*Icon*.Bres 621: KM 120: Maubl 56 II: Cke 717(717)) - takine the scaly cap as the distinguishing character there appear to be two such species, one with larger spores and one with smaller spores; Henry quotes Cke 717(717) as an illustration for the larger-spored species, which he calls *parafulmuneus* but inspection of original material at Kew has shown the spores to be 9-11/6-6µ thus coming within the upper limits of size of the smaller-spored species, *fulmineus* sensu Bres., 62; *parafulmineus* Hry., 63 is also included, however, since Rea gives larger spore dimensions in his description of *fulmineus;* I have not had opportunity to study either species fresh and further study seems necessary.

fulvoluteus Britz. = *illibatus* sensu Henry, 11.

glaucopus, 50. *(Icon.* Cke 706(712): KM 117: Ri 35[7]: Bres 615) - Rea's description suggests *amoenolens,* 49.

grallipes Fr. - not known; Cke 738(734) is doubtful, but suggests *Flammula gummosa.*

herpeticus, 51. (*Icon*.. Ri 37[4]) - this is *herpeticus* sensu Ricken; *herpeticus* sensu Cooke (Cke 722(849)) = *aureopulverulentus,* 44 (see notes on this species); for *herpeticus* sensu Henry see key § 48, a different species with larger spores and bluish tints in cap as well as stem and gills.

illibatus, 11. (*Icon*.. Britz 348, *fulvoluteus)* - this is *illibatus* sensu Henry; for *illibatus* sensu Metrod see *Metrodi,* 5.

infractus, 101. (*Icon*. L 87 C: Bres 610: KM 133: Cke 697(704) (too green): Ri 43[2]: Rolland - *Atlas,* PI. 63: Cke 698(705), *anfractus)* - probably also illustrated by Ricken as *subsimilis* (Ri 43[2]) and by Lange as *olivascens (L* 86 A).

intermedius Rea - the original paintings show this to be *glaucopus* so this name is now omitted; *intermedius* Hry. is a different species belonging to the Elegan-tiores not included in this work.

**Juranus* as var. of *Mairei,* 3&a. *(Icon.* Ri 36[1], *camphoratus).*

†*Langei,* 29. (*Icon*.no authentic plate known) - in *Bull. Soc. my col. Fr.* LV (1939), p. 169, Henry quotes Lange 83 A, *sulphurinus* as an illustration to a species he describes as *sulphurinus* var. *Langei* with spores 9-11/4½-5µ; later *(Bull. Soc. mycol. Fr.,* LXVII (1951)) he quotes this plate for *subturbinatus* but also includes var. *Langei* as a separate fungus and in *Rev. de Myc.* VIII (1943) he quotes *Langei* as a separate species; having found in Britain a fungus which I believe to be Henry's original *sulphurinus* var. *Langei* with smaller spores and also several collections of *subturbinatus* (some specimens of which were identified by Henry himself through A. A.

Pearson), I have no hesitation in including *Langei* as a separate species (although Lange had nothing to do with it!), differing from *subturbinatus* not only in smaller spores but also in a purer yellow cap, distinctly white gills when young and flesh soon almost entirely ± ochraceous-yellow; L 83 A, *sulphurinus* I would refer to *subturbinatus* as a not very typical illustration, since I have never seen the bulb so distinctly sulphur-yellow although it is often ochraceous or buff; see also notes on *subturbinatus.*

largus, 93. (*Icon.*Cke 693(701): KM 130: Maubl 54: Ri 42[2] (poor)).

latus Fr. - the Friesian species is not known at the present time but for *latus* sensu Bres. = *validus* Favre, see key § 96.

liquidus Fr. = *epipoleus,* 13, *sec* Henry.

livido-ochraceus, 4. (*Icon.*Cke 739(767))-

lustratus, 86. (*Icon*. Cke 688(799)).

†*lutescens,* 64. (*Icon*. no authentic plate known) - British material seems to agree with Henry's description (in *Butt. Soc. mycol. Fr.,* LV (1939), P- 171) except for sl. smaller spores and the fact that the gills did turn sl. olivaceous when older; this species seems to combine features of the Multiformes and the Fulgentes.

luteus as var. of *allutus* - see notes on *allutus.*

Mairei, 36. (*Icon*. *Maire - Bull. Soc. mycol. Fr.,* XXVI (1910), PI. VIII, f. 1-2: KM 115, *caerulescens* ssp. *caesiocyaneus)* - see notes on *caesiocyaneus.*

**marginatus* Bres. as var. of *roseo-limbatus - see* key § 37 and notes on *roseo-limbatus.*

melliolens, 22. (*Icon*. Ri 39[1]. *multiformis:* Bres 6n, *id.: 1* L 81 D, *id.* but colours rather pale) - see notes on *multiformis.*

Metrodi, 5. (*Icon*. Metrod - *Bull. Soc. mycol. Fr.* LX (1944).Pl. III.f.2, *illibatus).*

**microspermus* Lge. (*Icon*. L 199 D).-see key § 103, Moser has used this name for a species with characteristically small spores, which he includes m Phlegmacmm despite the fact that Lange originally classed this species m Hydrocybe; *vespertinus* sensu Ricken appears to be similar if not the same but this is one of the species of the section Sebacei requiring further study and revision

**minus* Vel. - see key § 31; has the smallest spores yet known for the Scauri.

**montanus* Kauff. - (*Icon*. Bres 625, *scaurus*) - *see* key § 70; Moser has identified *scaurus* sensu Bres. with this species but as a separate subspecies (*europaeus*) owing to absence of yellow veil and smaller size.

mucifluoides Hry. = *pseudosalor,* 8.

mucifluus, 7. (*Icon*. KM 109 (good): Ri 34[4] (good): L 90 D (not typical); non Cke 735(740) = *collinitus:* nee Fr 148[1] = *trivialis*) - confusion over this name began by Fries illustrating a different species (*trivialis* it seems) from that which he described; Ricken described a species under this name belonging to the *elatior* group with conspicuous marginal cells which is included here, but I doubt if this is the Friesian species; on the occasion of the British Mycological Society Foray in Scotland in 1953 a rather puzzling Myxacium was found under pine at Rannoch which lacked conspicuous sterile cells on the gill edge but nevertheless agreed quite well with Fries' description of *mucifluus;* I shall hope to discuss this at a later date when I have studied more fresh material.

mucosus, 3. (*Icon*. Bond 108 (very good): Cke 734(739) (poor): Ri 34' (poor): Ri 34[2], *arvinaceus* (poor).)

multiformis, 21. (*Icon*. Cke 701(708): KM 114: Maubl 57 I; non Ri 39[1]: Bres 611: L 81 D = *melliolens)* - this name has certainly had ' many forms ' referred to it in the past since almost any Phlegmacium with a yellowish-ochraceous cap, whitish gills and a ± marginately bulbous stem was called *multiformis,* and past British records are practically worthless unless accompanied by description and spores, and probably included members of the section Napi as well; spore size appears however to be critical and I have followed J. Schaeffer and Moser in referring the species with ± amygdaliform spores over 10µ long to *multiformis* sensu stricto, 21, and the species with more elliptic-amygdaliform smoothish spores less than 10µ long to *melliolens,* 22; as thus defined *multiformis* sensu Cke., Konr. & Maubl. and in my opinion Henry (= *polymorphic* Hry.) are referrable to *multiformis,* 21, and *multiformis* sensu Ricken, Bres. and probably Lange to *melliolens, 22: ochropallidus* Hry. has also been included because of its more constantly rounded

marginate bulb and uniform pale colours, but it is not recorded from Britain and in any case needs further study. The distribution of these species in Britain cannot be given with any certainty; *multiformis* sensu stricto is certainly British but *melliolens* needs confirmation, although I have examined spores from a collection labelled *'multiformis,* small form' which were the correct size and shape, but in the absence of further details cannot be named with certainty (this might equally well have been *amarescens* !); for *multiformis* sensu Boudier see notes on *Boudieri.*

**Nanceiensis,* 99. (*Icon*. . KM 135: Maire - *Bull. Soc. mvcol. Fr* XXVII (1911)' PI. XV f. 1-3 (poor).)

napus, 26. (*Icon*. KM 113: Cke 703(710).) - this is sensu Konr. & Maubl. and Cooke; *napus* sensu Henry is rather paler with smaller spores 9-12/5½-6µ. and has been renamed *pseudonapus* Hry. and may well be the same as *corrosus,* 27; *napus* sensu Vel. has still smaller spores 7-8/4-5µ and has been renamed *aurantiacus* Moser but is not yet known outside Central Europe - see key § 37.

nemorensis, 92. (*Icon*. L 88 C: Cke 692(863), as var.: Cke 690(699), *cyanopus).*

nemorosus, 41. (*Icon*. Henry - *Bull. Soc. my col. Fr.* L1I (1936), PI. II, f. 2: Bres 620, *dibaphus:* Cke 708(721), *caerulescens* sec Henry).

nitidus Fr. - not known at the present time; Cke 1189(1191) is doubtful but looks like *delibutus,* 10.

ochroleucus, 20. (*Icon*. . Cke 764(775): L 93 D) - originally placed in Dermocybe but transferred by Lange to Myxacium with the similar but more viscid bitter-tasting species.

**ochropallidus,* 23. (*Icon*., no authentic plate known) - see notes on *multiformis.*

**odorifer,* 71. (*Icon*. Bres 622, *orichalceus)* - see notes on *orichalceus.*

†*olidus,* 77. (*Icon*. L 86 E: KM 127, *cliduchus:* Ri 42[3] *id.).*

**olivascens* (Batsch.) Fr. sensu Bataille – see key § 120; many authors inxluding Lange have used this name for what is probably the very variable *infractus* with ± subglobose spores; *olivascens* sensu Bataille has, however, quite different spores but is not well known nor authentically recorded for Britain.

oricalcheus.70. (*Icon*. KM 122: Cke 718(754)-this is the species with the smell of fennel, i.e. *onchalceus sensu* Mrnre, Konr. & Maubl. and Rea; this name has also been used for a fungus smelling of anise differing also in flesh and stem colours which has been described as *odor if er* Britz. and is included here under that name but is not authentically recorded for Britain; *orichalceus* sensu Ricken (Ri 37[3]) besides being inodorous has cap blood-red in centre gills and stem yellowish-green at first, stem bulb often purplish-brown on the edge, flesh whitish with yellow outline turning sulphur-yellow with NaOH and spores 12-13/6-7µ, is found under conifers esp. on chalk and appears to be different again, but is not recorded for Britain.

†*pansa,* 47. (*Icon*. Fr 1452 (but colour rather too red): Gillet - *Champ. Fr.). papulosus* Fr. - not really known; Cke 713(718) is doubtful, and according to Moser *papulosus* sensu Bres. = *cephalixus,* 78.

parafulmineus, 63. (*Icon*. no authentic plate known) - see notes on *fulmineus.* †*parherpeticus,* 52. *(Icon,* no authentic plate known.)

†*parvus,* 43. (*Icon*. Henry - *Bull Soc. my col. Fr.* LI (1935) PI. I, f. 2).

percomis, 98 (*Icon*. KM 134) - this is sensu Konr. & Maubl. with a characteristic fragrant smell; *percomis* sensu Ricken (Ri 42[4]) is inodorous and has the cap golden-orange-brown, a sulphur-yellow mycelium and spores 10-12/6-6µ, and has been renamed *percomium* Hry., but is not recorded for Britain; *percomis* sensu Bres (Bres. 608) has some points in common with *russeus,* 100.

* *percomium* Hry. - see notes on *percomis.*

**pinetorum,* 32. (*Icon*. Boud 104, *multiformis)* - see notes on *Boudieri.*

pluvius, 17. (*Icon*. Cke 744(769) (not good); non Ri 35[6], ? = *vibratilis:* nee L 91 A, doubtful) - according to Fries' description this is a small species resembling a pale *vibratilis* but with the cap margin + striate, the only member of this section to show this feature; *pluvius* sensu Lange seems to be larger, paler and with sl. broader spores and to have more points in common with *emollitus.*

polymorphus Hry. = *multiformis,* 21 - see notes on *multiformis.*

porphyropus, 55. (*Icon*. L 87 B (good): Cke 728(731).)

praestans, 90. (*Icon*. Maubl 52: Cke 699(706) and 700(707), *Berkeleyi:* Boud 116, *torvus* var. *Berkeleyi:* Rolland - *Atlas,* PI. 65, *torvus :* Ri 40[1], *variicolor).*

prasinus, 72. (*Icon*. KM 124: Cke 719 (735): Boud I07: Ri 384) - this does not include *prasinus* sensu Lange (L 83 C) which is smaller and paler, with cap not spotted and has smaller amygdaliform spores 8 ½ -10/4 ½ -5µ; nor *prasinus* sensu Bres. (Bres 624) which is *atrovirens,* 73.

pseudocrassus Josserand = *crassus* sensu Ricken - see notes on *crassus*. *pseudonapus* Hry. = *napus* sensu Henry - see notes on *napus.*

†*pseudosalor,* 8. (*Icon*. L 89 A.)

pumilus (Fr.) Lange - the fungus described and figured by Lange (L 89 D) does not seem to be more than a small *elatior* or more likely *mucifluus,* not separable on size alone; Henry has also used this name for a variety of *trivialis* not having such conspicuous bands on the stem, not included in the present work.

purpurascens, 53. (*Icon*. L 82 A: Cke 710(723) and 711(724): Maubl 56 I: Ri 36[3] = Cke 712(725), *subpurpurascens*) - Henry has described two forms according to the shape of the stem - forma *eumarginatus* with ± margmate bulb (corresponding to Cke 710(723)) and forma *largusoides* with clavate or irregularly bulbous stem (corresponding to Cke 712 (725)), but I have not thought it necessary to introduce them, preferring to state ' stem variable ' m the description.

rapaceus 33. (*Icon*. Bres 612 sec Moser; non L 84 A nee Ri 39, doubtful) - -like *multiformis* this appears to be a collective species and again spore size and shape would appear to be critical since sizes given range from 7-9/4-5µ to 10-12/6-7µ and shape from pruniform almost smooth to amygdaliform rough, but the limits are not yet well defined ; I have had no opportunity to study the smaller-sporecl species or the larger-spored species and neither of these have been reliably recorded from Britain in recent years, but I have included here *rapaceus sensu* Moser with pruniform, almost smooth spores 7-9/4-5µ, which is most likely the Friesian species and corresponds to forma *media* Henry as originally described by him and to which Moser refers Bres 612 as an illustration, despite larger spore range given by Bresadola; the larger-spored species with ± amygdaliform rough spores 9-12/5-7µ (i.e. *rapaceus* sensu Ricken, probably Lange and possibly Bresadola p.p.) seems to me very close to if not conspecific with *caroviolaceus,* 34, the bluish-tinged flesh of which may quite likely not be a constant character and is in any case fugacious; further study is required to clear up this group.

repandus Ricken as var. of *collinitus = trivialis2.*

**Rickenianus* - *aleuriosmus* sensu Ricken, *(Icon.* Ri 39[4], *aleuriosmus)* - see key § 57. *Riederi,* 96. (*Icon*. Cke 694(702).)

**roseo-limbatus* Seer. = *variegatus* Bres. *(Icon.* Bres 613, *variegatus)* - see key § 105; this species is readily recognisable by its reddish cap and rather small elliptic fusiform spores; the stem bulb is variable, if distinctly marginate see var. *marginatus,* key § 37, *(Icon.* Bres 614).

rufo-olivaceus, 57. *(Icon.* KM 123: Bres 623: Cke 1188(1190), *testaceus:* Cke 758(759), *vinosus;* non Ri 37[1], ? = *xanthophyllus).*

russeus, 100. (*Icon*. Cke 696(751), *russus:* Metrod - *Bull Soc. mycol. Fr.* LX (1944), PI. Ill, f. i, *id.:* Favre - *Schweitz. Zeitschr. fur Pilzk.* 1947 Taf. 2, *id.)* - see notes on *russus.*

russus Fr. - not known at the present time; *russus* sensu Ricken and Metrod = *russeus* Hry., 100.

saginus, 82. (*Icon*. Cke 695(703)) - this is *saginus* sensu Cooke with subglobose spores; *saginus* sensu Ricken has bluish gills and stem apex when young, yellow or ochraceous cap, non-scaly ventricose or clavate stem and amygdaliform spores 10-11/6-6 ½ µ and is found under conifers but is not authentically recorded for Britain.

salor, 12. (*Icon*. Cke 740(768): KM no: Ri 35[3]: Bres 630.)

scaurus, 59. (*Icon*. L 84 B; non Cke 721(755), doubtful, nec Ri 37[s] - *subvirentophyllus* Hry.) - this is *scaurus* sensu Favre with characteristic spotted cap margin and pale olive-bistre gills; *scaurus* sensu Ricken has the cap not so dark at the margin and not spotted although sometimes streaky, and darker greenish-olive gills and has been renamed *subvirentophyllus* Hry. - see key § 70; *scaurus* sensu Bres. also has the cap not spotted but has olive-yellow gills and has been renamed *montanus* subsp. *europaeus* Moser - see key § 70; neither of these last two species are recorded for Britain.

sebaceus, 84. (*Icon*. Cke 687(697)) - there are two other species which should possibly be included in the section Sebacei but are not well enough known in this country; they are: *serarius* Fr. which has similar spores to *sebaceus* but an orange-brown innately fibrillose cap and the stem sometimes white floccoso-scaly at first and *vespertinus* Fr. sensu Bataille with a yellowish or ochraceous cap and sl. broader spores 7-8/4½-5µ; the section Sebacei as used in this work is imperfectly known not only in Britain but also on the continent and is in need of revision.

serarius Fr. - see notes on *sebaceus.*

sericellus Moser = *sebaceus,* 84 - in *Sydowia, Annales Mycologici* Ser. II, VI (1952). p. 82, Moser refers *turmalis* of French authors and also as mentioned by Pearson in 'Agarics at Aviemore ' *(Trans. Brit.*

Myc. Soc. XXIII (1939)) to *sericellus* and subsequently to *sebaceus;* I have, however, not cited this since from the descriptions *turmalis* sensu Konr. & Maubl. seems to me distinct from *sericellus,* especially in spore size, cortinal characters and flesh colour, but I have no personal experience of either species.

sodagnitus, 39. (*Icon*. Henry - *Bull Soc. mycol. Fr.,* LI (1935), PI. I, f. i.)

†*splendens,* 65. (*Icon*. Henry - *Bull. Soc. mycol. Fr.,* LII (1936), PL II, f. i) - it should be noted that in his first description of this species *(Bull. Soc. mvcol. Fr.,* LII (1936), p. 174) Henry states that NaOH gives an olive colour with the-cap cuticle, this error he later corrected to red-brown. (Ibid. LV (1939), p. 178.)

s*tillatitius,* 9 (*Icon.* Bres 632; non Cke 742(831), doubtful) - this is sensu Bresadola, specimens apparently of this species having recently been found in a clamp mossy wood in Scotland; the Friesian species is not known with certainty at the present time and Cooke's plate is doubtful.

**suaveolens* Bataille-Joachim (*Icon*. . - *Bull. Soc. mycol. Fr.,* LVI (1940). Atl. PI. LXXXIII) - see key § 43; appears to have a similar smell to *evosmus,* 30, but readily distinguished from that species by blue-violaceous colours.

**subarquatus,* 46. (*Icon*. *L* 83 B, *arquatus.)*

**subatkinsonianus* Hry. (*Icon*. Ri 39*, *arquatus)* - see key § 59 and notes on *arquatus.*

**subclaricolor* Moser, (*Icon*. Bres 601, *claricolor)* - see key § 100; recognised by small spores, fairly bright brownish cap and ± floccoso-scaly stem.

sub*purpurascens,* 54. (*Icon*. L 82 C; non Cke 712(725) = *purpurascens.)*

subsimilis Pers. - as described by Ricken (Ri 43-*) this is almost certainly *infractus,*101.

†*subtortus,* 102. (*Icon*. Ri 43^3: Maire & Kuhner - *Bull. Soc. mycol. Fr.,* LI (1935) PI. Ill, f. 6-9.)

**subtriumphans,* 75. (*Icon*. Ri 41^2, *triumphans)* - see notes on *triumphans. subturbinatus,* 28. (*Icon*. L 83 A, *sulphurinus* (not typical)) - in *Trans. Brit. Myc. Soc.,* XXXV (1952), p. 114, Pearson recorded *sulphurinus* var. *Langei* as well as *subturbinatus;* both these records should be referred to *subturbinatus;* in the same paper the dimensions of the cap of *subturbinatus* were wrongly given as " 5-19 cm." the correct figures are " 5-10 cm."; the fungus first described by Henry as *sulphurinus* var. *Langei* has smaller spores and a yellower cap and is included here as *Langei,* 29; see notes on *Langei.*

**subvirentophyllus* Hry. (*Icon*. Ri 37^5, *scaurus)* - see key § 70 and notes on *scaurus;* differs from *scaurus* and *montanus* in darker greenish-olive young gills and stem with more distinct marginate bulb.

†*sulphureus,* 67. (*Icon*. L 85 B) - Lange quotes Cke 702(709), *mulliformis* var. *flavescens* as an illustration of this species, but for reasons given in the notes on *flavescens* this seems rather doubtful.

* *sulphurinus* Quel. - this name has been used for different species - sensu Ricken = *elegantissimus,* 69: sensu Lange = *subturbinatus,* 28; the original *sulphur inus* of Quelet is not well known but according to Moser it is entirely pale sulphur-yellow at first except for deeper gills and whitish flesh, which later becomes yellower, with elliptic-amygdaliform spores 10-12(13)/6-8µ and grows under conifers (firs) but the cap may become tinged or spotted ochraceous later.

tabularis (Bull.) Fr. - see key § 104; although belonging to the section Anomali of the subgenus *Dermocybe* with roundish spores and cap with innate white silky sheen when dry, this species is included in the key because the cap is sometimes rather viscid; it seems that the name *decoloratus* has been used at times for such ± viscid specimens of *tabularis.*

talus Fr. - this name has been used in various ways and is excluded as such from the present work; the original Friesian species (*Icon.* Fr $I45^2$) with olive tints in the cap may have been *turbinatus* but is also sometimes referred to *rapaceus* or *mulliformis* sensu lato and is in any case doubtful; *talus* sensu Cooke (Cke 705(711)) has been referred by Henry to *allutus* var. *luteus,* inspection of the original specimen at Kew has shown the spores to be ± elliptic-amygdaliform, rough, 10-12/5½-6½µ, which supports this theory, but also would agree with *mulliformis* as included here and I am not yet convinced that this plate is anything other than *multiformis; talus* sensu Lange is undoubtedly different and has been renamed *amarescens* Moser (No. 25).

testaceus Cooke = *rufo-olivaceus,* 57.

†*triumphans,* 74. (*Icon,* no authentic plate known) - there has been some confusion over the use of this name; I have followed Kauffman and Henry in taking the larger-spored species to be *triumphans* sensu Fries; there are two other interpretations, both smaller-spored species - *triumphans* sensu Ricken, which has the cap innately fibrillose and cap and stem sometimes olivaceous, and has been renamed *subtriumphans* Hry., and *triumphans* sensu Cooke, Konr. & Maubl., Lange and Rea with yellower smoother cap and gills sometimes bluish at first, which I have referred to *crocolilus* and

which may well be Fries' forma *minor;* this latter species is so far as is known at the moment the commonest species in Britain, being typical of birch woods, and *triumphans* as included here has been found both under pine and birch, but there is no authentic record for *subtriumphans.*

†t*rivialis,* 2. (*Icon.* L 89 C: Ri 35', *collinitus* var. *repandus:* Fr I48[1], *mucifluus)* - see notes on *collinitus.*

turbinatus, 31. (*Icon Henry - Bull. Soc. mvcol. Fr.* LI (1935). Pl. I. f. 3; non Cke 714(714) = *elegantior,* nee Ri 39[3], doubtful) - there are several different interpretations of this name, the common factor of all being a tendency towards olivaceous tints in the cap; it is here included sensu Bataille and Henry, which is the species with characteristic subglobose or ovate-pruniform rough spores; *turbinatus* sensu Cooke and probably Rea = *elegantior* sensu Ricken; the identity of some other interpretations is open to doubt; *turbinatus* sensu Ricken has some points in common, notably smaller spores, with *melliolens,* whilst *turbinatus* sensu Boudier (Boud 105) which has sometimes obscure violaceous tints in the young gills or stem apex, flesh darker in bulb and spores 4; amygdali-form, 8-10/5-6μ seems different again. *turmalis,* 83. *(Icon.* Cke 684(694): Ri 43[6]: KM 136) - see notes on *sericellus.*

**validus* Favre = *latus* sensu Bres. (*Icon.* Favre - Hauts-Mar. Jur. PI. IV, f. 1) - see key § 96; near *olidus,* 77, but more robust with reddish-brown cap, elliptic spores and different habitat.

**variegatus* Bres. = *roseo-limbatus* Seer. - see key § 105.

variicolor, 91. (*Icon.* Cke 691(700): KM 131: Cke 689(698), *varius,* non Ri 42[1] = p*raestans.*)

varius, 94. (*Icon* KM 132: Ri 42[1]; non Cke 689(698) = *variicolor).*

**vespertinus* Fr. - see notes on *sebaceus;* not well known at the present time; *vespertinus* sensu Ricken from spore size at least seems likely to be *microspermus* Lange (see key § 103).

vibratilis, 15. (*Icon.* Cke 743(744): KM 112: L 90 F*:* Ri 35[2].)

vinosus Cke. = *rufo-olivaceus,* 57.

xanthophyllus, 58. (*Icon* Cke 713(753), *dibaphus* var. *xanthophyllus)* - the cap colours somewhat resemble those of *dibaphus* but the gills are a totally different colour; according to Moser Ri 37[1], *rufo-olivaceus* (icon, not description) may represent this species by reason of the sulphur-yellow gill.