

OBSERVATIONS ON THE BOLBITIACEAE: 19 Validation of some species of *Conocybe*

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ABSTRACT. Nine species of *Conocybe* subgen. *Conocybe* sect. *Conocybe* (Bolbitiaceae) originally described by R. Kühner are validated (*C. ambigua*, *C. brunneola*, *C. macrocephala*, *C. mesospora*, *C. pseudopilosella*, *C. semiglobata*, *C. sordida*, *C. spiculoides* and *C. subovalis*) as are two in subgen. *Pholiotina* sect. *Pholiotina* (*C. dentatomarginata* and *C. exannulata*). Kühner's concept of *C. siliginea* is discussed and *C. spicula* f. *macrospora* Kühner *nomen nudum* is confirmed to be synonymous with *C. magnicapitata* P. D. Orton. The new name *C. moseri* Watling is introduced for Kühner's concept of *C. siliginea*.

INTRODUCTION

As pointed out by Watling (1977) the seven species, nine varieties and seven forms described as new in *Le Genre Galera* (Kühner, 1935) must according to Article 36 of the *International Code of Botanical Nomenclature* be considered *nomina nuda*. Two species and one variety of this group were proposed in conjunction with R. Maire and one species and one variety in conjunction with J. Lange. Validation of some of these species has already been accomplished according to the rules (Watling, 1971; Watling, 1977). An earlier attempt at validation failed on points of technicality (Singer, 1959); seven taxa (two species, three varieties and two forms) were treated and several of these infraspecific taxa were raised to specific rank. Unfortunately the type-localities were not cited, type specimens were not indicated and places of deposition of the material were given incorrectly or not at all.

After discussion with many nomenclaturists it has been considered necessary to rectify these omissions, basing the work on the original material used by Kühner in the preparation of his excellent book. I am greatly indebted to Prof. Robert Kühner for loaning me this material, and to many colleagues, especially Dr Deighton at the Commonwealth Mycological Institute, Kew, and those at Ann Arbor, Edinburgh, Leiden and Kew, for their helpful discussions.

As the microscopic details of the specimens supplied by Prof. Kühner agree in all ways with those figured and described in *Le Genre Galera*, even in minutiae of basidiospore and cystidial dimensions, it was considered unnecessary to repeat the comprehensive field data found in that work.

The arrangement of the newly proposed epithets is alphabetic and is followed by a discussion of Kühner's interpretation of *C. siliginea*.

DESCRIPTIONS OF NEW SPECIES

1. *Conocybe ambigua* [Kühner ex] Watling, sp. nov. Fig. 1A.

Syn.: *C. siliginea* (Fries) Kühner var. *ambigua* Kühner, *Le Genre Galera* 106 (1935), *nomen nudum*.

? *C. ambigua* Kühner s. Singer, 1959.

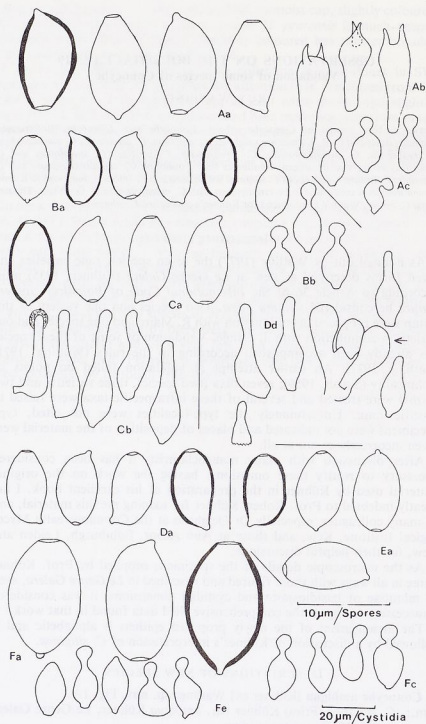


FIG. 1. A, *Conocybe ambigua*; B, *C. brunneola*; C, *C. dentatmarginata*; D, *C. exannulata*; E, *C. mesospora*; F, *C. pseudopilosella*. a, spores; b, basidia; c, cheilocystidia; d, lageniform cheilocystidia mixed with inflated cells (arrowed); e, caulocystidia. All from type material.

Pileus fulvo-ochraceus vel ochraceo-brunneus, 5–18 mm. Stipes 25–70 × 0.5–1.5 mm. Sporae (9–)11–12(–14) × 6–7 μ m, fusiformes vel leviter amygdaliformes, poro germinativo. Basidia bisporigera (—monosporigera), 18–30 × 7.5–10 μ m. Cystidia aciei lamellarum lecythiformia, 15–22 × 5.5–9 μ m, capitulis 3–4.5 μ m latis. Stipes et cellulis similibus capitatis vel non-captatis et pilis angustibus longis 1–2 μ m latis obtectus. Cellulae cuticulae pilei pyriformes vel sphaeropedunculate, 14–30 μ m diam.

Typus: Bois de Vincennes, Dept Val de Marne, près de Paris, France, 23 vii 1932, Kühner (holo. Hb. Kühner, Lyon; slide in E).

This taxon is a rather small-sized member of the *Conocybe* flora of Europe. It is a very distinctive species with prominently amygdaliform to subfusiform basidiospores and two-spored basidia, and it is not really closely related to *C. siliginea*, with which it was intimately connected when originally described. The caulocystidia are both capitate and non-capitate; the presence of lecythiform caulocystidia would place this species in subgen. *Conocybe* sect. *Conocybe*, but not close to the *C. pubescens* group whose members also have mixtures of capitate and non-capitate caulocystidia.

Material in MICH from Afghanistan on which Singer's 1959 description was based has been examined. Although undoubtedly close, it is not certain whether this collection and Kühner's original collections are conspecific. In his attempt to validate Kühner's taxon, Singer created an even greater state of confusion; luckily, however, it is not necessary to provide a new epithet.

Singer (1969) described a closely related four-spored species, *C. tetraspora*, from South America, and there is some evidence that it also occurs in Europe. It will be the subject of a later paper in this series.

2. *Conocybe brunneola* Kühner & Watling, sp. nov. Fig. 1B.

Syn.: *C. mesospora* Kühner var. *brunneola* Kühner, Le Genre Galera 55 (1935), *nomen nudum*.

Pileus brunneo-fulvus, villosus, 12.5–15 mm juve pluvio striatus. Stipes 37–45 × 1–1.2 mm. Sporae 6.5–7.5 × 3.5–4.5 μ m, phaseoliformes, poro germinativo. Basidia tetrasporigera, 18–20 × 6.5–7.5 μ m. Cystidia aciei lamellarum lecythiformia, 17–22 × 8–12.5 μ m, capitulis 4–5.5 μ m latis. Cystidia stipitis similia. Cellulae cuticulae pilei pyriformes vel sphaeropedunculate, 10–25 μ m diam.

Typus: Chartreuse près du Monastère de la Grande Chartreuse, France, 9 viii 1934, Kühner (holo. Hb. Kühner, Lyon; slide in E).

This is based on the material from which Kühner's description of *Conocybe mesospora* var. *brunneola* Kühner was drawn; two collections were used, one of which has been selected as type.

This species is readily recognised by the small stature, bright tawny, strongly striate pileus, and phaseoliform basidiospores. It is not conspecific with *C. mesospora* even though this has been suggested by Singer (1959).

3. *Conocybe dentatmarginata* Watling, sp. nov. Fig. 1C.

Syn.: *C. appendiculata* Lange & Kühner f. *macrospora* Kühner, Le Genre Galera 149 (1935), *nomen nudum*.

Pileus 7–12 mm, ochraceo-melleus juve sicco pallide flavido-ochraceus juve pluvio striatus. Stipes 40–50 × 1–1.5 mm. Sporae 10–11.5 × 5–6 μ m,

ellipsoideae, poro germinativo. Basidia tetrasporigera, c. $25-30 \times 8-9 \mu\text{m}$. Cystidia aciei lamellarum fere lageniformia cervice longa $25-33 \times 7-10 \mu\text{m}$ ad apicem $3.5-4.5 \mu\text{m}$. Cystidia stipitis absunt. Cellulae cuticulae pilei pyriformes vel sphaeropedunculatae, $12-30 \mu\text{m}$ diam.; pileocystidia absunt. Typus: Bois de Vincennes, Dept Val de Marne, Paris, France, 17 x 1932, Kühner (holo. Hb. Kühner, Lyon; slide in E).

Microscopically this taxon differs from *C. appendiculata* [Lange & Kühner ex] Watling not only in the size of the basidiospores, $10-11.5(-12) \times 5-6 \mu\text{m}$ as opposed to $7-8 \times 4.5(-5.5) \mu\text{m}$, but also in the shape of the cheilocystidia. In *C. appendiculata* the cheilocystidia are cucurbitiform whereas in *C. dentatmarginata* they are very variable, ranging from subcapitate to obtuse but always with an elongated, almost cylindric neck and body.

C. dentatmarginata is a member of subgen. *Pholiotina* sect. *Pholiotina*, and is typically found in grassy areas in or near woods: *C. appendiculata* is more typical of woodland paths and clearings.

4. *Conocybe exannulata* Kühner & Watling, sp. nov. Fig. 1D.

Syn.: *C. blattaria* (Fries) Kühner f. *exannulata* Kühner, Le Genre Galera 153 (1935), *nomen nudum*.

Pileus 20–30 mm, brunneo-ochraceus vel fulvus jove sicco sordido-ochraceus. Stipes 25–45 \times 1.5–4.5 mm. Sporae 6.5–9 \times 4.5–5 μm , ellipsoideae vel leviter amygdaliformes, poro germinativo minuto. Basidia tetrasporigera, c. $20-25 \times 7-8 \mu\text{m}$. Cystidia aciei lamellarum fere lageniformia cervice longa $35-45 \times 8.5-10 \mu\text{m}$ ad apicem $3.5-5 \mu\text{m}$, rariore pyriformia $11.5-18 \mu\text{m}$ diam. Cystidia stipitis absunt. Cellulae cuticulae pilei pyriformes vel sphaeropedunculatae, 8–18 μm diam.; pileocystidia absunt.

Typus: Bois de Vincennes, Dept Val de Marne, près de Paris, France, 16 v 1933, Kühner (holo. Hb. Kühner, Lyon; slide in E).

Kühner (1935) based his description on three collections all from Bois de Vincennes; one of these has been selected as type.

This taxon is characterised by cucurbitiform to lageniform cheilocystidia and basidiospores with minute germ-pores. This species is really not very closely related to the annulate *C. blattaria* with which it was linked by Kühner.

In the field *C. exannulata* can be distinguished from *C. blattaria* by the lack of an annulus and the presence of a usually larger pileus and stockier stipe; microscopically it differs in the much smaller basidiospores which lack the prominent germ-pore found in *C. blattaria*, and the much more elongate cheilocystidia.

Kühner (1935) adopted Ricken's interpretation of *C. blattaria* and so reversed the concept which had been traditionally used (see Orton, 1960) for *C. togularis* (Bull. ex Fries) Kühner and *C. blattaria*. The correct name for *C. togularis* is *C. arrhenii* (Fries) Kits van Waveren as shown by Kits van Waveren (1970). *C. exannulata* resembles *C. arrhenii* in many ways but differs in the lack of an annulus and, of more importance, in the shape of the cheilocystidia—cucurbitiform in *C. exannulata* and cylindric-flexuous in *C. arrhenii*.

As there has been considerable confusion in the nomenclature of the members of the *C. togularis* group the following summary is offered.

C. blattaria (Fries) Kühner (1935).

- ≡ *Pholiota blattaria* (Fries) Quélet (1872).
- ≡ *Pholiotina blattaria* (Fries) Fayod (1889).
- ≡ *Togaria blattaria* (Fries) W. G. Smith (1908).
- = *Pholiota teneroides* J. Lange (1921).

Misident.: *C. togularis* (Bull. ex Fries) Kühner s. Kühner (1935) *pro parte*.

C. vexans Orton (1960).

Misident.: *Pholiota togularis* (Bull. ex Fries) Kummer s. Ricken (1915); *C. togularis* (Bull. ex Fries) Kühner s. Kühner (1935) *pro parte*; ? *P. blattaria* (Fries) Quélet s. Konrad & Maublanc (1929) non 1948.

C. arrhenii (Fries) Kits van Waveren (1970).

- ≡ *Agaricus arrhenii* Fries (1838).
- = *Pholiota togularis* (Bull. ex Fries) Kummer auct. pl., non *Agaricus togularis* Bull. ex Fries (1821).
- = *Pholiotina togularis* (Bull. ex Fries) Fayod (1889).
- = *Togaria togularis* (Bull. ex Fries) W. G. Smith (1908).

Misident.: *Pholiota blattaria* (Fries) Quélet s. Ricken (1915); Bresadola (1930); *C. blattaria* (Fries) Kühner s. Kühner (1935).

C. aporos Kits van Waveren (1970).

- ≡ *Pholiotina aporos* (Kits van Waveren) Cléménçon (1976).

Misident.: *Pholiota togularis* (Fries) Kummer s. J. Lange (1938); *Pholiotina blattaria* (Fries) Fayod s. Moser (1953, 1967).

Kühner (1935) in his discussion on forma *exannulata* mentions a large-spored form with more prominent and irregularly shaped cheilocystidia and more prominent germ-pores in the basidiospores; the dimensions given for the basidiome are also greater. This is undoubtedly a distinct taxon. The cheilocystidia of this form resemble those of *C. arrhenii* var. *hadrocystis* Kits van Waveren but it cannot be an exannulate form of this taxon because var. *hadrocystis* possesses different shaped basidiospores.

However, in the field it is always very misleading in a characteristically annulate species when the veil, for some developmental or environmental reason, fails to form a ring, and velar fragments remain as appendiculate denticles on the pileus-margin. Under such conditions *C. arrhenii* can, it is true, macroscopically resemble *C. exannulata* and one must then resort to microscopic examination.

5. C. macrocephala Kühner & Watling, *sp. nov.* Fig. 2B.

Syn.: *C. tenera* (Schaeff. ex Fries) Fayod f. *macrocephala* Kühner, Le Genre Galera 73 (1935), *nomen nudum*.

Pileus 15–35 mm, fulvo-ochraceus vel luteo-fulvus. Stipes 15–50 × 1.5–3 mm. Sporae amygdaliformes, 8.5–10(–11.5) × 5.5–6(–6.5) µm. Basidia tetrasporigera, 18–30 × 9.5–12 µm. Cystidia aciei lamellarum lecythiformia, 18–26 × 10–12.5 µm, capitulis 4–7 µm latis. Cystidia stipitis similia. Cellulae cuticulae pilei pyriformes vel sphaeropedunculatae, 15–30 µm diam.

Typus: Bois de Vincennes, Dept Val de Marne, près de Paris, France, 4 x 1932, *Kühner* (holo. Hb. *Kühner*, Lyon; slide in E).

Not uncommon in Europe on soil amongst mosses, leaves and grass in woodlands; either solitary or in small troops.

Kühner based his description on collections from Bois de Vincennes, two of which have been examined and one selected as type.

Recognised by the large-headed, lecythiform cystidia and spore size (up to $11 \times 6.5 \mu\text{m}$) and the production of numerous needle-like crystals in aqueous ammoniacal mounts of the gills.

An attempt was made to validate this species by *Singer* in 1959.

6. *Conocybe mesospora* *Kühner* & *Watling*, sp. nov. Fig. 1E.

Syn.: *C. mesospora* *Kühner* f. *typica* *Kühner*, Le Genre *Galera* 58 (1935), *nomen nudum*.

Pileus aurantio-fulvidus, 10–35 mm. Stipes 35–45 \times 1–1.2 mm. Sporae $7.5\text{--}10 \times 4.5\text{--}5 \mu\text{m}$, ellipsoideae, poro germinativo. Basidia tetrasporigera, $17\text{--}25 \times 7.5\text{--}9 \mu\text{m}$. Cystidia aciei lamellarum lecythiformia, $7.5\text{--}12 \times 18\text{--}25 \mu\text{m}$, capitulis $4\text{--}5 \mu\text{m}$ latis. Cystidia stipitis similia. Cellulae cuticulae pilei pyriformes vel sphaeropedunculatae, 10–25 μm diam.

Typus: Ozoir-la-Ferrière, France, 28 ix 1932, *Kühner* (holo. Hb. *Kühner*, Lyon; slide in E).

Kühner (1935) described this taxon on the basis of ten collections made between July and September from various places around Paris. One of these collections (September 1932) has been selected as type as it agrees in all ways with the details given in the original description.

When describing *C. mesospora* *Kühner* erected in addition to the typical form (var. *mesospora* as f. *typica*) two other varieties. One of them has been described above as *C. brunneola*. This is not the *C. brunneola* indicated by *Singer* at the end of his Latin diagnosis of *C. mesospora* (1959).

C. mesospora is undoubtedly a widespread species in Europe on soil in woods and copses, but it is impossible to make out any pattern of distribution as workers have clearly not looked carefully at members of this group. One other French collection (aux environs de Paris, 31 viii 1931, *Kühner* (Hb. *Kühner*, Lyon; slide in E)) has been examined as have several from the British Isles.

Singer (in G) indicates that at least one collection of *Naucoria melinoides* *Fries* in *Fayod's* herbarium belongs to this taxon.

An attempt was made by *Singer* to validate this species in 1959.

7. *Conocybe pseudopilosella* *Kühner* & *Watling*, sp. nov. Fig. 1F.

Syn.: *C. pubescens* (*Gillet*) *Kühner* var. *pseudopilosella* *Kühner*, Le Genre *Galera* 89 (1935), *nomen nudum*.

Pileus ferrugineo-ochraceus, siccitate ochraceus et villosus, jove pluvio striatus, 5–12 mm. Stipes 40–80 \times 0.7–1.5 mm. Sporae $11.5\text{--}13.5\text{--}(15) \times 7.5\text{--}9 \mu\text{m}$, ellipsoideae, aliquantum crassitunicatae, poro germinativo. Basidia tetrasporigera, $17\text{--}32 \times 10.5\text{--}16 \mu\text{m}$. Cystidia aciei lamellarum lecythiformia, $15\text{--}20 \times 5\text{--}8\text{--}(9) \mu\text{m}$, capitulis $2.5\text{--}4.5 \mu\text{m}$ latis. Stipes et cellulis similibus capitatis vel non-capitatis et pilis angustibus longis 1–2 μm latis obiectus. Cellulae cuticulae pilei pyriformes vel sphaeropedunculatae, 12–25 μm diam.

Typus: Bois de Vincennes, Dept Val de Marne, près de Paris, France, 23 vii 1932, Kühner (holo. Hb. Kühner, Lyon; slide in E).

Kühner's description is based on fourteen collections; one of them which agrees admirably with the published description has been selected as type.

C. pseudopilosella differs from *C. pubescens* in its preference for a grassland habitat and its much smaller basidiospores, and from *C. subpubescens* in its broader spores and much more slender habit.

8. *Conocybe semiglobata* Kühner & Watling, sp. nov. Fig. 2A.

Syn.: *C. tenera* (Schaeff. ex Fries) Fayod f. *semiglobata* Kühner, Le Genre Galera 79 (1935), *nomen nudum*.

Pileus 9–24 mm, cremeus, cremeo-ochraceus vel aureo-ochraceus, striatus. Stipes 25–95 × 1–2 mm, vulgo bulbiloso (3–3.5 mm crassus). Sporae 12.5–14.5 × 7.5–8(–8.5) μm, ellipsoideae. Basidia tetrasporigera, 15–32(–35) × 9–12.5 μm. Cystidia aciei lamellarum lecythiformia, 15–25 × 6–10 μm, capitulis 2.5–4.5 μm latis. Cystidia stipitis similia. Cellulae cuticulae pilei pyriformes vel sphaeropendunculatae, 15–30 μm diam.

Typus: Bois de Vincennes, Dept Val de Marne, près de Paris, France, 6 x 1932, Kühner (holo. Hb. Kühner, Lyon; slide in E).

As pointed out by Kühner (1935) there is a great variation in dimensions of basidiospores, etc., in macroscopically similar collections. Two collections made by Kühner in addition to the type have been examined; one of these was also from Bois de Vincennes. Range in basidiospore dimensions observed were as follows: specimen A (24 ix 1932) 11–13.5(–14.5) × 6.5–8 μm (Fig. 2C); specimen B (type) 12.5–14.5 × 7.5–8(–8.5) μm; specimen C (no further data) 13.5–16.5 × 7.5–9 μm (Fig. 2D). Specimen C agrees with Kühner's form 'l'une macrospore à stipe foncé' and specimen A with form 'l'autre microspore à stipe plus clair'. There are correlated characters of size, shape and colour of the basidiomes which indicates that this complex demands further study. If members of the genus *Coprinus* are a guide then there is every likelihood that these so-called forms are indeed inter-sterile taxa. In addition it would appear that a macroscopically similar fungus is also present in Europe, but with even smaller basidiospores and several two-spored basidia scattered in the hymenium. Now that a base-line is available, i.e. a type species, a constructive approach to this complex can be attempted.

A good illustration of this fungus is given by Lange in Plate 129J (1938) under the name *C. tenera* f. *convexa* Lange. A description of European material which is conspecific with the type is offered to eliminate any confusion which might arise in the future with the recognition of additional microspecies. Unfortunately cultural studies could not be carried out using the 1932 material.

Pileus 10–25 mm, almost hemispherical to campanulate, becoming convex or conico-convex but never expanding further, rich ochraceous fawn to ochraceous brown, darker at the disc and striate almost to centre, hygrophanous, rapidly becoming ochraceous cream-colour on drying and finely villous under lens; flesh thin, rust-colour, pale ochraceous when dry. Stipe 25–100 × 1–2 mm, equal or with only a small bulb (up to 3.5 mm diam.), honey-coloured or pale ochraceous at apex, ochraceous to fawn

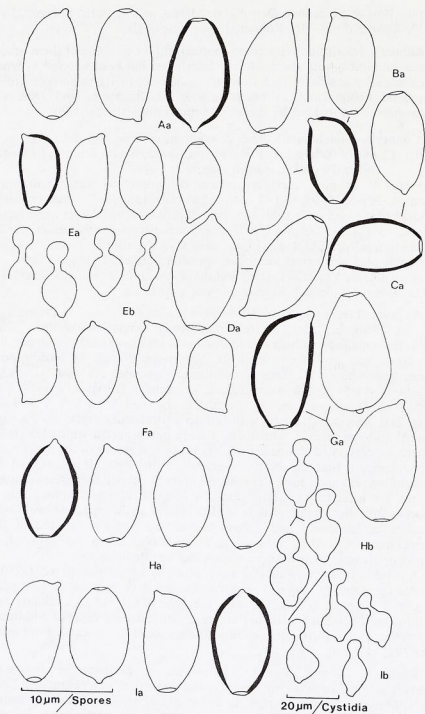


FIG. 2. A, *Conocybe semiglobata*; B, *C. macrocephala*; C, *C. semiglobata* specimen A; D, *C. semiglobata* specimen C; E, *C. sordida*; F, *C. spiculoides*; G, *C. subovalis*; H, *C. magnicapitata*; I, *C. moseri*. a, spores; b, cheilocystidia. From type material except where indicated.

below, although often white at very base, darkening upwards with age, finely powdered under a lens, but not villose; flesh honey-brown or fawn, paler on drying. Gills adnate, ochraceous cream becoming ochraceous brown with a slight cinnamon tinge.

Basidia 4-spored. Basidiospores $11-13(-13.5) \times 6-7.5(-8) \mu\text{m}$, ellipsoid, slightly flattened in profile, fairly thick-walled, with a distinct germ-pore. Cheilocystidia $15-25 \times 7.5-10 \mu\text{m}$, lecythiform with apex $2.5-5 \mu\text{m}$ diam. Caulocystidia similar, not intermixed with long flexuous hairs. Clamp-connections present. Positive reaction in aqueous ammonium hydroxide mounts of the gills.

9. *Conocybe sordida* Kühner & Watling, sp. nov. Fig. 2E.

Syn.: *C. spicula* f. *sordida* Kühner, Le Genre Galera 62 (1935), *nomen nudum*.

Pileus 6-16 mm, argillaceo-sordidus vel mellino-brunneus siccitate pallido ochraceus jove pluvio striatus sed mox exstriate siccans. Stipes 35-65 \times 0.7-1.5 mm. Sporae $8.5-10 \times 4.5-5 \mu\text{m}$, ellipsoideae vel leviter amygdaliformes, poro germinativo. Basidia tetrasporigera, $14-23 \times 6.5-8.5 \mu\text{m}$. Cystidia aciei lamellarum lecythiformia, $20-30 \times 9-15 \mu\text{m}$, capitulis $4-5.5 \mu\text{m}$ latis. Cystidia stipitis similia. Cellulae cuticulae pilei pyriformes vel sphaeropedunculatae, $15-30 \mu\text{m}$ diam.

Typus: Bois de Vincennes, Dept Val de Marne, près de Paris, France, 29 ix 1932, Kühner (holo. Hb. Kühner, Lyon; slide in E).

This is not conspecific with *C. rickeniana* Orton, the currently accepted name for *Galera spicula* (Lasch) Kummer s. Ricken, 1915. *Agaricus spiculus* Lasch is really an unknown entity and without even a hint of the microscopic details it is impossible to say to which fungus Fries (1821, 1838) was referring when he adopted Lasch's epithet.

The present species is characterised by its dull colours, non-striate pileus, and comparatively small spores, up to $9 \mu\text{m}$ long.

10. *Conocybe spiculoides* Kühner & Watling, sp. nov. Fig. 2F.

Syn.: *C. spicula* (Lasch) Kühner var. *spiculoides* Kühner, Le Genre Galera 61 (1935), *nomen nudum*.

Pileus 12-13 mm, griseo-argillaceus jove sicco pallido ochraceus. Stipes 45-65 \times 1.2-1.5 mm. Sporae $7.5-9.5 \times 4-5.5 \mu\text{m}$, ellipsoideae aliquantum tenuitunicatae, sub micro. pallidissimae. Basidia tetrasporigera, $19-26 \times 7.5-9 \mu\text{m}$. Cystidia aciei lamellarum lecythiformia, $17-32 \times 8-15 \mu\text{m}$, capitulis $4-5.5(-6) \mu\text{m}$ latis. Cystidia stipitis similia. Cellulae cuticulae pilei pyriformes vel sphaeropedunculatae, $15-30 \mu\text{m}$ diam.

Typus: Bois de Vincennes, Dept Val de Marne, près de Paris, France, 11 x 1932, Kühner (holo. Hb. Kühner, Lyon; slide in E).

Two collecting dates are given by Kühner (1935); the first collection is taken as type. One further collection, other than the type material has been examined; it came from the British Isles. *C. spiculoides* apparently is a rare agaric which is easily recognised by the very pale-coloured basidiospores which lack a germ-pore.

An attempt was made by Singer in 1959 to validate this taxon.

11. *Conocybe subovalis* Kühner & Watling, sp. nov. Fig. 2G.

Syn.: *C. tenera* (Schaeff. ex Fries) Fayod var. *subovalis* Kühner, Le Genre Galera 69 (1935), *nomen nudum*.

Pileus 10–30 mm, sordido-cremeus, cremeo-ochraceus vel mellino-ochraceus, exstriatus. Stipes 40–125 × 1.5–2.2 mm, vulgo bulbosus (4–6 mm crassus). Spores (10–)11.5–13.5(–15) × 6.5–8 µm, ellipsoideae. Basidia tetrasporigera, 17–32 × 9–13 µm. Cystidia aciei lamellarum lecythiformia, 20–30 × 7–15 µm, capitulis 4.5–6.5 µm latis. Cystidia stipitis similia. Cellulae cuticulae pilei pyriformes vel sphaeropedunculatae, 15–30 µm diam.

Typus: Chartreuse près du Monastère de la Grande Chartreuse, France, 12 viii 1934, *Kühner* (holo. Hb. *Kühner*, Lyon; slide in E).

This species is easily recognised by the dull colours of the pileus, the relatively large size, prominent basal bulb of the stipe, large basidiospores, and innumerable lecythiform cystidia scattered in long lines all down the stipe. It grows amongst herbaceous plants and grasses at the edge of woods and copses, and along track-sides.

One collection other than the type was examined from the six originally quoted by *Kühner*. Lange in Plate 129H (1938) figures this fungus admirably, but as *Galera tenera* Fries. Bresadola figures it in Plate 808 as *G. ovalis* Fries (1931), although this illustration appears to be of drying basidiomes.

CONOCYBE MAGNICAPITATA

Orton (1960) stated that *Conocybe magnicapitata* Orton (Fig. 2H) 'is *C. spicula* f. *macrospora* *Kühner* said by *Kühner* to grow in woods and in grass'. However, this was only a suspicion as *Kühner*'s material had not been examined; the new name had been introduced because Orton believed the taxon was worthy of specific rank and required a valid name.

The necessary analysis has now been completed, using one of *Kühner*'s collections on which his description was based, and Orton's suggestion of conspecificity can be confirmed. The table shows the comparisons at the microscopic level; macroscopic characters agree. The figures given for *C. magnicapitata* are from the type (Gwydyr Forest, Llanwrst, 16 v 1958, Orton, holo K, slide in E) and those for *C. spicula* f. *macrospora* from a *Kühner* specimen (Bois de Vincennes, Dept Val de Marne, Paris, 18 vi 1932, *Kühner*; Hb. *Kühner*, Lyon; slide in E).

	<i>C. magnicapitata</i>	<i>C. spicula</i> f. <i>macrospora</i>
Basidiospores		
size	9–11(–12) × 5–6(–7.5) µm	8.5–11 × 5.5–6(–6.5) µm
presence of germ-pore	+	+
Basidia		
no of sterigmata	4	4
size	15–25 × 7.5–8.5 µm	15–24 × 7.5–9.5 µm
Cheilocystidia		
size	18–24 × 10–14 µm	20–30 × 9–14(–18) µm
diam. of head	(4–)5–7(–8) µm	4.5–7.5 µm
Caulocystidia		
size	17.5–25.5 × 12.5–15 µm	16–30 × 12.5–16 µm
diam. of head	5–9 µm	5–9 µm

C. magnicapitata is characterised by its relatively large basidiospores and almost totally non-striate pileus. *C. rickeniana* Orton, 1960 (= *C. spicula* (Lasch) Kühner s. Kühner, 1935 = *Galera spicula* Lasch s. Ricken, 1915) which also has large headed cheilo- and caulocystidia, is distinguished by its striate, bright tawny ochraceous pileus, and smaller basidiospores. Unfortunately the epithet 'spicula' cannot be used and is best considered a *nomen ambiguum* (see p. 339).

Galera sparteae (Fr.) Kummer (1871) has also been used for members of this complex but without microscopic data it is impossible even to hazard a guess as to which fungus this name might refer. Some authorities have in fact referred the name 'sparteae' to *C. rickeniana* but this epithet along with 'spicula' is best abandoned.

CONOCYBE SILIGINEA

Conocybe siliginea (Fries) Kühner is based on *Agaricus siligineus* Fries (= *Galera siliginea* (Fries ex Fries) Quélet, 1872). However, the concept has now been restricted to what is considered Fries' original concept of 1821; there is evidence that Fries' ideas by 1838 had either changed or certainly expanded to incorporate taxa now considered distinct. In 1863 Fries' ideas were still at variance with the concept in *Systema Mycologicum*. Singer (1962) has also drawn attention in a footnote on p. 524 to the difference between Fries' interpretation of 1821 and that of 1838.

The purpose of Lundell and Nannfeldt's presentation of *Fungi Exsicc. Suecici* (1953) was to redefine and supply specimens for as many of the Friesian classical species as possible. Material of this exsiccata has been examined (No. 2050) and agrees with the concept outlined in the *New Check List of British Agarics and Boleti* (Dennis, Orton and Hora, 1960) and in *Flora Agaricina Danica* (J. Lange, 1938). The taxon is characterised by 2-spored basidia, large basidiospores, $13-18 \times 7.5-10 \mu\text{m}$, and ochraceous to pale brownish pileus.

Conocybe siliginea is a terribly confused taxon. The confusion has arisen from three important aspects: (1) lack of microscopic data on many important collections; (2) mis-use of the names of many of the fungi included in this section, and; (3) changing concepts of mycologists using those names. There would appear to be a mixture of several distinct micro-species in this complex.

Kühner's concept of *C. siliginea* covered, in addition to the type form six other varieties, 'ambigua' (see p. 331), *anthracophila* nob., *fragile* (Peck), *neoantipus* (Atk.), *oc(h)racea* nob., and *pallidospora* nob., some of which are now considered to be unrelated to *C. siliginea*. As his concept of *f. typica* followed that of J. Schaeffer (1930) and differed from that of Fries in *Systema Mycologicum* it was considered imperative to find how far the concepts differed. This has been achieved in the present study by the examination of one of the collections of *C. siliginea f. typica* 'description des récoltes tétrasporiques' used in *Le Genre Galera* (Bois de Vincennes, Dept Val de Marne, près de Paris, 28 viii 1932, Kühner (Hb. Kühner, Lyon; slide in E).

The following conclusions have been reached:—

a. *Conocybe siliginea* s. Kühner, 1935 = *C. kuehneri* Singer in Collect. Bot. 1:236 (1947), *nomen nudum*.

This conclusion confirms Dennis, Orton & Hora's (1960) opinion, although they identified the taxon under the erroneous name of *C. plumbeitincta* (Atk.) Singer s. Singer, 1950.

b. *Conocybe siliginea* s. Singer, 1950 = *C. rickenii* (J. Schaeffer) Kühner, Le Genre Galera 115 (1935).

A figure of this taxon is found in Bresadola, *Iconographia Mycologica*, Plate 807, as *Galera siliginea* and in Lange, *Flora Agaricina Danica*, Plate 128B.

G. siliginea s. J. Schaeffer fide Singer, 1959 = 'greyish form of *G. siennophylla* forma *cinerascens*' Singer, *nomen nudum*. On the next page (396) of the same article, however, '*C. ochracea* fa *cinerascens*' is mentioned apparently for the same fungus. See note below.

c. *Conocybe siliginea* s. Moser, 1953 = *C. plumbeitincta* (Atk.) Singer s. Moser, Gams' Kleine Kryptogamenflora, Band IIb/2:282 (1978) = *C. kuehneri* Singer (see above).

From Singer's comments in 1959 it would appear that Atkinson's original fungus has a pale pileus and stipe; this does not agree with the interpretation of *C. plumbeitincta* adopted by so many European authorities to date. In fact a new name with full documentation is required and what better material could be found than Kühner's from Bois de Vincennes cited above? As Singer's name *C. kuehneri* is based on the description covering this same collection it might have been possible to validate this epithet. However, *C. kuehneriana* Singer already exists for *C. siliginea* var. *ochracea* 'récoltes macrospores' and the two epithets are too close to be certain that orthographic errors might not occur in the future. I therefore propose to name this species *C. moseri* in dedication to Prof. M. Moser whose numerous contributions have considerably extended our knowledge of agarics throughout the world.

***Conocybe moseri* Watling, sp. nov. Fig. 2I.**

Pileus 6–11 mm, sordide brunneus, brunneo-fuliginous vel griseo-brunneus, striatus. Stipes 40–60 × 0.5–1 mm, filiformis non-bulbillosus, pallidus. Sporae 8.5–10.5 × 5.5–6 µm, ellipsoideae, poro germinativo. Basidia tetrasporigera. Cystidia aciei lamellarum, lecythiformia, 17.5–20 × 6.5–8.5 µm, capitulis 3–5 µm latis. Cystidia stipitis lageniformia vel cylindrica. Cellulae cuticulae pilei pyriformes vel sphaeropedunculatae, 17.5–30 µm diam.

Typus: Bois de Vincennes, Dept Val de Marne, près de Paris, France, 28 viii 1932, Kühner (holo. Hb. Kühner, Lyon; slide in E).

The 2-spored element described as belonging to *C. siliginea* by Kühner (1935) has been deliberately excluded as it is believed this represents a second taxon. Singer (1959) has come to a similar conclusion, although his discussion (p. 395) is difficult to follow.

Note

A full list of the various misidentifications of the known temperate species of *Conocybe* is being prepared and will appear as a separate publication.

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