Cortinarius Fr. (Agaricales) in Australasia. 2. Subgen. *Phlegmacium* in Papua New Guinea*

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Ten new species of *Cortinarius* subgen. *Phlegmacium*, *C.* (*Phl.*) *centroguttatus*, *C. contrarius*, *C. evanescens*, *C. fusiclavus*, *C. fuscoviridis*, *C. lacertianus*, *C. olivaceofumosus*, *C. papuanus*, *C. turbobasalis* and *C. vittatus* are reported from Papua New Guinea. Based on ecosociological data assessed at the collecting sites, all species treated are considered to enter ectomycorrhiza with native trees belonging to *Nothofagus* (2 spp.) and *Castanopsis-Lithocarpus* (Fagaceae). Illustrations of all taxa mentioned and a key to Papuan *Cortinarius* subgen. *Phlegmacium* are provided.

Keywords: Agaricales, basidiomycetes, mycorrhiza, southern hemisphere, taxonomy.

Worldwide, *Cortinarius s.l.* is one of the largest and taxonomically most difficult genera in the Agaricales. To date the majority of species in *Cortinarius* has been described from the northern hemisphere where representatives of this genus can be found as ectomycorrhiza-formers both with deciduous and coniferous trees and shrubs in many ecologically often widely different localities.

Traditionally, the genus *Cortinarius* is divided into several artificial subgenera, *Phlegmacium*, *Myxacium* or *Telamonia* representing the most common ones. In the older literature *Dermocybe* has also been perceived as a subgenus of *Cortinarius* but modern taxonomic concepts mostly based upon chemotaxonomic features (pigment analysis) indicate its rather isolated position within *Cortinarius s.l.* (Keller & al., 1987; Høiland & Watling, 1990). Taxa belonging to subgen. *Phlegmacium* are characterized by basidiomes with viscid-glutinous pileus and dry stipe whereas any member of *Myxacium* can be recognized by having a layer of gluten both on the pileus and on the stipe.

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* This paper is dedicated to Professor M. Moser on the occasion of his seventieth birthday.

Taking the large surface area and the many ecological niches on the Australian continent into account the present knowledge of Australian *Cortinarius* is still poor. The first reports concerning *Cortinarius s.l.* date back to Cooke (1892). The most comprehensive contribution towards the knowledge of this genus has been provided by Cleland (1934) who described or mentioned approximately ten taxa of *Phlegmacium* and eight taxa of *Myxacium* (Grgurinovic, 1989; Horak & Wood, 1990) collected in myrtaceous forests in SE and S Australia. Further scattered and incoherent information about *Cortinarius*, including subgen. *Phlegmacium* and some other subgenera, can be found in papers recently published by Bougher & Hilton (1989), Bougher & Malajczuk (1986), Fuhrer (1985), Fuhrer & Robinson (1992), Griffiths (1985), Hilton (1982), Hilton (1988), Høiland & Watling (1990), MacDonald & Westermann (1979) and Willis (1963). Very little information is available on *Cortinarius* in New Zealand [Horak, 1983; Horak, 1987 (*Dermocybe*); Horak & Wood, 1990], or New Caledonia (Horak & Wood, 1990).

This contribution deals with the first records of *Cortinarius* subgen. *Phlegmacium* collected exclusively in fagaceous forests in Papua New Guinea (Horak & Kobayasi, 1978). To better understand their taxonomy and ecology the Papuan taxa have been compared with representatives recorded from neighboring regions. *Cortinarius* and in particular its subgen. *Phlegmacium*, however, has never been reported before from the Malayan Archipelago, although many basidiomes representing these taxa have been observed by the author on several occasions in fagaceous forests in Indonesia, Malaysia and Singapore. In the past potential ectomycorrhizal trees (*Eucalyptus*, *Nothofagus*) for *Cortinarius* immigrated from Australia into New Guinea and it is safe to assume that also their symbiontic Cortinarii arrived in New Guinea together with their hosts.

Key to Papua New Guinean species of *Cortinarius* subgen. Phlegmacium

1. Lamellae (on young basidiomes) green to olive (cf. also No. 3, 10).. 2
1* Lamellae (on young basidiomes) blue to lilac..... 3

2. Stipe –65 mm, base bulbous-clavate (–15 mm), olive-green. Pileus –40 mm, dark brown to black with olive tinge. Odour and taste unpleasant. Spores 9.5–11 × 6–7 µm, broadly ovoid, verrucose. Under *Nothofagus* spp..... 1. *C.* (*Phl.*) *olivaceofumosus*
2* Stipe –70 mm, base submarginate or bulbous (–20 mm), pale yellow-green, with conspicuous volva-like olive-brown veil

remnants along margin. Pileus –55 mm, brown-olive, centre guttate. Odour and taste like fresh corn-cob. Spores 12–14 × 5.5–7 µm, sublimoniform, coarsely verrucose. Under *Castanopsis-Lithocarpus* ..... 2. *C.* (*Phl.*) *fuscoviridis*

3. Basidiomes with ± distinctive green-olive colours (cf. also No. 10). Pileus –70 mm, pale green, at centre turning ochre-orange. Stipe –75 mm (bulb –25 mm), distinctly marginate, with conspicuous veil remnants along margin, lilac above, pale green-blue towards base. Odour and taste pleasant. Spores 7–8 × 4 µm, subamygdaliform, verrucose, edge of lamellae with ovoid-subclavate cheilocystidia. Under *Castanopsis-Lithocarpus* ..... 3. *C.* (*Phl.*) *lacertianus*

3* Basidiomes devoid of distinctive green-olive colours (cf. No. 10) ... 4

4. Base of stipe cylindrical, clavate or fusoid 5

4* Base of stipe distinctly marginate. Spores distinctly amygdaliform-mucronate to limoniform, coarsely verrucose. Odour and taste not distinctive 7

5. Basidiomes small. Base of stipe slender fusoid to bulbous (–10 mm). Stipe –50 mm, cortina fugaceous, universal veil remnants absent, lilac, base whitish, densely covered with silvery fibrils. Pileus –40 mm, ochre-brown, with lilac tints towards margin. Odour and taste farinaceous to spermatic. Context pale ochre, lilac in rind of stipe. Spores 5.5–7 × 3.5–4 µm, elliptical, minutely verrucose. Under *Castanopsis-Lithocarpus* ..... 4. *C.* (*Phl.*) *fusiclavus*

5* Basidiomes robust. Base of stipe cylindrical to clavate, occasionally submarginate, below distinctive fibrillose cortina with numerous fibrillose to membranaceous persistent zones of universal veil. Stipe –150 × –20 mm. 6

6. Base of stipe cylindric to subclavate. Stipe pale yellow, universal veil remnants pale yellow to brown. Pileus –80 mm, yellow-brown, centre orange-brown with brown dots. Odour and taste not distinctive. Context pale yellow, pale lilac in rind of stipe. Spores 8.5–11 × 5–6 µm, elliptical, verrucose. Under *Nothofagus* .. 5. *C.* (*Phl.*) *centroguttatus*

6* Base of stipe clavate to submarginate. Stipe lilac, universal veil remnants ochre-brown. Pileus –120 mm, dark brown, gradually paler towards pale yellow-lilac margin. Odour and taste pleasant. Context white, lilac in rind of stipe. Spores 6.5–8 × 4–4.5 µm, amygdaliform, verrucose. Under *Castanopsis-Lithocarpus* 6. *C.* (*Phl.*) *vittatus*

7. Pileus golden yellow to sulphur yellow, centre covered with conspicuous darker dots, cortina distinctly fibrillose 8

7* Pileus not as above, cortina inconspicuous or absent. Spores coarsely verrucose 9

8. Pileus –35 mm. Stipe –25 (bulb –20 mm), pale lilac, whitish to pale yellow towards the base. Context lilac in stipe. KOH-reaction (on pileipellis) red. Spores 9.5–11 × 5.5–6 μm, coarsely verrucose. Under *Castanopsis* 7. *C.* (*Phl.*) *turbobasalis*

8* Pileus –55 mm. Stipe –65 mm (bulb –20 mm), pale yelow. Context off-white. KOH-reaction negative. Spores 8.5–10 × 4.5–5.5 μm. Under *Lithocarpus* ..... 8. *C.* (*Phl.*) *contrarius*

9. Pileus –60 mm, grey-blue (with silvery shine) turning yellow-brown in age, covered with agglutinate patches of white universal veil remnants. Stipe –100 (bulb –25 mm), blue-lilac, with submembranaceous pale ochre universal veil remnants at margin of bulb. Context off-white to pale, blue in apex of stipe. Spores (10)11–13 × 5.5–6 μm. Under *Castanopsis-Lithocarpus* ..... 9. *C.* (*Phl.*) *papuanus*

9* Pileus –70 mm, chocolate brown (with olive tinge in young specimens) turning ochre, strongly hygrophanous. Stipe –85 mm (bulb –20 mm), at first pale blue turning to pale brass yellow. Any distinctive veil remnants absent. Context blue-lilac, olive tinge beneath pileipellis, pale ochre in base of stipe. Spores 9–11 × 5–6 μm. Cheilocystidia broadly clavate forming sterile seam at gill edge of lamellae. Under *Castanopsis-Lithocarpus* 10. *C.* (*Phl.*) *evanescens*

Description of species

1. ***Cortinarius (Phlegmacium) olivaceofumosus*** E. Horak sp. n. – Fig. 1, 1-2. Pl. 1, 1.

Pileus –40 mm, hemisphaericus convexus vel expandus fuscus vel fuliginosus olicaeobrunneo tinctu, viscidus. Lamellae adnatae vel emarginatae, primo pallide olivaceae dein ferrugineae. Stipes –65 × 10 mm, cylindricus, ad basim bulbosoclavatus, olivaceus aetate argillaceus, siccus, cortina adest. Odor saporque ingrati. Caro pallide viridis. Sporae 9.5–11 × 6–7 μm, late ovoideae, verrucosae. Cheilocystidia nulla. Pileipellis ex hyphis gelatinosis fibulatis pigmento plasmatico luteobrunneo instructus.

Ad terram in silvis montanis nothofagineis. Nova Guinea. Holotypus: 4 v 1972, leg. Horak (ZT 72/436).

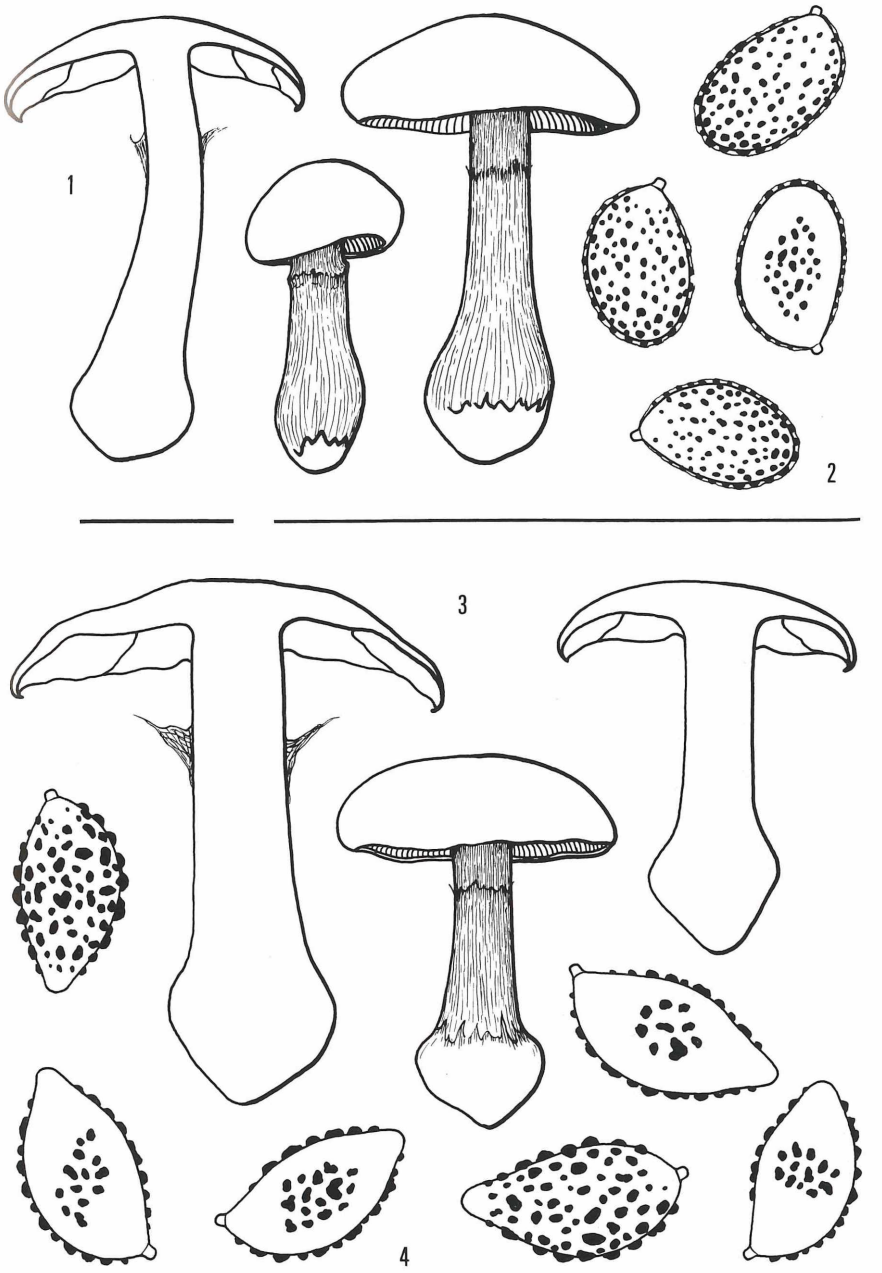

Fig. 1. – 1, 2. *Cortinarius* (*Phl.*) *olivaceofumosus* E. Horak (E. Horak (72/436, holotype). – 1. basidiomes. – 2. spores. – 3, 4. *Cortinarius* (*Phl.*) *fuscoviridis* E. Horak (71/190, holotype): 3. basidiomes. – 4 spores. – Bar = 20 mm (basidiomes), 20 µm (basidia, cheilocystidia), 10 µm (spores).

Pileus –40 mm, at first hemispherical to convex with incurved estriate margin becoming convex to expanded; dark brown to black with distinctive olive-brown tinge (also in aged specimens); viscid, innately fibrillose, not hygrophanous, universal veil remnants absent. – Lamellae crowded, adnate to emarginate, –up to 4 mm wide; at first pale olive-green, changing to rust brown; edges entire, concolorous. – Stipe –65 × –10 mm, cylindrical above becoming bulbous-clavate towards base (–15 mm diam.); olive-green over whole length, fading with age and then base turning pale brown; dry, conspicuously fibrillose, solid; at first fibrillose cortina conspicuous later collapsed, no further veil remnants. – Context pale brown in pileus, pale green in stipe. – Odour and taste unpleasant (like sweat). – Chemical reactions on pileus: KOH, HCl and NH_3 negative. – Spore print rust brown. – Spores 9.5–11 × 6–7 µm, broadly ovoid, verrucose, warts coarser at apex, perispore poorly developed. – Basidia 30–36 × 10 µm, clavate, 4–spored, clamped. – Cheilocystidia absent. – Pileipellis an ixocutis composed of repent to erect cylindrical strongly gelatinized hyphae (4–10 µm diam.), plasmatic pigment yellow-brown in KOH, terminal cells not differentiated. – Clamp connections present.

Habitat – On soil in mesophytic montane moss forest, on soil among litter under *Nothofagus* spp. (Fagaceae), 2300 m.

Material examined – PAPUA NEW GUINEA: Morobe District, Wau, Mt. Kaindi, 2300 m, 4 V 1972, leg. Horak (ZT 72/436, holotype).

Macroscopically this taxon is characterized by the distinctive olive-fuscous to olive-black color of the pileus, the pale green lamellae in young specimens and the olive-green bulbous to clavate stipe with a rather poorly developed cortina. The medium-sized broadly ovoid spores are covered with coarse isolated to shortly confluent, crested warts embedded in a distinct perispore (visible in scanning electron microscopy, SEM). The combination of these characters points towards unequivocal taxonomic ties to *C.* (*Phl.*) *infractus* (Fries) Wünsche (sect. Amarascentes, cf. Moser, 1960).

The locality where *C.* (*Phl.*) *olivaceofumosus* has been collected indicates a putative ectomycorrhizal relationship to *Nothofagus* in montane moss forest.

The present species shares several macroscopic features (green lamellae, bulbous stipe) with *C.* (*Phl.*) *ochraceofulvus* Cleland (1933) and *C.* (*Phl.* ?) *lilacinofulvus* Cleland (1933), both originally described from *Eucalyptus* forests in South Australia. Apart from the ecology at their habitat, the Papuan species is readily distinguished from the former taxon by its ovoid minutely warted spores measuring 7–8 ×

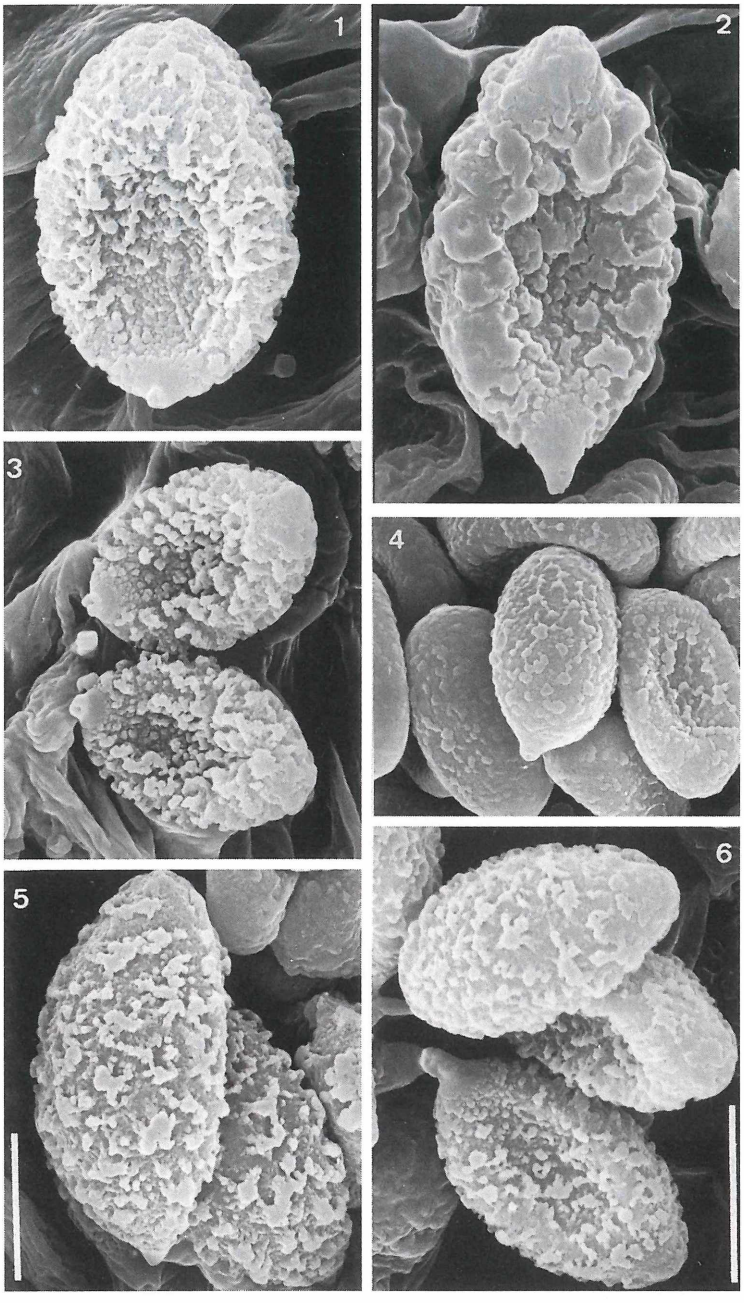

Plate 1. – Spores of *Cortinarius* spp. (SEM). – 1. *Cortinarius (Phl.) olivaceofumosus* E. Horak (72/436, holotype). – 2. *Cortinarius (Phl.) fuscoviridis* E. Horak (71/190, holotype). – 3. *Cortinarius (Phl.) lacertianus* E. Horak (71/217, holotype). – 4. *Cortinarius (Phl.) fusiclavus* E. Horak (72/309, holotype). – 5, 6. *Cortinarius (Phl.) centroguttatus* E. Horak (72/52, holotype). – Bar: 5 μm.

4.5–5 µm. The latter *Phlegmacium* [probably contaxic with *C.* (*Myx.*) *subarvincaeus* Cleland (1928)] is distinctly separated by the large (11–12.5 × 6–7 µm), coarsely warted and almond-shaped spores.

2. ***Cortinarius (Phlegmacium) fuscoviridis*** E. Horak sp. n. – Fig. 2, 3–4. Pl. 1, 2.

Pileus –55 mm, hemisphaericus dein convexus vel subumbonatus, brunneo-olivaceus, viscidus. Lamellae adnatae vel emarginatae, pallide olivaceoluteae dein argillaceae. Stipes –70 × –10 mm, cylindricus, ad basim bulbosus vel submarginatus, pallide luteoviridis, siccus, ad basim e velo submembranaceo olivaceobrunneo instructus. Caro pallide olivacea in pileo, lutea in stipite. Odor saporque grati. Sporae 12–14 × 5.5–7 µm, sublimoniformes, grosse verrucosae. Cheilocystidia nulla. Pileipellis ex hyphis gelatinosis, fibulatis pigmento fusco instructis. Ad terram in silvis montanis fagineis. Nova Guinea.

Holotypus: Papua New Guinea, Morobe District, Bulolo, Manki, 1450 m, 21 Oct. 1971, leg. Horak (ZT 71/190).

Pileus –55 mm, hemispherical to convex with incurved estriate margin, becoming expanded, occasionally subumbonate at centre; uniformly brown-olive, centre covered with soot brown dots; viscid, innately fibrillose, universal veil remnants absent. – Lamellae crowded, broadly adnate to emarginate, sometimes decurrent with short tooth, up to 6 mm wide; at first pale olive-yellow becoming argillaceous with rust brown tinge; edges entire or subserrate, concolorous. – Stipe –70 × –10 mm, cylindrical above, gradually becoming bulbous or submarginate towards base (–20 mm diam.); pale yellow-green; dry, strongly fibrillose, solid; cortina fibrillose, margin of basal bulb with conspicuous membranaceous to volva-like olive-brown veil remnants. – Context pale olive-green in pileus, yellow in rind of stipe. – Odour and taste like fresh corn-cob. – Chemical reactions on pileus: KOH negative. – Spore print rust brown. – Spores 12–14 × 5.5–7 µm, sublimoniform, coarsely verrucose, distinctive perispore absent. – Basidia 30–40 × 8–10 µm, subcylindric to clavate, 4-spored, clamped. – Cheilocystidia absent. – Pileipellis an ixocutis composed of entangled strongly gelatinized cylindric hyphae (4–7 µm diam.), terminal cells not differentiated, plasmatic (and occasional encrusting) pigment dark brown in KOH. – Clamp connections present.

Habitat – On soil in mesophytic montane rain forest, among litter under *Castanopsis acuminatissima* and *Lithocarpus* sp. (Fagaceae), 1450 m.

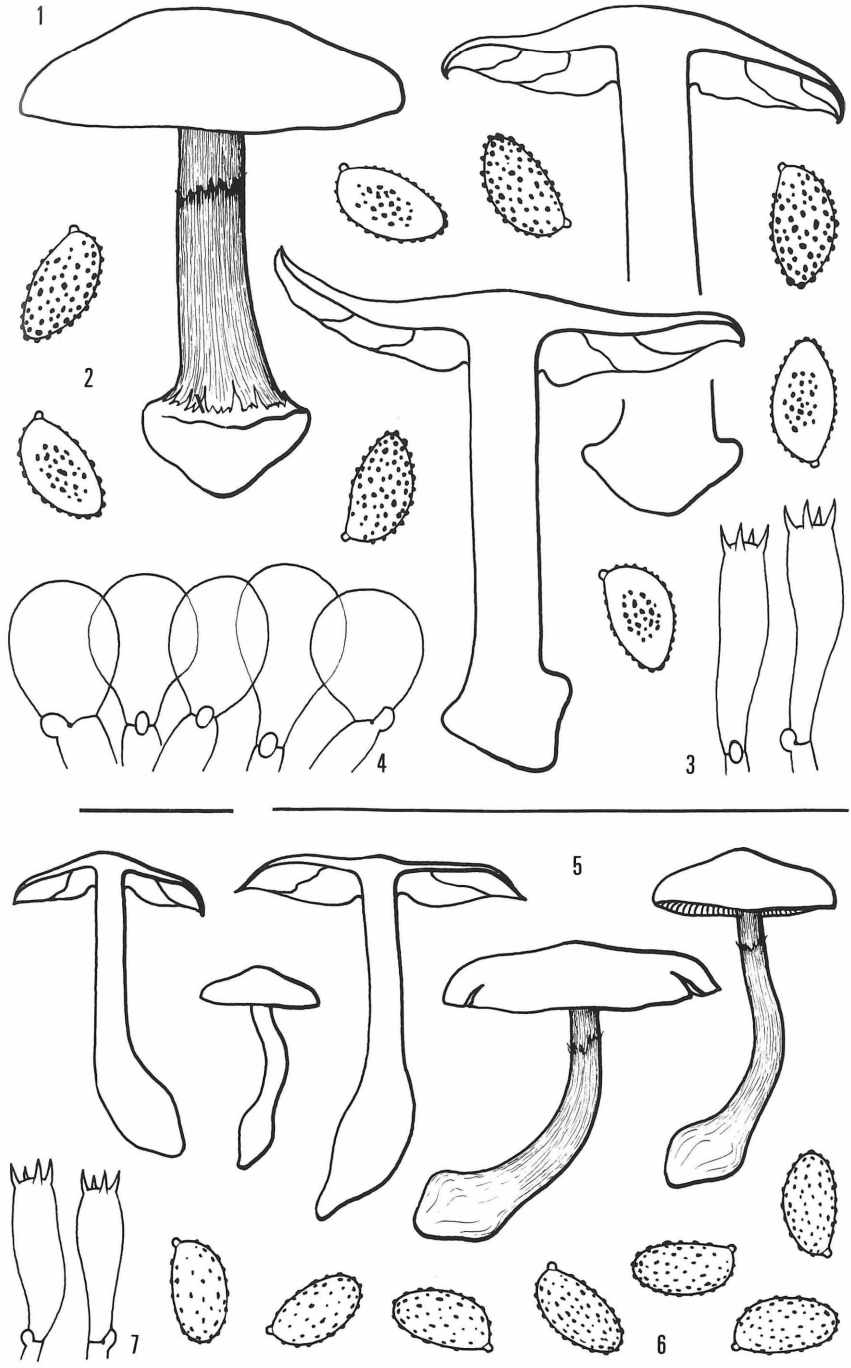

Fig. 2. – 1–4. *Cortinarius* (*Phl.*) *lacertianus* E. Horak (71/217, holotype): 1. basidiomes. – 2. spores. – 3. basidia. – 4. cheilocystidia. – 5-7. *Cortinarius* (*Phl.*) *fusiclavus* E. Horak (72/309, holotype). – 5. basidiomes. – 6. spores. – 7. basidia. – Bar: 20 mm (basidiomes), 20 μm (basidia, cheilocystidia), 10 μm (spores).

Material examined PAPUA NEW GUINEA: Morobe District, Bulolo, Manki, 1450 m, 21 Oct. 1971, leg. Horak (ZT 71/190, holotype).

In the field, *C.* (*Phl.*) *fuscoviridis* can be readily mistaken for *C.* (*Phl.*) *olivaceofumosus* because the basidiomes of both taxa have similar colors and habit. They are separated, however, by the shape and the size of the spores which in the former taxon are sublimoniform and very coarsely warted. Apart from its typical colors, the present species is recognized by its peculiar smell (in combination with rather large limoniform and coarsely warted spores) its infrageneric position must be in *Phlegmacium* subsect. Percomes (Moser, 1960). Accordingly *C.* (*Phl.*) *nanceiensis* (R. Maire) Moser (1960) is considered to have close taxonomic relationships.

According to the ecological data, *C.* (*Phl.*) *fuscoviridis* is restricted to montane rain forest and appears to have *Castanopsis-Lithocarpus* as its preferred ectomycorrhizal partners.

3. ***Cortinarius (Phlegmacium) lacertianus*** E. Horak sp. n. – Fig. 2, 1-4. Pl. 1, 3.

Pileus –70 mm, hemisphaericus vel convexus dein umbonato-expandus, pallide viridis, ochraceo-aurantiacus ad umbonem, viscidus. Lamellae adnatae vel subdecurrentes, primo lilaceae, dein ferrugineae. Stipes –75 × –12 mm, cylindricus, ad basim marginatobulbosus, lilacinus, pallide viridis, coeruleo tinctu ad bulbum, siccus, ad marginem bulbi e velo submembranaceo pallido instructus. Caro coerulea in stipite, albida vel pallida viridis in pileo. Odor saporque grati. Sporae 7–8 × 4 µm, subamygdaliformes, verrucosae. Cheilocystidia 15–20 × 10–15 µm, clavata vel vesiculosa. Pileipellis ex hyphis gelatinosis fibulatis pigmento plasmatico luteobrunneo instructus.

Ad terram in silvis montanis fagineis. Nova Guinea. Holotypus: 25 Oct. 1971, leg. Horak (ZT 71/217).

Pileus –70 mm, at first hemispherical to convex with incurved non-striate margin, becoming expanded or depressed with broad umbo; pale green, at centre turning ochre-orange; slightly viscid, innately fibrillose, universal veil remnants absent. – Lamellae crowded, broadly adnate and subdecurrent with short tooth, up to 6 mm wide; at first brilliant lilac, turning rust brown in age; edges entire, concolorous. – Stipe –75 × –12 mm, cylindrical above, base with conspicuous marginate bulb (–25 mm diam.); lilac, but becoming pale green-blue towards base, white on bulb; dry, strongly fibrillose, solid; cortina fibrillose, with conspicuous fibrillose to submembranaceous pallid veil remnants along margin of bulb. – Context blue to lilac in stipe, off-white in pileus, pale green upon exposure. – Odour and taste pleasant, fragrant. – Chemical reactions on pileus: KOH negative. – Spore print rust

brown. – Spores 7–8 × 4 µm, subamygdaliform, without distinctive mucro, verrucose, perispore absent. – Basidia 25–30 × 6–8 µm, subcylindric to clavate, 4-spored, clamped. – Cheilocystidia 15–20 × 10–15 µm, broadly clavate to vesiculose, hyaline, forming sterile edges on lamellae. – Pileipellis an ixocutis composed of slightly gelatinized cylindric hyphae (4–7 mm diam), terminal cells not differentiated, plasmatic (and encrusting) pigment yellow-brown in KOH. – Clamp connections present.

Habitat – On soil in mesophytic montane rain forest, among litter under *Castanopsis acuminatissima* and *Lithocarpus* sp. (Fagaceae), 1500 m.

Material examined PAPUA NEW GUINEA: Morobe District, Bulolo, Manki, 1500 m, 25 Oct. 1971, leg. Horak (ZT 71/217, holotype).

The blue and green colors observed on the basidiomes of *C.* (*Phl.*) *lacertianus* designate this taxon as one of the most striking Papuan representatives of *Phlegmacium*. At first sight, all observed macroscopical features relate this species with multicolored basidiomes to taxa assembled in *Phlegmacium* sect. Laeticolores (stirps Scaurum or Orichalceum). However, judging from the rather small subamygdaliform spores, it seems more likely that this Papuan fungus actually belongs to the swarm of taxa allotted into sect. Glaucopus (Moser, 1960) with *C.* (*Phl.*) *glaucopus* var. *olivaceus* Moser as its closest relative.

In addition, this species is also well defined by its conspicuous vesiculose cheilocystidia forming a sterile edge to the lamellae. Discovered in montane fagaceous rain forest, this species has to be added to the list of ectomycorrhiza-formers of *Castanopsis-Lithocarpus*.

4. ***Cortinarius (Phlegmacium) fusiclavus*** E. Horak sp. n. – Fig. 2, 5-7. Pl. 1, 4.

Pileus –40 mm, convexus, umbonatus vel subcampanulatus, primo ochraceobrunneus, lilacinus marginem versus, glutinosus. Lamellae adnatae vel decurrentes lilacinae dein pallideferrugineae. Stipes –50 × –5 mm, cylindricus basim versus fusoideus vel bulbosus, lilacinus, siccus, cortina fugacea instructus. Caro pallide ochracea in pileo, lilacea in stipitem. Odor saporque farinacei vel spermatici. Sporae 5.5–7 × 3.5–4 µm, ellipticae, minute verrucosae. Cheilocystidia nulla. Pileipellis ex hyphis gelatinosis fibulatis pigmento brunneo incrustatis.

Ad terram in silvis montanis fagineis. Nova Guinea. Holotypus: Papua New Guinea, Morobe District, Bulolo, Manki, 1450 m, 27 March 1972, leg. Horak (ZT 72/309).

Pileus –40 mm, convex to expanded or depressed, always with low umbo, subcampanulate, estriate margin not incurved, rather fragile; at first ochre-brown, lilac tints towards margin gradually fading and then grey-white; glutinous, strongly innate-fibrillose, occasionally with scattered, fibrillose veil remnants along margin. – Lamellae crowded, broadly adnate and decurrent with short tooth; brilliant lilac turning pale rust brown; edges entire, concolorous. – Stipe –50 × –5 mm, slender, cylindric at apex, towards base gradually becoming slender fusoid to bulbous (–10 mm); at first lilac, but whitish at base; dry, densely covered with silvery-white fibrils, solid to hollow; cortina fugaceous, any other universal veil remnants absent. – Context pale ochre in pileus and base of stipe, lilac in rind of stipe. – Odour and taste farinaceous to spermatic. – Chemical reactions on pileus: KOH negative. – Spore print rust brown. – Spores 5.5–7 × 3.5–4 μm, elliptical, minutely verrucose, perispore absent. – Basidia 18–22 × 6.5 μm, subcylindric to clavate, 4-spored, clamped. – Cheilocystidia absent. – Pileipellis an ixocutis composed of entangled strongly gelatinized hyaline cylindric hyphae (2–6 μm diam.), terminal cells not differentiated, encrusting pigment (in subpellis) brown in KOH, plasmatic pigment absent. – Clamp connections present.

Habitat – On soil in mesophytic montane rain forest, among litter under *Castanopsis acuminatissima* and *Lithocarpus* sp. (Fagaceae), 1450 m.

Material examined PAPUA NEW GUINEA: Morobe District, Bulolo, Manki, 1450 m, 27 March 1972, leg. Horak (ZT 72/309, holotype).

Macroscopically *C.* (*Phl.*) *fusiclavus* is easily recognized by the comparatively small and fragile basidiomes having a distinctive fusoid stipe and, in young specimens, brilliant lilac lamellae. In addition, this species (known to occur under *Castanopsis-Lithocarpus* in montane rainforest) is also immediately identified by its very small elliptical spores (5.5-7 × 3.5-4 μm) covered with minute warts which occasionally are interconnected by small ridges (SEM).

Within the generic concepts as outlined in Moser (1960) and Moser & Horak (1975) the actual systematic position of this isolated species remains uncertain.

5. ***Cortinarius (Phlegmacium) centroguttatus*** E. Horak sp. n. – Fig. 3, 1–2. Pl. 1, 5–6.

Pileus –80 mm, hemisphaericus dein late campanulatus vel umbonato-expansus, aurantiobrunneus, guttatus, glutinosus. Lamellae late adnatae vel

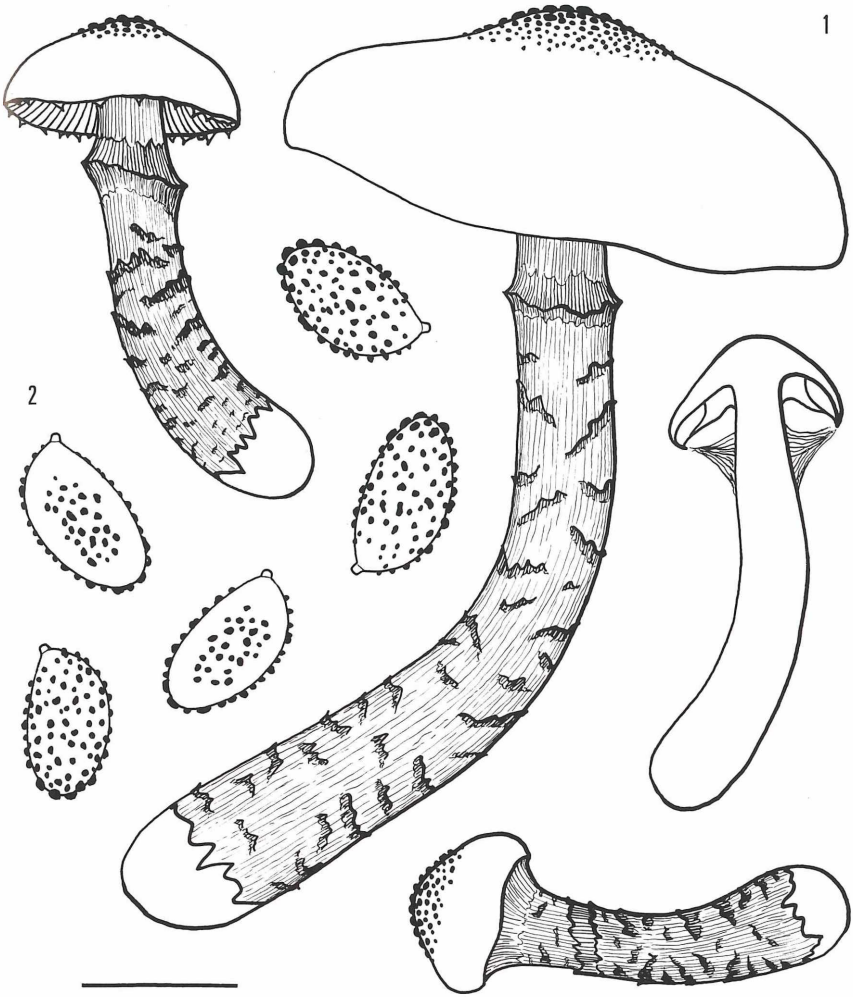

Fig. 3. – *Cortinarius* (*Phl.*) *centroguttatus* E. Horak (72/52, holotype). – 1. basidiomes. – 2. spores. – Bar: 20 mm (basidiomes), 20 µm (basidia, cheilocystidia), 10 µm (spores).

emarginatae, primo pallide lilaceae dein argillaceae. Stipes –150 × –20 mm, cylindricus vel clavatus basim versus, pallide luteus, siccus, infra cortina fibrillosa zonis numerosis e velo fibrillos vel submembranaceo pallide luteo vel brunneo conspicue instructus. Caro pallide lutea in pileo, pallide lilacinea in stipite. Odor saporque nulli. Sporae 8.5–11 × 5–6 µm, ellipticae, verrucosae. Cheilocystidia nulla. Pileipellis ex hyphis gelatinosis fibulatis pigmento plasmatico (rare encrustato) pallide brunneo instructus.

Ad terram in silvis montanis nothofagineis. Nova Guinea. Holotypus: Papua New Guinea, Eastern Highlands, Goroka, Daulo Pass, 600 m, 10 Jan. 1972, leg. Horak (ZT 72/52).

Pileus –80 mm, hemispherical to broadly campanulate with inrolled margin becoming umbonate-expanded with incurved estriate margin; orange-brown to yellow-brown, centre covered with darker or brown dots, margin appendiculate from conspicuous fibrillose to submembranaceous persistent universal veil remnants; glutinous, smooth. – Lamellae densely crowded, broadly adnate to distinctly emarginate, with long decurrent tooth; at first pale lilac turning to argillaceous brown, edges entire to subserrate, concolorous. – Stipe –150 × –20 mm, cylindric to slender clavate or slightly swollen towards base; pale yellow; dry, fibrillose, solid becoming hollow; fibrillose cortina strongly developed, from cortina to base covered with numerous fibrillose to submembranaceous pale yellow to brown persistent zones of universal veil, girdles in upper portion often glutinous. – Context pale yellow, pale lilac in rind of stipe. – Odour and taste not distinctive. – Chemical reactions on pileus: KOH negative. – Spore print rust brown. – Spores 8.5–11 × 5–6 µm, elliptical, verrucose, distinctive perispore absent. – Basidia 30–36 × 8–9 µm, subcylindric to clavate, 4-spored, clamped. – Cheilocystidia absent. – Pileipellis an ixocutis composed of entangled strongly gelatinized cylindric hyphae (2–5 µm diam.), terminal cells not differentiated, plasmatic (and encrusting) pigment pale brown in KOH. – Clamp connections present.

Habitat – On soil in mesophytic montane rain forest, among litter under *Nothofagus* spp. (Fagaceae), 600 m.

Material examined. PAPUA NEW GUINEA: Eastern Highlands, Goroka, Daulo Pass, 600 m, 10 Jan. 1972, leg. Horak (ZT 72/52, holotype).

Undoubtedly *C.* (*Phl.*) *centroguttatus* is a spectacular representative of *Phlegmacium* sect. Phlegmacium in Papua New Guinea. The taxon is recognized by its lilac lamellae on rather robust basidiomes whose cylindric stipes are beset with yellow-brown, numerous, mostly incomplete, submembranaceous, persisting zones and belts occurring over the whole length of the stipe. Another striking feature is the umbo of the yellow-brown pileus densely speckled with brown dots embedded in the gluten of the universal veil. Examined in the light microscope the warts of the elliptic spores are seen as isolated warts whereas in the SEM the ornamentation consists of rather large patch-like warts of irregular outline.

The type material has been collected in fagaceous montane rain forest dominated by *Nothofagus*.

6. ***Cortinarius (Phlegmacium) vittatus*** E. Horak sp. n. – Fig. 4, 1–2. Pl. 2, 1.

Pileus –120 mm, robustus, hemisphaericus vel convexus, dein expandus ad marginem reflexus, fuscus, pallide luteo-lilacinus marginem versus, ad umbonem squamuloso-guttatus, viscidus. Lamellae densae, late adnatae, decurrentes vel

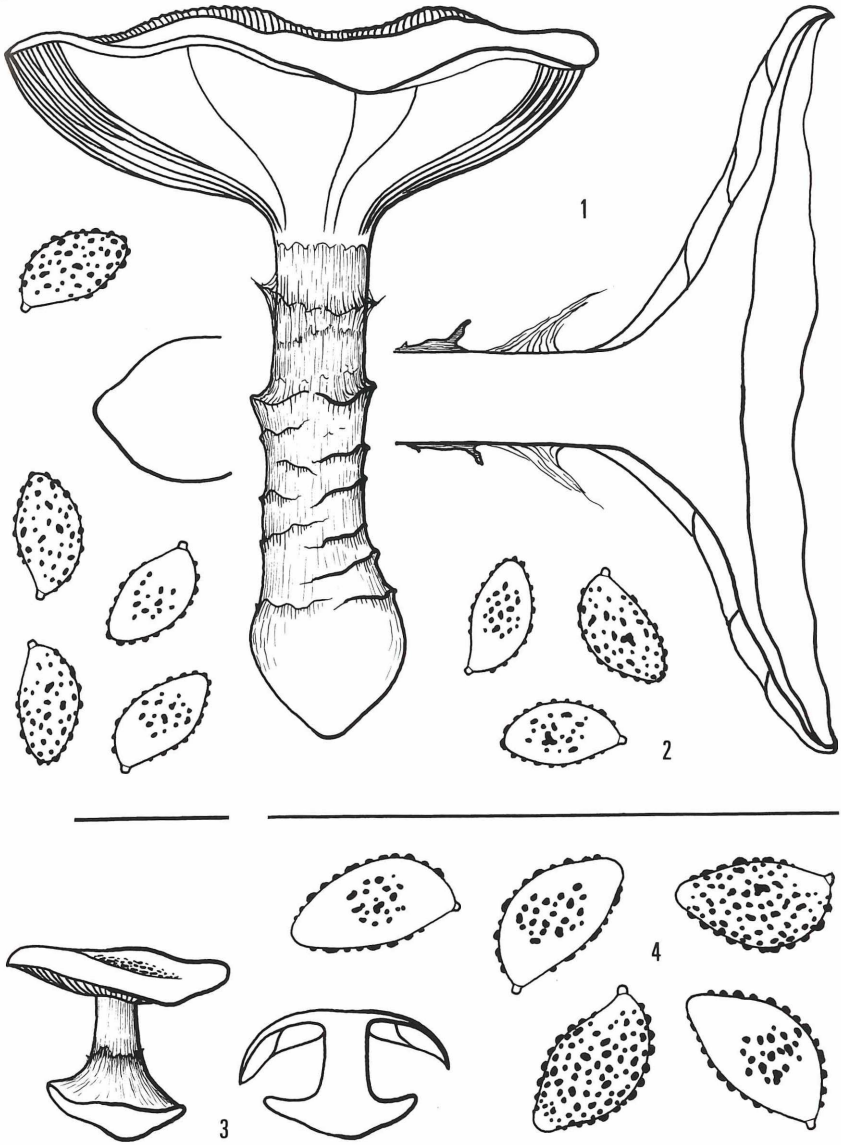

Fig. 4. – 1, 2. *Cortinarius* (*Phl.*) *vittatus* E. Horak (71/232). – 1. basidiomes. – 2. spores. – 3, 4. *Cortinarius* (*Phl.*) *turbobasalis* E. Horak (71/429, holotype). – 3. basidiomes. – 4. spores. – Bar: 20 mm (basidiomes), 20 μm (basidia, cheilocystidia), 10 μm (spores).

arcuatae, primo lilacinae dein saturate brunneae. Stipes –150 × –20 mm, robustus, cylindricus, ad basim cylindricus, clavatus vel submarginatus, supra lilacinus, infra pallide ochreo-brunneus, siccus, zonis numerosis membranaceo-annulatis vel fibrillosis pallide ochraceo-brunneis persistenter ornatus. Odor saporque grati. Caro

alba, lilacinea in cortice stipitis. Sporae 6.5–8 × 4–4.5 µm, amygdaliformes, verrucosae. Cheilocystidia nulla. Pileipellis ex hyphia gelatinosis fibulatis pigmento incrustato ferrugineo instructus.

Ad terram in silvis montanis fagineis. Nova Guinea. Holotypus: Papua New Guinea, Morobe District, Bulolo, Manki: 1200 m, 27 March 1972, leg. Horak (ZT 72/306).

Pileus –120 mm, robust, hemispherical to convex with strongly inrolled to incurved margin, gradually expanding, becoming flat to saucer-shaped with reflexed estriate margin in aged specimens; equally dark brown, centre often with concolorous or darker dots or squamules, gradually paler towards pale yellow-lilac margin; viscid, innately fibrillose, margin covered with persistent appendiculate submembranaceous ochraceous remnants of universal veil. – Lamellae very crowded, broadly adnate-decurrent to arcuate, up to 10 mm wide; at first lilac becoming deep chocolate brown with age, edges entire to subserrate, concolorous. – Stipe –150 × –20 mm, robust, cylindric above, base cylindric, clavate or submarginate; lilac at apex, otherwise pale ochre-brown; dry, strongly fibrillose, solid; below cortina well developed fibrillose persistent cortina with numerous membranaceous (above) or fibrillose (below) ring-like persistent pale brown-ochre girdles and zones of the universal veil, uppermost girdles occasionally funnel-shaped; solitary or clustered, often in large populations. – Context compact, white, lilac in rind of stipe. – Odour and taste pleasant, sweetish, reminescent of pastry. – Chemical reactions on pileus: KOH negative. – Spore print rust brown. – Spores 6.5–8 × 4–4.5 µm, amygdaliform to pip-shaped, verrucose, perispore absent. – Basidia 18–25 × 5–7 µm, subcylindric to clavate, 4-spored, clamped. – Cheilocystidia absent. – Pileipellis an ixocutis composed of entangled strongly gelatinized cylindric hyphae (2–6 µm diam), terminal cells not differentiated, plasmatic pigment absent, encrusting pigment rust brown in KOH. – Clamp connections present.

Habitat – On soil in mesophytic montane rain forest, among litter under *Castanopsis acuminatissima* and *Lithocarpus* sp. (Fagaceae), 1200–1400 m.

Material examined PAPUA NEW GUINEA: Morobe District: Bulolo, Manki: 1200 m, 27 March 1972, leg. Horak (ZT 72/306, holotype); same locality: 1400 m, 3 Nov. 1971, leg. Horak (ZT 71/232).

In Papua New Guinean montane fagaceous rain forests *C.* (*Phl.*) *vittatus* is found under *Castanopsis-Lithocarpus* which are supposed to be its ectomycorrhizal hosts. This species is probably a wide-spread *Phlegmacium* immediately recognized by rather robust basidiomes

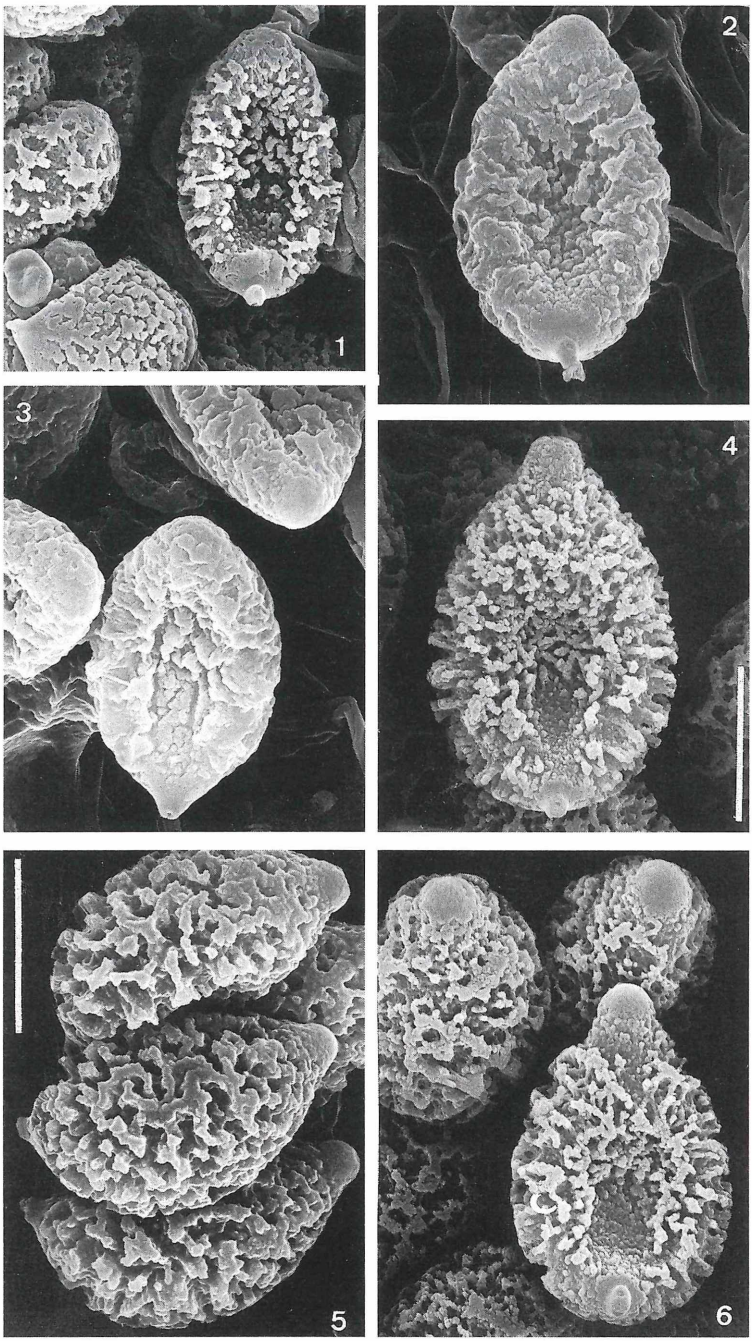

Plate 2. – Spores of *Cortinarius* spp. (SEM). – 1. *Cortinarius* (*Phl.*) *vittatus* E. Horak (72/306). – 2. *Cortinarius* (*Phl.*) *turbobasalis* E. Horak (71/429, holotype). – 3. *Cortinarius* (*Phl.*) *contrarius* E. Horak (72/698, holotype). – 4, 5. *Cortinarius* (*Phl.*) *papuanus* E. Horak (72/702, holotype). – 6. *Cortinarius* (*Phl.*) *evanescens* E. Horak (72/593, holotype). – Bar: 5 μm.

with dark brown pilei and lilac lamellae and context of stipe in young specimens. The most distinctive feature are the strongly developed membranaceous or fibrillose pale brown-ochre persistent rings and belts of the universal veil (covering the stipe from the base to the conspicuous cortina). Furthermore, this Papuan taxon is defined by its small amygdaliform verrucose spores (6.5–8 × 4–4.5 µm).

The macroscopic features observed on this unique species point towards a close taxonomic relationship with *C.* (*Phl.*) *australiensis* (Cleland & Cheel, 1918) Horak (1983), occasionally recorded from myrtaceous forests dominated by *Eucalyptus* and *Leptospermum*, both in Australia (Cleland, 1934; Moser & Horak, 1975; Fuhrer, 1985; Hilton, 1988) and New Zealand (Horak, 1983). *C. australiensis*, originally described as a member of the genus *Rozites*, however, is easily distinguished from its Papuan relative by its massive basidiomes and significantly larger spores.

7. ***Cortinarius (Phlegmacium) turbobasalis*** E. Horak sp. n. – Fig. 4, 3–4. Pl. 2, 2.

Pileus –35 mm, hemisphaericus vel convexus, sulphureus vel limoneus, ad umbonem guttatus, viscidus. Lamellae adnatae vel late adnatae, primo lilacinae vel coeruleae dein argillaceo-brunneae. Stipes –25 × –6 mm, cylindricus, ad basim conspicue marginato-bulbosus, supra pallide lilacinus, albus vel pallide luteus basim versus, siccus. Caro albida vel pallide lutea in pileo, lilacina in stipite. Odor saporque nulli. Pileopellis ope KOH ruber. Sporae 9.5–11 × 5.5–6 µm, amygdaliformes vel sublimoniformes, grosse verrucosae. Cheilocystidia nulla. Pileipellis ex hyphis gelatinosis fibulatis pigmento plasmatico aurantiaco instructus.

Ad terram in silvis montanis fagineis. Nova Guinea. Holotypus: Papua New Guinea, Morobe District, Bulolo, Manki, 1400 m, 17 Dec. 1971, leg. Horak (ZT 71/429).

P i l e u s –35 mm, hemispheric to convex with incurved non-striate margin becoming expanded; brilliant sulphur yellow or lemon yellow, centre with darker concolorous or brown dots; viscid, smooth, margin devoid of conspicuous universal veil remnants. – L a m e l l a e crowded, adnate to broadly adnate, without tooth, up to 4 mm wide; at first brilliant lilac to blue, slowly turning to argillaceous brown, edges entire, concolorous. – S t i p e –25 × –6 mm, cylindric, with conspicuous marginate bulb (–20 mm diam.); pale lilac above, whitish to pale yellow towards the base; dry, fibrillose, solid; fibrillose cortina poorly developed, universal veil remnants on margin of bulb absent. – C o n t e x t whitish to pale yellow, lilac in rind of stipe. – O d o u r and t a s t e not distinctive. – C h e m i c a l r e a c t i o n s on pileus: KOH red, HCl pale brown, NH_3 negative. – S p o r e p r i n t rust brown. – S p o r e s 9.5–11 × 5.5–6 µm, (distinctly almond-shaped to)

sublimoniform, coarsely verrucose, perispore absent. – Basidia 30–40 × 8–10 µm, clavate, 4-spored, clamped. – Cheilocystidia absent. – Pileipellis an ixocutis composed of gelatinized cylindric hyphae (2–7 µm diam.), terminal cells not differentiated, plasmatic pigment orange in KOH. – Clamp connections present.

Habitat – On soil in mesophytic montane rain forest, among litter under *Castanopsis acuminatissima* (Fagaceae), 1400 m.

Material examined. PAPUA NEW GUINEA: Morobe District, Bulolo, Manki, 1400 m, 17 Dec. 1971, leg. Horak (ZT 71/429, holotype).

C. (*Phl.*) *turbobasalis* is an unmistakable member of *Phlegmacium* sect. Calochroi Moser (1960). Its most remarkable macroscopic features are the small basidiomes whose centre of the sulphur yellow pilei is conspicuously speckled by darker coloured dots, lilac gills, marked marginate bulb, and red KOH-reaction on the pileipellis. Concerning the habit of the basidiomes and the coarsely verrucose ornamentation of the spores, the present Papuan species is closely related to two European species which enter ectomycorrhiza with *Fagus* or rarely also *Picea*, viz. *C.* (*Phl.*) *platypus* M. Moser (1960) which is separated, however, by its brown KOH-reaction and rather amygdaliform spores (instead of sublimoniform) spores, and *C.* (*Phl.*) *calochroum* (Persoon: Fries) Wünsche (1877) distinguished by lilac lamellae with pink tinge, copious yellow cortina and limoniform spores with large very coarse warts.

In Papua New Guinea, *C.* (*Phl.*) *turbobasalis* has been recorded only once on soil in pure montane forest exclusively composed of the fagaceous *Castanopsis acuminatissima*, its putative ectomycorrrhizal host partner.

For further discussion, cf. 8. *C.* (*Phl.*) *contrarius*.

8. ***Cortinarius (Phlegmacium) contrarius*** E. Horak sp. n. – Fig. 5, 1–2. Pl. 2, 3.

Pileus –55 mm, hemisphaericus vel convexus dein expandus; aureus, ad umbonem guttatus, glutinosus. Lamellae emarginatae, primo lilacinae dein argillaceae vel ferrugineae. Stipes –65 × –1o mm, supra cylindricus, infra conspicue marginato-bulbosus, pallide luteus, siccus. Caro albida. Odor saporque nulli. Sporae 8.5–10 × 4.5–5.5 µm, amygdaliformes vel sublimoniformes, grosse verrucosae. Cheilocystidia nulla. Pileipellis ex hyphis gelatinosis fibulatis pigmento incrustato luteobrunneo instructus.

Ad terram in silvis montanis fagineis. Nova Guinea. Holotypus: PAPUA NEW GUINEA, Eastern Highlands, Kassem Pass, Yonki, 500 m, 6 Dec. 1972, leg. Horak (ZT 72/698).

Pileus –55 mm, hemispherical to convex with inrolled margin becoming convex to expanded; golden yellow, centre with darker concolorous or yellow-brown dots; glutinous, innately fibrillose, universal veil remnants on margin absent. – Lamellae crowded, emarginate, up to 6 mm wide; at first brilliant lilac turning to argillaceous rust brown, edges entire, concolorous. – Stipe –65 × –10 mm, cylindric above, base with conspicuous marginate bulb (–20 mm diam.); pale yellow over whole length; dry, fibrillose, solid; fibrillose cortina inconspicuous, any universal veil remnants absent. – Context off-white. – Odour and taste not distinctive. – Chemical reactions on pileus: KOH, HCl and NH_3 negative. Spore print rust brown. – Spores 8.5–10 × 4.5–5.5 µm, slender amygdaliform to sublimoniform, coarsely warted, perispore present. – Basidia 25–35 × 7–10 µm, subcylindric to clavate, 4-spored, clamped. – Cheilocystidia absent. – Pileipellis an ixocutis composed of entangled strongly gelatinized cylindric hyphae (2–5 µm diam.), terminal cells not differentiated, encrusting pigment yellow-brown in KOH. – Clamp connections present.

Habitat – On soil in mesophytic montane rain forest, on soil among litter under *Lithocarpus* spp. (Fagaceae), 500 m.

Material examined – PAPUA NEW GUINEA: Eastern Highlands, Kassem Pass, Yonki, 500 m, 6 Dec. 1972, leg. Horak (ZT 72/698, holotype).

Like the before-mentioned taxon, this species also belongs to *Phlegmacium* sect. Calochroi Moser (1960). Except for the negative KOH-reaction on the pileipellis all other macroscopic features fit this infrageric section well. The medium-sized limoniform spores (8.5–10 × 4.5–5.5 µm) are covered with coarse warts (SEM) which, when seen under the light microscope, are embedded in a distinctive perispore. The present taxon is close to *C.* (*Phl.*) *calochroum* (Pers.: Fries) Wünsche (1877) and *C.* (*Phl.*) *citrinolilacinum* M. Moser (1960), but differs from both species by its smaller and much slender spores.

The type material of *C.* (*Phl.*) *contrarius* has been gathered in montane fagaceous rain forest dominated by *Lithocarpus* sp.

For further discussion, cf. 7. *C.* (*Phl.*) *turbobasalis*.

9. ***Cortinarius (Phlegmacium) papuanus*** E. Horak sp. n. – Fig. 5: 3–4. Pl. 2: 4–5.

Pileus –60 mm, convexus dein campanulatus vel umbonato-expandus, primo griseo-coeruleus (et fibrillis argentatis obtectus) dein luteo-brunneus, aurantio-brunneus, brunneus ad umbonem, ex residuis agglutinatis albidis vel pallide

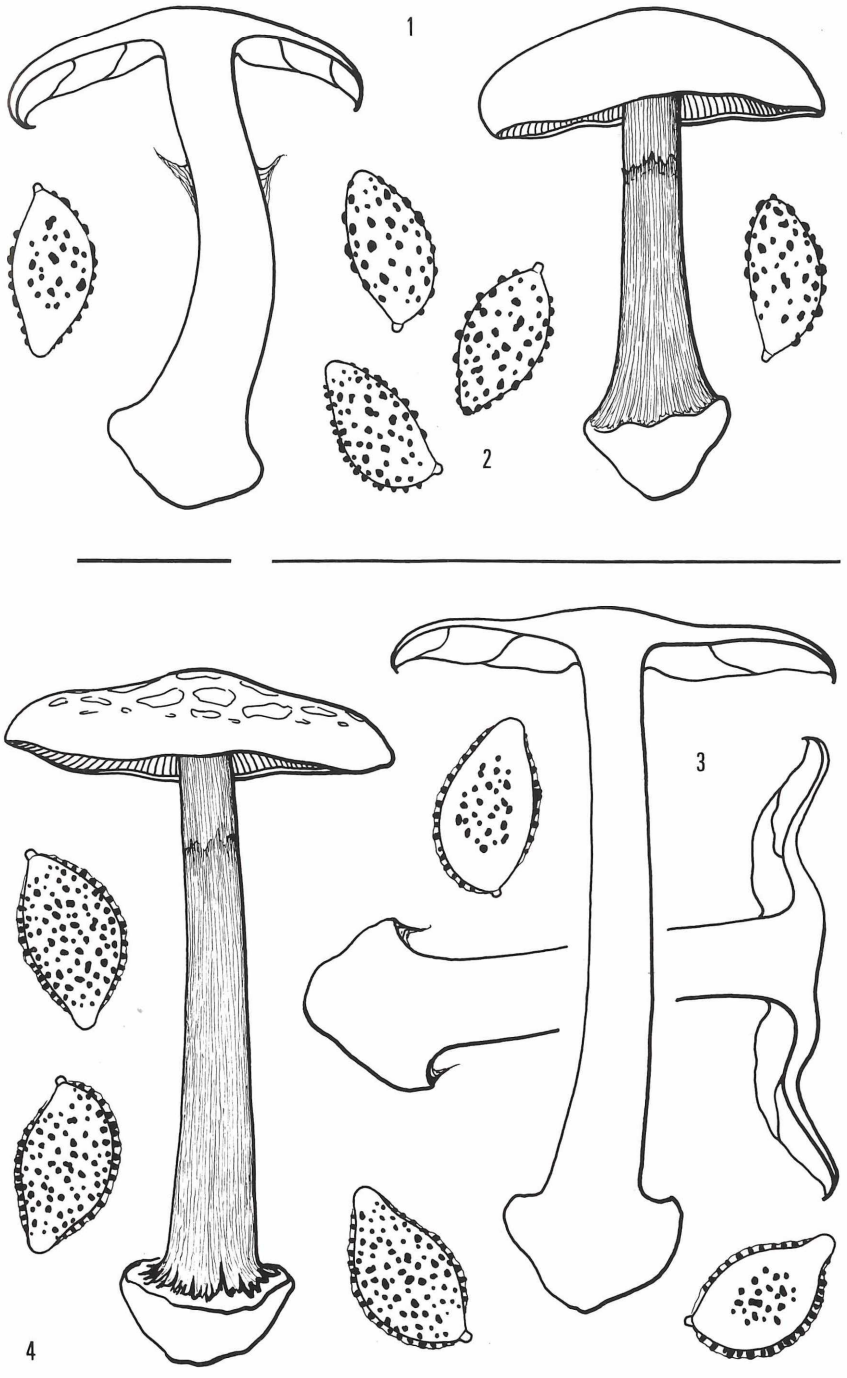

Fig. 5. – 1, 2. *Cortinarius* (*Phl.*) *contrarius* E. Horak (72/698, holotype): 1. basidiomes. – 2. spores. – 3, 4. *Cortinarius* (*Phl.*) *papuanus* E. Horak (72/702, holotype). – 3. basidiomes. – 4. spores. – Bar: 20 mm (basidiomes), 20 μm (basidia, cheilocystidia), 10 μm (spores).

aurantio-ochraceis e velo instructus, viscidus. Lamellae late adnatae vel emarginatae, primo coeruleae dein griseo-brunneae vel ferugineae. Stipes –100 × –12 mm, supra cylindricus, infra conspicue marginato-bulbosus, coeruleus, siccus, ad basim e velo submembranaceo pallide aurantio-ochraceo persistenter ad marginem bulbi instructus. Caro albida vel pallide brunnea in stipite, coerulea ad apicem et pallide ochracea ad basim stipitis. Odor saporque haud distincti. Sporae (10) 11–13 × 5.5–6 µm, sublimoniformes, grosse verrucosae. Cheilocystidia nulla. Pileipellis ex hyphis gelatinosis fibulatis pigmento luteo-brunneo incrustato instructus.

Ad terram in silvis montanis fagineis. Nova Guinea. Holotypus: Papua New Guinea, Eastern Highlands, Kassem Pass, Yonki, 500 m, 6 Dec. 1972, leg. Horak (ZT 72/702).

Pileus –60 mm, convex with incurved margin becoming broadly campanulate or umbonate-expanded, non-striate margin upturned in aged specimens; grey-blue (with silvery shine) turning yellow-brown, orange-brown or brown in age (especially at centre), covered with agglutinate whitish to very pale orange-ochre patches of universal veil remnants; viscid (in wet conditions only), innately fibrillose, margin with persistent fibrillose remnants from universal veil. – Lamellae crowded, broadly adnate to emarginate with short tooth, up to 7 mm wide; at first brilliant blue (ink blue) slowly turning to grey-brown and finally to rust brown, edges entire or notched, concolorous. – Stipe –100 × –12 mm, cylindric, abruptly ending into conspicuous marginate bulb (–25 mm diam); blue-lilac over whole length, slowly changing to silvery blue; dry, fibrillose, solid, fistulose in aged specimens; fibrillose cortina poorly developed, with conspicuous persistent submembranaceous to volva-like pale orange-ochre remnants of universal veil at margin of bulb. – Context off-white to pale brown, dark blue in apex of stipe, pale ochre in base of stipe. – Odour and taste slightly fragrant or like raw potatoes. – Chemical reactions on pileus: KOH negative. – Spore print rust brown. – Spores (10) 11–13 × 5.5–6 µm, sublimoniform, coarsely verrucose, perispore present. – Basidia 25–35 × 8–10 µm, subcylindric to clavate, 4-spored, clamped. – Cheilocystidia absent. – Pileipellis an ixocutis composed of repent, gelatinized cylindric hyphae (4–8 µm diam.), terminal cells not differentiated, encrusting pigment yellow-brown in KOH. – Clamp connections present.

Habitat – On soil in mesophytic montane rain forest, among litter under *Castanopsis acuminatissima* and *Lithocarpus* sp. (Fagaceae), 500–1300 m.

Material examined – PAPUA NEW GUINEA: Eastern Highlands, Kassem Pass, Yonki, 500 m, 6 Dec. 1972, leg. Horak (ZT 72/702, holotype); Morobe District, Bulolo, Manki, 1300 m, 22 Oct. 1971, leg. Horak (ZT 71/206).

The basidiomes of *C.* (*Phl.*) *papuanus* are characterized by the pale blue-lilac pileus (covered by silvery fibrils of the veil) and stipe, blue-lilac lamellae and blue context. In addition, volva-like pale ochre remnants of the universal veil skirt the margin of the bulbous base of the stipe. Following the taxonomic concept of Moser (1960), this taxon clearly belongs to *Phlegmacium* sect. Coerulescentes.

Comparing representatives of this section reported from the northern hemisphere, the habit of *C.* (*Phl.*) *volvatus* (A.H. Smith) M. Moser (1960) most closely resembles that of the Papuan species. It differs, however, by its much smaller spores.

Two other European taxa, *C.* (*Phl.*) *durissimus* (M. Moser) M. Moser (1960) and *C.* (*Phl.*) *caesiogriseus* (J. Schäff. ap. M. Moser) M. Moser (1960), share both the spore size and the spore shape (cf. Pl. 2, 4–5) with *C.* (*Phl.*) *papuanus* but are distinctly separated by several macrocharacters observed on the basidiomes.

In Papua New Guinea this species is probably widely distributed in the montane rain forests dominated by *Castanopsis* and *Lithocarpus*. These two fagaceous trees are also expected to be its putative ectomycorrhizal symbionts.

10. ***Cortinarius (Phlegmacium) evanescens*** E. Horak sp. n. – Fig. 6, 1–3. Pl. 2, 6.

Pileus –70 mm, hemisphaericus vel convexus dein umbonato-expandus, primo ope brunneus olivaceo tinctu dein ad umbonem ochraceus vel brunneus, glutinosus, hygrophaneus. Lamellae adnatae, emarginatae vel subdecurrentes, primo pallide coeruleae dein ochraceo-argillaceae. Stipes –85 × –10 mm, supra cylindricus, infra abrupte marginato-bulbosus, primo pallide coeruleus dein pallide luteus, siccus, cortina fibrillosa spuria. Caro coeruleo-lilacina (olivacea tinctu in pileo et ad apicem stipitis), pallide ochracea ad basim stipitis. Odor saporque nulli. Sporae 9–11 × 5–6 µm, sublimoniformes, grosse verrucosae. Cheilocystidia 15–20 × 8–12 µm, vesiculosa. Pileipellis ex hyphis gelatinosis fibulatis pigmento plasmatico brunneo instructus.

Ad terram in silvis montanis fagineis. Nova Guinea. Holotypus: Papua New Guinea, Morobe District, Bulolo, Manki, 1300 m, 8 Nov. 1971, leg. Horak (ZT 72/593).

P i l e u s –70 mm, hemispheric to convex, non-striate margin not incurved, later becoming subcampanulate or umbonate-expanded, centre often depressed and margin upturned in aged specimens; at first chocolate brown (with olive tinge), slowly turning from centre to ochre or ochre-brown; glutinous, strongly hygrophanous, in dry condition gluten radially wrinkled and grooved towards margin, universal veil remnants at margin absent. – L a m e l l a e crowded, adnate to emarginate, subdecurrent with conspicuous tooth, ventricose, up to 8 mm wide; at first pale blue slowly becoming ochre-

argillaceous, finally rust brown; edges entire to subserrate, concolorous. – Stipe –85 × –10 mm, cylindric, abruptly ending with conspicuous marginate bulb (–20 mm diam.); at first pale blue turning to pale yellow or brass yellow, off-white in overmature specimens; dry, fibrillose, solid; fibrillose cortina spurious, any distinctive remnants of universal veil absent. – Context blue-lilac (in pileus and upper portion of stipe), with olive tinge beneath pileipellis, pale ochre in base of stipe. – Odour and taste not distinctive. – Chemical reactions on pileus: KOH negative. – Spore print rust brown. – Spores 9–11 × 5–6 µm, sublimoniform, coarsely verrucose, warts embedded in perispore. – Basidia 20–30

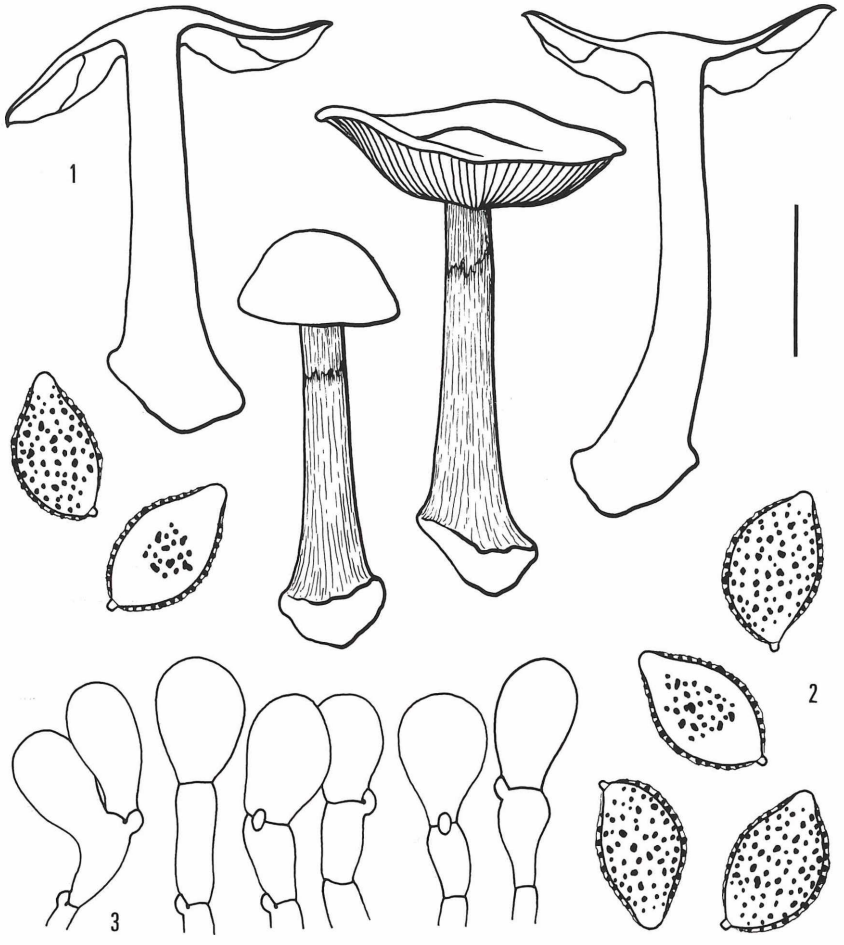

Fig. 6. – 1–3. *Cortinarius* (*Phl.*) *evanescens* E. Horak (72/593, holotype). – 1. basidiomes. – 2. spores. – 3. cheilocystidia. – Bar: 20 mm (basidiomes), 20 µm (basidia, cheilocystidia), 10 µm (spores).

× 8–10 µm, subcylindric to clavate, 4-spored, clamped. – Cheilocystidia 15–20 × 8–12 µm, broadly clavate or vesiculose (forming sterile edge on lamellae), hyaline. – Pileipellis an ixocutis composed of entangled, strongly gelatinized, cylindric hyphae (2–6 µm diam), terminal cells not differentiated, plasmatic pigment brown in KOH, encrusting pigment absent.

Habitat – On soil in mesophytic montane rain forest, among litter under *Castanopsis acuminatissima* and *Lithocarpus* sp. (Fagaceae), 1300–1400 m.

Material examined PAPUA NEW GUINEA: Morobe District, Bulolo, Manki, 1300 m, 8 Nov. 1971, leg. Horak (ZT 72/593, holotype); Same locality, 1400 m, 15 Nov. 1972, leg. Horak (ZT 72/623).

Judging from the set of the macrocharacters *C.* (*Phl.*) *evanescens* belongs to *Phlegmacium* sect. Calochroi (Moser, 1960). In this stirps several species described from the northern hemisphere (*C. glaucopus* and related taxa) show close affinities to the Papuan taxon. Amongst those it seems to be closest to *C.* (*Phl.*) *amoenolens* (Rob. Henry ex P D. Orton) M. Moser (1960) whose microscopical features (spores, cheilocystidia) are almost identical. These two taxa, however, can be separated by their different odour, presence and distribution of the veil remnants and habitat.

The two records so far reported from Papua New Guinea indicate that *C.* (*Phl.*) *evanescens* occurs only in montane fagaceous rain forests predominantly composed by the *Castanopsis* and *Lithocarpus*.

Acknowledgments

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