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New and interesting species of *Phaeomarasmius* (Agaricales) from Papua New Guinea and adjacent regions

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Summary. Seven new species of *Phaeomarasmius* Scherffel (1897), viz. *Ph. affinis*, *Ph. infidus*, *Ph. melanesius*, *Ph. nanus*, *Ph. perlaetus*, *Ph. secretus* and *Ph. squamulatus* are described from Papua New Guinea, Solomon Isl. and Sabah (Eastern Malaysia). The occurrence of *Ph. verrucipes* Horak (1980) is reported for Papua New Guinea. The agarics are keyed out; illustrations and a key to the species are presented.

Introduction

Distinctive macroscopic and microscopic characters (Horak 1968, Singer 1975) make *Phaeomarasmius* Scherffel (1897; type species: *Ph. excentricus* Scherffel) a well defined genus among the brown-spored Agaricales.

The great majority of the described species occur either on decaying wood and bark or on rotting debris of herbaceous plants. Despite comprehensive studies (Singer 1956, Watling 1966) the taxonomy of *Phaeomarasmius* and in particular its relationships to neighboring genera (e. g. *Flammulaster*, *Inocybe*, *Tubaria*, *Simocybe*) are still far from being well understood until all material of the agarics in question is thoroughly re-examined and monographed.

Except New Zealand (Horak 1980) both occurrence and distribution of *Phaeomarasmius* in the Australasian and Indomalayan region are not well known yet. Two Australian species (*Ph. bowmanni*, *Ph. gigasporus*) are reported by Pegler (1965) but unfortunately the type material is in rather fragmentary condition and therefore several important morphologic data can not be recovered. Also the record of *Ph. horizontalis* (Fr.) ss. Cleland (1934: 126; *Naucoria*) from Australia remains doubtful. According to Cleland's observations the spores of the Australian fungus have only about half the length of typical *Ph. horizontalis* (Fr.). Finally Boedijn (1938) published on *Phaeomarasmius sp.*, a poisonous fungus occurring in Java (Indonesia). Efforts to locate the authentic material failed, however, the detailed description of the agaric indicates that this fungus rather represents a member of *Galerina*.

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Acknowledgement

I am indebted to Prof. J. H. CORNER (Cambridge, England) who offered his material of *Phaeomarasmius* for study. My thanks are also extended to the authorities of the Papua New Guinea Department of Forests for the facilities provided at the Forest Research Centre in Bulolo.

If not otherwise mentioned the magnifications of the figures are: carpophores (nat. size), spores (×2000), basidia and cystidia (×1000), cuticle (×500, vertical section).

Type material is kept in ZT (Herbarium, Institute for Special Botany, Zürich, Switzerland).

Key to species of *Phaeomarasmius*

1. Veil remnants (cortina, universal veil on margin of pileus) membranous and persistent; pileus —25 mm, convex to campanulate, date brown, scaly on disc; lamellae adnexed; stipe —25×—2.5 mm, brown, scaly below cortina; spores 6.5—8×5—6 µm; cheilocystidia clavate; on rotten wood. Papua New Guinea ..... 1. *Ph. affinis*

1*. Veil remnants not persistent or absent at all; carpophores smaller 2

2. Pileus —5 mm, hemispheric to convex, reddish brown, minutely squamulose; lamellae adnate; stipe —12×—0.5 mm, concolorous with pileus; spores 4.5—5 µm, subglobose; cheilocystidia clavate; on rotten wood. Papua New Guinea ..... 2. *Ph. nanus*

2*. Pileus larger; spores different (phaseoliform, limoniform, amygdaliform) 3

3. Stipe covered with conspicuous warts or minute spines; pileus spiny, warty, floccose, fibrillose-glabrous; spores phaseoliform or limoniform 4

3*. Stipe fibrillose or glabrous; pileus scaly or squamulose..... 6

4. Spores phaseoliform (to amygdaliform), 6—6.5×4—4.5 µm; pileus —12 mm, conico-convex, yellow-brown, granular to spiny-warty; lamellae adnexed; stipe —35×—1 mm, concolorous with pileus, minutely spiny to dotted all over; cheilocystidia cylindric to subfusoid; on rotten wood in rain forest. Papua New Guinea ..... 8. *Ph. perlaetus*

4*. Spores limoniform (to amygdaliform); carpophores not yellow-brown, floccose, fibrillose or glabrous 5

5. Lamellae broadly adnate to arcuate; pileus —15 mm, convex to plane, soon becoming depressed at centre, argillaceous to pale brown, minutely floccose; stipe —40×—1 mm, cylindric, stiff, slender, concolorous with pileus; spores 6—8×3.5—4.5 µm; cheilocystidia fusoid-subclavate; on rotting leaves of grass or

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broad-leaved trees. Papua New Guinea; New Zealand (type)... ..... 7. *Ph. verrucipes*

5*. Lamellae emarginate; pileus —12 mm, conico-convex to umbonate, papilla always distinct, date brown, glabrous; stipe —25×—1.5 mm, cylindric, pale brown, often cespitose; spores 7.5—9×5—5.5 μm; cheilocystidia fusoid; on rotten wood in soil. Papua New Guinea ..... 6. *Ph. secretus*

6. Spores 9.5—11.5×4.5—5.5 μm, subphaseoliform; pileus —15 mm, ochraceous with ferruginous squamules at centre; stipe —22×—2 mm, central, pale ochraceous, fibrillose-floccose; cheilo-cystidia fusoid; on soil in forest. Sabah (Borneo) ..... 3. *Ph. infidus*

6*. Spores distinctly smaller, not phaseoliform..... 7

7. Pileus —18 mm, convex to plane, rust brown, minutely scurfy; lamellae adnexed to adnate; stipe —8×—1.5 mm, often eccentric, pale prown; spores 6—7.5×4—5.5 μm; cheilocystidia cylindric to subclavate; on rotting branches. Solomon Isl..... ..... 4. *Ph. melanesius*

7*. Pileus —15 mm, convex, grey to argillaceous with fuscous, small, fibrillose scales (especially at disc); lamellae adnate to adnexed; stipe —20×—1.5 mm, central, pale brown with reddish brown fibrils towards base; spores 6.5—7.5×4—5 μm; cheilocystidia fusoid; on rotten wood. Papua New Guinea..... ..... 5. *Ph. squamulatus*

1. *Phaeomarasmius affinis* Horak sp. n.
Fig. 1

Pileus —25 mm, convexus dein campanulatus, brunneus, squamis concoloribus dense obtectus, marginem striatam e velo ornatus. Lamellae adnexae, pallide brunneae, albofimbriatae. Stipes —25×2.5 mm, cylindraceo-subclavatus, pileo concolor, cortina subannulata instructus, basim versus squamulis recurvatis dense obtectus. Sporae 6.5—8×5—6 μm, ovatae, brunneae. Ad lignum putridum Nothofagi. Nova Guinea. Typus ZT, 73/25.

Pileus —25 mm, convex to campanulate becoming umbonate-expanded; equally brown (date brown), paler towards distinctly striate margin; disc covered with conspicuous, conic, concolorous squamules and small scales; dry, slightly hygrophanous, margin with fibrillose to submembranaceous, subpersistent remnants of the veil. Lamellae crowded, adnexed; pale brown, edge albofimbriate. Stipe —25×—2.5 mm, cylindric to subclavate, central; concolorous with pileus; fibrillose or covered with recurved squamules and scales below persistent, membranaceous ring-like cortina; dry, hollow, single in groups. Odour and taste not distinctive. Spore print brown.

Spores 6.5—8×5—6 μm, broadly ovoid to pip-shaped, brown, mucro occasionally present but indistinct, membrane thin-walled,

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smooth, germ pore none. Basidia 25—35×7—9 μm, 4-spored. Cheilocystidia 30—75×10—20 μm, vesiculose, clavate or subfusoid, membrane often thick-walled, often encrusted with brown pigment. Pleuro- and caulocystidia not distinctive. Cuticle a cutis or trichoderm of cylindric hyphae (5—10 μm diam.), terminal cells not differentiated,

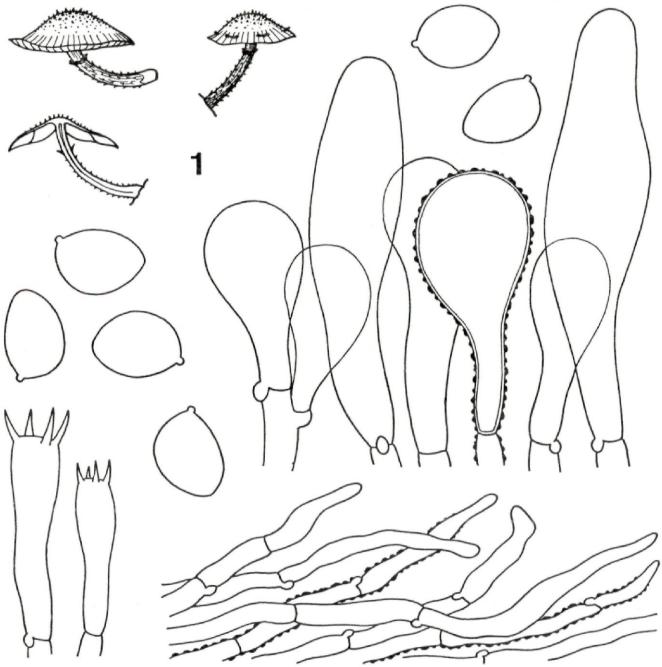

Fig. 1. *Phaeomarasmius affinis* Horak (type): carpophores, spores, basidia, cheilocystidia, cuticle

membranes thin-walled, not gelatinized, encrusted with yellow-brown (KOH) pigment. Clamp connections numerous.

Habitat. — On rotten wood (*Nothofagus grandis, N. carrii*). — Papua New Guinea.

Material. — Papua New Guinea: Morobe District: Wau, Mt. Kaindi (2500 m), 29. I. 1973, leg. Horak (ZT, 73/25, holotype). — Wau, Mt. Kaindi (2600 m), 11. V. 1973, leg. Horak (ZT, 73/220).

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Ph. affinis is characterized by a number of distinctive features, e. g. persistent membranaceous ring, spiny-recurved squamules and scales at the centre of pileus and on the stipe (towards base), pip-shaped spores and conspicuous clavate-subfusoid cheilocystidia. Macroscopically this species reminds of taxa described in sect. Confragosi SINGER (1975), however, the microscopic data do not support a relationship to species referred to this infrageneric group.

2. *Phaeomarasmius nanus* HORAK sp. n.
Fig. 2

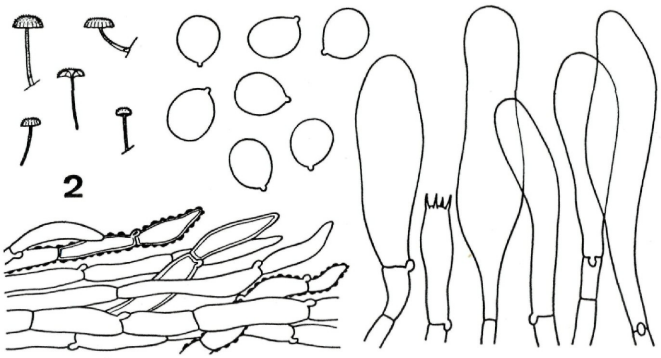

Fig. 2. *Phaeomarasmius nanus* HORAK (type): carpophores, spores, basidium, cheilocystidia, cuticle

Pileus —5 mm, convexus, carneo-roseus, fibrillis concoloribus vel obscurioribus obtectus. Lamellae late adnatae, pallide carneae, albo-fimbriatae. Stipes —12×—0.5 mm, cylindricus, pileo concolor, apicaliter subpruinosus. Sporae 4.5—5 μm, subglobosae, brunneae. Ad lignum putridum. Nova Guinea. Typus ZT, 71/268.

Pileus —5 mm, hemispheric to convex, fragile; reddish brown, dark brown towards centre; fibrillose to minutely squamulose, floccose at disc; dry, striate when moist, thin-membranous, veil remnants absent. Lamellae (L 6—8, —3) moderately crowded, adnate to broadly adnate; pale red-brown to argillaceous, edge albofimbriate. Stipe —12×—0.5 mm, cylindric, equal, central, often curved; concolorous with pileus; pruinose at apex, smooth towards base, solid, dry, veil remnants absent, single in groups. Context pale brown. Odour not distinctive.

Spores 4.5—5 μm, subglobose to larmiform, brown, membrane smooth, thin-walled, germ pore absent. Basidia 15—20×4—5 μm,

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4-spored. Cheilocystidia 30—55 × 6—12 μm, clavate to subclavate, thin-walled, hyaline, forming dense seam at edge. Pleurocystidia none. Caulocystidia like cheilocystidia. Cuticle a cutis or trichoderm of cylindric hyphae (4—12 μm diam.), terminal cells fusoid, membrane thick-walled, not gelatinized, coarsely encrusted with brown pigment. Clamp connections on septa.

Habitat. — On rotten dicotyledonous wood. — Papua New Guinea.

Material. — Papua New Guinea: Morobe District, Bulolo, Taun Creek (1150 m), 10. XI. 1971, leg. Horak (ZT, 71/268, holotype).

This inconspicuous and delicate fungus is recognized best by the small size of its carpophores and the subglobose spores. In *Phaeomarasmius* spores of this shape are rather uncommon and in the Australasian region there is only one other species reported having similar spores viz. *Ph. hispidulus* Horak (1980) from New Zealand.

3. *Phaeomarasmius infidus* Corner & Horak sp. n.
Fig. 3

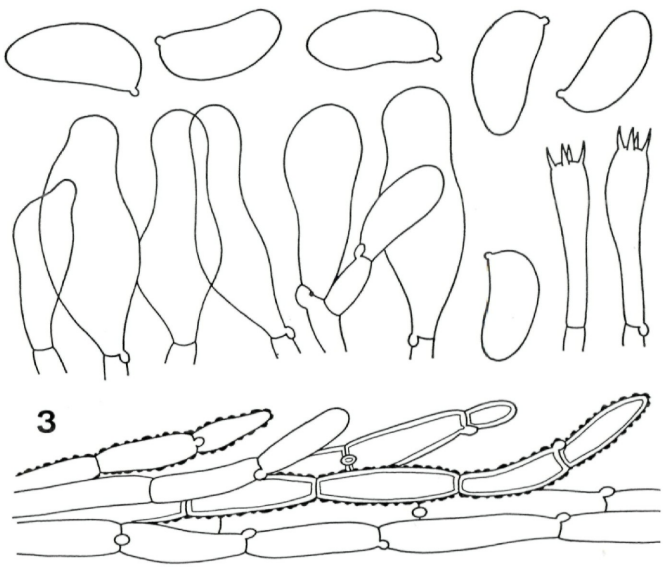

Fig. 3. *Phaeomarasmius infidus* Corner & Horak (type): spores, basidia, cheilocystidia, cuticle

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Pileus —15 mm, convexus, ochraceus, squamis ferrugineis instructus. Lamellae adnatae, subochraceae. Stipes —22×—2 mm, cylindricus, pileo concolor, fibrilloso-floccosus. Odor subspermaticus. Sporae 9.5—11.5×4.5—5.5 µm, subphaseoliformes, brunneae, glabrae. Ad terram in silvis. Sabah. Typus ZT, 79/321.

Pileus —15 mm, convex to plane; fawn to light ochraceous with more or less ferruginous (or concolorous), erect or recurved, fibrillose squamules on disc, appressedly fibrillose towards estriate margin; veil remnants absent, dry, not hygrophanous. Lamellae (L 8—12, —3) adnate, crowded; pale fawn or subochraceous, edge concolorous or paler, subfimbriate. Stipe —22×—2 mm, cylindric, equal, central; concolorous with pileus; minutely fibrillose to subfloccose; dry, solid, single in groups, no veil remnants. Context pale ochraceous. Odour slightly spermatic. Spore print brown.

Spores 9.5—11.5×4.5—5.5 µm, phaseoliform to subfusoid, yellow-brown (KOH), membrane smooth, thin-walled, germ pore absent. Basidia 25—30×6—7 µm, 4-spored. Cheilocystidia 25—40×7—15 µm, fusoid to subclavate, membrane hyaline, thin-walled, forming sterile seam on lamellar edge. Pleurocystidia and caulocystidia none. Cuticle a cutis or trichoderm of cylindric hyphae (8—16 µm diam.), terminal cells subfusoid or rounded, membrane thick-walled, with conspicuous, brown, membranous and encrusting pigment. Clamp connections numerous.

Habitat. — On soil in forests. Sabah (Eastern Malaysia, North Borneo).

Material. — SABAH: Mt. Kinabalu, Mesilau River (1700 m), 20. I. 1964, leg. CORNER (ZT, 79/321, holotype).

Due to the scaly pileus and the slightly spermatic odour this peculiar species can be mistaken for *Inocybe* or *Astrosporina* respectively. The thick-walled, encrusted cuticular hyphae and the phaseoliform or subfusoid spores, however, are placing this fungus into *Phaeomarasmius*.

4. *Phaeomarasmius melanesius* CORNER & HORAK sp. n.
Fig. 4

Pileus —18 mm, convexo-planus, ferrugineus, squamis obscuriobus minutis obtectus. Lamallae adnexae, cinnamomeae, albofimbriatae. Stipes —8×—1.5 mm, cylindricus, saepe excentricus, pallidus fibrillis brunneis basim versus instructus. Sporae 6—7.5×4—5.5 µm, subovoideae. Ad ramos putridos. Ins. San Cristobal. Typus ZT, 79/322.

Pileus —18 mm, convex to plane; ferrugineous, paler or subochraceous or cinnamon towards margin; minutely scurfy or squamulose at centre, fibrillose towards striate margin; dry, membranous, veil remnants absent. Lamellae (L 6—7, —3), subdistant, adnexed, ventricose, occasionally transversely veined in the interstices; pale brown to cinnamon, edge albofimbriate. Stipe —8×—1.5 mm,

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cylindric, equal, often eccentric; whitish to pale brown; pruinose to minutely fibrillose-scurfy towards base; dry, solid, veil remnants absent, single in groups. Context pale brown. Odour and taste not known.

Spores 6—7.5×4—5.5 µm, subovoid to pip-shaped, membrane smooth, thin-walled, brownish, germ pore none. Basidia 20—25×5—6 µm, 4-spored. Cheilocystidia 35—60×5—8 µm, cylindric to subclavate, often constricted, membrane thin-walled, hyaline. Pleurocystidia absent. Cuticle a cutis or trichoderm of cylindric hyphae (5—15 µm diam.), membrane thin-walled, not gelatinized, encrusted with brown pigment. Clamp connections present on septa.

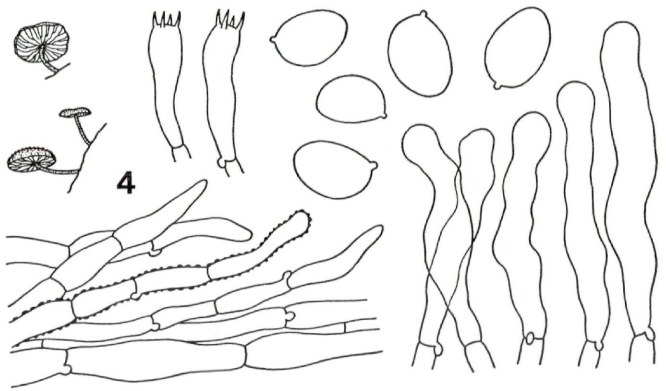

Fig. 4. *Phaeomarasmius melanesius* Corner & Horak (type): carpophores, spores, basidia, cheilocystidia, cuticle

Habitat: — On fallen branches in the forest. — Solomon Isl. (San Cristobal).

Material. — Solomon Isl.: San Cristobal, Warahito River, 27. VII. 1965, leg. Corner (ZT, 79/322, holotype; RSS 836, isotype).

The macroscopic characters of this delicate and rather inconspicuous fungus from the Solomon Islands indicate a relationship to *Ph. nanus* Horak from neighboring Papua New Guinea. However, *Ph. melanesius* is distinguished by larger, ovoid spores and cuticular hyphae with thin-walled membranes.

5. *Phaeomarasmius squamulatus* Horak sp. n.

Fig. 5

Pileus —15 mm, convexus dein applanatus, griseo-argillaceus, fibrillis squamulisque fuscis instructus. Lamellae adnatae, griseae, albofimbriatae.

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Stipes —20× —1.5 mm, cylindricus, apicaliter pruinosus, basim versus fibrillis pallide ferrugineis obtectus. Sporae 6.5—7.5×4—5 μm. Ad lignum putridum. Nova Guinea. Typus ZT, 71/278.

Pileus —15 mm, convex to plane; grey to argillaceous, covered with dark brown to fuscous minute scaly or recurved squamules (especially around disc), innately fibrillose towards margin; dry, margin not striate, veil remnants absent. Lamellae (L 10—12, —3), rather crowded, adnexed to adnate, ventricose; grey to pale argil-

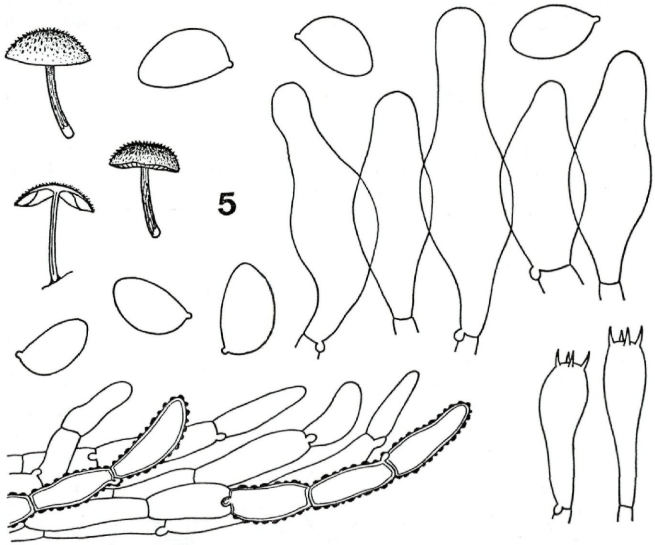

Fig. 5. *Phaeomarasmius squamulatus* Horak (type): carpophores, spores, basidia, cheilocystidia, cuticle

laceous, edge albofimbriate. Stipe —20×—1.5 mm, cylindric equal central; whitish at apex, argillaceous towards base, covered with conspicuous longitudinal pale red-brown fibrils; dry, vaguely pruinose at apex, fistulose, persistent cortina absent, single in groups. Context pale brown. Odour and taste not distinctive.

Spores 6.5—7.5×4—5 μm, amygdaliform to pip-shaped, brown, membrane thin-walled, smooth, germ pore absent. Basidia 22—28× 7—8 μm, 4-spored. Cheilocystidia 30—55×13—20 μm, broadly fusoid to lageniform, membrane thin-walled, hyaline, pigment absent. Pleurocystidia and caulocystidia absent or like cheilocystidia. Cuticle a cutis or trichoderm of cylindric hyphae (8—12 μm), terminal cells

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subfusoid or cylindric, membrane thick-walled, not gelatinized, coarsely encrusted with brown pigment. Clamp connections present.

Habitat. — On rotten wood in *Castanopsis-Lithocarpus* forest. — Papua New Guinea.

Material. — Papua New Guinea: Morobe District, Bulolo, Watut (1300 m) 11. XI. 1971, leg. Horak (ZT, 71/278, holotype).

Habit and macroscopic characters (size, coarsely fibrillose to subsquamulose pileus) of this small species remind of the New Zealand *Ph. lanatulus* Horak (1980). *Ph. squamatulus*, however, is separated by the thick-walled cuticular hyphae and the broadly fusoid cheilocystidia.

6. *Phaeomarasmius secretus* Horak sp. n.

Fig. 6

Pileus —12 mm, convexo-umbonatus vel campanulatus, brunneus, glabrus. Lamellae adnexae vel submarginatae, brunneae. Stipes —25 × —1.5 mm, cylindricus, subbulbosus ad basim, pallide brunneus, squamis obscurioribus dense obtectus, cespitosus. Odor ingratus. Sporae 7.5—9 × 5—5.5 µm, sub-

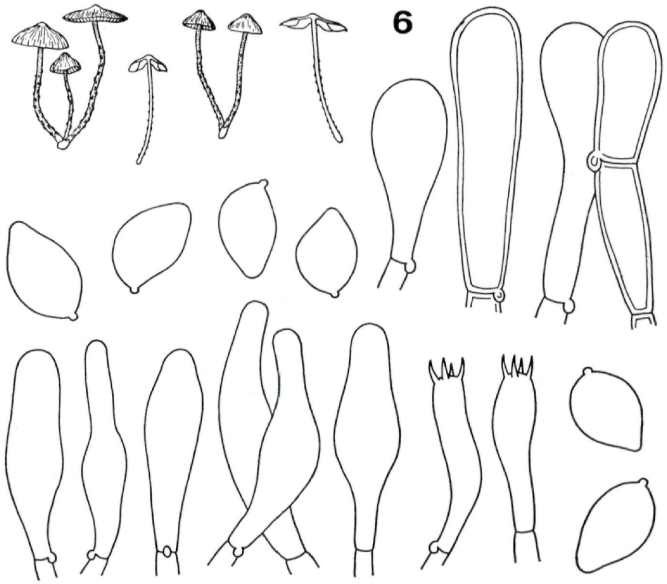

Fig. 6. *Phaeomarasmius secretus* Horak (type): carpophores, spores, basidia, cheilocystidia, caulocystidia

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limoniformes, brunneae. Ad terram vel lignum putridum in silvis Castanopsidis Lithocarpique. Nova Guinea. Typus ZT, 73/205.

Pileus —12 mm, hemispheric or conic when young becoming convex or plane with distinct obtuse umbo, campanulate; pale brown or brown; dry, smooth, margin vaguely striate, not hygrophanous, veil remnants absent. Lamellae (L 12—16, —3), moderately crowded, adnate becoming emarginate in aged specimens, ventricose; whitish at first turning brown or fuscous, edge albofimbriate. Stipe —25× —1.5 mm, cylindric, equal above, base often subbulbous (—2 mm diam.), central; pale brown or concolorous with pileus; dry, covered all over with small, dark brown, fibrillose, persistent warts and squamules, cortina absent; solid or fistulose, often cespitose in groups. Context brown. Odour and taste spermatic, unpleasant. Chemical reactions on pileus: KOH — negative. Spore print brown.

Spores 7.5—9×5—5.5 µm, sublimoniform to amygdaliform, membrane smooth, thin-walled, brown, germ pore absent. Basidia 25—30×6—7 µm, 4-spored. Cheilocystidia 35—45×7—12 µm, fusoid to lageniform, hyaline, pigment absent, membrane thin-walled. Pleurocystidia none. Caulocystidia 25—70×7—14 µm, cylindric to subclavate, in clusters, membrane brown, often thick-walled. Cuticle a cutis of repent, cylindric hyphae (3—8 µm diam.), membrane not gelatinized encrusted with yellow-brown (KOH) pigment, subcutis consisting of subglobose to ovoid cells. Clamp connections present.

Habitat. — On soil or on rotten wood in forests dominated by *Castanopsis* and *Lithocarpus* (Fagaceae). — Papua New Guinea.

Material. — Papua New Guinea: Morobe District, Bulolo, Manki (1400 m), 8. II. 1973, leg. Horak (ZT, 73/205, holotype).

Due to the conspicuous, persistent warts and squamules over the entire length of the stipe this agaric resembles *Ph. verrucipes* Horak (1980) from Papua New Guinea and New Zealand. The two species, however, are easily separated by the macromorphology of the carpophores, odour and habitat respectively.

7. *Phaeomarasmius verrucipes* Horak 1980

New Zealand J. Botany (in print).

Illustrations: Horak (1980: l. c.).

Description of the Papua New Guinean collections:

Pileus —15 mm, hemispheric or convex becoming expanded and often subumbilicate or depressed at centre; pale brown (occasionally with reddish tint) or argillaceous; disc covered with minute concolorous or brown squamules, smooth towards striate margin; dry, membranaceous, slightly hygrophanous, margin often covered with small, subpersistent, brown squamules from the veil. Lamellae

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(L 10—15, —3) crowded, broadly adnate (sometimes subdecurrent with short tooth); argillaceous to ochraceous when young turning pale rust brown with age; adge albofimbriate. Stipe —40×—1 mm, cylindric, equal, central; concolorous with pileus, darker brown towards base; all over densely covered with dark brown, persistent, small warts and dots, fibrillose cortina absent; dry, tough, slender, solid, white mycelium at base, single in groups. Context pale brown. Odour and taste not distinctive. Spore print pale brown.

Spores 6—8.5×4—5.5 µm, amygdaliform to sublimoniform, membrane thin-walled, smooth, pale brown, germ pore absent. Basidia 18—37×5—8 µm, 4-spored. Cheilocystidia 35—65×5—9 µm, cylindric to subfusoid, often constricted, membrane hyaline or pale brown, thin-walled, occasionally thick-walled towards basal septum. Pleurocystidia none. Caulocystidia like cheilocystidia. Cuticle a cutis of cylindric hyphae (4—10 µm diam.), terminal cells cylindric to ovoid, sometimes bluntly forked, forming shortcelled chains, membrane not gelatinized, encrusted with brown pigment. Clamp connections present.

Habitat. — On rotting debris and leaves of grass and broad-leaved trees. — Papua New Guinea, New Zealand (type).

Material. — Papua New Guinea: Eastern Highlands: Mt. Michael, Frigano, Hut Track (2500 m), 6. XII. 1971, leg. Horak (ZT, 71/382). — Kassem Pass (1850 m), 28. V. 1973, leg. Horak (ZT, 73/285). — Morobe District: Wau, Unima (2500 m), 21. V. 1973, leg. Horak (ZT, 73/253).

For discussion compare *Ph. secretus* Horak.

8. *Phaeomarasmius perlaetus* Horak sp. n.
Fig. 8

Pileus —12 mm, conicus, aureobrunneus, granuloso-squamulosus. Lamellae adnato-adnexae, ex argillaceo aureobrunneae. Stipes —35× —1 mm, cylindricus, pileo concolor, squamis minutis brunneis instructus. Sporae 6—6.5×4—4.5 µm, phaseoliformes vel subamygdaliformes, brunneae, leves. Ad lignum putridum in silvis. Nova Guinea. Typus ZT, 72/135.

Pileus —12 mm, conic (also in aged specimens); yellow-brown to golden yellow; densely covered with minute granular or subfibrillose warts and squamules, dry, margin with sterile seam, neither striate nor hygrophanous. Lamellae (L 12—18, —3), moderately crowded, adnate to adnexed, ventricose; argillaceous, pale brown or yellow-brown, edge albofimbriate. Stipe —35×—1 mm, cylindric, equal or subbulbous at base (—2 mm diam.), central; concolorous with pileus, all over covered with minute, dark brown, granular warts and squamules; dry, veil remnants absent, fistulose, single in groups. Context yellowish. Odour and taste subfarinaceous. Chemical

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reactions on pileus: KOH, NH_3, HCl — negative. Spore print pale brown.

Spores 6—6.5×4—4.5 µm, phaseoliform (to subamygdaliform), membrane thin-walled, (reddish) brown, smooth, germ pore absent. Basidia 18—22×5—6 µm, 4-spored. Cheilocystidia 30—50×3—5 µm, cylindric to subfusoid, hyaline, thin-walled, pigment absent, clamp on basal septum. Pleuro- and caulocystidia absent. Cuticle a trichoderm of bundled chains of globose to ovoid cells (8—15 µm diam.), terminal cells broadly fusoid, membrane thin-walled, not gelatinized, strongly encrusted with brown (KOH) pigment. Clamp connections numerous.

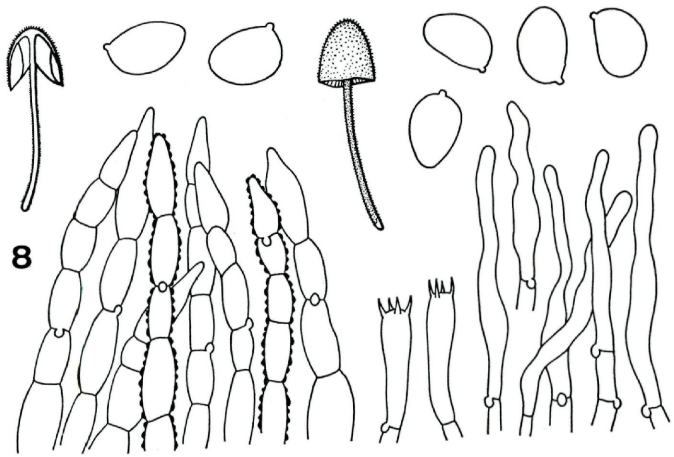

Fig. 8. *Phaeomarasmius perlaetus* Horak (type): carpophore, spores, basidia cheilocystidia, cuticle

Habitat. — On rotten wood of dicotyledonous trees in rain forest. — Papua New Guinea.

Material. — Papua New Guinea: Morobe District, Bulolo, Heads Hump (1200 m), 8. II. 1972, leg. Horak (ZT, 72/135, holotype).

This remarkable fungus is closely related to *Ph. ciliatus* Singer (1953) a rather common agaric on rotten wood in the subantarctic *Nothofagus* forests both of New Zealand (Horak 1980) and Southern Chile and Argentina (Horak 1979). *Ph. perlaetus* is readily distinguished from *Ph. ciliatus* due to the smaller cheilocystidia and spores which lack a germ pore.

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References

Boedijn, K. B. (1938). A poisonous species of the genus *Phaeomarasmius*. — Bull. Jard. Bot. Buitenzorg 16: 76—82.

Cleland, J. B. (1934). Toadstools and mushrooms and other larger fungi of South Australia. — 178 pp. (Gov. Printer, Adelaide).

Horak, E. (1968). Synopsis generum Agaricalium. — Beitr. Krypt. Schweiz 13: 1—741.

— (1979). Agaricales and secotiaceous Gasteromycetes. — Fl. Criptogamica Tierra del Fuego 13 (in print).

— (1980). Fungi Agaricini Novazelandiae. VIII. *Phaeomarasmius* Scherffel and *Flammulaster* Earle. — New Zealand Journ. Bot. 18 (in print).

Pegler, D. N. (1965). Studies on Australasian Agaricales. — Austr. Journ. Bot. 13: 323—356.

Scherffel, A. (1897). *Phaeomarasmius*, ein neues Agaricineen-Genus. — Hedwigia 36: 288—290.

Singer, R. (1953). The agarics of the Argentine sector of Tierra del Fuego and limitrophous regions of the Magellan area. — Sydowia 7: 206—265.

— (1956). Versuch einer Zusammenstellung der Arten der Gattung *Phaeomarasmius*. — Schw. Z. Pilzk. 34: 44—47, 53—65.

— (1975). The Agaricales in modern taxonomy. — 912 pp. (Cramer, Vaduz).

Watling, R. (1966). The genus *Flammulaster*. — Not. Roy. Bot. Gard. Edingburgh 28: 65—72.

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