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NOTES ON BOLETE TAXONOMY—II

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(With 11 Text-figures)

Newly discovered mycorrhizal relationships of boletes with Sapotaceae and Nyctaginaceae in the Neotropics are discussed. The eight neotropical species of *Phylloporus* are keyed out and three described. *Fistulinella* Henn. is transferred to the Strobilomycetaceae. *Phylloporus manausensis* Sing. and *P.* sect. *Manausenses* Sing., *P. leucomycelinus* Sing., *Xerocomus amazonicus* Sing., *X. radicicola* Sing. & Araujo, *Tylopilus arenarius* Sing., *T. potamogeton* Sing., *T.* sect. *Potamogetones* Sing. sect. nov., *Fistulinella campinaranae* Sing. and *Porphyrellus rionegrensis* Sing. & Araujo. are new taxa.

Recent field and laboratory studies have been carried out on boletes (Boletaceae and Strobilomycetaceae) on both fresh and formalin material. Some of the results, as far as they refer to thus far unpublished data or lead to new combinations or new taxa have been found to be of general interest in bolete taxonomy and are discussed in the following series of notes as a continuation of the notes published in the first series (Singer, 1973b).

1. Mycorrhizal relationships

Recent studies on ectomycorrhiza in the neotropics (Amazonas, Brazil) have shown that the ectomycorrhizal fungi of the white sand stands of the hylaea (campina and campinarana vegetation) are ectotroph dominated forest communities. Careful ecological and root anatomy studies have revealed that short roots with mantle and Hartig net can be traced to carpophores of mycorrhizal fungi, including aside from boletes also *Lactarius* (two species), *Amanita* (two species) and *Cantharellus*. The trees belong in the Leguminosae (*Aldina* and perhaps other genera), Rubiaceae (*Psychotria barbiflora*) and Sapotaceae (*Glycoxylon inophyllum*), possibly also some species in the Sapindaceae, but only the mycorrhizae of *Aldina* and *Glycoxylon* can be considered as certainly obligatorily ectomycorrhizal.

The cicatrizing ectomycorrhiza (Singer & Morello, 1960) is the only one which very rarely and sporadically occurs in the primary terra firme forest (which covers most of Amazonia) which has been characterized as practically anectotrophic. On the other hand, the secondary and root-damaged type of hylaea – wherever the natural and complex ecosystem of the hylaea has been disturbed – is known to be

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relatively rich in ectomycorrhiza (cicatrizing mycorrhiza) but only the ectotrophs of the montane rain forest and the subtropical forests of South America and one ectotroph of tropical Asia (*Pinus/Suillus*) had been studied thoroughly. The Amazonian ectotrophs are *Neea* spec. (Nyctaginaceae[1]) with *Amanita* sp. (three species), possibly also *Psychotria* sp., Sapindaceae sp., Leguminosae sp. on one hand and *Russula* sp. and *R. puiggarii* as well as *Phylloporus manausensis* on the other.

The varzea forests had thus far been considered ectomycorrhiza-free. The first hint as to the possibility of ectomycorrhizal symbiosis in inundable forests of Amazonia had been reported by Singer (1961) who observed *Inocybe matrisdei* Sing. with unidentified trees in Amazonian Bolivia but ectomycorrhiza was only suggested by the identity of the fungus, not by direct observation. Singer & Prance and I. Araujo have now collected in varzea *Tylopilus potamogeton* which is evidently ectomycorrhizal with legums.

The bolete species involved are new and shall be described below.

2. The genus Phylloporus in the Neotropics

KEY TO THE TROPICAL AND SUBTROPICAL SPECIES IN THE WESTERN HEMISPHERE.

1. Entire carpophore green, not blackening; cystidia numerous, chestnut colored inside; spores 8.5–10.7 × 4–5.5 µm. . . . . 1. *P. viridis*, p. 423
1. Carpophores differently colored; if pileus olive-green at first, lamellae (pores) not green and context blackening.
   2. Bluing species (context or at least fresh lamellae bluing on bruising). Ectomycorrhizal species (with angiosperms and conifers), occurring in the Gulf area.
      3. Spores 8.5–11.7 × 4–5, few up to 12.3 × 5.5 µm; basidia up to 11 µm broad. 2. *P. bellus*, p. 423
      3. Spores 10.5–15 × 4.5–5.8 µm; basidia up to 14.5 µm broad. 3. *P. foliiporus*, p. 424
   2. Context or lamellae not bluing.
      4. Pileus and stipe red or reddish. Mycorrhizal with *Quercus*. 4. *P. purpurellus*, p. 424
      4. Pileus and stipe not red.
         5. Context blackening (not reddening before blackening); lamellae not yellow; spore print not olive or olive-brown but 'marron glacé' to 'sandal wood' or 14 H 8, sometimes reaching 'Vandyke brown' to 'Cochin' (Maerz & Paul). Mostly lignicolous. Amazonas region. . . . . 5. *P. manausensis*, p. 425
         5. Context not blackening; lamellae yellow to yellow brown or olive brown; spore print with an olive tinge; NH_3 and NH_4OH strongly, deeply and persistently bluing on fresh pileus surface. Mostly terricolous and mycorrhizal. Only subtropical and tropical-montane species.
            6. Basal mycelium white or whitish.
               7. Pileus 'Rembrandt' to dark olive with 'casserole' margin (Maerz & Paul); lamellae light chrome yellow; spores 4.5–5 µm broad. *Alnus* mycorrhiza. 6. *P. caballeroi*, p. 426
               7. Pileus 'casserole', often with paler center between 'rose beige' and 'Papyrus' (Maerz & Paul); lamellae soon yellowish brown with an olive shade; spores 3.3–4.8 µm broad. *Fagus* mycorrhiza (not tropical?). 7. *P. leucomycelinus*, p. 426
            6. Basal mycelium yellow. Mostly *Quercus* mycorrhiza. 8. *P. rhodoxanthus*, ssp. *rhodoxanthus*, p. 428

[1] This family had also, independently, been indicated as ectomycorrhizal by J.-P. Fiard and by D. Janos (personal communication).

1. PHYLLOPORUS VIRIDIS (Berk.) Sing.

Paxillus viridis Berk. *in* Hooker's London J. Bot. **8**: 133. 1856. — *Phylloporus viridis* (Berk.) Sing. *in* Nova Hedwigia **7**: 123. 1964.

If the green color indicated by Berkeley from notes of the collector were the consequence of bluing — a possibility we have to keep in mind – this species would key out with *P. bellus* which would become a synonym of *P. viridis*. The yellow contents of the cystidia may have been darkening during over 100 years of conservation. In spite of intensive search the species has not been recollected in Amazonia.

2. PHYLLOPORUS BELLUS (Mass.) Corner—Fig. 1

Flammula bella Mass. *in* Kew Bull. for 1914: 74. 1914. — *Phylloporus bellus* (Mass.) Corner *in* Nova Hedwigia **20**: 798. 1970.

Pileus deep bay, granular fibrillose to villous, under a lens with small deeper fibrillose-scaly tufts on paler brownish ground, very densely so, so that the surface appears smooth or subsmooth macroscopically, eventually subtomentose and slightly paler, convex then concave, 10 mm broad (but said to reach 60 mm diam.). — Lamellae bright yellow, bluing when bruised, rather narrow to medium broad, subdistant to distant, not anastomosing near the stipe but often forked at base, decurrent. Spore print brown-olive. — Stipe red-brown, slightly paler than pileus, glabrous to subglabrous macroscopically but very finely scurfy under a lens, subequal but often widened at apex 12 × 1.3 mm (but reaching larger size in the type); basal mycelium white or whitish yellow. — Context whitish yellow, unchanging or indistinctly bluing in parts, fleshy, inodorous.

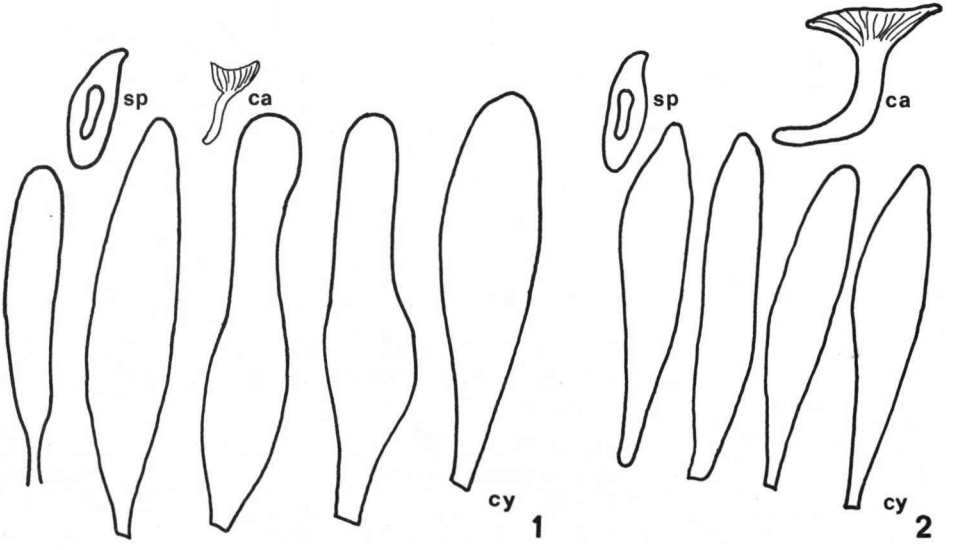

Fig. 1. *Phylloporus bellus*. — ca. Carpophore, × 3/4. — sp. Spore, × 1500. — cy. Cystidia, × 750.

Fig. 2. *Phylloporus purpurellus*. — ca. Carpophore, × 3/4. — sp. Spore, × 1500. — cy. Cystidia, × 750.

Spores 8.5–11.7(–12.3) × 4–5(–5.5) µm, golden olive to greenish melleous, smooth, fusoid, with suprahilar depression. — Hymenium: Basidia 30–38(–40) × 8–10.5(–11) µm, 4-spored, hyaline to yellowish (ammonia mounts), fading to pale argillaceous, pigment intracellular, dissolved. Cystidia 33–77(–98) × 9–18(–20) µm, projecting 25–30 µm, fusoid, ventricose or utriform, not incrusted but internally pigmented like the basidia. — Hyphae hyaline, without clamp connections; hymenophoral trama bilateral of the Phylloporus-subtype. — Cortical layers: Epicutis of pileus a trichodermium of rather broad hyphal cells with rounded ends. Surface of pileus with subhymeniform layer of dermatocystidia in bunches, these either clavate or or like the hymenial cystidia; a similar structure on stipe.

HABITAT.—Solitary in oak woods.

MATERIAL STUDIED.—MEXICO: Oaxaca, San Agostín, Sierra Mazateca, 10 VII 1969, *Singer B 8428* (F). — INDONESIA: Tjibodas, *Hoehnel* ('Zwergexemplare' von *P. bogoriensis* Hoehn., FH).

I believe that *P. bellus* var. *cyanescens* Corner (at least the large-spored collection l.c. p. 799) is *P. foliiporus* (Murr.) Sing. (see below). My Mexican collection appears to be a small carpophore of *P. bellus* var. *bellus* (as described by Corner) and of equal size as Hoehnel's material which shows no trace of blackening.

3. **Phylloporus foliiporus** (Murrill) Sing., *comb. nov.*

Gomphidius foliiporus Murrill *in* Mycologia **35**: 452. 1943. — *Phylloporus rhodoxanthus* var. *foliiporus* (Murrill) Sing. *in* Farlowia **2**: 432. 1945.

Phylloporus bellus var. *cyanescens* Corner *in* Nova Hedwigia **20**: 799. 1940 (*pro parte?*).

This species was described in detail (Singer 1945: 432, pl. 1, 11–12).

4. PHYLLOPORUS PURPURELLUS Sing.—Fig. 2

Phylloporus purpurellus Sing. *in* Sydowia Beih. **7**: 100. 1973.

This species was described in detail l.c.

5. **Phylloporus manausensis** Sing., *sp. nov.* —Fig. 3

Pileo subolivaceo dein flavo vel rufescente; hymenophoro favoloideo et lamellari, griseolo, nigricante; sporis in cumulo vegeto violaceobrunneo. Stipite griseolo, nigricante, carne nigricante. Sporis 8.5–11.2 × 4.2–5.5 µm; cystidia usque ad 89 × 13 µm, tenui- vel crasse tunicatis. Ad truncos arborum ascendens, in silva secundaria tropicali Amazoniae. Typus: *Singer B 9790* (F).

Pileus dusky olive yellow or olive ('syrup', 'old Bronze', 'citrine', 'willow'), on margin often green ('metallic green', 'Quaker green'), often more yellow ('aureoline') on margin, later becoming 'colonial yellow' or the whole pileus orange-rufescent ('feuille morte', 'terracotta') or ferruginous, unshining, velutinous, eventually often becoming granose or granulose, neither hygrophanous nor viscid, rarely or exceptionally subviscid after strong rains, hemispherical or pulvinate, eventually mostly becoming irregularly applanate, neither umbilicate nor umbonate, with at first somewhat incurved, rather acute smooth margin, 7–62 mm broad. — Hymenophore between favoloid and lamellate most frequently partly the former partly the

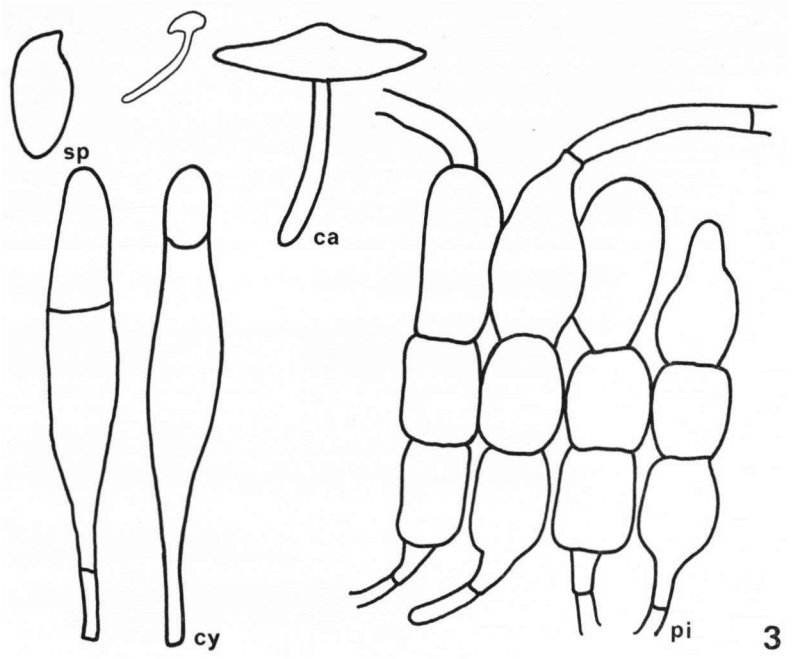

Fig. 3. *Phylloporus manausensis.* — ca. Carpophores, ×3/4. — sp. Spore, ×1500. — cy Cystidia, ×750. — pi. Cortical layer of pileus, × 750.

latter, the anastomoses not necessarily more numerous near margin or near stipe, where present reaching down to the edges of the lamellae or only about half depth of hymenophore, and forming mostly radially extended or boletinoid pentagonal or hexagonal pores 0.8×0.5 to 4×2.7 mm, these not discolorous and the whole hymenophore never yellow or olive brown but 'polar bear', 'ivory', 10 B 3, (M&P) or frequently more grayish ('Longchamps'), blackening when touched, medium broad (deep), later becoming broad to very broad (reaching up to 10 mm), the lamellae medium distant to distant, decurrent. Spore print 'sandal wood' to 'leather brown' or 'marron glacé', or 14 H 8, in very thick layer 'Vandyke brown' to 'Cochin', i.e. never with an olive hue even when quite fresh, but always more or less fawn color to bay. — Stipe 'Ivory' to 'beige soirée' in upper, 'bracken' to 'teak wood' in lower part, only when quite young and fresh 'Manila' above and 'camels hair' below, mostly becoming 'almond', more rarely bright yellow (all colors according to Maerz & Paul, lst Ed.), blackening all over when touched, often also in age, glabrous or subglabrous, not viscid, naked, central, more rarely somewhat eccentric, solid, sometimes at first somewhat tapering upwards, otherwise equal or subequal, eventually sometimes tapering downwards, rarely with abruptly widening base, 26–62 × 2–5 mm; basal mycelium whitish. — Context melleous (reaching 'burnt, yellowstone') or somewhat paler, but neither white nor bright yellow nor reddish, never bluing and not reddening before strongly and consistently blackening when bruised or cut, always quite soft-fleshy in pileus and somewhat fragile, eventually becoming slightly tougher and elastic in stipe. Odor none. Taste mild or submild (occasionally very slightly acid or astringent).

Spores 8.5–11.2×4.2–5.5 μm, oblong, smooth, melleous, with suprahilar depression. — Hymenium: Basidia 34–38×9–10.8 μm, clavate, hyaline, 4-spored. Cystidia

rather numerous on pores and edges of lamellae, 76–89 × 9–13 μm, ventricose to subampullacious or subcylindrical with broadly rounded tip and mostly long-effilate melleous pedicel, with thin to partially thick hyaline to pale melleous wall (0.3–2.5 μm thick), covered by a resinous, sepia-colored continuous incrusting layer which covers the apex like a hood or the middle like a girdle. — Hyphae not or only slightly gelatinizing, without clamp connections, thinwalled, hyaline, but some brownish elements here and there, especially in hymenophoral trama which is bilateral of Phylloporus-subtype; brownish hyphae often connecting with cystidia; mediostratum consisting of axially arranged multiseptate hyphae 2.5–7.7 μm broad, not more pigmented than lateral stratum which consists of divergent but subparallel to parallel hyphae touching each other, never strongly recurved or imbedded in gelatinous mass, 2.5–10.5 μm broad. — Cortical layers: Epicutis of pileus a trichodermial palisade of erect chains of short hyphal cells about 16–18 × 13–16 μm, with sepia intraparietal pigment, with rather thin or firm wall; the terminal cells 25–40 × 13–17 μm, ellipsoid to ampullaceous; above this some applicate hyphae running horizontally and likewise with intraparietal pigment and rather thin wall, 5–9 μm broad, rising from cells which erupt from and often surpass the general level of the trichodermial palisade, this layer becoming rather disorganized and ruptured in old specimens. Hypodermium of smaller hyphal cells, more irregularly arranged than epicutis, about 6–8 μm broad – a relatively shallow layer.

Chemical color reactions: NH_3 and NH_4OH on surface of pileus negative, or very slowly slightly darkening reaching e.g. 16 C 10 (M&P). — KOH on pileus brownish. — Formalin on context of pileus 'Cordovan' (M&P). — Phenol on context of pileus black.

HABITAT.—On earth or humus or most frequently directly on wood around the standing tree trunks of secondary tropical rain forest or ascending on these up to 20 cm from the ground, singly or in small groups. Known hosts: *Neea*, Palmae, Euphorbiaceae. Ectomycorrhizal relationship not demonstrated.

MATERIAL STUDIED.—BRAZIL: Manaus, VIII 1977, *Singer B 10587* (INPA), *B 9790* (typus, F), and ten additional collections (INPA).

6. PHYLLOPORUS CABALLEROI Sing.—Fig. 4

Phylloporus caballeroi Sing. *in* Sydowia Beih. 7: 101. 1973.

This has been fully described l.c.

7. **Phylloporus leucomycelinus** (Sing.) ex Sing., *sp. nov.*—Fig. 5.

Phylloporus rhodoxanthus ssp. *leucomycelinus* Sing., ined.

Macroscopice characteribus *P. rhodoxanthi* gaudens — mycelio basali albido excepto; sporis 11–12.5 × 3.5–4.5 μm; cystidiis haud incrustatis, hyalinis, ampullaceis. Ad terram sub Fago grandifolia. Typus: *Singer N 7674* (F).

Pileus deep red brown (near 'casserole' M&P), often with bleached zone (between 'rose beige' and 'papyrus') at center, unshining, subvelutinous, sometimes soon becoming densely rivulose-cracked, dry, pulvinate to convex, 28–34 mm broad. — Lamellae brownish yellow to yellow-brown with eventually an olive tinge, close or subclose, rather broad with only here and there an occasional cross-vein, mainly not intervenose and not anastomosing near stipe, waxy-soft and rather thick above, decurrent. Spore print olive-brown. — Stipe concolorous-paler above, with concolorous punctation on much paler ground giving the overall impression of 'cocoa' to 'wild honey' (M&P), pallid near base, central, solid, tapering downwards

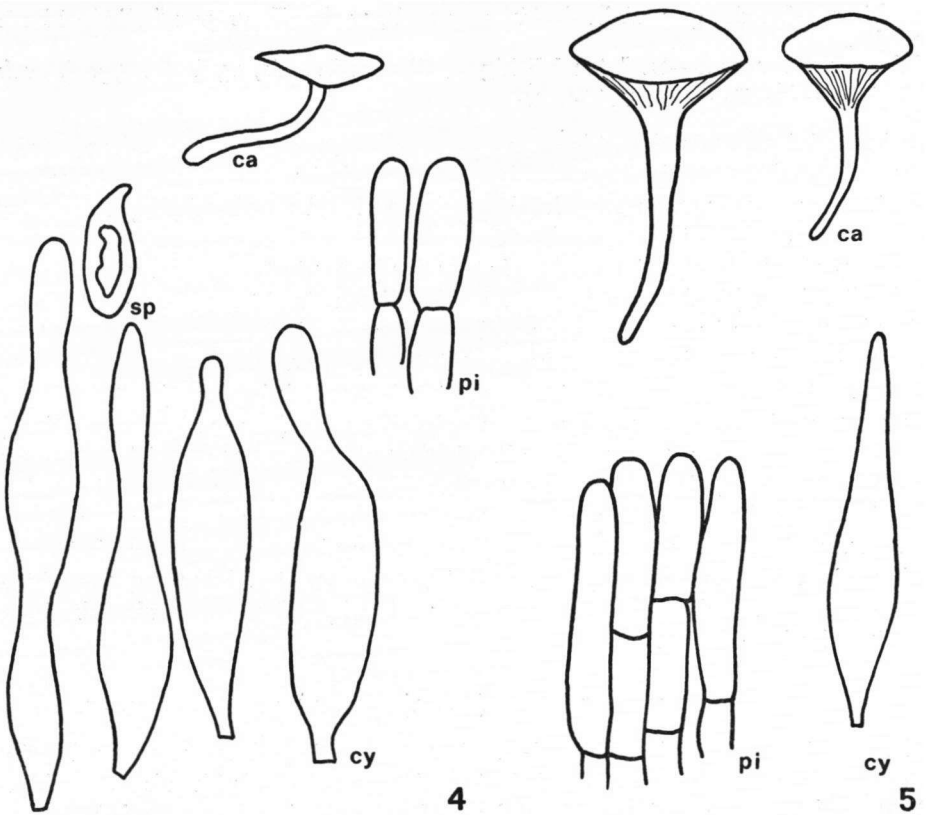

Fig. 4. *Phylloporus caballeroi.* — ca. Carpophore, × 3/4. — sp. Spore, × 1500. — cy. Cystidia, × 750. — pi. Fragment of cortical layer of pileus, × 750.

Fig. 5. *Phylloporus leucomycelinus.* — ca. Carpophores, × 3/4. — cy. Cystidium, × 750. — pi. Cortical layer of pileus, × 750.

27–45 × 3–5 mm; basal mycelium whitish. — Context at first buffy white all over but often developing a bright yellow zone in the lower part of the pileus and the upper part of the stipe, reddish cinnamon immediately underneath the cuticle, whitish in the base of the stipe, unchanging when bruised or cut; odor nil or slight, agreeable. Taste mild.

Spores 10–12.5(–13.5) × 3.3–4.5(—4.8) μm, (11–12.5 × 3.5–4.5 μm in type) fusoid, melleous, smooth, with suprahilar depression. — Hymenium: Basidia 20–25 × 6–7 μm, ventricose, 4-spored (in type). Cystidia 50–71 × (6)–11–12 μm, ampullaceous, more rarely cylindric-fusoid, hyaline, not incrusted. — Hyphae of hymenophoral trama in bilateral arrangement of Phylloporus-subtype, melleous-hyaline, scarcely subgelatinous; hyphae broad without clamp connections. — Cortical layers: Epicutis of pileus a trichodermial palisade, melleous, of chains of hyphal cells which are melleous, without incrustation, cylindrical or subcylindrical and parallel with each other, the end-cells 18–50 × 6–8 μm, more rarely swollen (to 16.5 μm), broadly rounded.

Chemical color reactions: NH_3 and NH_4OH giving a strong greenish blue reaction immediately, on the pileus surface as well as the stipe.

Habitat.—On the ground in deciduous woods, under *Fagus grandifolia* in North America.

MATERIAL STUDIED.—U. S.A.: Michigan, Warren Woods, 23 VII 1973. *Ponce de León*, comm. *Singer N 7674* (typus, F).

It is not fully certain that this fungus enters the tropical zone since the material received from Oaxaca, Mexico, under beech and oak is doubtful. Additional material from Chocorua, New Hampshire, has been observed and conserved (FH) previously. It seems to occur also in Canada (FH).

This species is closely related to *P. rhodoxanthus* (Schwein.) Bres. and to the Asiatic species *P. sulcatus* (Pat.) E. J. Gilb. and *P. orientalis* var. *brevisporus* Corner. *P. sulcatus* differs by the conspicuous ribs running down the upper half of the stipe continuing the lamellae and the basal mycelium tending to yellow. These characters would make *P. sulcatus* a synonym of *P. rhodoxanthus* (Schwein.) Bres. which has similar decurrent ribs in many or most specimens. In a Chinese (Yünnan) specimen (FH) the spores are 12.5–14 × 4–4.5 μm in; *P. sulcatus*, type, 11–12.8 × 4.5–5(6) μm; in the American type of *P. rhodoxanthus* 10.5–14.3 × 4–5.5 μm. It appears doubtful whether these forms can be distinguished by spore sizes alone. The intraspecific taxonomy of the *P. rhodoxanthus-sulcatus* complex should be studied more carefully before its various elements can be recognized as independent species. However, the white-mycelial form, described above is certainly specifically different. *P. orientalis* differs from it in bluing context.

8. PHYLLOPORUS RHODOXANTHUS (Schw.) Bres. subsp. RHODOXANTHUS

This species has often been described adequately and needs no further redescription. Its occurrence in the tropics (Mexico, Veracruz) is established by a specimen mixed in with the type of *Naucoria mexicana* Murr. (NY) (a *Phaeomarasmius*).

All temperate and neotropical species investigated thus far, with the single exception of *P. manausensis* have olive to olive-brown spore print, and give the characteristic deep blue ammonia reaction on the pileus. The type species of the genus should therefore with the majority of the species be included in the section *Phylloporus* while *P. manausensis* becomes the type of the section *Manausenses*:

Manausenses Sing. *sect. nov.*

Pileo ammoniaci ope haud caerulescente; sporis in massa purpureo-cervinis. Mycelio vix (obligatim?) ectomycorrhizico. Typus: *P. manausensis* Sing.

It is possible that *P. viridis*, not studied fresh, might belong to the same section. It is also possible that *P. phaeosporus* Corner, for which spore print and chemical data are likewise unknown, may belong in section *Manausenses*. In this latter species the lamellae are described as golden yellow and the spores under the microscope as characteristically 'rich dark brown' (Corner). If it were not for this species, the absence of yellow, brown or olive colors in the lamellae might also be characteristic for the new section. From the color of the lamellae as painted (Corner 1970, pl. 4A) one might also assume that *P. cingulatus* Corner belongs in sect. *Manausenses*.

3. New species of Xerocomus and Tylopilus

Xerocomus amazonicus Sing., *sp., nov.*—Fig. 6.

Pileo sordide ochreo ammoniaci ope caerulescente, tomentoso, haud viscido, tubulis luteis, immutabilibus, mediocribus, stipite sursum brunneolo-vinoso, deorsum vinoso-pallido, ad apicem grosse reticulato, ceterum subtomentoso; carne flavida, sub cute rubido-cinnamomea, immutabili. Sporis 11–15 (22) × 3.5–4.8 (6) μm. Cystidiis inconspicuis; cheilocystidiis majoribus quam cystidia; epicute e trichodermio palisadico efformata sine incrustatione. Ad basin arborum in silva pluviali arenosa. Typus: *Singer & I. Araujo B 1036o* (INPA).

Pileus light ocher-beige (11 C 4 to 11 D 5), at center between 'blush' and 'cork', at margin 'blush' (M&P), tomentose, not even subviscid, smooth, convex, obtuse, sometimes slightly applanate in the center, about 25 mm broad. — Hymenophore tubulose, tubes yellow, rather long in the middle (i.e. ventricose), pores concolorous, unchanging on pressure, angular, 0.5–1 mm wide, mostly 0.5–0.8 mm wide, at stipe radially stretched-elongated and lamellar, sinuate-depressed, but not deeply so. — Stipe in upper part brownish vinous ('Cordova, castellon') and here concolorously coarsely reticulated, in the lower two thirds vinous-pallid and finely tomentose or subtomentose but with occasional brownish vinose streaks, smooth, solid, equal, 57 × 6 mm; basal mycelium bright yellow (5 L 1/2) — Context light yellow but under cuticle and in stipe cinnamon, reddish brown and in circumference of base of stipe bright yellow, unchanging when bruised or cut, fleshy. Odor none. Taste mild.

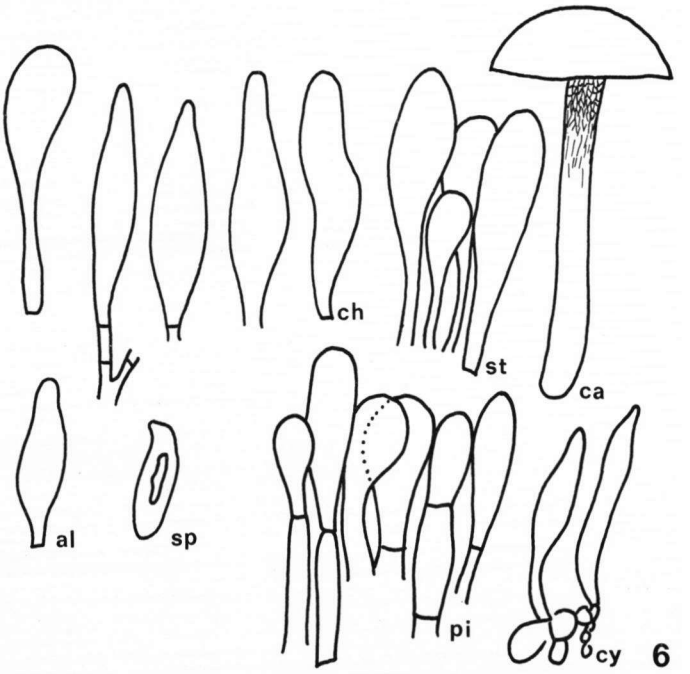

Fig. 6. *Xerocomus amazonicus.* — ca. Carpophore, × 3/4. — ch. Cheilocystidia, × 750. — al. Allocyst, × 750. — st. Covering of stipe, × 750. — pi. Cortical layer of pileus, × 750. — cy. Cystidia of hymenium, × 750.

Spores 11–15–(22) × 3.5–4.8–(6) µm, mostly 11–13.5 × 4–4.5 µm, smooth, melleous, fusoid, more rarely irregularly or regularly cylindrical, without truncation or pore at the distal end but with suprahilar depression or applanation, inamyloid. — Hymenium: Basidia 25–34 × 8–9.5 µm, 4-spored, basal septum without clamp. Cystidia and cystidioles 24–36 × 5–6 µm, fusoid or subcylindrical, obtuse-rounded or with obtuse mucro, thin-walled, little or not projecting, inconspicuous, hyaline; cystidioles rooting at the level of the basidia, cystidia deeper. Cheilocystidia differentiated and occurring at pores and their immediate neighbourhood, 26–49 × 7–11 µm, versiform, mostly fusoid, more rarely cylindrical-clavate or cylindrical-subcapitate, some almost ampullaceous, always rounded-obtuse above, hyaline, thin- or firm-walled, numerous, but not making the edge heteromorphous. — Hyphae hyaline or subhyaline (NH_4OH, KOH), thin-walled, scarcely gelatinized, without clamp connections, inamyloid. Hymenophoral trama bilateral of Phylloporus-type; hyphae of lateral and mediostratum little or scarcely differentiated, 4–13 µm broad, much less irregularly shaped and arranged than in pileus-trama. Subhymenium irregularly subcellular; cells 4.5–7.5 µm in diameter. — Cortical layers: Epicutis of pileus a trichodermial palisade, palest ochraceous stramineous (NH_4OH) with intraparietal pigment, not incrusted, elements thin- to firm-walled; terminal cells cystidiform, these forming a sybhymeniform layer, 26–29 × 13.5–15.5 µm or 32–34 × 7–11 µm, cylindrical, ventricose, clavate or subvesiculose, with broadly rounded tip. Reticulation of stipe beset with fascicles or hymeniform stretches of dermatocystidia and occasionally single dermatocystidia, these 18–49 × 6–12.5 µm, mostly clavate, more rarely fusoid, with rounded tip, thin-walled. — Basal mycelium with hyphae 3–12 µm broad, without clamp connections; occasional allocysts about 30 × 8 µm, thin-walled, these, as the hyphae yellowish-hyaline (KOH), inamyloid.

Chemical color reactions: NH_4OH on surface of pileus immediately and persistently greenish blue. — KOH on surface of pileus fuliginous-chocolate with blue margins.

Habitat.—In campinarana vegetation at base of a dicotyledonous tree in detritus, near Leguminosae, Sapotaceae and Rubiaceae.

MATERIAL STUDIED.—BRAZIL: 60 km N. of Manaus, *R. Singer & I. Araujo B 10360*, 20 XII 1977, (typus, INPA).

This species belongs in section *Pseudophyllopori* where it is easily separated by its colors. Like all known representatives of this section, this species is ectomycorrhizal.

Xerocomus radicicola Sing. & Araujo, *sp. nov.*—Fig. 7

Pileo subolivaceo-fusco, 10 mm lato; poris gyrosis, luteis, inaequalibus; stipite eburneo, pubescente, dein glabrescente, levi, tenui, radicelligeno; mycelio clare flavido. Sporis 6–8 × 3–4 µm, cystidiis et cheilocystidiis 24–40 × 7–8 µm, ventricoso-mucronatis vel fusoideis. Ad radices arborum dicotyledonearum in silva inundabili pluviali Brasiliae. Typus: *I. Araujo 916* (INPA).

Pileus subolivaceous-fuscous, then fuscous (A 3 D Locquin), subtomentose, convex, about 10 mm broad — Hymenophore tubulose, tubes deep lemon yellow (A 7 h, Locquin) becoming reddish brown (A 2 d, Locquin), maroon when dried, relatively long, ventricose, depressed around the stipe; pores concolorous with tubes, strongly gyrose, often compound (at uneven level), angular and varying from subisodiametric to elongated and even curved, relatively wide. — Stipe ivory colored (F 7 h, Locquin), at first distinctly pubescent under a lens but glabrescent, subglabrous macroscopically, slightly tapering upwards when mature, 22–24 × 0.7–1.5 mm; basal mycelium light yellow; veil none in mature carpophores. — Context rather

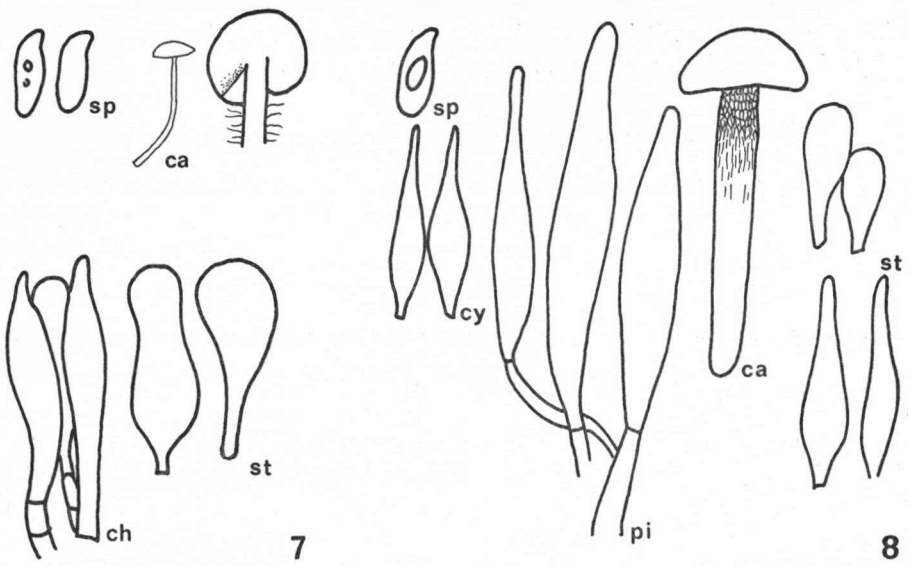

Fig. 7. *Xerocomus radicicola.* — ca. Carpophore, ×3/4. — pr. Primordium, ×25. — sp. Spores, ×1500. — ch. Cheilocystidia, ×750. — st. Elements of covering of stipe, ×750.

Fig. 8. *Tylopilus arenarius.* — ca. Carpophore, ×3/4. — sp. Spore, ×1500. — ca. Cystidia, ×750. — pi. Terminal cells of covering of pileus, ×750. — st. Elements of covering of stipe, ×750.

thin, fleshy, not discolored when bruised, no specific odor noticed. — Development: In smallest carpophore (0.4 mm) primordial hymenium still covered by silky filaments between margin of pileus and apex of stipe, with margin still touching the stipe on one side.

Spores 6–8×3–4 μm, most frequently 6.5–7×3–3.5 μm, oblong to cylindrical, smooth, inamyloid. — Hymenium: Basidia 17×6.5 μm, 4-spored. Cystidia 24–33×7–8 μm, ventricose, ventricose-submucronate or utriform, rounded at tip, thin-walled, not incrusted, hyaline. Cheilocystidia as end cells of mediostratum hyphae above a cylindrical 4–5–(9) μm broad mother cell, about 40 μm long and 7–8 μm broad, fusoid or fusoid-mucronate, few subcylindrical, obtuse, thin-walled, subhyaline, inamyloid. — Hyphae subhyaline, inamyloid, thin-walled, without clamp connections, scarcely gelatinized, irregularly arranged. Hymenophoral trama bilateral of Phylloporus subtype, subhyaline; mediostratum with hyphae slightly firmer-walled and axially arranged than those of the lateral stratum, all about 3–4.3 μm broad. — Cortical layers: Epicutis of pileus a trichodermium of rather loosely arranged interwoven hyphae which soon become matted down in uppermost layer, hyaline to melleous, mostly finely granular inside, 3–8 μm broad. Hypodermium poorly differentiated; incrusting pigment absent. Covering of stipe consisting of dermatocystidia, these 33–38×13–15 μm, short, ventricose-clavate to utriform, or about 100×9 μm, cylindrical and apically attenuated but obtuse. All covering layers vaguely to distinctly gelatinizing in KOH medium.

HABITAT.—On living, creeping rootlets over rotten wood in varzea vegetation of tropical rain forest, apparently parasitic, in Amazonia.

MATERIAL STUDIED.—BRAZIL: Amazonas, Rio Negro, at the Tupuruguarai forest along the river, 17 I 1978, *I. Araujo 916* (typus; INPA).

We consider this small bolete as belonging to section *Brasilienses* Sing. where it is unique because of its colors and its apparent parasitism on rootlets.

Tylopilus arenarius Sing., *sp. nov.*—Fig. 8

Pileo albo, leniter lilacino-tincto, levi, poris parvis, albidis, stipite anguste subventricoso, apice subtiliter lilaceo-reticulato, deorsum minutissime pustuloso sed levi, carne alba, fractu leniter subardosiaca. Sporis (6)–8–11 × 3–3.5 μm, subhyalinis, cum basidiis cystidiisque intus granulis pseudoamyloideis repletis. Ammoniaci ope omnibus superficiebus caerulescentibus. Sub Leguminosis Sapotaceisque in Amazonia. Typus: *Singer B 10590* (INPA).

Pileus white or whitish with slight lilac (55 H 1, M&P) flush especially near margin but this bleaching to dirty white or becoming pale tawny in age and on drying, not viscid, subglabrous to subvelutinous or subtomentose, with at first almost involute margin, smooth, convex, obtuse, about 22–23 mm broad. — Hymenophore tubulose, tubes white or whitish then dirty pinkish, medium long, depressed around stipe; pores concolorous, unchanging on pressure or becoming sordid livid when touched, forming an uneven surface because of their position at different levels, round, three to a millimeter. — Stipe finely lilac (55 H 1, M&P) reticulate on white ground in the upper third, smooth and 53 H 3 (M&P) in the lower two thirds, there minutely pustulate-scurfy when seen under a lens, solid, slightly narrowly ventricose, 30–33 × 7–9 mm, at apex and base about 5–7 mm broad. Basal mycelium white or whitish, soft-cottony. — Context white, slightly slate color to livid when bruised or cut, fleshy-soft in pileus and stipe. Odor none. Taste mild.

Spores (6)–8–11 × 3–3.5 μm, oblong to subfusoid, smooth, with thin, inamyloid wall, but often with minute pseudoamyloid granules inside. — Hymenium: Basidia (16)–22–27 × (6)–8.5 μm, with four up to 7 μm long sterigmata; basidioles often with finely granular pseudoamyloid contents. Cystidia 26–27 × 5–10 μm, with thin inamyloid wall, fusoid to ampullaceous with narrow subobtuse to subacute 2.3–3 μm broad neck, some with pseudoamyloid granulation. — Hyphae inamyloid but some with a fine pseudoamyloid granulation, without clamp connections, thin-walled, in pileus more or less radially, in stipe more or less longitudinally arranged. Hymenophoral trama bilateral of Boletus-subtype; mediostratum not gelatinized, hyaline to pale melleous, of interwoven to subparallel hyphae 2–3 μm broad; lateral stratum broad, strongly gelatinized although hyphae relatively close, strongly curved outwards at first, hyaline or subhyaline and 4.4–8 μm broad, intermixed with some hyaline to pale melleous, flexuous, thin-filamentose hyphae 1–2 μm broad. — Cortical layers: Epicutis of pileus a trichodermium which ends in cystidiform elongated cells, these 40–96 × 6–13 μm, narrowly ventricose to fusoid or ampullaceous, thin-walled, mostly hyaline, with subobtuse or obtuse tip, thin-walled hyphae below somewhat melleous to subhyaline but without incrusting pigment, not gelatinized or scarcely so. Hypodermium a cutis of pale melleous-ochraceous (NH_4OH) to subhyaline hyphae. On veins of reticulation of stipe a hymeniform layer consisting of dermatocystidia (much like hymenial cystidia) and numerous basidiomorphous cells (dermatopseudoparaphyses or dermatobasidia) 15–29 × 6.5–10 μm.

Chemical color reactions: NH_4OH and KOH on all surfaces giving a strong blue reaction (much like that of *Phylloporus* sect. *Phylloporus* and *Xerocomus* sect. *Pseudophyllobori*).

HABITAT.—On humus in campinarana vegetation over white sand and under *Glycoxylon* and Leguminosae, solitary, in Amazonia.

MATERIAL STUDIED.—BRAZIL: Amazonas, Estrada Manaus-Caracaraí, km 45, 3 II 1978, *Singer B 10590* (typus; INPA), & 28 II 1978, *Singer B 10734* (INPA); material parasitized by a *Hypomyces*.

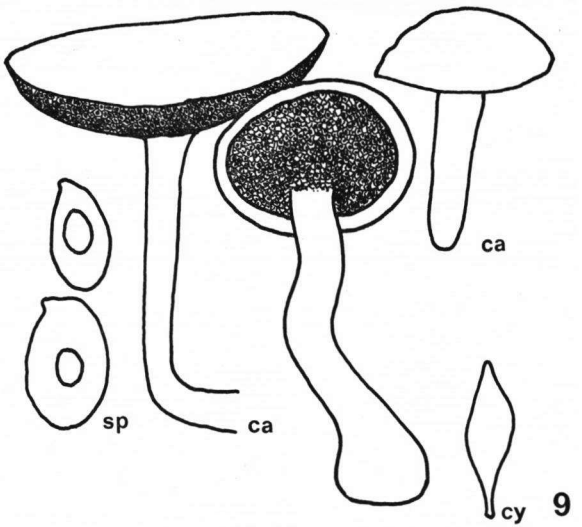

Fig. 9. *Tylopilus potamogeton.* — ca. Carpophores, ×3/4. — sp. Spores, ×1500. — cy. Cystidium, ×750.

Tylopilus potamogeton Sing., *sp. nov.*—Fig. 9.

Pileo brunneo, tomentoso glabrescente, levi; tubulis et poris (0.5–1 mm diam.) nec non carne immutabilibus; stipite cinnamomeo vel umbrino, interdum pallescente, subcylindraceo. Sporis 9.5–12×6.5–8 μm; cystidiis hyalinis. Probe ripam fluminum in silva inundabili et ad arenam albam Amazoniae. Typus: *Singer B 10351* (INPA).

Pileus at first a bright ochraceous brown (near Dennis' illustration of *Lepiota multicolor*), later paler reaching 'clove' or 'Conga' (M&P), at margin tending to cinnamon or Locquin A 2 d, at first evenly tomentose or velutinous, dry, later minutely fibrillose to subglabrous starting from margin inwards, convex, then often with slightly depressed center, 27–36 mm broad. — Hymenophore tubulose, whitish, then pale to light flesh-pink or orangy pink ('sandust', to 'blush' M&P; X 6 h Locquin) deeply depressed-sinuate around stipe but in the middle about 10 mm long and ventricose; pores concolorous with the tubes, rather small to medium (0.5–1 mm wide, about 6 per 1 cm), slightly irregular but scarcely elongated, exuding watery droplets when young and fresh. — Stipe 'cinnamon' then fuscous to umber ('Conga', M&P; X 1 d Locquin), paler or sordid pallid below, sometimes somewhat pallescent in age, densely fibrillose-tomentose, strongly hirsute-tomentose at base, glabrescent above base (at least macroscopically and at least in parts, under a lens remaining finely tomentose), smooth, solid, often twisted, cylindrical or slightly widened at apex or at base, otherwise subequal, 33–75×4.5–16 mm. — Context white, unchanging. Odor none. Taste bitter.

Spores 9.5–12×6.5–8 μm, characteristically ellipsoid to short fusoid, with the inner side sometimes less convex, to slightly concave, i.e. almost bean-shaped, with smooth, homogeneous, firm to slightly thickened (wall 0.4–0.7 μm thick) hyaline wall with mostly a slight fulvous reflex on the inner side (KOH or NH_4OH mounts), with, more rarely without an incomplete to complete germ pore and wall mostly at least thinned at distal end but not truncate. — Hymenium: Basidia 25×7 μm, 4-spored. Cystidia on edges and sides 28–29×5.7–7 μm, fusoid and

often mucronate, hyaline, thin-walled. — Hyphae hyaline, inamyloid, without clamp connections. Hymenophoral trama bilateral of Boletus-subtype; mediostratum somewhat interwoven with hyphae pale melleous ocher from intraparietal pigment, 3–4 μm broad, running axially; hyphae of lateral stratum strongly curved outwards, gelatinized, hyaline, 5–6 μm broad; hyphae of pileus trama interwoven, hyaline, 4–7 μm broad. — Cortical layers: Epicutis of pileus – a trichodermium with superficial terminal hyphae tending to be brown and narrow (1.5–5 μm) whereas in hypodermium they are paler or hyaline and not depressed to form a false cutis, here 2.5–7 μm broad; trichodermium between brown hyphae of surface and hypodermium made up of hyphae which are at first stramineous to brown (from intraparietal pigment and thin fugacious punctate incrustation). Covering of stipe consisting of a similar trichodermium.

Chemical color reactions: KOH on old pileus darker reaching 'leafmold' M&P. — NH_4OH on pileus and stipe darker brown. — Phenol on context negative. — HNO_3 on cuticle of pileus fire orange, on context orangy pallid. — Formalin on context of stipe livid-pallid or negative (white).

HABITAT.—On somewhat sandy soil in inundable varzea or on white sand soils in gallery forest and campinas near river, under dicotyledonous trees, solitary or in small groups, fruiting in early rainy season (December to early March), forming ectomycorrhiza with leguminous trees.

MATERIAL STUDIED.—BRAZIL, Amazonas: Ponta Negra, 18 XII 1977, *Singer & Prance B 10351* (typus; INPA); Rio Negro at 20 km downstream from São Gabriel das Cachoeiras, 20 I 1978, *I. Araujo 938* (INPA); Rio Solimões 4 km off Estrada à Manacapurú, 5 III 1978, *Anderson & Smith*, comm. *Singer B 10788* (INPA).

This species differs from others in the remarkably broad spores. In view of this character combined with the characteristic covering of the stipe and the bitter taste, this species should enter a new section of *Tylopilus*: **Potamogetones** Sing., *sect. nov.*

Sporis 6 μm latis; stipite tomentoso; carne alba immutabili, amara. Typus: *T. potamogeton* Sing.

4. The taxonomic position of the genus Fistulinella.

The genus *Fistulinella* was based on *F. staudtii* Henn. from Africa. The type of this genus is not, as was generally assumed (Gúzman 1974), lost but has been rediscovered and restudied (Singer 1973). I agree with Horak (1968) and Guzman (1974) who consider *Ixechinus* Heim identical with *Fistulinella*. I have shown that all pickled material of boletes has separable ('individual') tubes if the lateral stratum swells up to push the tubes away from each other and if the mediostratum is sufficiently gelatinized or thin to permit the fluid to dissolve enough of the gelatinous mass and thus sever the few thin-walled hyphae connecting the two sides of the lateral strata. Even while growing, some tubes may slide downwards a fraction of a millimeter in relation to others surrounding them, and thus create an uneven pore level, which emphasizes the false impression of separate individual 'pores' as known in *Fistulina*. However, a section through the tubes of dried *Fistulinella campinaranae* Sing., *F. minor* (Heim) Guzmán, *F. venezuelae* (Sing. & Digilio) Sing. and *F. violaceiporus* (Stevenson) Sing., *comb. ined.*, as studied by me show that the hymenophoral trama, aside from being somewhat more gelatinized, is not different from other corresponding

structures in Boletaceae and Strobilomycetaceae. The 'outer' layer of separated tubes as removed from hymenophores in liquid preparations consists of a naked lateral stratum with free hyphae dangling in the medium.

I have (Singer 1975) inserted *Fistulinella* as a section in *Tylopilus*, but have insisted that this is a temporary and tentative solution, waiting for more studies of fresh material. Such fresh material has been obtained recently from the campinarana vegetation in Brazil. These fresh collections were prepared as dried herbarium material and thus a continuous tube-layer was maintained. This species is considered new and most closely related to *F. mexicana* Guzmán. A fraction of the formalin material on which this latter species, recently published (Guzmán, 1974), was based, was kindly sent to the present author for comparison.

What do the newly discovered species of *Fistulinella* reveal about the position of this genus, its limits, and distribution?

In the first place, it appears that all have numerous characters in common and that their distribution and ecology is totally different from that of *Tylopilus* as well as the smooth-spored species of *Porphyrellus*. *Fistulinella* is tropical, extending to New Zealand, and non-mycorrhizal, whereas *Tylopilus* — although including some tropical species — is predominantly north-temperate and consistently ectomycorrhizal. *Porphyrellus* on the other hand, is, as far as smooth-spored species are concerned, north-temperate but reaching the palaeotropics as well as the *Nothofagus* zone of Australia and New Zealand.

Being non-mycorrhizal and narrow-stemmed, with generally very long spores, these often being pseudoamyloid and/or with apical germ pore, with a spore print in color much like that of *Porphyrellus gracilis*, it becomes obvious that *Fistulinella* is much closer to *Porphyrellus* than to *Tylopilus*. It differs nevertheless by the spores which are smooth and by the strong gelatinization not only of the hymenophoral trama but also of the surface layers, at least of the pileus, and the relatively slender stipe.

If we now exclude all species of *Porphyrellus* which agree in their characteristics with *Fistulinella*, we have to transfer the subsection *Viscidini* and with it the type of section *Pseudotylopili* Sing. to *Fistulinella* and transfer the subsection *Niveini* to section *Graciles* of *Porphyrellus*.

The genus *Fistulinella* will then be placed side by side with *Porphyrellus* in the Strobilomycetaceae, and will contain the following species:

F. staudtii Henn.; *F. minor* (Heim) Guzmán, *F. major* (Heim) Guzmán, **F. campinaranae** Sing. *sp. nov.*, *F. mexicana* Guzmán; **F. viscida** (McNabb) Sing., *comb. nov.*[1]; **F. venezuelae** (Sing. & Digilio) Sing., *comb. nov.*[2], and obviously also *Boletellus violaceiporus* Stevenson (type revised).

[1] Basionym: *Porphyrellus viscidus* McNabb *in* New Zealand J. Bot. **5**: 547. 1967.
[2] Basionym: *Tylopilus venezuelae* Sing. & Digilio *in* Lilloa **30**: 163. 1960.

Fistulinella campinaranae Sing., *sp. nov.*—Fig. 10.

Pileo albo, partim subbrunnescente, 23–29 mm lato; poris duobus vel tribus per millimetrum; stipite albo, lubricoviscido, evolvato, levi, glabro. Sporis 11.5–16.5×4–6 μm, pseudoamyloideis, poro germinativo destitutis; cystidiis ventricoso-fusoideis. Ad truncos emortuos in Brasilia amazonica. Typus: *Singer B 10109* (INPA).

Pileus pallid white with brown ('broncho' or 'brown sugar' M&P) areas, dried 'olive wood' to 'bark', viscid-sticky, slightly lubricous, smooth, glabrous, with non-projecting margin, convex, neither depressed nor umbonate, 23–29 mm broad. — Hymenophore tubulose, tubes whitish, becoming 'sandust' to 4 B 9 (M&P) from spores, 3–5 mm long, free at stipe; pores concolorous, reaching different levels but never separating in fresh or dried material, small (2–3 per mm), round. — Stipe white, somewhat lubricous-viscid, glabrous, naked, smooth, solid, equal, up to 60 mm long, about 3 mm broad. — Context white, unchanging, fleshy-soft and somewhat subgelatinous. Odor none Taste mild.

Spores 11.5–16.5×4–6 μm, fusoid, smooth, subhyaline to ocher melleous but never quite hyaline (unless very young), with pseudoamyloid, homogeneous wall, without germ pore, with elongated oil drop, usually with suprahilar depression. — Hymenium: Basidia 31–36.5×4.8–10.4 μm, (1)–2–4-spored, clavate. Cystidia about 52–15 μm, ventricose fusoid, obtuse, hyaline, thin-walled. — Hyphae filamentous, hyaline, thin-walled, without clamp connections, inamyloid. Hymenophoral trama bilateral of Boletus-subtype; mediostratum hyaline, either reduced to just one axial tier of relatively broad (3–7.5 μm) hyphae or entirely gelatinized and then little different from lateral stratum where, however, hyphae widely spaced, 2–4 μm broad and distinctly recurved. Hyphae of stipe trama only subparallel; rind hyphae thin-filamentous, hyphae of core more like those of mediostratum. Hyphae of pileus trama strongly interwoven, with hyphal cells rather variable in size and shape, subgelatinous. — Cortical layer: Epicutis of pileus – an ixotrichodermium, consisting of elongated hyphae 3.4–7.3 μm, broad gradually narrower towards terminal member, broadly rounded at tip, hyaline or subhyaline in ammonia, somewhat gelatinized.

HABITAT.—In campinarana vegetation on rotting wood, mostly stumps of dicotyledonous trees, solitary or in small groups, fruiting early and late in rainy season.

MATERIAL STUDIED —BRAZIL: Amazonas, Estrada Manaus-Caracaraí, km 45, 18 VII 1977, *Singer B 10109* (typus; INPA). Several times recollected at same place.

This species differs from *F. mexicana* in having larger spores without germ pore and more distinctly pseudoamyloid (which may, however, result from the manner of conservation) and the absence of the volva-like 'vaina transparente y muy gelatinosa' described and illustrated by Guzmán (1974).

5. A second Porphyrellus in South America

Porphyrellus rionegrensis I. Sing. & Araujo, *sp. nov.*—Fig. 11.

Pileo pallide salmoneo, badio-squamoso; tubulis sordide pallideque salmoneis, poris 1–2 mm latis; stipite brunneo, aequali, pertenui, nudo. Sporis (14.5)–15–17.7×7–9 μm, minute punctato-verruculosis. Cystidiis voluminosis (11–18 μm latis). Inter radices foliaque putrescentia sub *Diospyro* in silva inundabili. Typus: *I. Araujo 937* (INPA).

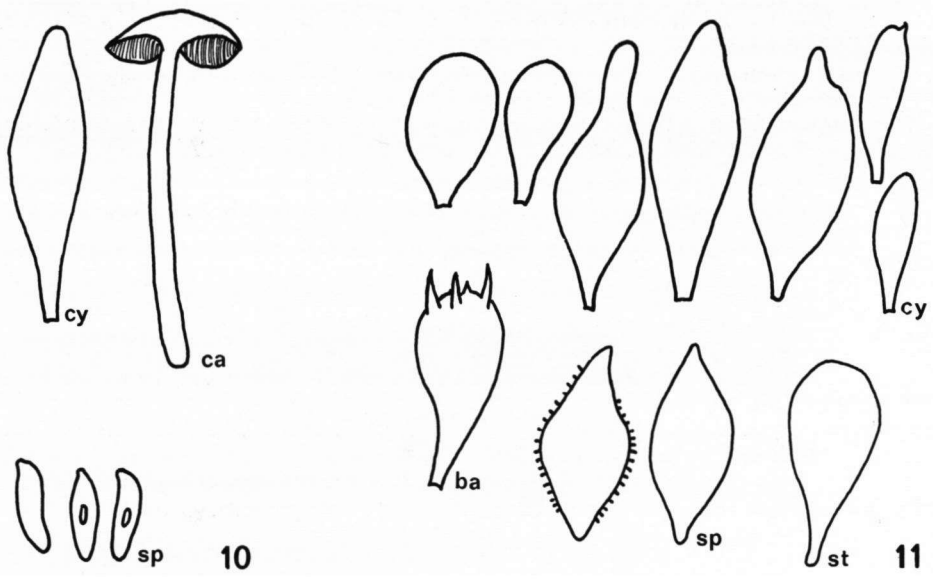

Fig. 10. *Fistulinella campinaranae.* — ca. Carpophore, ×1. — cy. Cystidium, ×750. — sp. Spores, ×825.

Fig. 11. *Porphyrellus rionegrensis.* — cy. Cystidia, ×750. — cl. Cystidioles, ×750. — ba. Basidium, ×750. — sp. Spores, ×1500. — st. Element of covering of stipe, ×750.

Pileus reddish brown (A d 2 Locquin) scaly-areolate on pale orangy salmon (F 6 h) ground, convex, eventually concave, 18–43 mm broad. — Hymenophore tubular, tubes dirty pale salmon (P 5 h Locquin), depressed around stipe; pores concolorous, somewhat irregular, round or angular, 1–2 mm wide when dried, i.e. relatively very wide. Spore print not obtained. — Stipe brown (A 3 e Locquin), dried becoming light yellowish, glabrous, smooth, but ± dotted-punctate, solid, very slightly and gradually tapering upwards, 34–54 × 1.2–2.7 mm; veil none. — Context pallid. Odor none.

Spores (14.5)–15–17.7×7–9 μm, mostly 15.5–16.5×7–8 μm, fusoid, more rarely cylindrical or almost rhombic, with suprahilar depression, light melleous in KOH, with short rod-like ornamentation, verruculose-punctate, with ornamentation projecting about 0.6–0.8 μm but extreme apex and base of spore smooth or subsmooth, without germ pore or callus. — Hymenium: Basidia 31–43×12.5–17 μm, with four 7 μm long sterigmata Cystidioles 19–26×7–8.5 μm, narrowly ventricose, sometimes with apical eccentric appendage, hyaline, without visible contents. Cystidia 11–52×11–18 μm, ventricose, ventricose-mucronate or ampullaceous, thin-walled, hyaline, 'empty'. — Hyphae inamyloid without clamp connections. Hymenophoral trama bilateral of Boletus-subtype; mediostratum axially arranged, of interwoven hyphae, yellow: lateral stratum hyaline, consisting of strongly recurved hyphae imbedded in gelatinous mass. — Cortical layers: Epicutis of pileus consisting of a trichodermium overlaid by a few repent hyphae 1.5–2.5 μm wide; terminal cells of trichodermium ampullaceous or clavate to utriform 27–35×6–9 μm, often chrome yellow incrusted, below 3–6 μm wide; hypodermium a cutis of brownish ocher hyphae. Covering of stipe: dots formed by chrome yellow incrustations (KOH) over dense layer of dermatocystidia and dermatocystidioles corresponding in size and

shape to respective sterile cells of the hymenium, rising from cutis of 2–6 μm broad, subparallel hyphae.

HABITAT.—Among creeping rootlets and foliage under trees, especially *Diospyrus* sp. (Ebenaceae), rising from earth in inundable forest.

MATERIAL STUDIED.—BRAZIL, Amazonas, Rio Negro, 20 km downstream from São Gabriel das Cachoeiras, 20 I 1978, *I. Araujo 937* (typus; INPA).

This is the second species of this genus discovered in South America. The first known representative of *Porphyrellus* was *P. festivus* Sing.

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