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Trogia (Basidiomycetes)

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Abstract

73 species (38 new) of *Trogia* are recorded from tropical Asia and Australasia, and 17 (3 new) from the neotropics. Keys to identification are given and, for most species, descriptions. The sarcodimitic fruit-body is regarded as a refinement to the lignicolous habitat, and tending, consequently, to simplification by loss of stem and gills, as well as by diminished size. Its origin is considered along with the polypore *Meripilus* and a possible explanation is found in the ancestry of pteruloid fungi with inflating hyphae. *Heimomyces*, with marasmiod affinity, is compared. *Rimbachia* is considered along with *Rhodoarrhenia* (one new species) and *Skepperiella*.

New species — *Trogia aurantiphylla*, *T. basivillosa* (neotropical), *T. brevipes*, *T. carminea*, *T. decipiens* with var. *pleurotella*, *T. delicata*, *T. diminutiva*, *T. endocystidiata*, *T. exigua*, *T. fusciceps*, *T. fuscoalba* with var. *metuloidea*, *T. fuscolutea* with var. *minor*, *T. icterinoides*, *T. laeta* (neotropical), *T. lateralis*, *T. latifolia*, *T. limonospora*, *T. limonosporoides*, *T. macra*, *T. mamillata*, *T. marasmiodes*, *T. minima*, *T. nigrescens* with var. *violuscens*, *T. nitrosa*, *T. obfuscata*, *T. octava*, *T. odorata*, *T. omphalinoides* with var. *confertifolia*, *T. pallida*, *T. perpusilla* (neotropical), *T. polyadelphe*, *T. pusilla* with var. *sublateralis*, *T. raphanolens*, *T. revoluta*, *T. rosea*, *T. seriflua*, *T. sublateralis*, *T. subtomentosa*, *T. subtranslucens*, *T. tenax*, *T. venulosa* — *Rhodoarrhenia solomonensis*.

Other new varieties — *Trogia alba* Corner var. *brasiliensis* and var. *minor*, *T. anthidepas* (Berk. et Br.) Corner var. *brasiliensis*, *T. aphylla* Corner var. *solomonensis*, *T. fulvochracea* Corner var. *brasiliensis* and var. *solomonensis*, *T. impartita* Corner var. *griseola* and var. *major*, *T. subglobospora* Corner var. *mellea*.

New combinations — *Trogia guadelupensis* (Heim) with var. nov. *subincarnata*.

Introduction

My treatment of this genus in 1966 brought an outburst of indignation. That anyone should assemble in one genus agarics with and without gills along with stereoid or sessile forms on the grounds of a sarcodimitic construction was considered a farce. I replied (Corner 1968) and the matter has rested until the recent contribution by Redhead (1987). I am not deterred because I have had numerous other collections of these fungi, on which I now report. They link even more closely the variety that is to be found in this alliance and confirm my understanding of the genus.

According to Singer (1975), the species which I put in *Trogia* should be dispersed in *Gerronema*, *Hemimycena*, *Hydropus* and *Mycena*, to which one can add *Marasmiellus* and *Neoclitocybe*. His reason is that what he refers to as the supposed sarcodimitic construction occurs widely in Tricholomataceae and, if accepted as a generic distinction, then *Trogia* would be augmented by many more species. I agree and look forward to the revelation because I have no faith in those genera, unless in *Mycena*. I cannot discover any clear distinction between them, even though dispersed in three or four tribes, and I doubt their natural content when I find such as the simply monomitic *Omphalina fibula* and *Cantharellus albidus* placed in *Gerronema* along with species that have the sarcodimitic structure of *Trogia*; when the common *Trogia infundibuliformis*, of wide acceptance, is described as a new species of *Neoclitocybe*, namely *N. membranacea* Sing. et Grisl. (Pegler 1977); when *T. cantharelloides* is still maintained in

Trogia, though it is, as originally described, a species of *Panus* (Corner 1981); and when *Vanromburghia* is unexplained. Indeed the concatenation of species in *Trogia* is far closer than that which leads to the inclusion of *Cyphellostereum* in the same tribe as *Tricholoma*. In practice, as I have ascertained by studying hundreds of different agarics, the sarcodimitic construction is easily recognised and extracts a close alliance of agarics with a characteristic waxy-cartilaginous appearance that is readily detected in the field. If a strip of stem-tissue is detached from a living specimen, or from one preserved in alcohol-formalin, and teased apart, the very long and more or less thick-walled fusiform cells can be seen at once under a moderate magnification. It is a very useful guide to identification because it extracts from the welter of collybioid, clitocyboid, mycenoid, omphalinoid, pleurotoid and tricholomatoid agarics and gives precision. Indeed, sooner or later in the course of specific identification, it is necessary to examine the hyphae and, as their behaviour characterises the fruit-body, so I regard it as a primary consideration. My first enquiry on studying any fruit-body microscopically is to find out what kind of hyphae make it. I note that with dried material only of *Trogia*, this may be impossible because the hyphae often stick firmly together; hence, doubtless, the neglect of the sarcodimitic construction. It required the passage of thirty years before the importance of hyphal construction was realised in connection with polypores.

The species of *Trogia* are abundant lignicolous fungi in South East Asia, probably throughout the tropics, and they come at once to the notice of the mycologist and ecologist concerned with decomposition on the forest floor. Though the fruit-bodies are usually small, they are often densely gregarious or caespitose and may occur in large troops on fallen trunks. They prefer, it seems, wood in the later stages of decay and, as it may then moulder into soil, so some species appear to be terricolous, e.g. *T. cyanea*, *T. delicata*, *T. limonosporoides*, *T. pallida* and *T. subgelatinosa*. The largest fruit-bodies that I have met are those of *T. fuliginea* and *T. latifolia* with the pileus up to 11 cm wide. The smallest are those of *T. minima* and *T. perpusilla* with the pileus 1-3 mm wide. I list about 73 species for tropical Asia and Australasia and an under-estimated 17 for the neotropics. There are certainly more to be found and many improvements to be made, but the keys and descriptions are the initial guides. In the monograph (Corner 1966) only Latin descriptions were given for new species. These I have translated in the following account but, where the description was in English, I have referred to that monograph (with figures and plates), unless later collections have enabled me to improve. The identification of the species with white or yellowish fruit-bodies is intricate because they are variously depigmented and reduced from several alliances; recourse to microscopic detail is inevitable. *Rhodoarrhenia* is an uncertain genus which holds some species allied with *Trogia*.

Trogia as a genus

In spite of the criticism that I have lumped too many different kinds of fruit-body into this genus, I am still unable to find any distinction sharp enough to separate them into genera; there are in all cases intermediates and they cannot be ignored. Modern taxonomy imposes humanistic limits which are shown, sooner or later as mycological discovery progresses, to be unreal; its track is strewn with waste genera. In *Trogia* the one isolated feature is the asperulate spore of *T. pleurotoides*. The asperulate spore, as opposed to the smooth spore, is often taken to distinguish two genera without consideration why the spore should be asperulate. In the case of *Boletus* and polypores, I have found evidence that, as one might expect from its predominance in modern basidiomycetes, the smooth spore has evolved from the ornamented and bitunicate (Corner 1972, 1989). Ornamented and smooth, or nearly smooth, spores are admitted for instance, in *Inocybe*, *Lepista*, *Melanoleuca*, *Ramaria* and some genera of polypores. Therefore, the asperulate spore may be expected in *Trogia*.

The ideas of *Vanromburghia*, based on *Trogia silvestris*, and of *Inflatostereum*, based on a stereoid species of *Trogia*, are also vapid. The first is a mesopodal *Trogia* without gills, but there may be traces of gill-folds about the stem-apex, and such gill-folds are better developed, though also disappearing, in the allied *T. rosea*, *T. pallida* and *T. macra* (as here described), and similarly in *T. aphylla*. There are enough microscopic details among these five species to split off three microgenera, if no others were known, but all link up with fully lamellate alliances. Gill-less species occur, for instance, in *Laccaria* and the alliance of *Marasmius* without generic effect. The fruit-body of *Inflatostereum* is not only devoid of gills but is pleuropodal or sessile and unilaterally flabelliform; microscopically, it is toughly sarcotrimitic with thickening hymenium; thus, it appears stereoid except for the inflating hyphae and, in *T. rivulosa*, the slightly incurred margin of the pileus which is a relict agaric feature. Several species of *Trogia*, as given in the keys, have variously simplified and narrowed gills to excentric, sublateral and lateral stems, and among these *T. pleurotoides* approaches in form and colour what one would expect as ancestral to *T. stereoides*. In parallel, there is the transition from mesopodal *T. infundibuliformis* through *T. venulosa* and *T. subtranslucens* to the stereoid *T. cervina*. The idea of *Inflatostereum* seems to have been achieved twice by *Trogia*. The sarcotrimitic construction is incipient in the lamellate *T. obfuscata*. The thickening hymenium occurs in the gill-less *T. silvestris*, the partly gilled *T. rosea* and *T. pallida*, and in the lamellate *T. lateralis* and *T. pleurotoides* where it is most conspicuous in the gill-intervals. Thus, with loss of gills, the thickening hymenium may compensate loss in spore-output, if that is material. The thickening hymenium appears to be a primitive feature in basidiomycetes and traces may be expected in *Trogia*. Indeed, I see in *Trogia* a genus no more varied than *Thelephora* with its transition from fully clavarioid forms to mesopodal pileate, stereoid and fully resupinate, with or without the pseudo-hydroid hymenial papillae; the reason is that there are many species bridging these humanistic distinctions. A natural genus is found, not dictated.

As some indecisive characters in *Trogia*, I note the following:—

1. *Pileus-shape*, whether plane, umbonate or umbilicate to infundibuliform. These differences can be specific but several species are variously intermediate. Why the pileus should be umbonate in *Trogia* is not known. In terricolous agarics it commonly results from the subterranean origin of the fruit-body with conical pileus thrusting through the soil, but this cannot be the case with lignicolous fruit-bodies of superficial origin.
2. *Lateral stem*. This distinguishes some species but in others the stem is sublateral in that there is a small development of the pileus on the side towards the substratum. Some species are variable in the position of the stem, e.g. *T. decipiens* and *T. pleurotoides*.
3. *Gills*, whether well-formed or pliciform. The first state seems to be the distinction between *Gerronema-Hydropus* and *Trogia* as originally defined but some species have both kinds of gill in the same pileus, e.g. *T. inaequalis* (Pegler 1986), *T. macra*, *T. pallida* and *T. rosea*. In the fully laminate species the gills may be narrow in some to fairly wide or very wide in others. Some care is needed, however, in the use of this feature because the gills may begin to function when narrow and, then, widen considerably by intercalary growth of the hymenium. In so doing, the attachment of the gill may change from decurrent or adnate to sinuate and ventricose, even adnexed, e.g. *T. fuliginea*, *T. revoluta*. This widening, of course, thrusts the limb of the pileus upwards and alters its shape.
4. *Spores*, amyloid or not. The reaction may be so weak that it is impossible to decide, especially if some glycogen inside the spore gives a slight vinaceous brownish colour, e.g. *T. aphylla* var. *solomonensis*. In *T. straminea* the spores may or may not be slightly amyloid. *T. impartita* has pale amyloid spores but they are inamyloid

in the very similar *T. raphanolens*; likewise with the species-pairs *T. omphalinoides*–*T. octava* and *T. tricholomatoides*–*T. latifolia*. In *T. alba* the spores are not amyloid but slightly so in its var. *minor*; similarly, *T. ceraceomollis* and its var. *amylospora*. The amyloid reaction seems to be caused by a very thin coat of mucilage as a remnant of an exospore.

5. *Cheilocystidia*, as a sterile gill-edge or not. The variability of this feature is shown by *T. subglobospora* with sterile, partly and wholly fertile gill-edge. In some species the cheilocystidia collapse early, even before sporing has begun, and mature fruit-bodies appear to lack them.
6. *Pleurocystidia*, present or absent. Their presence is a useful mark for numerous species but in others they may be so sparse as easily to be overlooked, e.g. *T. calyculus*, *T. polyadelpha* and *T. subdistans*; they may even be as evanescent as the cheilocystidia. Then, *T. limonosporoides* has pleurocystidia and its ally *T. limonospora* lacks them; similarly *T. fuscoalba* with *T. subdistans* and *T. seriflua* with *T. icterinoides*. The thick-walled pleurocystidia of *T. fuscoalba* var. *metuloidea* suggest a good distinction but they are slightly thick-walled in several species, e.g. *T. fuscolutea*.
7. *Pileus-structure*, with or without a pseudoparenchymatous hypodermis. This is also a useful character but it may be confined to the centre of the pileus and it is variable in the complex of *T. umbrino-alba*. Generally, the rugulose surface of the pileus results from this hypodermis.
8. *Pileus-surface*, with or without 'rameales structure'. Such a surface is well-developed in *T. marasmioides* and *T. subtomentosa*, less so in *T. venulosa* and vestigial in its ally *T. infundibuliformis*.
9. *Fusiform cells*. These are the long, inflating and, usually, thick-walled cells which, in my monograph, I called the skeletal cells; they certainly support the fruit-body. They may be limited to the stem or developed throughout the fruit-body or variously extended into pileus and gills. They vary in length and width in every species but in some they are noticeably very wide or long. It would be desirable to test specific alliances by the maximum length of the fusiform cells but this is difficult to ascertain because the longer are nearly impossible to extract without breaking. I have not used the feature in the analytic keys.
10. *Sarcotrimitic construction*. While this distinguishes most stereoid species, it is present in varying degree in the stem if not also in the pileus, of some lamellate species, e.g. *T. obfuscata*.

Specific alliances. These are given under the specific descriptions. I note the following more extensive alliances but, in the generality of the construction of the fruit-body and in the uncertainty of the limits of the alliances, they are not separable as genera:—

1. With bluish green or fuliginous green fruit-bodies — *T. odorata*, *T. subviridis*, *T. cyanea*, *T. pleurotoides* and *T. stereoides*.
2. With lilaceous fruit-bodies without cystidia — *T. infundibuliformis*, *T. venulosa*, *T. subtranslucens* and stereoid *T. cervina*.
3. With pleurocystidia — *T. aurantiphylla*, *T. fulvochracea*, *T. fuscolutea*, *T. silvestris*, *T. rosea* and *T. macra*, both the last with narrow gills or none.
4. Without pleurocystidia — *T. furcata* and *T. pallida*.
5. Mycenoid — *T. delicata*, *T. omphalinoides*, *T. revoluta*.
6. With endocystidia — *T. endocystidiata*, *T. limonospora*, *T. limonosporoides*.

Xerulaceae

In his recent contribution to the problem of *Trogia*, Redhead places the genus in a primitive position in the family Xerulaceae which has, as advanced members,

Oudemansiella and *Mycena*. His thesis is that the sarcodimitic construction advances, or simplifies, into the monomitic with inflating hyphae as in *Oudemansiella* and the inflating but secondarily septate as in *Mycena*. *Inflatostereum* may be a primitive stereoid member of the family. Thus, *Trogia* is supposed to be in the process of developing stem, gills and centric pileus. This is quite contrary to my original view that *Trogia* displayed the degeneration of the agaric into the gill-less and stereoid state (Corner 1966). I do not find this Xerulaceous argument at all convincing; a morphological series can be read in either direction and time's arrow is needed for evolutionary sequence.

The essence of the sarcodimitic state lies in the specialisation of tissue enlargement by means of the fusiform cells and not in the conjunction of ordinarily enlarged and unenlarged hyphae, for that is a monomitic construction, as I illustrated for *Clavulinopsis* (Corner 1950). The clavarioid comparison is seen in *Pterula* which, if its long skeletal cells inflated, would be sarcodimitic. I note that Redhead's inclusion of *Lentinus tigrinus* in the sarcodimitic category is misleading (Corner 1981). In complaining as others have done, that I have lumped too many genera in *Trogia*, Redhead prunes off without explanation how this can be done and overlooks the bridging species. What he has left in *Trogia* is not clear. In any case, the fruit-bodies of this genus with thin flesh, hollow stem, and small spores and basidia cannot be antecedent to those of *Oudemansiella* with thick flesh, massive and solid stem, large spores and large basidia. The construction of *Trogia* reveals specialisation and not primitive evolution among its modern species. Nevertheless, in his valuable contribution, Redhead indicates sarcodimitic species in *Baeospora*, *Clitocybula*, *Mycena* s. l., and *Xeromphalina*. From my studies of English species, I add *Mycena crispata* Kuehner and *M. delectabilis* (Peck) Kuehner, both of which are placed in *Hemimycena* by Singer. They are small white species which would come in Group D of my key on microscopic characters and near to *T. octava* and *T. exigua* respectively. The interest lies in discovering how the temperate species of *Trogia* fit in with the tropical.

Meripilus

This genus of polypores introduces a problem which, if it can be solved, will lead to much better understanding of basidiomycetes. The fruit-bodies have the sarcodimitic construction but, so far as known, consistently without clamp-connections (Corner 1984). Either *Meripilus* is a parallel evolution from a monomitic source of polypores, such as the ancestry of *Grifola* might supply, or it is connected with the ancestry of *Trogia*. My preference is to think of the pre-*Pterula* and pre-*Deflexula* with inflating hyphae whence an extinct hericioid ancestor might have diverged into the poroid *Meripilus* and the lamellate *Trogia*. The only evidence that I can find for such a hericioid ancestor lies in the microfibrillar flesh of *M. giganteus*, as if the fruit-body were compounded of clavarioid branches. Parallel instances are *Panus* s. str. and *Rigidoporus* with uninflated hyphae and *Lentinus* s. str. and *Polyporus* s. str. with their peculiar hyphae.

Thus, I differ profoundly from Redhead's view that *Inflatostereum* evolved into *Meripilus* and *Trogia*. He gives no explanation how tubes (or gills) were evolved and disregards the difference in basidia and spores in the case of *Meripilus*. That tubes may variously degenerate in resupinate fungi with uninflated hyphae is no proof that they were originally so easily evolved. Moreover, the idea that a stem is an advantage in lignicolous basidiomycetes is not borne out by *Hymenochaete*, *Stereum* s. l., *Thelephora* and polypores in general, or by the great abundance of resupinates. Already raised on woody supports, the fruit-body does not require a stem.

It is to be noted that, in many species of *Trogia*, the caulocystidia and pileocystidia form a close palisade or hymenioderm in the unexpanded fruit-body. Then, on expansion, the layer becomes disrupted into the pruina-like clusters on the stem, the

furfuraceous centre of the pileus, and the scattered pileocystidia over the limb. That such a hymenioderm is the result of reduction from an original trichoderm is shown by diverse genera, e.g. *Boletus*, *Entoloma*, *Pluteus* and *Amauroderma*. It is part of the sterile cortication of the ancestral fruit-body, and the loss of the trichoderm is shown in *Meripilus*. Thus, *Trogia marasmioides* and *T. subtomentosa* are relatively primitive in this respect, parallel with *Tricholomopsis*. The state with smooth pileus, lacking cystidia, is the advanced. So *Oudemansiella* and *Xerula* are more primitive in this respect than most species of *Trogia*.

Heimiomyces

The type-species of this genus, *H. tenuipes* (Schw.) A.H. Smith, is a frequent pan-tropical fungus with which I have been acquainted since 1929, but it was not till some years after I published the account of *Trogia* that I realised the *Trogia*-like construction of the stem. The inner tissue of the hollow stem has long, fusiform clamped cells 8–28 μm wide, with thin or slightly thickened walls. They become subdivided by many broad clampless secondary septa into cells 60–750 μm long. Unfortunately, I have not had material young enough to reveal at what stage secondary septation begins or how long the initial fusiform cells may be. Among these inflated cells there are many uninflated hyphae, 2–5 μm wide, with thickening walls and often branched from the clamp; thus the stem is approaching the sarcotrimitic state. In contrast, the hyphae of the pileus and gills are monomitic and uninflated with more or less mucilaginous walls. Redhead gives the species, under the name *Xeromphalina tenuipes*, as sarcodimitic 'in stipe, modified'. Thus, *Heimiomyces* might be regarded as a trichodermatous *Trogia*. However, *H. tenuipes* has the acerose basidioles of *Marasmius*, which are absent from *Trogia*, and the peculiar uninflated gelatinous tissue of the pileus which is also found in the alliance of *Marasmius*. Until such fungi have been analysed more fully, I prefer to keep *Heimiomyces* distinct. *Xeromphalina* lacks the acerose basidioles and has monomitic short-celled hyphae with broad septa, inflating in all parts of the fruit-body, as in *Flammulina* and *Omphalina*, though *Flammulina* may have some secondary septation in the stem.

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***Trogia* in tropical Asia and Australasia**

KEY TO THE SPECIES ON MACROSCOPIC FEATURES

1. Gills absent or as slight folds disappearing in the outer half of the pileus Group A
1. Gills present, not so disappearing.
 2. Pleuropodal Group B p. 7
 2. Mesopodal, varying excentric in some species.
 3. Pileus orange or red, mostly small, ~10 mm wide.
 4. Pileus and stem orange. Gills decurrent, ochraceous. Ceylon *T. inaequalis* p. 41
 4. Pileus rose red. Stem white. Gills adnexed, pink. Borneo *T. carminea* p. 21
 3. Larger, differently coloured.
 5. Pileus pinkish vinaceous, then pallid. Gills narrow.
 6. Stem becoming hollow with the pileus pervious *T. infundibuliformis* p. 41
 6. Stem not hollow. Solomon Isl. *T. venulosa* p. 85
 5. Fuliginous green to indigo (see below).
 7. Gills ~0.5 mm wide. Mesopodal to pleuropodal *T. pleurotoides* p. 64
 7. Gills 1-3 mm wide, subdistant.
 8. Smell of aniseed. Solomon Isl. *T. odorata* p. 60
 8. No such smell. Flesh of pileus agglutinated. Malay Peninsula
..... *T. cyanea* p. 24
 5. Differently coloured.
 9. Stem or gills yellow. Pileus yellowish, often clouded fuscous or fuliginous, mostly concave to infundibuliform. Gills mostly decurrent Group C p. 8
 9. Gills and stem not yellow.
 10. Pileus brown to fuliginous or grey Group D p. 8
 10. Pileus white or yellowish white Group E p. 9

Group A

1. Pleuropodal, flabelliform ascending, shortly stipitate to sessile, stereoid.
 2. Fuliginous olivaceous, at least towards the pileus margin *T. stereoides* p. 73
 2. Fuscous with grey hymenium *T. rivulosa* p. 69
 2. Brownish to ochraceous tan, sometimes with a mycelial skin spreading over the wood
..... *T. cervina* p. 23
 2. Greyish tinged vinaceous, subtranslucent *T. subtranslucens* p. 79
 2. White, very small, delicate *T. minima* p. 52
1. Mesopodal or, if pleuropodal, with slender stem (*T. aphylla*).
 3. Pileus usually papillate-umbonate and rugulose.
 4. Pileus crimson to rose-pink *T. rosea* p. 69
 4. Pileus cinnamon fawn to pale ochraceous *T. silvestris* p. 73
 3. Pileus neither papillate nor rugulose.
 5. Fuscous olivaceous to fuliginous yellowish, mostly without gills. Stem 0.5-1 mm thick
..... *T. aphylla* p. 18
 5. Pileus pink, yellow or white, mostly with slight gill-folds.
 6. Pileus ~9 cm wide, pale clear yellow. Stem 2-4 mm thick *T. macra* p. 47
 6. Pileus smaller, not yellow.
 7. Pale livid pink, subochraceous with age. Stem ~8 × 2-3 mm, short
..... *T. venulosa* p. 85
 7. Pallid white.
 8. Stem 1-1.5 mm thick *T. pallida* p. 62
 8. Stem 0.5 mm thick. Pileus 2-5 mm wide *T. diminutiva* p. 28

Group B

1. Fuliginous green to indigo. Gills very narrow *T. pleurotoides* p. 64
1. Pileus fuscous brownish. Gills ochraceous *T. ochrophylla* p. 58

1. Yellowish white to white.
 2. Stem sublateral, brownish at the base. Gills 0.5 mm wide *T. sublateralis* p. 77
 2. Stem truly lateral, not brown at the base.
 3. Pileus 1-3 mm wide. Gills as 2-4 faint folds *T. minima* p. 52
 3. Larger.
 4. Gills ~2 mm wide *T. lateralis* p. 41
 4. Gills 2-4 mm wide. Stem varying central *T. marasmioides* p. 50

Group C

1. Gills adnate to adnexed, mostly with clear yellow edge. Pileus papillate-umbonate.
 2. Gills orange to rich yellow. Solomon Isl. *T. aurantiphylla* p. 18
 2. Gills white.
 3. Gills ~4 mm wide, edge yellow. Pileus with fuscous centre *T. fuscolutea* p. 36
 3. Gills ~1.5 mm wide, not yellow. Pileus and stem yellow *T. papillata* p. 63
1. Gills decurrent. Pileus not papillate-umbonate.
 4. Small. Pileus ~20 mm wide. Stem ~1.5 mm thick. Gills ~2 mm wide.
 5. Pileus not fuscous, ~12 mm wide.
 6. Pileus primrose yellow, mesopodal. Gill-interstices subrugulose *T. primulina* p. 65
 6. Pileus pale ochraceous, excentric. Gills not veined. Stem brownish at the base
..... *T. sublateralis* p. 77
 5. Pileus fuscous in the centre. Gill-interstices not or scarcely veined.
 7. Pileus ~7 mm wide. Gills 0.5 mm wide, whitish.
 8. Basidia 2-spored. Spores 7-9 × 5.5-7 µm. Stem central to sublateral
..... *T. pusilla* p. 66
 8. Basidia 4-spored. Spores 4-5 µm long *T. fuscomellea* p. 37
 7. Larger. Gills ~2 mm wide, honey-yellow. Basidia 4-spored. Spores 7-9 µm long
..... *T. mellea* p. 50
 4. Larger in all parts.
 9. Pileus and stem greenish yellow. All parts reddening with potash. Ceylon
..... *T. holochlora* p. 38
 9. Not so. Gill-interstices often veined to poroid-reticulate. Pileus fuscous to yellowish. Stem and gills yellowish.
 10. Spores subglobose, 4-5.5 µm *T. subglobozpora* v. *mellea* p. 77
 10. Spores ellipsoid.
 11. Pileus with dark innate fibrils. Stem fuliginous pruinose *T. anthidepas* p. 17
 11. Without such fibrils or pruina *T. straminea* p. 74
(Pileus with innate fibrils *T. aff. straminea* p. 75)
(Stem white, yellowish in age. Gills grey then white *T. umbrino-alba* p. 83)

Group D

1. Gills adnexed, sinuate or adnate, rather wide, rather crowded.
 2. Smell strong, nitrous. Pileus brownish *T. nitrosa* p. 56
 2. Not nitrous.
 3. Gills 10-20 mm wide. Pileus 5-11 cm wide.
 4. Pileus acutely umbonate, yellowish white clouded fuscous in the centre. Ceylon
..... *T. tricholomatoides* p. 83
 4. Pileus subumbonate, pale fuscous brownish. Borneo *T. latifolia* p. 43
 3. Gills not so broad. Pileus not so large.
 5. Pileus finely fibrilloso-squamulose to submentose, pale brownish subochraceous with fuscous centre *T. subtomentosa* p. 79
 5. Pileus not submentose.
 6. Pileus acutely umbonate, cinnamon ochraceous to fulvous fawn or fuscous grey. Stem white *T. fulvochracea* p. 31
 6. Pileus umbonate or not, of dull colour.
 7. Pileus greyish lilaceous. Stem 3-7 cm, ~9 mm wide at the base. Smell farinaceous, strong. Gills ~7 mm wide *T. lilaceogrisea* p. 44

- 7. Pileus fuscous umber to greyish. Stem smaller. Gills usually narrower.
 - 8. Pileus, stem and gills hispidulous. Smell farinaceous or none
..... *T. hispidula* p. 38
 - 8. Pileus not hispidulous.
 - 9. Pileus rugulose. Stem white. Gills greyish
..... *T. fulvochracea* v. *fuscogrisea* p. 32
 - 9. Pileus not rugulose. Stem fuliginous pruinose. Gills white
..... *T. mycenoides* p. 53
- 1. Gills more or less deeply decurrent.
 - 10. Stem sublateral, short. Pileus – 25 mm wide, cinnamon brown to somewhat orange or ferruginous
..... *T. tenax* p. 81
 - 10. Mesopodal. Pileus more or less infundibuliform.
 - 11. Gills narrow 0.5–1 mm wide. Fruit-bodies small.
 - 12. Pileus – 6 mm wide, honey-yellow with fuscous centre. Stem yellow ... *T. fuscomellea* p. 37
 - 12. Pileus and stem not yellow.
 - 13. Gills forked 1–3 times, 0.5 mm wide, subdistant *T. furcata* p. 33
 - 13. Gills not or rarely forked.
 - 14. Pileus – 11 mm wide, grey with innate grey-green streaks .. *T. calyculus* p. 21
 - 14. Pileus larger, fuscous umber *T. umbrino-alba* p. 83
 - 11. Gills wider.
 - 15. Pileus with greenish or bluish tints.
 - 16. Pileus fuliginous cyaneous. Gills and stem paler *T. cyanea* p. 24
 - 16. Pileus grey tinged greenish ochre. Gills and stem white *T. subviridis* p. 80
 - 15. Pileus not so tinted.
 - 17. Stem fuscous or fuliginous pruinose.
 - 18. Gill-edge fuscous fuliginous pruinose as the pileus and short stem
..... *T. brevipes* p. 20
 - 18. Gill-edge not darker pruinose.
 - 19. Gills whitish, – 2.5 mm wide. Stem whitish *T. fusciceps* p. 33
 - 19. Gills – 6 mm wide, paler concolorous with the pileus
..... *T. ceraceomollis* p. 22
 - 17. Stem whitish pruinose.
 - 20. Uniformly grey, firmly waxy subgelatinous. Pileus – 7 cm wide. Gills 2.5–6 mm wide *T. subgelatinosa* p. 75
 - 20. Not so.
 - 21. Spores subglobose 4–5.5 × 3–5 µm. Gills 1–2 mm wide, white, interstices poroid *T. subglobo-spore* p. 76
 - 21. Spores ellipsoid.
 - 22. Spores 4.5–5.5 × 2.7–3.3 µm. Gills – 2.5 mm wide, thick, distant, white then fuscous *T. obfusca* p. 58
 - 22. Spores larger. Gills 2–4 mm wide, interstices not or scarcely veined.
 - 23. Pleurocystidia thick-walled *T. fuscoalba* v. *metuloidea* p. 35
 - 23. Pleurocystidia thin-walled.
 - 24. Spores 8–10 × 6–7 µm. Stem greyish *T. cystidiata* p. 25
 - 24. Spores 6–8 × 4.5–5.5 µm.
 - 25. Gills 2–4 mm wide, subdistant *T. subdistans* p. 75
 - 25. Gills – 2 mm wide, crowded, hispidulous. Pileus papillate-umbonate *T. fuscoalba* p. 34

Group E

- 1. All parts of the fruit-body blackening. Flesh with watery juice turning red or violaceous on exposure. Gills adnate, 1–2 mm wide, very crowded *T. nigrescens* p. 54
- 1. Not blackening.
 - 2. Gills free, adnexed or sinuate.
 - 3. Pileus acutely umbonate.
 - 4. Gills – 1.5 mm wide, very crowded. Smell strong *T. papillata* p. 63

4. Gills much wider, subdistant *T. tricholomatoides* p. 83
3. Not papillate-umbonate.
 5. Gills in 1 rank, distant, adnexed or free. Pileus sulcate, delicate *T. delicata* p. 26
 5. Gills in 3–4 ranks, sinuate, crowded. Pileus firm, not sulcato-striate *T. endocystidiata* p. 29
2. Adnato-decurrent to deeply decurrent.
 6. Gills 0.5 mm wide. Pileus 2–20 mm wide.
 7. Pileus acutely umbonate, –5 mm wide. Gills in 1 rank, often fold-like *T. mammillata* p. 49
 7. Not so.
 8. Gills in 1 rank, not forked.
 9. Spores 4–5.5 μm wide, pale amyloid *T. omphalinoides* p. 61
(Not amyloid, see *T. octava*).
 9. Spores 3.5–4.3 $\times$ 2–2.3 μm , not amyloid. Smell nitrous *T. diminutiva* p. 28
 8. Gills in 2–3 ranks, often forked. Spores 2.5–3.5 μm wide, not amyloid *T. alba* p. 16
 6. Gills broader.
 10. Pileus 4–9 cm wide, pale yellow, thin. Gills often fold-like, disappearing outwards *T. macra* p. 47
 10. Not so.
 11. Flesh with copious watery juice. Stem more or less excentric *T. seriflua* p. 70
 11. Not so.
 12. Pileus sulcato-striate.
 13. Gills 2–6 mm wide in 2 ranks, thick. Stem –25 mm long *T. revoluta* p. 68
 13. Gills 1–2 mm wide, mostly 1 rank, edge fimbriate. Stem –11 mm long *T. polyadelpha* p. 64
 12. Not sulcato-striate.
 14. Gills in 1(–2) ranks.
 15. Spores 4.7–6 $\times$ 4.5–5 μm , not amyloid *T. exigua* p. 31
 15. Spores 6–7 $\times$ 3.7–4.5 μm , amyloid *T. impartita* p. 40
 15. Spores 6–9 $\times$ 4.5–6 μm , not amyloid *T. raphanolens* p. 67
 14. Gills in 2–4 ranks.
 16. Base of stem with a fibrillose arachnoid felt. Spores pale amyloid *T. omphalinoides* v. *confertifolia* p. 61
 16. No such basal felt.
 17. Cheilocystidia as a sterile gill-edge. Spore not amyloid.
 18. Pleurocystidia present *T. decipiens* p. 25
 18. Pleurocystidia absent.
 19. Gills –1.5 mm wide *T. limonospora* p. 45
 19. Gills 2–4 mm wide *T. marasmioides* p. 50
 17. Cheilocystidia none or sparse; gill-edge fertile. Spores pale amyloid.
 20. Pileus pale yellowish. Spores 5.5–6.5 μm wide *T. icterinoides* p. 39
 20. Pileus white or greyish. Spores 3.5–5 μm wide *T. impartita* p. 40

KEY TO THE SPECIES ON MICROSCOPIC CHARACTERS

1. Pleurocystidia present or, if without gills, then with hymenial cystidia Group A
1. Pleurocystidia absent.
 2. Spores amyloid.
 3. Fruit-bodies white Group B p. 12
 3. Fruit-bodies coloured Group C p. 13
 2. Spores not amyloid.
 4. Fruit-bodies white Group D p. 13
 4. Fruit-bodies coloured Group E p. 14

Group A

1. Fruit-bodies white, yellowish to pale ochraceous, in one species blackening. Gills well formed but often sterile for some time. Pileus not umbonate, without a pseudoparenchymatous hypodermis.
2. Fruit-body blackening, exuding a watery juice turning red or violaceous, then blackening. Gills adnate, very crowded, narrow. Spores $5-6 \times 4-5 \mu\text{m}$, amyloid *T. nigrescens* p. 54
2. Not blackening.
3. Flesh of pileus with endocystidia. Spores not amyloid.
 4. Gills sinuate, 2-4 mm wide. Cheilocystidia clavate to ventricose fusiform, appendaged. Spores $7-10 \times 4.5-5.7 \mu\text{m}$ *T. endocystidiata* p. 29
 4. Gills adnate-decurrent, 1-2 mm wide. Cheilocystidia mostly with a subglobose apex. Spores $6.5-9 \times 4-5.5 \mu\text{m}$ *T. limonosporoides* p. 46
3. Without endocystidia.
 5. Pileus small, 7-15 mm wide. Stem very short, sublateral.
 6. Spores $4 \times 2.5 \mu\text{m}$, amyloid. Caulocystidia with pale brown walls, turning pink in KOH *T. sublateralis* p. 77
 6. Spores $7-9 \times 3.5-4.5 \mu\text{m}$, ? not amyloid. Caulocystidia colourless. Gills -2 mm wide *T. decipiens* v. *pleurotella* p. 26
 5. Mesopodal or somewhat excentric.
 7. Pileus shallowly sulcato-striate, -20 mm wide. Stem -10 $\times$ 1.5 mm. Secondary gills fold-like. Spores $7-9 \times 5.5-6.5 \mu\text{m}$, amyloid. Basidia 2-spored. Pleurocystidia sparse *T. polyadelpha* p. 64
 7. Not sulcato-striate. Secondary gills well developed. Basidia 4-spored.
 8. Spores subglobose c. $6 \times 5.5 \mu\text{m}$, amyloid. Tissue with stout oleiferous hyphae 8-20 μm wide, ending as hymenial cystidia. Stem usually excentric. Flesh with copious watery juice *T. seriflua* p. 70
 8. Spores ellipsoid. Without such oleiferous hyphae.
 9. Spores $6-9 \times 4.5-5.5 \mu\text{m}$, not amyloid. Pileus -22 mm wide. Gills -2 mm wide. Pleurocystidia abundant *T. decipiens* p. 25
 9. Spores $5.5-7 \times 2.7-3.5 \mu\text{m}$, very faintly amyloid. Pileus -8 mm wide. Gills -0.5 mm wide. Pleurocystidia none but with scattered ends of oleiferous hyphae in the hymenium *T. alba* v. *minor* p. 16
 1. Pileus coloured or, if pale yellowish, then with a pseudoparenchymatous hypodermis and fold-like gills (*T. macra*). Spores not amyloid (except *T. tenax*).
 10. Stem short, almost lateral. Wholly cinnamon fawn tinged orange. Pileus -25 mm wide. Spores $3-4 \times 2-2.5 \mu\text{m}$, pale amyloid *T. tenax* p. 81
 10. More or less mesopodal. Spores larger.
 11. Pileus umbonate or, if not, then the gills not decurrent; with a pseudoparenchymatous hypodermis (except *T. subtomentosa*). Gill-edge sterile.
 12. Pileus acutely umbonate, often rugulose.
 13. Gills absent or as slight folds. Spores $7-11 \times 4-6 \mu\text{m}$.
 14. Pileus crimson to rose pink *T. rosea* p. 69
 14. Pileus brown, fuscous, ochraceous or greyish *T. silvestris* p. 73
 13. Gills well formed.
 15. Spores globose 8-10 μm . Gills orange to deep yellow. Solomon Isl. *T. aurantiphylla* p. 18
 15. Spores ellipsoid $6-9 \times 4-6 \mu\text{m}$ (except *T. carminea*).
 16. Gills decurrent, crowded, 1-2 mm wide, white. Pileus pale fuscous umber. Stem white *T. fuscoalba* p. 34 (pleurocystidia thick-walled var. *metuloidea*)
 16. Gills adnexed, adnate or subdecurrent, usually wider.
 17. Pileus yellow with fuscous centre. Stem yellow. Gills white, edge yellow. Pleurocystidia -200 μm long with clavate apex 10-17 μm wide *T. fuscolutea* p. 36
 17. Differently coloured. Gills without yellow edge.
 18. Pileus -9 mm wide, rose-red. Gills nearly free. Stem white. Spores $5-7 \times 2.7-3.5 \mu\text{m}$ *T. carminea* p. 21

18. Larger, differently coloured.
 19. Pileus fulvous cinnamon to fawn ochraceous, fuscous or greyish.
Stem white *T. fulvochracea* p. 31
 19. Pileus fuscous umber tinged lilaceous ... *T. lilaceogrisea* p. 44
12. Pileus not so strongly umbonate. Gills adnexed, adnate or subdecurrent.
 20. Pileocystidia none. Caulocystidia $-50 \times 17 \mu\text{m}$, widely clavate. Pileus -3 cm wide, fuscous grey. Stem fuliginous pruinose *T. mycenoides* p. 53
(smaller, pileus rose-red *T. carminea*)
 20. Pileocystidia present. Caulocystidia longer, subclavate to ventricose.
 21. Pileus subtomentose with septate hyphal ends, fawn ochraceous to fuscous or sepia. Gills ventricose. Spores $5.5-7 \times 4.2-5.5 \mu\text{m}$, slightly amyloid
..... *T. subtomentosa* p. 79
 21. Pileus not subtomentose.
 22. Pleurocystidia thick-walled. Pileus fuscous brown. Spores $7-9.5 \times 4-5.5 \mu\text{m}$, not amyloid *T. fuscoalba* v. *metuloidea* p. 35
 22. Pleurocystidia thin-walled. Smell often farinaceous.
 23. Pileocystidia $-250 \mu\text{m}$ long, with supporting hyphae at the base. Pileus -3 cm wide, fuscous umber to fuscous ochraceous. Stem $1-3 \text{ mm}$ thick
..... *T. hispidula* p. 38
 23. Pileocystidia shorter, not so supported. Pileus -9 cm wide, fuscous vinaceous to greyish lilac. Stem $2-7 \text{ mm}$ thick. Smell strong
..... *T. lilaceogrisea* p. 44
 11. Pileus infundibuliform, not umbonate. Gills usually deeply decurrent.
 24. Wholly pale yellowish. Pileus $3-9 \text{ cm}$ wide, thin. Gills $0.5-1.5 \text{ mm}$ wide, often fold-like, edge fertile. Spores $7-10 \times 4.5-6 \mu\text{m}$ *T. macra* p. 47
 24. Not so. Gill-edge with cheilocystidia. Pileus fuscous, greyish brownish or greenish.
 25. Pileus without a pseudoparenchymatous hypodermis. Spores ellipsoid.
 26. Pileus -10 mm wide. Pleurocystidia scarce. Cheilocystidia mostly clavate as a sterile edge. Spores $6-7.5 \times 4-5 \mu\text{m}$ *T. calyculus* p. 21
 26. Larger. Cheilocystidia ventricose lanceolate, not as a sterile edge. Spores larger.
 27. Pileus grey green. Gills -3 mm wide. Spores $7-10 \times 4-5 \mu\text{m}$, not amyloid
..... *T. subviridis* p. 80
 27. Pileus fuscous. Gills 0.5 mm wide, often forked. Spores $8-10 \times 6.5-8.5 \mu\text{m}$, pale amyloid *T. fureata* p. 33
 25. Pileus with a pseudoparenchymatous hypodermis, not greenish.
 28. Spores $8-10 \times 6-7 \mu\text{m}$, ellipsoid. Cheilocystidia more or less ventricose. Flesh waxy-soft, tough in the gills *T. cystidiata* p. 25
 28. Spores $6-8 \times 5.2-7 \mu\text{m}$, subglobose. Cheilocystidia mostly clavate. Flesh tough, subgelatinous. Lignicolous or humicolous *T. subgelatinosa* p. 75

Group B

1. Gills none or as slight folds not reaching the stem. Hymenium thickening. Cystidia none. Pileus -15 mm wide. Spores $7-8.5 \times 4.5-6.5 \mu\text{m}$ *T. pallida* p. 62
1. Gills distinct. Hymenium not thickening.
 2. Pileus $1-5 \text{ cm}$ wide, sulcato-striate, delicate. Stem -7 cm long, base subbulbous. Gills adnexed or free, 1 rank, $1-6 \text{ mm}$ wide. Spores $6.5-8.5 \times 5-7.5 \mu\text{m}$. Fragile *T. delicata* p. 26
 2. Without such character; texture firmly waxy.
 3. Cheilocystidia forming a sterile gill-edge.
 4. Pileus -4 cm wide, sulcato-striate. Gills decurrent, then widening and adnate to adnexed, $2-6 \text{ mm}$ wide, thick, veined at the base. Spores $5.7-6.7 \times 5-6.3 \mu\text{m}$ *T. revoluta* p. 68
 4. Pileus $4-20 \text{ mm}$ wide, not sulcato-striate. Gills decurrent, $0.5-1.5 \text{ mm}$ wide, not or scarcely veined at the base.
 5. Spores $5.5-7 \times 2.7-3.5 \mu\text{m}$, ? amyloid. Pileus -8 mm wide. Gills crowded, $14-18$ primaries, $2-3$ ranks *T. alba* v. *minor* p. 16

5. Spores $5-7 \times 3.7-5.5 \mu\text{m}$, pale amyloid. Pileus 4–20 mm wide. Gills distant or rather crowded *T. omphalinoides* p. 61
3. Cheilocystidia sparse or none.
 6. Wholly pale cream to pale bistre ochraceous. Pileus ~22 mm wide. Spores $6-7 \times 5.5-6.5 \mu\text{m}$, subglobose. Cheilocystidia $-18 \mu\text{m}$ wide, clavate *T. icterinoides* p. 39
 6. White to pale yellowish or pale grey. Spores $5.5-8 \times 3.5-5.2 \mu\text{m}$, ellipsoid. Cheilocystidia, if present, generally narrower.
 7. Pileus -5 mm wide, acutely umbonate. Cystidia none *T. mammillata* p. 49
 7. Pileus not umbonate, usually larger. Cystidia sparse or none *T. impartita* p. 40

Group C

1. Cheilocystidia absent.
 2. Pileus -8 cm wide, strongly umbonate, pale yellowish clouded fuscous in the centre. Stem white, -7 mm thick. Gills -15 mm wide, usually emarginate, white to yellowish. Spores $5-6.5 \times 4.7-5.2 \mu\text{m}$. Ceylon *T. tricholomatoides* p. 83
 2. Pileus not umbonate, 2–6 cm wide. Gills not so wide.
 3. Spores subglobose.
 4. Spores $6-7 \mu\text{m}$. Wholly cream drab to pale bistre ochraceous *T. icterinoides* p. 39
 4. Spores $4-5.5 \mu\text{m}$. Fuscous or fuliginous brown fading greyish white *T. subglobospora* p. 76
 3. Spores ellipsoid $6-8.5 \times 4-5.5 \mu\text{m}$.
 5. Gills citron yellow, 2–3 mm wide, often furcate, not veined. Pileus and stem fuscous yellow. Queensland *T. aff. straminea* p. 75
 5. Gills white, 3–6 mm wide, shallowly veined or reticulate at the base. Pileus sepia brown then paler. Stem greyish to brownish *T. ceraceomollis* v. *amylospora* p. 22
1. Cheilocystidia present, sparse to abundant or as a sterile gill-edge.
 6. Spores $4.3-5.5 \times 2.7-3.3 \mu\text{m}$. Pileus -28 mm wide, fawn drab. Gills white, then fuscous cream, shallowly reticulate at the base. Cheilocystidia mostly clavate. Hyphae sarcotrititic *T. obfuscata* p. 58
 6. Spores longer, wider or subglobose.
 7. Gills adnexed, pale fawn brown to brownish honey-colour as the pileus 1–5 cm wide. Smell strong nitrous. Spores $5-7 \times 4-5.5 \mu\text{m}$ *T. nitrosa* p. 56
 7. Gills adnate to decurrent. Smell not nitrous.
 8. Spores $8-10 \times 6.5-8.5 \mu\text{m}$. Pileus -25 mm wide, fuscous as the stem. Gills 0.5 mm wide, 2–3 times furcate, white. Cheilocystidia as sterile basidia *T. furcata* p. 33
 8. Spores smaller.
 9. Spores ellipsoid, $6-7 \times 3.5-4.3 \mu\text{m}$. Pileus -35 mm wide, pale greyish white. Stem and gills white *T. impartita* v. *griseola* p. 40
 9. Spores subglobose.
 10. Spores $6-7 \mu\text{m}$. Fruit-body pale cream or ochraceous drab. Cheilocystidia $-18 \mu\text{m}$ wide, mostly clavate, scattered *T. icterinoides* p. 39
 10. Spores $4-5.5 \mu\text{m}$. Pileus and stem fuscous fuliginous or fuscous brown, fading greyish white. Gills white, poroid reticulate at the base. Cheilocystidia $-30 \times 4-9(-14) \mu\text{m}$, clavate to subventricose, scattered or as a sterile gill-edge *T. subglobospora* p. 76
(Fruit-body suffused yellowish v. *mellea*)

Group D

1. Gills crowded in 3–4 ranks, mostly more than 20 primaries, -1.5 mm wide. Stem 1–2 mm thick.
 2. Gills adnexed, 45–60 primaries. Pileus -28 mm wide, papillate-umbonate, yellowish white. Stem 20–48 mm long. Spores $4-4.5 \times 3-3.5 \mu\text{m}$. Cheilocystidia none *T. papillata* p. 63
 2. Gills subdecurrent.
 3. Pileus with endocystidia. Gill primaries 22–24. Spores $8-11 \times 4.5-5.5 \mu\text{m}$ *T. limonospora* p. 45

3. Without endocystidia.
 4. Gill primaries 28–34, –0.5 mm wide. Spores $5-6 \times 2.5-3.5 \mu\text{m}$ *T. alba* p. 16
 4. Gill primaries 10–16, 2–4 mm wide. Stem varying short and lateral. Spores $6-8 \times 4-4.7 \mu\text{m}$ *T. marasmioides* p. 50
1. Gills more or less distant in 1–2(–3) ranks, less than 20 primaries. Without endocystidia. Stem 0.3–1(–1.5) mm thick.
 5. Cheilocystidia present.
 6. Cheilocystidia mostly over $50 \mu\text{m}$ long, more or less ventricose. Pileus 3–15 mm wide. Gills with 11–18 primaries.
 7. Smell of radish. Spores $6-9 \times 4.5-6 \mu\text{m}$. Gills 1–2 mm wide *T. raphanolen* p. 67
 7. Smell none. Spores $5.5-7 \times 2.7-3.5 \mu\text{m}$. Gills –0.5 mm wide *T. alba* v. *minor* p. 16
 6. Cheilocystidia shorter.
 8. Stem lateral, $2-3 \times 1 \text{ mm}$. Pileus –12 mm wide, convex with a mucilaginous upper layer. Spores $6-7.5 \times 4-4.5 \mu\text{m}$. Cheilocystidia as a sterile edge *T. lateralis* p. 41
 8. Stem central, longer. Pileus without a mucilaginous layer.
 9. Spores $4.7-6 \times 4.5-5 \mu\text{m}$. Cheilocystidia as a more or less sterile gill-edge. Pileus 10–30 mm wide. Gill primaries 8–11, 1–4 mm wide *T. exigua* p. 31
 9. Spores $3.5-4.3 \times 2-2.3 \mu\text{m}$. Cheilocystidia sparse. Pileus 2–5 mm wide. Gill primaries 12–18, 0.3 mm wide or fold-like. Smell nitrous *T. diminutiva* p. 28
 5. Cheilocystidia absent.
 10. Stem central. Pileus 8–12 mm wide. Gill primaries 9–13, 0.5 mm wide. Spores $4-5.5 \times 3-4 \mu\text{m}$ *T. octava* p. 59
 10. Stem lateral, $1 \times 0.3 \text{ mm}$. Pileus 1–3 mm wide, subcucullate. Gills as 2–4 slight folds. Spores $4-5.5 \times 3.7-4.5 \mu\text{m}$ *T. minima* p. 52

Group E

1. Fruit-body bluish or greenish, often more or less fuliginous.
 2. Stereoid, pleuropodal, without gills, sarcotrimitic. Spores $4.7-5.5 \times 3-3.5 \mu\text{m}$ *T. stereoides* p. 73
 2. Gills distinct, decurrent.
 3. Gills 0.5 mm wide, very crowded. Fruit-body centric to pleuropodal. Spores $4.5-5.5 \times 3-4.3 \mu\text{m}$, asperulate *T. pleurotoides* p. 64
 3. Gills wider. 1–3 mm (except *T. calyculus*). Mesopodal. Spores smooth.
 4. Spores $4-4.7 \times 3.5-4 \mu\text{m}$. Fruit-body dark fuliginous indigo in age, smelling of aniseed. Cheilocystidia as sterile basidia. Caulocystidia brown-walled *T. odorata* p. 60
 4. Spores $6-8 \times 4.5-5 \mu\text{m}$. Cheilocystidia distinct. Fruit-bodies fading in age.
 5. Pileus –35 mm wide, at first fuliginous cyaneous. Gills 1–3 mm wide *T. cyanea* p. 24
 5. Pileus –12 mm wide, grey with green streaks. Gills narrower *T. calyculus* p. 21
 1. Fruit-bodies not bluish or greenish.
 6. Hymenium smooth or with slight folds.
 7. Mesopodal or, if occasionally pleuropodal, with slender stem.
 8. Spores $3.7-4.5 \times 3-3.5 \mu\text{m}$. Fruit-bodies fuliginous yellowish to fuscous olivaceous or yellowish drab, infundibuliform varying flabelliform *T. aphylla* p. 18
 8. Spores $7-10 \times 5-6 \mu\text{m}$. Fruit-body livid pink, gill-folds slight *T. venulosa* p. 85
 7. Pleuropodal with short stem or sessile, stereoid, sarcotrimitic.
 9. Spores $6-9.5 \times 4-5 \mu\text{m}$.
 10. Fawn to subochraceous tan, sometimes with a mycelial skin spreading over the wood *T. cervina* p. 23
 10. Pale greyish livid, tinged vinaceous *T. subtranslucens* p. 79
 9. Spores $5-6 \times 3-4 \mu\text{m}$.
 11. Fuliginous olivaceous. Hymenium bluish green towards the margin of the pileus *T. stereoides* p. 73
 11. Fuscous. Hymenium grey *T. rivulosa* p. 69.

6. Gills distinct.

12. Pleuropodal, small.

13. Gills whitish, edge sterile with cheilocystidia. Pileus yellowish white. Spores $6-7.5 \times 4-4.5 \mu\text{m}$ *T. lateralis* p. 41

13. Gills ochraceous or yellowish without cheilocystidia.

14. Gills bright ochraceous. Pileus fuscous brown. Spores $5-7 \times 2.5-3 \mu\text{m}$ *T. ochrophylla* p. 58

14. Gills dingy honey-yellow. Pileus honey-yellowish flecked fuliginous in the centre. Spores $7-8.5 \times 5-5.7 \mu\text{m}$ *T. pusilla* v. *sublateralis* p. 66

12. Mesopodal.

15. Pileus and stem orange. Gills -1 mm wide, ochraceous. Spores $6-8 \times 3.5-4.5 \mu\text{m}$. Ceylon *T. inaequalis* p. 41

15. Pileus pink, lilac or vinaceous, infundibuliform with narrow gills. Hymenial cystidia absent. (See below).

16. Pileus becoming pervious to the hollow stem. Gills -1 mm wide. Spores $7-8.5 \times 4.7-6 \mu\text{m}$. Caulocystidia scarcely developed *T. infundibuliformis* p. 41

16. Pileus not pervious, stem stuffed. Gill-folds -0.2 mm wide. Caulo- and pileo-cystidia well developed. Spores similar, $-10 \mu\text{m}$ long *T. venulosa* p. 85

15. Fruit-body fuliginous, grey, brown or yellow.

17. Fruit-body without yellow colour, except the white stem turning ochraceous in age in *T. umbrino-alba*.

18. Stem fuscous fuliginous pruinose.

19. Basidia 4-spored. Hyphae clamped.

20. Gills crowded, $1-2 \text{ mm}$ wide, with fuliginous sterile edge. Spores $7-9 \times 4.7-6 \mu\text{m}$ *T. brevipes* p. 20

20. Gills more or less distant, $2-5 \text{ mm}$ wide, fertile edge not darker. Spores $6-8 \times 4-5 \mu\text{m}$ *T. ceraceomollis* p. 22

19. Basidia 2-spored. Hyphae without clamps. Gills $1-2.5 \text{ mm}$ wide, edge not fuliginous.

21. Spores $9-11.5 \times 7.5-10 \mu\text{m}$. Cheilocystidia none *T. ceraceomollis* v. *bispora* p. 23

21. Spores $4.5-7 \times 3.7-5 \mu\text{m}$. Cheilocystidia present .. *T. fusciceps* p. 33

18. Stem white pruinose, or fuliginous only at the base.

22. Cheilocystidia present, often as a sterile gill-edge.

23. Gills $2-4 \text{ mm}$ wide. Pileus $10-35 \text{ mm}$ wide. Spores $6.5-8 \times 4.5-5.5 \mu\text{m}$ *T. subdistans* p. 75

23. Gills $0.5-1.5 \text{ mm}$ wide. Pileus $2-20 \text{ mm}$ wide.

24. Pileus fuscous umber. Stem white, yellowish in age. Oleiferous hyphae abundant. Spores $7-8 \times 4.5-5 \mu\text{m}$ *T. umbrino-alba* p. 83

24. Pileus pale grey with innate grey-green fibrils. Stem fuscous fuliginous pruinose at the base. Spores $6-7.5 \times 4-5 \mu\text{m}$.. *T. calyculus* p. 21

22. Cheilocystidia absent. Gills more than 10 mm wide, emarginate-adnate. Pileus $8-11 \text{ cm}$ wide.

25. Pileus acutely umbonate, pallid yellowish clouded fuscous in the centre. Spores $6 \times 5 \mu\text{m}$. Ceylon *T. tricholomatoides* p. 83

25. Pileus subumbonate, pale fuscous brown. Spores $5.5-7 \times 3.5-4 \mu\text{m}$. Borneo *T. latifolia* p. 43

17. Fruit-body more or less yellow.

26. Tissue reddening strongly in KOH. Pileus greenish yellow with fuscous streaks. Spores $6.5-8.5 \times 4.5-5.7 \mu\text{m}$. Ceylon *T. holochlora* p. 38

26. Tissue not or slightly reddening in KOH.

27. Cheilocystidia absent.

28. Gills adnexed, white. Pileus papillate-umbonate, yellowish white. Spores $4-4.5 \times 3-3.5 \mu\text{m}$ *T. papillata* p. 63

28. Gills adnate to decurrent.

29. Pileus -7 mm wide, central to sublateral, fuscous grey then yellowish honey-colour. Stem and gills yellowish. Spores $7-9 \times 5.5-7 \mu\text{m}$. Basidia 2-spored, without clamps *T. pusilla* p. 66

29. Pileus larger, 1–5 cm wide. Basidia 4-spored.
30. Gills and stem rufescent on bruising. Flesh with watery juice. Pileus fuliginous olivaceous. Stem and gills yellowish honey-colour. Caulocystidia with brown walls. Spores $7\text{--}10 \times 4.5\text{--}6 \mu\text{m}$ or $5.5\text{--}7.5 \times 3.3\text{--}4 \mu\text{m}$. (v. *parvispora*)
 *T. subrufescens* p. 93
30. Not so. Fruit-body pale yellow. Pileocystidia $30\text{--}120 \times 12\text{--}30 \mu\text{m}$. Spores $7\text{--}9 \times 4.5\text{--}6 \mu\text{m}$ *T. straminea* p. 74
27. Cheilocystidia present.
31. Spores $4\text{--}5 \times 3\text{--}3.5 \mu\text{m}$. Pileus – 6 mm wide. Gill intervals not veined
 *T. fuscomellea* p. 37
31. Spores $7\text{--}11 \times 4\text{--}6 \mu\text{m}$.
32. Cheilocystidia forming a broad sterile gill-edge. Pileus 4–23 mm wide. Gill intervals not or scarcely veined *T. mellea* p. 50
32. Gill-edge becoming fertile with scattered cheilocystidia. Gill intervals becoming reticulately veined.
33. Fruit-body wholly pale yellow. Gills distant, – 1 mm wide. Basidia mostly 2-spored *T. primulina* p. 65
33. Pileus fuscous or fuliginous in the centre, with innate dark streaks. Gills 2–6 mm wide. Stem fuscous pruinose. Basidia mostly 4-spored *T. anthidepus* p. 17

T. alba Corner

Mon. Canth. Fungi (1966) 195, 95, f. 93a.

Fruit-bodies white, yellowish in age. Pileus 8–20 mm wide, plano-convex to subinfundibuliform, smooth, striate, drying subpruinose; margin incurved, pruinoso-puberulous, subcrenulate. Stem $20\text{--}30 \times 1.5\text{--}2$ mm, cylindric, hollow, base abrupt, fibrilloso-arachnoid, apex pruinoso-fibrillose, softly cartilaginous. Gills decurrent, *narrow, crowded*, often forked, transversely rugulose in the interstices, 28–34 primaries 0.5 mm wide, 3–4 ranks. Flesh hygrophanous, slightly tough in the gills. Smell none.

On dead wood in the forest. Singapore (Bukit Timah).

Spores $5\text{--}6 \times 2.5\text{--}3.5 \mu\text{m}$, not amyloid. Basidia $27\text{--}32 \times 6.5\text{--}7.5 \mu\text{m}$; sterigmata (2–)4, $3.5\text{--}4.5 \mu\text{m}$ long. Cheilocystidia $25\text{--}35 \times 3\text{--}10 \mu\text{m}$, subcylindric, subclavate or subventricose, mostly with slender filiform apex $1\text{--}2 \mu\text{m}$ wide, sparse, not as a sterile gill-edge. Pleurocystidia none. Caulocystidia $10\text{--}50 \times 4\text{--}10 \mu\text{m}$, as the cheilocystidia, or $45 \times 2\text{--}3.5 \mu\text{m}$ and cylindric. Pileocystidia as the caulocystidia, in a disrupted layer. Hyphae clamped; fusiform cells $300\text{--}2000 \times 10\text{--}30 \mu\text{m}$, wall $1 \mu\text{m}$ thick; oleiferous hyphae $3\text{--}4 \mu\text{m}$ wide, few. Pileus without a pseudoparenchymatous hypodermis.

var. **brasiliensis** v. nov.

(see p. 88)

var. **minor** var. nov.

Figure 1

Different statu minori, lamellis subdistantibus, interstitiis haud rugulosis, cheilocystidia plerumque in acie sterili instructis. Ad truncum delapsus in silva. Ins. Solomonenses, Kolombangara, 23 Aug. 1965, RSS 1022; herb. Corner.

Pileus 5–8 mm wide. Stem $8\text{--}18 \times 0.5\text{--}0.8$ mm. Gills adnato-decurrent, subdistant, 14–18 primaries 0.5 mm wide, 2–3 ranks, often irregular, with smooth intervals. Spores $5.5\text{--}7 \times 2.7\text{--}3.5 \mu\text{m}$, possibly very faintly amyloid. Basidia $18\text{--}22 \times 4.5\text{--}5.5 \mu\text{m}$; sterigmata 4, $5 \mu\text{m}$ long. Cheilocystidia $30\text{--}70 \times 6\text{--}10 \mu\text{m}$, more or less ventricose with obtuse apex, varying clavate, many with yellowish opalescent contents, often surrounded

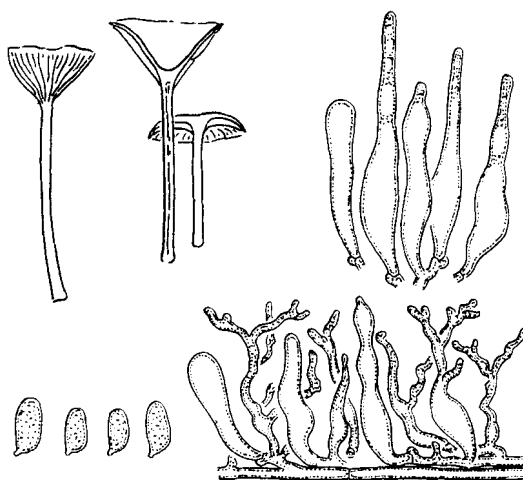


Fig. 1. *Trogia alba* var. *minor*. Fruit-body, $\times 2$. Spores, $\times 1000$. Cheilocystidia (above) and caulocystidia, $\times 500$. Collection RSS 1022.

with hyphal processes $1-2\ \mu\text{m}$ wide from the subhymenium. Pleurocystidia none, but with scattered ends of oleiferous hyphae in the hymenium. Caulocystidia $-35 \times 3-9\ \mu\text{m}$, as the cheilocystidia but shorter and without appendage, with somewhat yellowish opalescent contents, becoming more or less invested with branched or lobulate processes $1-2\ \mu\text{m}$ wide from the superficial hyphae of the stem. Pileocystidia as the caulocystidia, scattered. Hyphae clamped; fusiform cells $-1200 \times 6-20\ \mu\text{m}$ in the stem, $-30\ \mu\text{m}$ wide in the pileus; oleiferous hyphae frequent in the pileus and gills, with tapered or subclavate ends in the hymenium and on the pileus.

As originally noted, this species is close to the north temperate *T. gypsea*, which is placed in *Hemimycena* by Singer. It is, also, close to *T. infundibuliformis*. Unfortunately, I have only a single collection each of the typical state and the two varieties. Var. *minor* seems, at first, to be a distinct species but var. *brasiliensis* combines the features of var. *minor* and var. *alba*.

T. anthidepas (Berk. et Br.) Corner

Mon. Canth. Fungi (1966) 195, f. 83, 89-92, 96; pl. 4 F, G.

Hydropus anthidepas (Berk. et Br.) Singer (1975) 400; Pegler, Agaric Fl. Sri Lanka (1986) 186.

var. **anthidepas**

Stem fuscous pruinose. Gills light yellow. Spores $6-10 \times 3.5-5.5\ \mu\text{m}$. Tropical Asia and America.

var. **brasiliensis** var. nov.

Stipes albopruinosus. *Lamellae luride ochraceoflavae*. *Sporae* $7.5-8.5 \times 3-3.5\ \mu\text{m}$. Brazil, Mato Grosso, pr. Chavantina, 31 Jan. 1968, Corner s.n.; herb. Corner.
(see p. 88).

var. **saturation** Corner

Mon. Canth. Fungi (1966) 196, f. 97; pl. 4e.

As var. *anthidepas* but with densely fuscous pruinose pileus and stem. Singapore.

For this species, which seems to be pantropical and not uncommon, I refer to my description and illustrations in 1966. Though referred to *Hydropus* by Singer and Pegler, I cannot see any generic difference from *Gerronema*, placed in another tribe, to which the closely allied *T. icterina* is referred.

T. aphylla Corner

Mon. Canth. Fungi (1966) 198, f. 99.

Fruit-bodies *entirely pale fuliginous yellowish to fuscous olivaceous*, sometimes merely yellowish isabelline, turning brown in decay. Pileus 10–30 mm wide, mostly *centric and infundibuliform* but occasionally lateral and flabelliform, smooth, with *innate radiating fuliginous or brownish streaks*; margin slightly incurved at first, minutely crenulate. Stem 8–12 × 0.5–1 mm, –1.5 mm at the abrupt and slightly swollen base, cylindric or compressed, solid or fistulose, smooth or sparsely fuscous pruinose, often rather greenish. *Hymenium smooth*, shortly decurrent, without gills. Flesh 0.2–0.4 mm thick in the pileus, rather tough and pliant. Smell none.

On very rotten wood in the forest. Malay Peninsula (Pahang, Singapore).

Spores 3.7–4.5 × 3–3.5 µm, not amyloid. Basidia 25–30 × 4–5 µm; sterigmata 2–4, 4 µm long. Cystidia none. Hymenium not or slightly thickening. Caulocystidia –35 × 5–12 µm, subclavate, with fuscous sap, sparse. Pileocystidia –10 × 3–5 µm in the centre of the pileus, sparse. Hyphae clamped; fusiform cells 100–1200 × 5–12 µm in the stem, –25 µm in the pileus, walls –1.5 µm thick. Surface of pileus with radiating hyphae, with fuscous sap and yellowish walls; no pseudoparenchymatous hypodermis.

var. **solomonensis** var. nov.

Differt hymenio saepe lamellis 7–12 pliciformibus praedito, sporis subgloboseis, cellulis fusiformibus longioribus. Ad lignum putridum in silva. Ins. Solomonenses, Kolombangara 400 m alt., 8 Sept. 1965, RSS 1340; herb. Corner.

Pileus –25 mm wide, pale sordid ochraceous to isabelline, centre with short innate fuscous streaks. Stem –11 × 1 mm. Hymenium smooth or with 7–12 slight gill-folds near the stem. Spores 3.5–4.2 × 3–3.7 µm, subglobose, not amyloid or very faintly violaceous brown from disperse glycogen in the cytoplasm. Basidia 27–35 × 5–5.5 µm; sterigmata 4, 4–5 µm long. Hymenium slightly thickening –60 µm. Fusiform cells –2000 × 28 µm, walls 1–2 µm thick; narrow hyphae in the stem 2–4 µm wide with somewhat thickened binding processes; oleiferous hyphae 2–4 µm wide, rarely branched, scattered.

This species would qualify for *Vanromburghia* but, without pleurocystidia or hypodermal pseudoparenchyma to the pileus, it links with another group of *Trogia* compared with *T. silvestris*. Thus, *T. fuscata* with larger spores is close. The slight gill-folds in var. *solomonensis* are certainly not the evolutionary beginnings of agaric gills, but their relics. Compare, *T. obfuscata*.

Trogia aurantiphylla sp. nov.

Figure 2

Pileus –25 mm latus, convexus dein conicus, papillato-umbonatus, radiatim rugulosus, subviscidus, cervinoluteus fuscoluteus vel livido-aurantiacus, marginem versus claro luteus. Stipes 15–50 × 1–2.5 mm, basi abrupto 2–4 mm subdilatato, fistulosus pruinulosus luteus. Lamellae adnatae, ascendentes vel uncinato-adnexae, dein ventricosae, subdistantes, 18–23 primariae –5 mm latae, ordinibus 3(–4), haud venosae, aurantiacae vel alte flavae. Caro in umbone 2.5–6 mm crassa, ceracea firma hygrophana scissilis, in stipite lamellis subcornea. Odor nullus. Sporae 8–10.5 µm latae, subglobosae, intus oleaginosae, inamyloideae. Basidia 40–55 × 9–10 µm; sterigmata 4, 5 µm longa. Cheilocystidia –90 × 8–12 µm, ventricosa, apice elongato –60 × 4–8 µm, primo in acie sterili instructa. Pleurocystidia –130 × 19 µm, ut cheilocystidia, copiosa. Caulocystidia –70 × 8–20 µm, subcylindrica, clavata vel ventricosa, copiosa. Pileocystidia –50

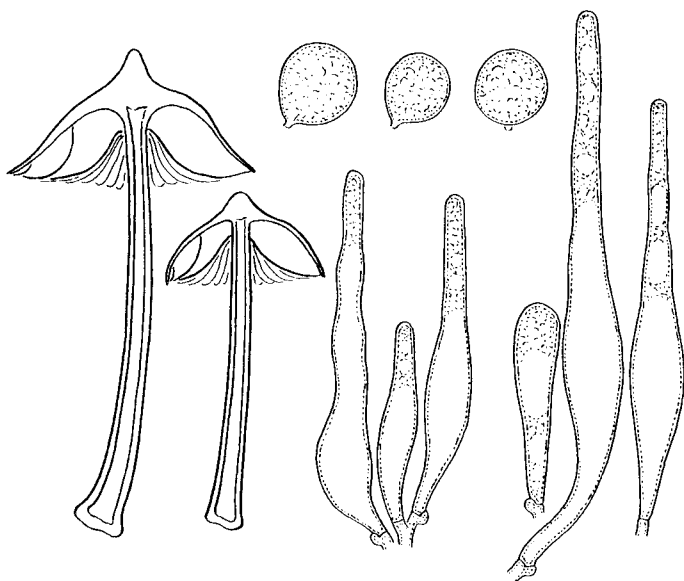


Fig. 2. *Trogia aurantiphylla*. Fruit-body, $\times 1\frac{1}{2}$. Spores, $\times 1000$. Cheilocystidia and pleurocystidia (right), $\times 500$. Collection, RSS 1573.

$\times 5\text{--}10\text{ }\mu\text{m}$. Hyphae sarcodimiticae fibulatae; cellulae fusiformes $300\text{--}2000 \times 10\text{--}30\text{ }\mu\text{m}$, tunicis $\sim 1\text{ }\mu\text{m}$ crassis. Ad lignum ramosque dejectos in silva. Ins. Solomonenses, Guadalcanal, Mt. Popomanasiu 1700–2200 m alt., 24–26 Oct. 1965, RSS 1573 (typus), 1573A, 1573B; herb. Corner.

Pileus $\sim 25\text{ mm}$ wide, convex to conical, *papillate-umbonate*, *radially rugulose* from the umbo, subviscid, *fawn yellow*, *fuscous yellow* or *livid orange* with *clear yellow striate margin* exceeding the gills. Stem $15\text{--}50 \times 1\text{--}2.5\text{ mm}$, $2\text{--}4\text{ mm}$ at the somewhat inflated abrupt base, cartilaginous, hollow, *canary yellow*, finely pruinose. Gills ascending adnate or uncinately adnexed, becoming ventricose, subdistant, 18–23 primaries $\sim 5\text{ mm}$ wide, 3(–4) ranks, not veined, *orange yellow to deep chrome yellow* with *clear yellow edge*. Flesh $2.5\text{--}6\text{ mm}$ thick in the umbo, waxy-firm, watery, scissile, rather horny in the stem and gills. Smell none.

On sticks, fallen branches and bits of wood in the forest. Solomon Islands, Guadalcanal, Mt. Popomanasiu 1700–2200 m alt.

Spores $8\text{--}10.5\text{ }\mu\text{m}$ wide, more or less globose, smooth, with oleaginous contents (? guttulate when fresh), not amyloid. Basidia $40\text{--}55 \times 9\text{--}10\text{ }\mu\text{m}$; sterigmata 4, $5\text{ }\mu\text{m}$ long. Cheilocystidia $\sim 90 \times 8\text{--}12\text{ }\mu\text{m}$, ventricose with prolonged cylindric obtuse apex $\sim 60 \times 4\text{--}8\text{ }\mu\text{m}$, at first as a sterile gill-edge. Pleurocystidia $\sim 130 \times 19\text{ }\mu\text{m}$, as the cheilocystidia, projecting $\sim 70\text{ }\mu\text{m}$, not guttulate, abundant. Caulocystidia $\sim 70 \times 8\text{--}20\text{ }\mu\text{m}$, clavate to subcylindric-ventricose, thin-walled, vacuolate, abundant. Pileocystidia $\sim 50 \times 5\text{--}10\text{ }\mu\text{m}$, as out-turned ends of the superficial radiating hyphae or as short processes from them, obtuse, thin-walled, rather crowded over the umbo, scattered over the limb, not in a palisade. Hyphae sarcodimitic, clamped; fusiform cells $300\text{--}2000 \times 10\text{--}30\text{ }\mu\text{m}$, walls $\sim 1\text{ }\mu\text{m}$ thick. Surface of pileus with a compact pseudoparenchymatous hypodermis overlain by a submucilaginous layer $\sim 100\text{ }\mu\text{m}$ thick composed of narrow radiating hyphae $3\text{--}7\text{ }\mu\text{m}$ wide.

If it were not for the large globose spores, this could be regarded as a variety of *T. fulvochracea* or *T. fuscolutea*, with yellow stem and richly coloured gills.

Trogia brevipes sp. nov.

Figure 3

Pileus 15–40 mm latus, infundibuliformis, sordide fuligineo-ochraceus vel fuscogriseus, ex integro fuscofuliginoso-furfuraceus vel pruinosis, substriatus. Stipes 12–22 $\times$ 2–4 mm, basi abrupto, fistulosus, concolor vel pallidus, ex integro fuligineo-pruinosis. Lamellae decurrentes angustae subconfertae crassiusculae, primariae 19–30, 1.5–2 mm latae, ordinibus 2–4, aliquando marginem pilei versus subreticulatae, pallide concolores vel albae, acie fuscofuliginea. Caro c. 1 mm crassa in centro pilei, ceraceo-tenax hygrophana. Odor nullus. Sporae 7–9.5 $\times$ 4.7–6 μ m, inamyloideae. Basidia 33–46 $\times$ 7–8.5 μ m; sterigmata 4, 4–5 μ m longa. Cheilocystidia 30–55 $\times$ 6–10 μ m, subcylindrica clavata vel subventricosa, intus succo brunneo-umbrino, ut acie angusta sterili instructa. Pleurocystidia nulla. Caulocystidia et pileocystidia 30–100 $\times$ 5–10(–14) μ m, cylindrica vel clavata, succo brunneo-umbrino. Ad ramos dejectos in silva. Borneo, Mt. Kinabalu 1400–1600 m alt; Ins. Solomonenses, Mt. Gallego 400 m alt. Typus, Borneo, RSNB 8070A; herb. Corner.

Pileus 15–40 mm wide, *infundibuliform* almost from the first, hygrophanous, substriate, *fuliginous bistre or pale fuscous grey, wholly finely darker fuscous fuliginous scurfy pruinose*; margin slightly incurved at first. Stem 12–22 $\times$ 2–4 mm, short, cylindrical, hollow, becoming baggy, base abrupt, *concolorous or whitish, finely fuliginous scurfy pruinose*. Gills decurrent, *narrow*, rather crowded, rather thick, 19–30 primaries 1.5–2 mm wide, 2–4 ranks, often slightly veined in the interstices, often somewhat forked and irregularly poroid reticulate towards the margin of the pileus, *paler con-*

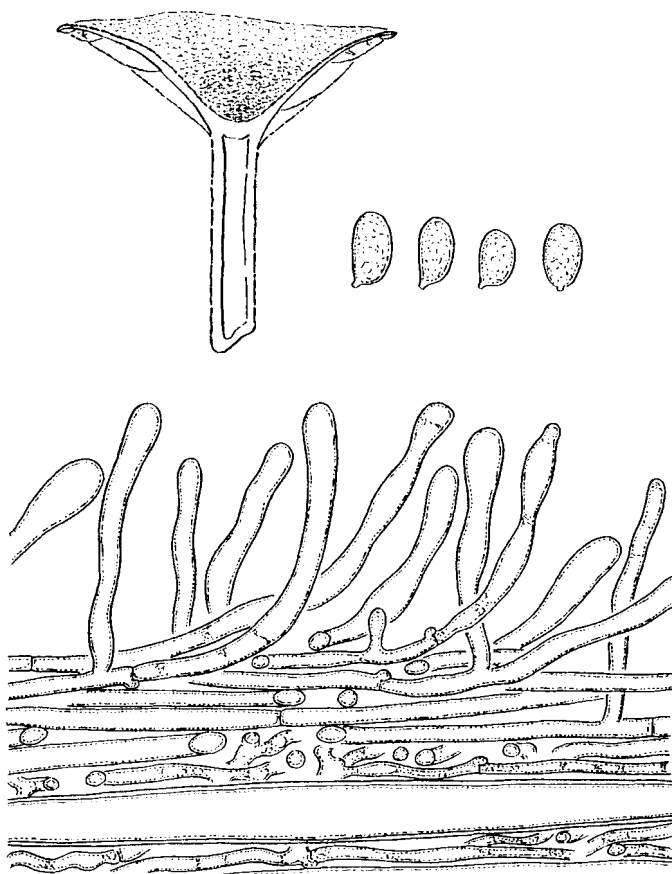


Fig. 3. *Trogia brevipes*. fruit-body, $\times 1\frac{1}{2}$. Spores, $\times 1000$. Pileocystidia, $\times 500$. Collection, RSNB 8070A.

colourous to whitish with fuscous fuliginous edge. Flesh c. 1 mm thick in the centre of the pileus, hygrophanous, waxy-tough. Smell none. Tissue not reddening in KOH.

On fallen branches in the forest. Borneo, Solomon Islands.

Spores $7-9.5 \times 4.5-6 \mu\text{m}$, inamyloid. Basidia $33-46 \times 7-8.5 \mu\text{m}$; sterigmata 4, $4-5 \mu\text{m}$ long. Cheilocystidia $30-55 \times 6-10 \mu\text{m}$, clavate, varying subcylindric or subventricose, without an appendage, sometimes flexuous, mostly with umber-brown sap, as a sterile gill-edge but finally collapsing or becoming obscured by basidia. Pleurocystidia none. Hymenium not thickening (or slightly?). Caulocystidia and pileocystidia $30-100 \times 5-10(-14) \mu\text{m}$, cylindric to clavate, with umber-brown sap, forming a disrupted palisade, derived from the outcurved ends of narrow superficial hyphae $3-5 \mu\text{m}$ wide or as processes from them, often curved. Hyphae sarcodimitic, clamped; fusiform cells $200-1400 \times 8-30 \mu\text{m}$, walls $1-2 \mu\text{m}$ thick in the stem; narrow hyphae $2-6 \mu\text{m}$ wide, the narrow interweaving branches developing slightly thickened walls in the stem. Pileus without a pseudoparenchymatous hypodermis. Marginal hyphal ends of the pileus cylindric to subclavate $3-6 \mu\text{m}$ wide, mostly with umber sap.

Collections: — Borneo, Mt. Kinabalu, Mesilau, 1400–1600 m alt., 2 April 1964, RSNB 8070; 1 May 1964, RSNB 8070A; 17 April 1964, RSNB 8316. — Solomon Islands, Mt. Gallego 400 m alt., 8 July 1965, RSS 601.

This species, in the affinity of *T. anthidepas*, is tending towards *T. infundibuliformis*.

T. calyculus Corner

Mon. Canth. Fungi (1966) 201, f. 87, 100.

Pileus 2–11 mm wide, 2–7 mm high, *obconica*, *deeply infundibuliform*, minutely pruinose, *grey with innate greyish green fibrils*, paler towards the margin. Stem 3–10 $\times$ 0.5–0.8 mm, cylindric with abrupt base, minutely pruinose, *hyaline white, fuscous pruinose downwards*. Gills deeply decurrent, abruptly delimited, narrow, subdistant, not veined, 11–14 primaries 0.5–0.8 mm wide, 2–4 ranks, often vein-like towards the margin of the pileus, *greyish white*. Flesh 0.2–0.4 mm thick in the centre of the pileus, somewhat horny, fissile, hygrophanous.

On dead wood in the forest. Malaya (Johore).

Spores $6-7.5 \times 4-5 \mu\text{m}$, not amyloid. Basidia $22-27 \times 5.5-7 \mu\text{m}$; sterigmata 4, $4 \mu\text{m}$ long. Cheilocystidia $20-40 \times 8-15 \mu\text{m}$, clavate to subventricose, rarely with prolonged obtuse apex, as a sterile gill-edge. Pleurocystidia similar, sparse. Caulocystidia $20-65 \times 8-20 \mu\text{m}$, clavate, rarely subventricose, the wall slightly thickened, scattered or crowded, with fuscous sap in the lower part of the stem. Pileocystidia $-60 \times 25 \mu\text{m}$, as the caulocystidia, sparse. Hyphae clamped; fusiform cells $300-1000 \times 9-40 \mu\text{m}$, walls $-1 \mu\text{m}$ thick; narrow hyphae rather few. Pileus without a pseudoparenchymatous hypodermis.

This minute fungus, in the affinity of *T. cyanea* and *T. subviridis*, has distinct gills of hyphal downgrowth.

Trogia carminea sp. nov.

Pileus -9 mm latus, conicus dein convexo-planus, subumbonatus glaber striatus rubroroseus. Stipes $14-22 \times 1 \text{ mm}$, basi tenuiter strigoso abrupto vix incrassato, subpruinosis albus. Lamellae adnexae subliberae subdistantes subventricosae, primariae $14-15$, -1.5 mm latae, ordinibus 2–3, ad basim subreticulatae, pileo concolores, aciem versus albiae. Sporae $5-7 \times 2.7-3.5 \mu\text{m}$, angustae ellipsoideae, inamyloideae. Basidia $18-22 \times 5-5.5 \mu\text{m}$; sterigmata 4, $4-5 \mu\text{m}$ longa. Cystidia $-45 \times 6-11 \mu\text{m}$, lanceolata vel ventricosa subacuta, haud in acie sterili instructa, superficiei lamellae sparsa. Caulocystidia $-28 \times 7-15 \mu\text{m}$, clavata. Pileocystidia nulla. Hyphae sarcodimiticae fibulatae; cellulae fusiformes $600-1300 \times 2-23 \mu\text{m}$ in stipite, tenuiter tunicatae. Ad folia emortua in silva montana. Borneo, Mt. Kinabalu c. 1800 m alt., Typus, RSNB 5545; herb. Corner.

Pileus —9 mm wide, conical then *convexo-plane and subumbonate*, smooth, striate, deep clear *rose-red or carmine*. Stem 14–22 × 1 mm, finely and thinly pruinose, with the slightly thickened abrupt base thinly white strigose, *white*. Gills *adnexed, nearly free*, subdistant, subventricose, 14–15 primaries —1.5 mm wide, 2–3 ranks, slightly reticulately veined at the base, *rose-red or carmine, paler and whitish towards the edge*. Flesh thin, waxy-firm. Smell none.

On dead leaves in montane forest, solitary. Borneo, Mt. Kinabalu.

Spores 5–7 × 2.7–3.5 μm , narrowly ellipsoid, not amyloid. Basidia 18–22 × 5–5.5 μm ; sterigmata 4, 4–5 μm long; no acerose basidioles. Cystidia —45 × 6–11 μm , lanceolate to ventricose, subacute, not or shortly appendaged, scattered along the fertile gill-edge and on the surface. Caulocystidia —28 × 7–15 μm , more or less clavate, scattered or in small clusters. Pileocystidia none. Hyphae sarcodimitic in stem and pileus, clamped; fusiform cells 600–1300 × 2–23 μm , thin-walled, closely adherent, tapered. Surface of pileus with minute cylindric projections from the narrow radiating and interwoven superficial hyphae; hypodermal tissue as an almost pseudoparenchymatous thin layer.

Collections: — Borneo, Mt. Kinabalu c. 1700 m alt., Mesilau and Bembangan rivers, 28 Feb. 1964, RSNB 5545; 6 May 1964, RSNB 8685.

This is an ally of *T. acicula*, which is customarily referred to *Mycena*, but it has shorter spores and lacks yellow colour in stem and gills. It may be *Mycena roseocandida* (Pk) Sacc. as described by A.H. Smith (North American Species of *Mycena* 1947, 178). I have a collection from Japan, on pine needles, which is identical microscopically with *T. carminea*, but which has a long pale yellow stem —45 × 1 mm (p. 88). It seems likely that these are but variations of the widespread *T. acicula*.

T. ceraceomollis Corner

Mon. Canth. Fungi (1966) 203, pl. 4D.

Pileus 10–45 mm wide, convex then plano-umbilicate, revolute, undulate, sometimes with a small papilliform umbo, rarely pervious to the base of the stem, subvillous to fuscous pruinose in the centre, striate, *dark grey or fuscous fuliginous then paler on expansion, greyish white in age*, the centre and striae fuscous brown; margin slightly incurved, then subdentate-crenulate. Stem 15–40 × 1.5–3(–4) mm, often compressed, soon hollow, waxy-tough, minutely fuscous pruinose, *paler concolorous then whitish*, base abrupt and strigose-villous. Gills adnate-decurrent to deeply decurrent, *distant*, sometimes forked, more or less strongly *transversely reticulate at the base* and on the sides especially towards the margin of pileus, waxy-soft, 12–27 primaries 1.5–5 mm wide, 2–3 ranks, *paler concolorous*. Flesh 0.5–1.5 mm thick in the centre of the pileus, waxy-soft in the pileus and gills. Smell none.

On dead wood and sticks in the forest. Malay Peninsula, widespread.

Spores 6–8 × 4–5 μm , subcylindric to narrowly pruniiform, not amyloid. Basidia 25–33 × 6–8 μm ; sterigmata 4, 5–6 μm long. Cystidia none; gill-edge fertile. Caulocystidia 30–90 × 8–20 μm , clavate towards the stem-apex, subventricose to subcylindric downwards with obtuse apex, even subcapitate 3–6 μm wide, —120 μm long at the base of the stem, with umber sap. Pileocystidia similar, mostly narrowly clavate, scattered over the limb. Hyphae clamped; fusiform cells —2000 × 7–35 μm in the stem, —700 μm in the pileus, —400 μm in the gills, walls 0.5 μm thick. Pileus without a pseudoparenchymatous hypodermis.

var. **amylospora** var. nov.

Differt sporis pallide amyloideis. Malaya, Ins. Solomonenses; Typus, Malaya, Selangor, Ulu Gombak, Corner P-199; herb. Corner.

Pileus –65 mm wide, brownish or greyish with sepia centre and striae. Gills –6 mm wide. Spores $6-8 \times 4.5-5.5 \mu\text{m}$, pale violaceous blue amyloid. Oleiferous hyphae $4-5 \mu\text{m}$ wide, scattered.

Collections: – Malaya, Selangor, Ulu Gombak, 2 Sept. 1972, Corner P-199. – Solomon Islands, Kolombangara, up to 600 m alt., 25 Aug.–5 Sept. 1965, RSS 1068 and RSS 1271.

This variety approaches *T. subglobospora* which has smaller spores, more poroid reticulate interstices to the gills, and a pale yellow colour to the fruit-body.

var. *bispora* Corner

Mon. Canth. Fungi (1966) 203, f. 101, pl. 5E.

Spores $9-11.5 \times 7.5-10 \mu\text{m}$, broadly ellipsoid to subglobose, not amyloid. Basidia $38-45 \times 8-9 \mu\text{m}$; sterigmata 2, $7-8 \mu\text{m}$ long. Hyphae without clamps. Pileus –25 mm wide. Stem – $15 \times 2.5 \text{ mm}$. Gills with 25–27 primaries $2-2.5 \text{ mm}$ wide, scarcely crowded, not or scarcely veined. Malaya, Pahang, Kota Glanggi, 5 Dec. 1930.

This is a common species in the Malay Peninsula, close to *T. anthidepas* but without its yellow colour, without hymenial cystidia, and with softer tissue. The large spores of var. *bispora* are evidently the consequence of its 2-spored and larger basidia.

T. cervina Corner

Figure 4

Mon. Canth. Fungi (1966) 203.

? *Inflatostereum* Reid, Nova Hedwigia Beih. 18 (1965) 143.

Fruit-bodies *stereoid, sessile or shortly pleuropodal, without gills, at first white then sordid fawn to sordid brownish ochraceous*. Pileus –60 mm in radius, flabelliform, ascending, smooth, subhygrophanous, finely streaked with innate darker fibrils, drying pallid with the margin strongly incurved. Stem $2-5 \times 3-4 \text{ mm}$, with a subdiscoid white to pale pinkish bulbous base $3-5 \text{ mm}$ wide, *sometimes arising from a widespread, rather waxy, pale cream to subochraceous, pinkish tan, and brownish mycelial skin* with white byssoid margin and whitish rhizomorphs. Hymenium abruptly delimited, smooth. Flesh 1–2 mm thick at the base of the pileus, fissile, then coriaceous from the base outwards, drying hard. Smell none or slightly aromatic.

On dead wood and branches in the forest. Malay Peninsula, Borneo, Solomon Islands.

Spores $7-9.5 \times 4-5 \mu\text{m}$, not amyloid, Basidia $40-70 \times 7-9 \mu\text{m}$; sterigmata 4, $4-5 \mu\text{m}$ long. Hymenium thickening – $300 \mu\text{m}$. Cystidia none. Caulocystidia and

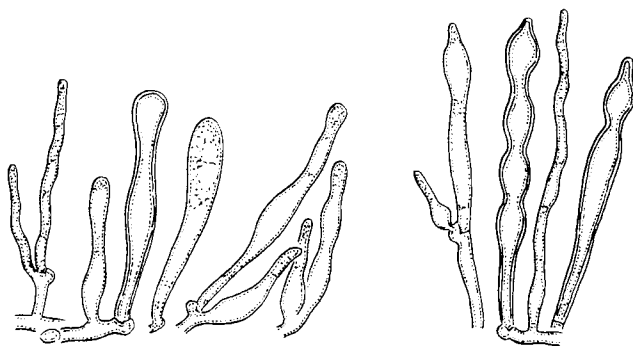


Fig. 4. *Trogia cervina*. Pileocystidia (left) and caulocystidia, $\times 500$. Collection, RSS 1019.

pileocystidia $60\text{--}(80) \times 4\text{--}8\text{--}(9) \mu\text{m}$, cylindric to subclavate, sometimes submoniliform or lobulate, crowded towards the margin of the pileus. Hyphae sarcodimitic then sarcotrimitic, clamped; fusiform cells $100\text{--}1100 \times 8\text{--}28 \mu\text{m}$, walls $4 \mu\text{m}$ thick; binding processes $1100 \times 2.5\text{--}6 \mu\text{m}$, thick-walled, not or sparingly branched, with thin-walled tapered ends; marginal hyphae of the pileus $1\text{--}3 \mu\text{m}$ wide; mycelial hyphae $1.5\text{--}4 \mu\text{m}$ wide, thin-walled, agglutinated at the surface of the mycelial skin. Colour caused by the pale brown sap of the superficial hyphae.

It seems that this is not uncommon in Malesia. My collections from Johore and the Solomon Islands were remarkable for the very extensive mycelial skin. It spread from the dead tree-trunk, on which the fruit-bodies were growing, over the living part of the trunk for distances up to 3 and 5 m and on to the surrounding living shrubs and lianes; rather indistinct rhizomorphs led to adjacent twigs and stems. Yet, this mycelial skin did not appear to be parasitic. The fruit-bodies developed in clusters only from the skin on the dead wood. According to the Solomon islanders, young fruit-bodies are edible.

This might be the fungus intended as *Inflatostereum* but what were given as skeletal hyphae in the description appear to have been the binding hyphae; they develop as in *Piptoporus*. The construction is impossible to make out satisfactorily from dried material. The allied stereoid *T. subtranslucens* has slight relict gill-folds, thus showing that *T. cervina* is a stereoid agaric, and the shortly stalked, more or less centric pileus of *T. venulosa* with rather better developed gill-folds makes the transition to *T. infundibuliformis*. In contrast, the blue-green stereoid *T. stereoides* seems related to the blue-green lamellate species of *Trogia*. Thus, at best, *Inflatostereum* is merely a form-genus.

T. cyanea Corner

Mon. Canth. Fungi (1966) 205, f. 93b, pl. 5D.

Pileus 20–35 mm wide, convex then *deeply infundibuliform*, sometimes pervious, smooth or minutely pruinose towards the margin, with innate fibrils, hygrophanous, substrate towards the margin, *fuliginous blue*, often spotted blue; margin at first incurved. Stem 25–45 $\times$ 1.5–4.5 mm, often compressed, hollow, cartilaginous, minutely pruinose, *paler concolorous to pallid fuliginous ochraceous*, base abrupt and slightly swollen. Gills deeply decurrent, scarcely crowded, *narrow*, often forked, tough, the interstices not or scarcely veined, 21–30 primaries 1–2 mm wide, 3–5 ranks, *pale concolorous or tinged flesh colour*. Flesh 1–1.5 mm thick in the centre of the pileus, firm, elastic. Smell none.

On dead wood and sticks and on the earth by rotten trunks. Malay Peninsula (Pahang, Singapore).

Spores $7\text{--}8 \times 4.5\text{--}5 \mu\text{m}$, not amyloid. Basidia $35\text{--}50 \times 6.5\text{--}8 \mu\text{m}$; sterigmata (2)–4, $4 \mu\text{m}$ long. Cheilocystidia $30\text{--}60 \times 5\text{--}10 \mu\text{m}$, subcylindric to subventricose, often lobed or subcapitate, at first as a sterile gill-edge, then with basidia intercalated. Hymenium slightly thickening $90 \mu\text{m}$. Caulocystidia $70 \times 5\text{--}10 \mu\text{m}$, as the cheilocystidia, collapsing in the lower part of the stem. Pileocystidia $60 \times 7 \mu\text{m}$, similar, scattered. Hyphae clamped; fusiform cells $250\text{--}1000 \times 10\text{--}23 \mu\text{m}$, walls $1\text{--}3 \mu\text{m}$ thick; oleiferous hyphae $300 \times 9\text{--}20 \mu\text{m}$, aseptate, scattered in pileus and gills; hyphae on the surface of the stem and throughout the pileus subagglutinated. Blue green colour caused by a slight incrustation on the superficial hyphae.

This striking fungus has the form and consistency of *T. infundibuliformis* but the blue-green colour of *T. odorata*, *T. subviridis*, *T. pleurotoides*, *T. calyculus* and *T. stereoides*. The hymenium thickens slightly, particularly in the gill-intervals. The hyphae of the pileus are entirely subagglutinated in a toughly mucilaginous matrix and seem to be composed mainly of inflated cells $40\text{--}500 \times 6\text{--}25 \mu\text{m}$.

T. cystidiata Corner

Mon. Canth. Fungi (1966) 206, f. 102.

Hydropus cystidiatus (Corner) Pegler, Agaric Fl. Sri Lanka (1986) 185.

Pileus 20–30 mm wide, convex then plane or umbilicate, striate to the often rugulose centre, subsulcate towards the margin, finely pruinose then subviscid, at first *fuscous fuliginous, then paler and greyish or light yellowish*; margin at first slightly incurved. Stem 20–40 × 2–3 mm, subcartilaginous, hollow, base abrupt and slightly swollen – 4 mm wide, pruinoso-puberulous, *greyish to greyish white*. Gills adnato-decurrent to shortly decurrent, *distant, thick, tough*, subcartilaginous, interstices not veined or slightly towards the margin of the pileus, 20–24 primaries 2–4 mm wide, 2–3 ranks, *greyish white*. Flesh thin, hygrophanous, rather soft in the pileus, tough in the gills. Smell none or slight.

On dead wood and branches in the forest. Ceylon, Malaya (Johore).

Spores 8–10 × 6–7 µm, not amyloid. Basidia 30–38 × 7–8 µm; sterigmata (2–)4, 5 µm long. Cheilocystidia 35–75 × 6–15 µm, conical or subventricose with obtuse and often subcapitate apex 3–6 µm wide, as a narrow sterile gill-edge. Pleurocystidia 60–120 × 7–15 µm, immersed or projecting – 50 µm, lanceolate-subventricose, the obtuse apex 3–7 µm wide, the base deeply immersed in the trama, frequent. Hymenium not thickening. Caulocystidia and pileocystidia – 50 × 7–12 µm, cylindric to subventricose, the apex obtuse and often subcapitate. Hyphae clamped; fusiform cells – 2000 × 10–35 µm, wall – 0.5 µm thick. Pileus with a thin pseudoparenchymatous hypodermis, 2–4 hyphae thick, with cells 40–120 × 15–40 µm, just below the narrow layer of appressed hyphae 3–8 µm wide. Colour in the fuscous sap of the pseudoparenchyma.

According to Pegler, this is close to the Brazilian *Hydropus dissiliens* Singer with narrow spores and pleurocystidia. It seems to be placed in *Hydropus* because of the colour of the pileus which is said usually to be bright in *Gerronema* or colourless. This is not true of the type-species of *Gerronema* and, clearly, the difference is not a generic character.

Trogia decipiens sp. nov.

Figure 5

Receptacula alba, aetate flavidula. Pileus – 22 mm latus, convexus dein planus, saepe subumbilicatus, substriatus. Stipes – 23 × 1–2 mm, aliquando subexcentricus, puberulus. Lamellae breviter decurrentes, confertae, aliquando furcatae, primariae 20–27, – 2 mm latae, ordinibus 3–4. Caro hygrophana ceraceo-subcornea. Sporae 6–9 × 4.5–5.5 µm, inamyloideae. Basidia 20–25 × 6–7 µm; sterigmata 4, 4 µm longa. Cheilocystidia – 35 × 8–13 µm, clavata, vel – 60 µm longa ventricosa, in acie sterili instructa. Pleurocystidia ut cheilocystidia ventricosa. Caulocystidia et pileocystidia – 50 × 5–11 µm, plerumque subcylindrica vel subventricosa. Hyphae fibulatae, sarcodimiticae, tunicis in KOH flavescentibus; cellulae fusiformes 300–2300 × 7–25 µm. Ad truncos putridos in silva. Ins. Solomonensus, Guadalcanal, Mt. Gallego, 11 Jul. 1965, RSS 530A; herb. Cantab.

Fruit bodies white, yellowish in age. Pileus – 22 mm wide, convex then plane, the centre slightly depressed, smooth substriate. Stem – 23 × 1–2 mm, central or slightly excentric, puberulous. Gills shortly decurrent, crowded, sometimes forked near the stem-apex, 20–27 primaries – 2 mm wide, 3–4 ranks. Flesh hygrophanous, rather waxy-horny.

On rotten trunks in the forest. Solomon Islands, common.

Spores 6–9 × 4.5–5.5 µm, not amyloid. Basidia 20–25 × 6–7 µm; sterigmata 4, 4 µm long. Cheilocystidia – 35 × 8–13 µm clavate, or – 60 µm long and ventricose with prolonged obtuse apex 3–7 µm wide and scattered among the clavate ones, as a sterile gill-edge. Pleurocystidia as the ventricose cheilocystidia, abundant. Caulocystidia and pileocystidia – 50 × 5–11 µm, mostly subcylindric to subventricose with prolonged obtuse apex, narrow, abundant but the pileocystidia collapsing. Hyphae sarcodimitic,

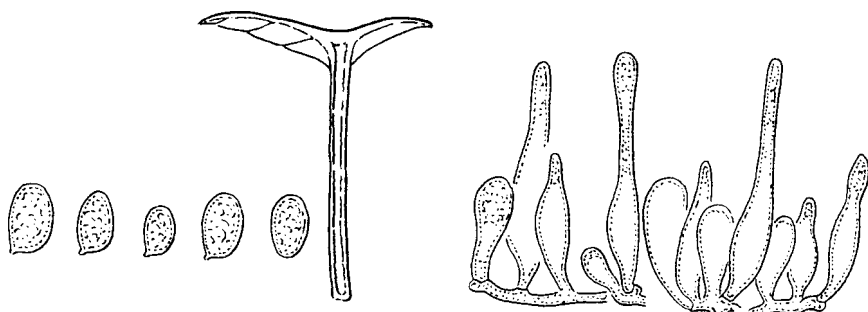


Fig. 5. *Trogia decipiens*. Fruit-body, $\times 1$. Spores, $\times 1000$. Cheilocystidia, $\times 500$. Collection, RSS 530A.

clamped, the walls yellowish in KOH: fusiform cells $300\text{--}2300 \times 7\text{--}25 \mu\text{m}$ in the stem; pileus with shorter cells $40\text{--}250 \times 7\text{--}16 \mu\text{m}$, not forming a pseudoparenchyma, with a lax superficial layer of hyphae $1.5\text{--}3 \mu\text{m}$ wide.

var. pleurotella var. nov.

Different stipite brevi, fere laterali, $1\text{--}2.5 \times 1\text{--}1.5 \text{ mm}$; sporis angustioribus $3.7\text{--}4.5 \mu\text{m}$ latis; cellulis fusiformibus brevioribus $150\text{--}800 \times 5\text{--}20 \mu\text{m}$. Malaya, Johore, Gunong Pulai, 24 Sept. 1966, Corner s.n.; herb. Cantab.

Fruit-bodies pale cream whitish. Pileus $\sim 15 \text{ mm}$ wide, *strongly excentric*, opaque, smooth, rather thick. Stem $1\text{--}2.5 \times 1\text{--}1.5 \text{ mm}$, *very short*, almost lateral, pruinose. Gills adnate to subdecurrent, crowded, 13–16 primaries $\sim 2 \text{ mm}$ wide, 3–4 ranks, edge entire. Flesh $\sim 1.5 \text{ mm}$ thick at the thickest part of the pileus, firm.

On dead wood in the forest. Malaya, Johore, Gunong Pulai.

Spores $7\text{--}9 \times 3.7\text{--}4.5 \mu\text{m}$, not or ? very slightly brownish amyloid. Basidia $20\text{--}24 \times 6\text{--}7 \mu\text{m}$; sterigmata 4, no acerose basidioles. Cheilocystidia $24\text{--}55 \times 8\text{--}15 \mu\text{m}$, clavate to ventricose and obtusely appendaged, as a sterile gill-edge. Pleurocystidia $30\text{--}60 \times 5\text{--}10 \mu\text{m}$, ventricose, appendaged, obtuse, the apex $3\text{--}5 \mu\text{m}$ wide, projecting, scarce to frequent in parts of the same gill. Caulocystidia as the cheilocystidia. Surface of pileus with appressed radiating hyphae $3\text{--}7 \mu\text{m}$ wide and scattered cystidia as the cheilocystidia; no pseudoparenchymatous hypodermis.

Superficially, this is very like *T. seriffua* but the spores are ellipsoid and not amyloid, and wide oleiferous hyphae with hymenial branchings are lacking. Var. *pleurotella* bears comparison with *T. lateralis* without pleurocystidia.

Trogia delicata sp. nov.

Figures 6, 7

Receptacula alba. Pileus $10\text{--}50 \text{ mm}$ latus, conicus dein campanulatus, ultimo planus vel revolutus, aliquando umbonatus, laevis hygrophanus, ad centrum pellucidum sulcato-striatus. Stipes $20\text{--}70 \times 1\text{--}5 \text{ mm}$, basi subbulboso $2\text{--}6 \text{ mm}$ lato, cartilagineus sed fragilis, fistulosus, minute furfuraceo-pruinosis. Lamellae adnexae, fere liberae, emarginatae distantes, raro furcatae, interstitiis haud vel vix rugulosis, primariae 21–43, $1\text{--}6 \text{ mm}$ latae, ordinibus 1(–2). Caro $1\text{--}1.5 \text{ mm}$ crassa in pilei centro, ceraceo-cartilaginea sed fragilis. Odor nullus. Sporae $6.5\text{--}8.5(9.5) \times 5\text{--}7.5 \mu\text{m}$, subglobosae vel late lacrymiformes, e basidiis 2-sporigeris $\sim 9.5 \times 5\text{--}6 \mu\text{m}$, pallide violaceo-amyloideae. Basidia $27\text{--}35(40) \times 6\text{--}8 \mu\text{m}$; sterigmata (2–)4, $4\text{--}5 \mu\text{m}$ longa. Cheilocystidia $\sim 60 \times 8\text{--}12 \mu\text{m}$, clavata vel ventricosa, in acie fertili sparsa. Pleurocystidia nulla. Caulocystidia $\sim 50 \times 7\text{--}14 \mu\text{m}$, ut cheilocystidia. Pileocystidia nulla vel sparsa, vix evoluta $4\text{--}6 \mu\text{m}$ lata. Hyphae sarcodimiticae, fibulatae; cellules fusiformes $350\text{--}1200(2000) \times 7\text{--}40 \mu\text{m}$, tunicis vix incrassatis, in pileo cellulis $35\text{--}150 \times 15\text{--}40 \mu\text{m}$. Ad truncos putridos, ad ramulos, vel ad terram prope lignum putridissimum. Borneo, Ins. Solomonenses. Typus, Borneo, RSNB 8547; herb. Cantab.

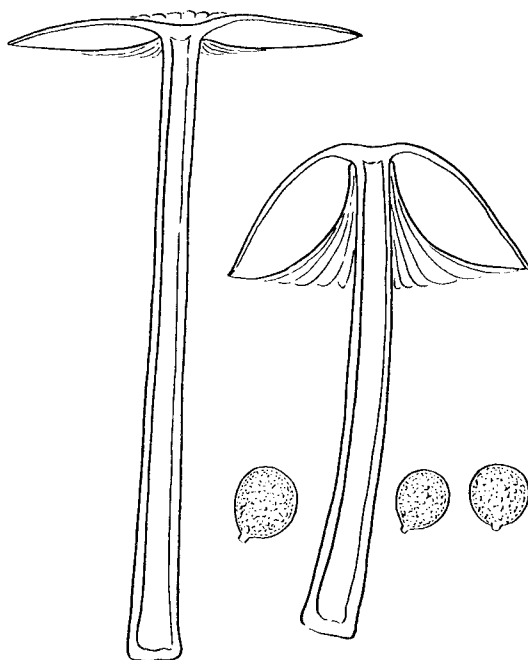


Fig. 6. *Trogia delicata*. Fruit-body, $\times 1\frac{1}{2}$. Spores, $\times 1000$.
Collection, RSNB 8547.

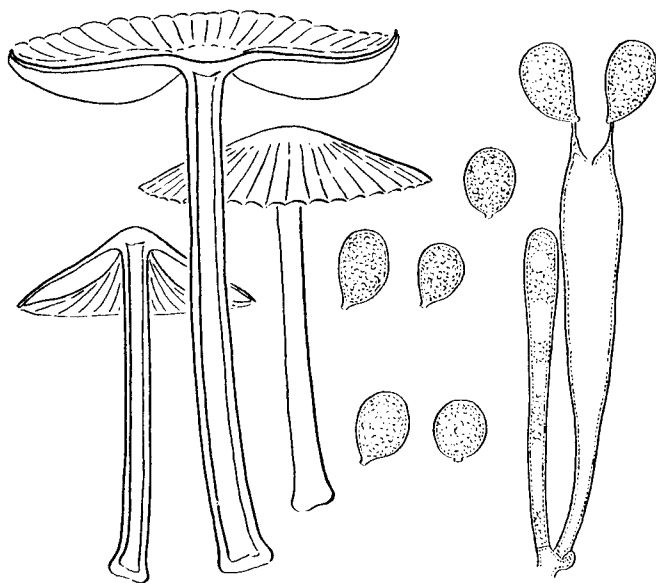


Fig. 7. *Trogia delicata*. Fruit-body, $\times 1$. Spores and basidium, $\times 1000$. Collection, RSS 1574; upper spores from RSS 740A.

Fruit-bodies white. Pileus 10–50 mm wide, conical then campanulate, finally plane or revolute, sometimes umbonate, smooth, hygrophanous, *sulcato-striate to the pellucid disc*. Stem 20–70 × 1–5 mm, the subbulbous base 2–6 mm wide, cartilaginous, brittle, finely scurfy pruinose or subpruinose only towards the apex, hollow. Gills adnexed or nearly free, *distant, emarginate*, not or rarely branched, interstices smooth or slightly veined transversely towards the margin of the pileus, 21–43 primaries 1–6 mm wide, 1(–2) ranks. Flesh 1–1.5 mm thick in the centre of the pileus, waxy-cartilaginous but brittle and fragile. Smell none.

On dead trunks and sticks in lowland and montane forest, also on earth by very rotten trunks. Borneo, Solomon Islands.

Spores 6.5–8.5(–9.5) × 5–7.5 μm , subglobose or widely lacrymiform, –9.5 × 5–6 μm on 2-spored basidia, pale violaceous amyloid. Basidia 27–35(–40) × 6–8 μm ; sterigmata (2–)4, 4–5 μm long. Cheilocystidia –60 × 8–12 μm , clavate to ventricose, very scattered along the fertile gill-edge or absent. Pleurocystidia none. Caulocystidia –50 × 7–14 μm , clavate to subventricose, collapsing, at the stem-apex mostly as sterile basidia. Pileocystidia none or as sparse subdivergent subventricose hyphal ends 4–6 μm wide. Hyphae sarcodimitic, clamped; fusiform cells 350–1200(–2000) × 7–40 μm , the walls not or slightly thickened; inflated hyphae of the pileus mostly with short cells 35–150 × 15–40 μm , scarcely pseudoparenchymatous; oleiferous hyphae narrow, occasional in the stem. Surface of pileus with appressed radiating hyphae 3–8 μm wide.

Collections: – Borneo, Mt. Kinabalu, Mesilau 1600 m alt., 9 April 1964, RSSNB 8204; 4 May 1964, RSSNB 8547. – Solomon Islands, San Cristobal, Warahito R., July 1965, RSS 711, 740 and 740A; Kolombangara, 26 Aug. 1965, RSS 1089; Guadalcanal, Popomanasiu 1800 m alt., 24 Oct. 1965, RSS 1574; Guadalcanal, low alt., Tsuva, 10 Nov. 1965, RSS 1795, 1795A.

The fruit-bodies of this species are solitary or merely 2–3 together. They appear as a white-spored *Coprinus* but they evidently last for several days. The Bornean specimens had subglobose spores and scattered cheilocystidia. Those from the Solomon Islands had either such spores (RSS 711, 740 and 740A) or distinctly ellipsoid spores which, in the case of the 2-spored basidia, were elongate pip-shaped. The Solomons' specimens lacked cheilocystidia but had better developed caulocystidia. *T. polyadelpha* appears to be closely allied in spite of its decurrent gills. *T. revoluta* connects *T. delicata* with more typical *Trogia*. Compare *Mycena dennisii* of Venezuela and *Corrugaria* (*Mycena* sect. *Radiatae* Singer 1975).

***Trogia diminutiva* sp. nov.**

Receptacula alba. Pileus 2–5 mm latus, saepe excentricus, convexus dein plano-umbilicatus, laevis substriatus. Stipes 2–8 × 0.5 mm, hyalinus laevis, basi abrupto mycelio tenui affixo. Lamellae decurrentes subconfertae pliciformes, marginem pilei versus evanescentes, primariae 12–18, –0.3 mm latae. Caro ceracea hygrophana. Odor fortis nitrosus. Sporae 3.5–4.3 × 2–2.3 μm , ellipsoideae inamyloideae. Basidia 17–20 × 4 μm ; sterigmata 2–4, 2.5–3 μm longa. Cheilocystidia 25–32 × 4–8 μm , ventricosa apice obtuso, sparsa vel nulla. Pleurocystidia nulla. Caulocystidia –16 × 3–6 μm , subclavata vel subventricose, sparsa. Pileocystidia nulla. Hyphae sarcodimiticae, fibulatae; cellulae fusiformes in stipite 400–1500 × 7–18 μm , in pileo –30 μm latae. Ad lignum putridum, saepe dense gregaria, in silva. Ins. Solomonenses, Guadalcanal, RSS 507; typus, herb. Cantab.

Fruit-bodies *white, with strong nitrous smell*. Pileus 2–5 mm wide, convex then plano-umbilicate, often excentric, smooth, substriate. Stem 2–8 × 0.5 mm, central or excentric, cylindric, smooth, hyaline, the abrupt base attached by a slight mycelium. Gills decurrent, rather crowded, *disappearing towards the margin of the pileus, fold-like*, 12–18 primaries c. 0.3 mm wide, or merely 5–9 slight folds in small fruit-bodies. Flesh thin, waxy-hygrophanous.

Gregarious, often densely, on rotten wood in the forest. Solomon Islands, Guadalcanal, San Cristobal.

Spores $3.5\text{--}4.3 \times 2\text{--}2.3 \mu\text{m}$, ellipsoid, not amyloid. Basidia $17\text{--}20 \times 4 \mu\text{m}$; sterigmata $2\text{--}4$, $2.5\text{--}3 \mu\text{m}$ long; no acrose basidioles. Cheilocystidia $25\text{--}37 \times 4\text{--}8 \mu\text{m}$, more or less ventricose with short obtuse apex, very scattered and absent from some fruit-bodies. Pleurocystidia none. Caulocystidia $16 \times 3\text{--}6 \mu\text{m}$, subclavate to subventricose, scattered. Hyphae sarcodimitic, clamped; fusiform cells in the stem $400\text{--}1500 \times 7\text{--}18 \mu\text{m}$, in the pileus $30 \mu\text{m}$ wide. Surface of pileus with radiating appressed hyphae, without cystidia.

That so small a fungus still carries the mark of *Trogia* is evidence of the reality of the genus. Presumably, it goes in *Hemimycena* for those who disregard hyphal structure, but it is not separable generically from *T. infundibuliformis*.

Collections: — Solomon Islands, Guadalcanal, Monitor Creek, 2 July 1965, RSS 507; San Cristobal, Warahito R., 23 July 1965, RSS 737.

Trogia endocystidiata sp. nov.

Figure 8

Receptacula cremeo-alba, lamellis primo flavidulis. Pileus $10\text{--}30 \text{ mm}$ latus, semper convexus, laevis opacus; margine paullo incurvato. Stipes $40 \times 1.5\text{--}3 \text{ mm}$, vel 5 mm applanatus, fistulosus cartilagineus, minute pruinosis. Lamellae sinuato-adnatae subconfertae, primariae $27\text{--}32$, $2\text{--}4 \text{ mm}$ latae, ordinibus $3\text{--}4$. Caro 2 mm crassa in pilei centro, ceracea firma, in stipite subtenax. Odor farinaceus, vix fortis. Sporae $7\text{--}10 \times 4.5\text{--}5.7 \mu\text{m}$, inamyloideae. Basidia $22\text{--}28$ (35 in interstitiis) $\times 6\text{--}8 \mu\text{m}$; sterigmata 4 , $4 \mu\text{m}$ longa. Cheilocystidia $48 \times 5\text{--}11 \mu\text{m}$, clavata vel ventricosa cum apice elongato $1.3\text{--}3$ (8) μm lato, primo ut acie sterili instructa dein basidis intercalatis. Pleurocystidia similia, immersa vel $10 \mu\text{m}$ projicientia, copiosa sed facile praetermissa. Caulocystidia $100 \times 3\text{--}7 \mu\text{m}$, cylindrica vel attenuata, apicem stipitis versus ut cheilocystidia. Pileocystidia vix evoluta. Endocystidia $35\text{--}80 \times 3\text{--}10$ (14) μm , lanceolata-ventricosa, basi saepe elongato $1\text{--}3 \mu\text{m}$ lato, apice saepe filiformi $1\text{--}2 \mu\text{m}$ lato, tenuiter tunicata, intus oleaginosae, copiosa in pilei stipitidque carne immersa, in lamellis sparsa. Hyphae sarcodimiticae fibulatae; cellulae fusiformes $250\text{--}700 \times 12\text{--}30 \mu\text{m}$, tunicis $1 \mu\text{m}$ crassis. Ad truncos putridos in silva montana. Borneo, Mt. Kinabalu, Mesilau 1400 m alt., 13 April 1964, RSNB 8269; herb. Cantab.

Fruit-bodies pale cream-white, the gills at first yellowish. Pileus $10\text{--}30 \text{ mm}$ wide, persistently convex, smooth, dry, opaque; margin at first slightly incurved. Stem $40 \times 1.5\text{--}3 \text{ mm}$, or flattened 5 mm wide, cartilaginous, hollow, minutely pruinose. Gills sinuato-adnate, rather crowded, $27\text{--}32$ primaries $2\text{--}4 \text{ mm}$ wide, $3\text{--}4$ ranks. Flesh 2 mm thick in the centre of the pileus, waxy-firm rather tough in the stem. Smell slight, mealy.

On rotten trunks in montane forest. Borneo, Mt. Kinabalu 1400 m alt.

Spores $7\text{--}10 \times 4.5\text{--}5.7 \mu\text{m}$, not amyloid. Basidia $22\text{--}28$ (35 in the gill interstices) $\times 6\text{--}8 \mu\text{m}$; sterigmata 4 , $4 \mu\text{m}$ long. Cheilocystidia $48 \times 5\text{--}11 \mu\text{m}$, clavate to ventricose with appendaged apex $1.3\text{--}3$ (8) μm wide at the subacute or obtuse tip, at first as a sterile gill-edge but the edge becoming partly fertile. Pleurocystidia similar, reaching the hymenial surface or projecting $10 \mu\text{m}$, hyaline, vacuolate, abundant or scattered, easily overlooked. Caulocystidia $100 \times 3\text{--}7 \mu\text{m}$, cylindric or tapered, or irregular in width, apex $2\text{--}5 \mu\text{m}$ wide, abundant as a disrupted palisade, becoming clavate like the cheilocystidia at the stem-apex. Endocystidia $35\text{--}80 \times 3\text{--}10$ (14) μm , lanceolate-ventricose, or fusiform with long narrow base $1\text{--}3 \mu\text{m}$ wide and tapered to the often filiform apex $1\text{--}2 \mu\text{m}$ wide, thin-walled with oleaginous contents, abundant throughout the tissue of pileus and stem, oriented in any direction, but longitudinal in the surface tissue of the stem, sparse in the subhymenial tissue of the gills, absent from the central tissue of the stem and from the gill-trama. Hyphae strongly sarcodimitic in the stem apparently monomitic in the pileus, clamped; fusiform cells in the stem $250\text{--}1700 \times 12\text{--}30 \mu\text{m}$, tapered, walls $1 \mu\text{m}$ thick, the narrow hyphae often with walls $0.5\text{--}1 \mu\text{m}$ thick; in the pileus with cells variously inflated $3\text{--}35 \mu\text{m}$ wide, densely

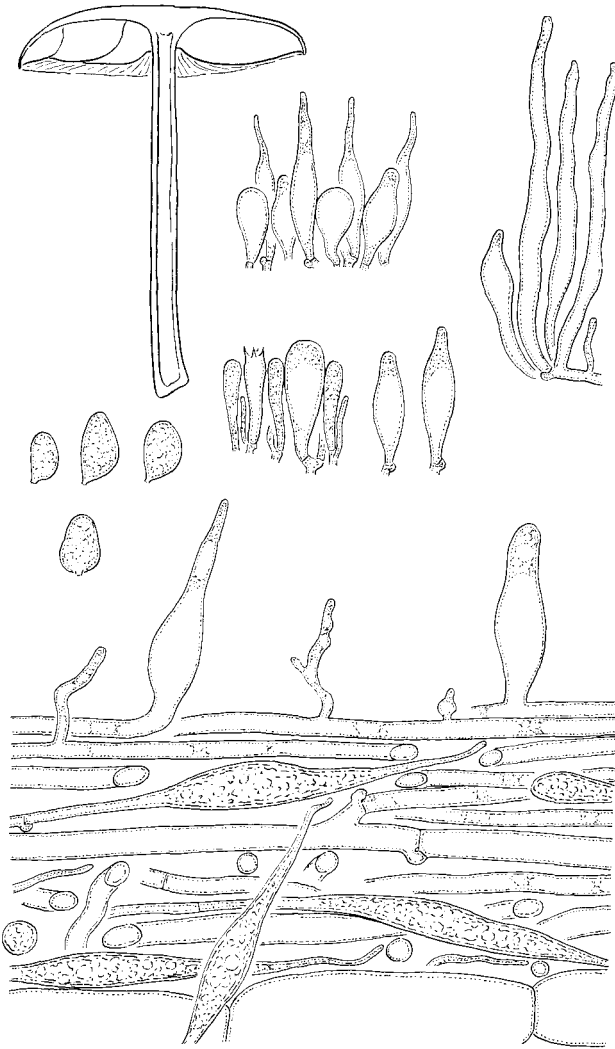


Fig. 8. *Trogia endocystidiata*. Fruit-body, $\times 1\frac{1}{2}$. Spores and surface of pileus (below), $\times 1000$. Cheilocystidia (upper centre), caulocystidia (upper right), basidia and pleurocystidia, $\times 500$. Collection, RSNB 8269.

interwoven, without a pseudoparenchymatous hypodermis; in the gill-trama 5–15 μm wide, rather long and fusiform. Surface of pileus with narrow, 2–4(–5) μm wide, appressed radiating hyphae rather loosely arranged in a layer c. 40 μm thick in the centre of the pileus with a few scattered pileocystidia as the cheilocystidia, and more or less permeated by endocystidia, sometimes developing narrow processes – 25 $\times$ 1–2 μm from the superficial hyphae; marginal cells 6–9 μm wide, clavate.

This species of collybioid form introduces the remarkable feature of immersed cystidia with oleaginous contents. The gill-edge is at first sterile but becomes invaded with basidia and shows, thus, how difficult it can be to use this feature in classification. Compare *T. limonospora* and *T. limonosporoides*.

Trogia exigua sp. nov.

Receptacula alba. Pileus 15–30 mm latus, convexo-planus, centro depresso, laevis striatus. Stipes –15 × 0.5–1.5 mm, basi abrupto, puberulus. Lamellae adnato-decurrentes distantae crassiusculae, primariae 8–11, –1 mm latae, dein 3–4 mm, ordinibus 1–2(–3), marginem pilei versus saepe pliciformes, haud venosae. Odor nullus. Sporae 4.7–6.3 × 4.5–5.3 µm, subglobose inamyloideae. Basidia 28–36 × 6–7 µm; sterigmata 4, 4.5–5 µm longa. Cheilocystidia –55 × 4–9 µm, subclavata vel subventricosa, plus minus in acie sterili instructa. Pleurocystidia nulla. Caulocystidia ut cheilocystidia, copiosa; pileocystidia similia sparsa. Hyphae sarcodimiticae fibulatae; cellulae fusiformes –700 × 22 µm, in pileo –28 µm. Ad lignum emortuum in silva montana, subcaespitosa. Borneo, Ins. Solomonenses. Typus, Borneo, RSNB 1599; herb. Cantab.

Fruit bodies white. Pileus 15–30 mm wide, convexo-plane, centre depressed, smooth, striate, slightly sulcato-striate in age. Stem –15 × 0.5–1.5 mm, cylindric, puberulous, base abrupt. Gills adnato-decurrent distant, rather thick, 8–11 primaries –1 mm, then widening 2–4 mm, 1–2(–3) ranks, often fold-like towards the margin of the pileus, the interstices smooth. Flesh thin. Smell none.

On rotten logs in montane forest, subcaespitose. Borneo, Solomon Islands.

Spores 4.7–6.3 × 4.5–5.3 µm, subglobose, not amyloid. Basidia 26–36 × 6–7 µm; sterigmata 4, 4.5–5 µm long. Cheilocystidia –55 × 4–9 µm, subclavate to subventricose, with short or somewhat prolonged obtuse apex, more or less as a sterile gill-edge. Pleurocystidia none. Caulocystidia as the cheilocystidia, abundant. Pileocystidia similar, sparse. Hyphae sarcodimitic, clamped; fusiform cells in the stem –700 × 22 µm, –28 µm in the pileus. Surface of pileus with appressed radiating narrow hyphae and scattered pileocystidia, without a pseudoparenchymatous hypodermis.

Collections: – Borneo, Mt. Kinabalu, east ridge, 1000 m alt., 1 Aug. 1961, RSNB 1599. – Solomon Islands, Kolombangara 600 m alt., 7 Sept. 1965, RSS 1323.

Compare *T. omphalinoides* with pale amyloid spores and *T. raphanolens* with ellipsoid spores.

T. fulvochracea Corner

Mon. Canth. Fungi (1966) 207, f. 103–106, pl. 4A.

Pileus 1–5 cm wide, conical then plane, *acutely umbonate*, smooth, subviscid, varying subpruinose or minutely appressed squamulose, striate to the centre, *bright fawn, fulvous- or cinnamon-ochraceous*; margin slightly incurved at first, then as a narrow piloso-dentate fringe. Stem 20–60 × 1–5 mm, cylindric, hollow, cartilaginous, base abrupt and slightly swollen, minutely pruinose, *white*, becoming sordid subochraceous downwards. Gills adnexed, almost free, becoming sinuate to adnate, *crowded*, thin, not veined in the interstices, 23–40 primaries 3–5 mm wide, merely 15–16, –1 mm wide, in small specimens, 3–4(–5) ranks, *white to pallid concolorous* with the pileus but white towards the edge and near the margin of the pileus. Flesh 1–3 mm thick in the centre of the pileus, waxy-firm, hygrophanous, more or less concolorous. Smell none.

On dead wood and branches in montane forest. Malaya, Borneo, Brazil.

Spores 7–9.5 × 4.5–6 µm, inamyloid. Basidia 27–32 × 6.5–8 µm; sterigmata 4, 5 µm long. Cheilocystidia 30–65 × 9–16 µm, subventricose with obtuse apex 5–8 µm wide, as a sterile gill-edge. Pleurocystidia –110 × 18 µm, as the cheilocystidia, the base deeply immersed in the gill-trama. Hymenium not thickening; subhymenium c. 20 µm thick, with interwoven hyphae 2–3 µm wide. Caulocystidia as the cheilocystidia or subcylindric to subclavate, the wall often slightly thickened. Pileocystidia –70 × 9–15 µm, subcylindric to subventricose, often reduced to lobules from the superficial hyphae, obtuse, thin-walled, hyaline. Hyphae clamped; fusiform cells –1500 × 10–30 µm, the wall slightly thickened; oleiferous hyphae 4–7 µm wide, sparse; hyphae of the stem entirely slightly agglutinated. Surface of the pileus with a superficial layer,

20–30 μm thick in the centre of the pileus, composed of narrow colourless appressed radiating hyphae, and a pseudoparenchymatous hypodermis c. 100 μm thick in the centre of the pileus. Colour caused by the brownish ochraceous sap in the radiating hyphae of the flesh of the pileus.

Key to the species on macroscopic features

1. Pileus smooth to minutely squamulose, fulvous or cinnamon ochraceous. Spores $7\text{--}9.5 \times 4.5\text{--}6 \mu\text{m}$ v. *fulvochracea*
1. Pileus radially rugulose.
 2. Pileus fawn ochraceous. Spores $7\text{--}8 \times 5\text{--}6.5 \mu\text{m}$. Solomon Is. v. *solomonensis*
 2. Pileus fuscous.
 3. Pileus fuscous grey. Stem white pruinose. Spores $7\text{--}9 \times 4.5\text{--}6 \mu\text{m}$. Borneo v. *fuscogrisea*
 3. Pileus fuscous ochraceous with darker fuscous umbo. Stem brownish pruinose in the lower part. Spores $8\text{--}10 \times 4.5\text{--}5.5 \mu\text{m}$. Brazil v. *brasiliensis*

var. *fulvochracea*

As above. Malaya, Pahang, Cameron Highlands. — Borneo, Mt. Kinabalu 1300–1800 m alt.

var. *brasiliensis* var. nov.

Pileus 20–30 mm latus, fusco-ochraceus, umbone fusco-obscuro, rugulosus, ex integro puberulus. **Stipes** 30–35 $\times$ 1.5 mm, albus, basim versus brunneo-pruinosis. **Lamellae** ventricosae emarginatae, vix confertae, primariae 24–27, –4 mm latae, ordinibus 3, albae. **Sporae** 8–10 $\times$ 4.5–5.5 μm . **Basidia** 35–45 $\times$ 7.5–9 μm , guttulate; sterigmata 4. **Cheilocystidia** –55 $\times$ 8–11 μm , subclavata. **Pleurocystidia** 65–130 $\times$ 8–14 μm , cylindrica vel subfusiformia, vix ventricosa, apice obtuso 5–8 μm lato, intus guttulis sparsis. **Caulocystidia** –55 $\times$ 8–15 μm , subcylindrica vel subclavata, basim stipitis versus succo brunneo. **Pileocystidia** –50 $\times$ 8–15 μm , ut caulocystidia sed sine succo brunneo, curvatim ascendentia. **Pileus** strato pseudoparenchymatice vix evoluto. Ad lignum emortuum in silva. Brazil, Estado do Rio, Niteroi, 21 Sept. 1947, Corner s.n.; herb. Cantab.

This agrees essentially with the Asian species, and differs merely in the colour and slightly longer spores, but the colour of the pileus resides in the slight pseudoparenchyma of the pileus and in the narrow superficial hyphae. Another collection which I made in Brazil (Mato Grosso, 27 Jan. 1968) agreed with var. *fulvochracea* except that the pileocystidia were up to 180 μm long and there were, besides the pleurocystidia, numerous more or less immersed and fusiform cystidia –55 $\times$ 9 μm . Unfortunately, this collection was immature without spores.

var. *fuscogrisea* Corner

Mon. Canth. Fungi (1966) 209.

Pileus fuscous grey, radially rugulose. Gills greyish white. Stem white. Cheilocystidia mostly elongate clavate. Pileocystidia sparse. Borneo, Mt. Kinabalu, 1200 m alt.

var. *solomonensis* var. nov.

Figure 9

Pileus e centro marginem versus radiatim rugulosus. **Stipes** albido-pruinosis. **Lamellae** subdistantes, primariae 18–19, vel confertae, primariae 22–26, –2 mm latae. **Sporae** 7–8 $\times$ 5–6.5 μm , late ellipsoideae. **Basidia** 32–40 $\times$ 7–8 μm ; sterigmata 4. **Cheilocystidia** 50–90 $\times$ 7–13 μm , anguste ventricosa, apice alongato 3–7 μm lato. **Pleurocystidia** 45–155 $\times$ 7–16 μm , ut cheilocystidia, intus saepe oleaginoso (haud guttulate). **Caulocystidia** 25–55 $\times$ 7–12 μm , clavata vel plerumque ventricosa. **Pileocystidia** ut cheilocystidia, sparsa. **Insulae** Solomonenses, Kolombangara 1200 m alt., 3–4 Sept. 1965, RSS 1215, 1216, 1259 (typus); herb. Cantab.

This differs from var. *fulvochracea* in the rugulose pileus, the rounder spores and the longer cheilocystidia with the form of the pleurocystidia. A fourth and, unfortu-

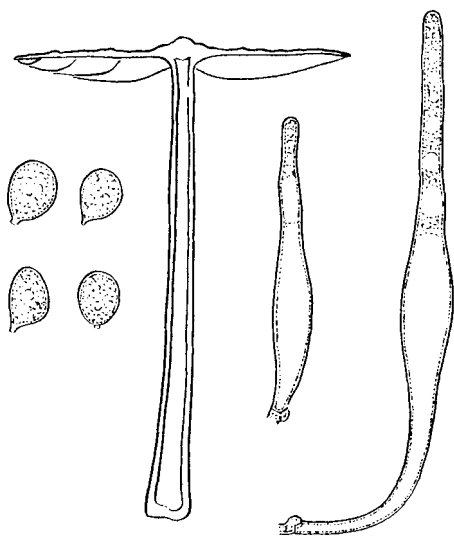


Fig. 9. *Trogia fulvocracea* var. *solomonensis*.
Fruit-body $\times 1\frac{1}{2}$. Spores, $\times 1000$.
Cheilocystidium and pleurocystidium
(right), $\times 500$. Collection, RSS 1259.

nately, sterile collection from the Solomons (RSS 823, San Cristobal, Warahito R., 27 Aug. 1965) differed in growing on the ground at low altitude. It had multiguttulate basidia and pleurocystidia (as in var. *brasiliensis*), clavate cheilocystidia, very abundant pileocystidia almost in a palisade over the centre of the pileus, and, yet, no pseudo-parenchymatous hypodermis to the pileus.

Evidently, *T. fulvocracea* is a widespread species, probably pantropical, with many minor variations. Compare *T. aurantiphylla* with globose spores.

***T. furcata* Corner**

Mon. Canth. Fungi (1966) 210, f. 107, 108.

Pileus —25 mm wide, *infundibuliform*, smooth or subpruinose, inoderm, *fuscous*, margin finally undulate. Stem 8–14 $\times$ 1.5–2.5 mm, hollow, subpruinose, base abrupt, *fuscous*. Gills decurrent, *very narrow, subdistant*, often 1–3 times forked, primaries c. 20, 0.5 mm wide, in 2–3 irregular ranks, *whitish*. Flesh thin, waxy-soft.

On rotten wood in the forest, gregarious. Brunei (Ulu Belalong).

Spores 8–10.5 $\times$ 6.5–8.5 μm , or —13 $\times$ 10 μm (? from 2- and 3-spored basidia), broadly ellipsoid, slightly violaceous amyloid. Basidia 35–46 $\times$ 7–8.5 μm ; sterigmata 4, 5–7 μm long, or 1–3 and 7–10 μm long. Cystidia sparse on gill-edge and surface, like sterile basidia with a sterigma-like process 7–16 μm long; gill-edge fertile. Caulocystidia —40 $\times$ 4–12 μm , subcylindric, clavate or ventricose, as a sterile hymenium. Pileocystidia similar, sparse. Hyphae clamped; fusiform cells very long, —20 μm wide, wall —0.5 μm thick; narrow hyphae 2.5–5 μm wide, walls —1 μm thick.

This quaint little fungus suggests *T. aphylla* with gills, but it has the large spores of *T. cystidiata*. Its alliance may rather be with *T. calyculus*.

***Trogia fusciceps* sp. nov.**

Pileus —20 mm latus, *convexus dein infundibuliformis*, *fuscogriseus*, *inodermeus*, *centro furfuraceo-pruinosis*. Stipes —50 $\times$ 3–3.5 mm, *cylindricus fistulosus*, *pallide albus*, *ex integro fuscopruiinosus*, *basi subcyaneo strigoso*. Lamellae *decurrentes*, *saepe furcatae*, *saepe ad latera subreticulatae*, *primariae* 25–30,

1.2–2.5 mm latae, ordinibus 2–3, albae. Caro concolor, ceraceo-firma, in stipite cartilaginea. Odor nullus. Sporae $4.5\text{--}6.5 \times 3.7\text{--}4.5 \mu\text{m}$, ($-7 \times 5 \mu\text{m}$, ? monosporae), late ellipsoideae, inamyloideae. Basidia $32\text{--}45 \times 5\text{--}6.5 \mu\text{m}$, afibulatae; sterigmata 2(–3), 8–10 μm longa erecta. Cheilocystidia $28\text{--}42 \times 5\text{--}10 \mu\text{m}$, cylindrica vel clavata, raro subventricosa, vix prominentia, haud (vel primo ?) in acie sterili instructa. Pleurocystidia nulla. Hymenium haud incrassatum. Caulocystidia ut cheilocystidia, succo fusco-umbrino praedita. Pileocystidia $40\text{--}130 \times 8\text{--}27 \mu\text{m}$, clavata, pyriformia vel subglobosa, in centro pilei dense instructa, marginem versus appressa sparsa, succo fusco-umbrino praedita. Hyphae sarcodimiticae afibulatae; cellulae fusiformes $-1500 \times 8\text{--}30 \mu\text{m}$, tenuiter tunicatae. Superficies pilei haud pseudoparenchymatica. Ad radicem emortuam in silva, caespitosa. Borneo, Mt. Kinabalu, Mesilau 1700 m alt., 31 March 1964, RSNB 8004; herb. Cantab.

This fungus resembles in shape *T. cyanea* and *T. subviridis*, but it is cyaneous only at the base of the stem, and it has smaller spores on, mainly, 2-spored basidia without clamps. It has the large pileocystidia of *T. subviridis*, but lacks its pleurocystidia. It may be a 2-spored state of *T. subglobospora* comparable with var. *bispora* of *T. ceraceomollis*. I describe it because it is necessary to record for future consideration all findings of this intricate group.

Trogia fuscoalba sp. nov.

Figure 10

Pileus 10–50 mm latus, convexus dein concavus, umbone parvo vel papilliformi acuto, laevis, marginem versus striatus, pallide fusco-umbrinus vel sublividus, umbone brunneo. Stipes 30–80 $\times$ 1–3 mm, basi abrupto subtumido 1.5–4 mm lato, fistulosus pruinosis albus. Lamellae decurrentes angustae confertae hispidulae, primariae 20–40, 0.5–2 mm latae, ordinibus 3–4, aliquando hinc inde conjunctae, albae. Caro tenuis hygrophana ceracea firma. Odor nullus. Sporae $6\text{--}8\text{--}(9) \times 4.5\text{--}5.5 \mu\text{m}$, vel $7.5\text{--}9 \times 5.5\text{--}6.5 \mu\text{m}$ (basidia 2-sporigera), inamyloideae. Basidia $27\text{--}30 \times 5.5\text{--}6.5 \mu\text{m}$; sterigmata 4, 3 μm longa, vel 2, 6–7 μm longa. Cheilocystidia $-110 \times 6\text{--}11 \mu\text{m}$, ventricosa, apicibus obtusis $-45 \times 4\text{--}8 \mu\text{m}$ elongatis, intus granuloso-guttulata, in speciminibus Malayanis plerumque clavata, ut acie sterili instructa. Pleurocystidia ut cheilocystidia, 9–15 μ lata, $-65 \mu\text{m}$ projicientia, tunica haud vel paulo incrassata. Caulocystidia $-70 \times 10\text{--}16 \mu\text{m}$, clavata vel ventricosa sine apice elongata, primo intus granuloso-guttulata, tunica vix incrassata. Pileocystidia ut cheilocystidia sparsa vel nulla. Hyphae sarcodimiticae, fibulatae vel afibulatae (basidis 2-sporigeris); cellulae fusiformes $-1800 \times 7\text{--}27 \mu\text{m}$; oleiferae angustae sparsae. Pileus hypodermate pseudoparenchymatico plus minus bene instructo. Ad ramulos dejectos in silva. Malaya, Ins. Solomonenses. Typus, Ins. Solomonenses RSS 508A; herb. Cantab.

Pileus 10–50 mm wide, convex then concave, with a small or acutely papilliform umbo, smooth, striate towards the margin, pale fuscous umber to fuscous livid with brownish umbo. Stem 30–80 $\times$ 1–3 mm, 1.5–4 mm wide at the abrupt and slightly swollen base, cylindric, hollow, pruinose, white. Gills decurrent, often rather deeply, narrow, crowded, minutely hispid, sometimes anastomosed in places, 20–40 primaries 0.5–2 mm wide, 3–4 ranks, white. Flesh thin, hygrophanous, waxy-firm, pliant. Smell none.

On sticks in the forest, lowland and montane. Malaya, Solomon Islands.

Spores $6\text{--}8\text{--}(9) \times 4.5\text{--}5.5 \mu\text{m}$, or $7.5\text{--}9 \times 5.5\text{--}6.5 \mu\text{m}$ on 2-spored basidia, not amyloid. Basidia $27\text{--}30 \times 5.5\text{--}6.5 \mu\text{m}$; sterigmata 4, 3 μm long, or 2, 6–7 μm long. Cheilocystidia $-110 \times 6\text{--}11 \mu\text{m}$, ventricose with an obtuse appendage 4–8 μm wide at the tip, projecting $-45 \mu\text{m}$, contents at first granular-guttulate, forming a sterile edge to the gill; in Malayan collections mostly clavate, $-20 \mu\text{m}$ wide. Pleurocystidia similar, 9–15 μm wide, projecting $-65 \mu\text{m}$, with the obtuse apex 3–8 μm wide, varying subclavate $-9 \mu\text{m}$ wide, the wall thin or slightly thickened, at first with granular-guttulate contents, colourless. Caulocystidia $-70 \times 10\text{--}16 \mu\text{m}$, clavate to subventricose, not appendaged, at first finely granular-guttulate then vacuolate, with slightly thickened colourless wall, often in tufts. Pileocystidia as the cheilocystidia, very scattered, often rudimentary or almost none. Hyphae sarcodimitic, clamped or without clamps (2-spored fruit-bodies); fusiform cells $-1800 \times 7\text{--}27 \mu\text{m}$; oleiferous hyphae narrow, few. Pileus with a more or less well developed pseudoparenchymatous hypodermis 2–3 cells thick

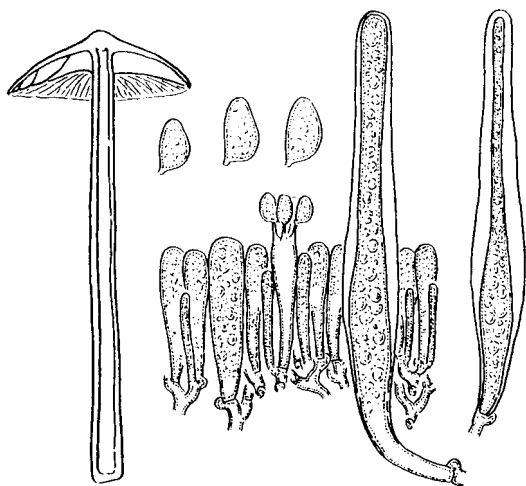


Fig. 10. *Trogia fuscoalba* var. *metuloidea*. Fruit-body, $\times 1$. Spores, $\times 1000$. Basidia and pleurocystidia, $\times 500$. Collection, RSNB 5620.

(feebly developed in the 2-spored RSS 508), with a superficial layer 10–15 μm thick of narrow radiating hyphae 3–7 μm wide; marginal cells 7–11 μm wide, clavate. Colour in the sap of the pseudoparenchymatous hyphae and those immediately underlying.

Collections: — Malaya, Pahang, Cameron Highlands 1700 m alt., 2 Oct. 1966. — Solomon Islands, Guadalcanal, Mt. Gallego, July 1965, RSS 508 (2-spored), 508A, 508B; Tsuva, Nov. 1965, RSS 1745.

var. *metuloidea* var. nov.

Different pleurocystidiis tunicis 2–5 μm valde incrassatis, guttulatis. Ad truncos delapsos. Borneo, Mt. Kinabalu, 1600 m alt., Feb. 1964, RSNB 5620; herb. Cantab.

Pileus —25 mm wide, fuscous brown with pallid white umbo. Stem white or sub-fuscous pruinose. Gills with 20–24 primaries 1.5–3 mm wide, slightly reticulate at the base towards the margin of the pileus, pale fawn grey, whitish towards the edge. Spores 7–9.5 $\times$ 4–5.5 μm . Basidia 26–30 $\times$ 6.5–7.5 μm ; sterigmata 4, 4 μm long. Cheilocystidia 40–100 $\times$ 8–16 μm , with thin or slightly thickened wall, internally with opalescent oil-droplets, as a wide sterile gill-edge. Pleurocystidia 35–120 $\times$ 10–16 μm , the longer projecting —75 μm , narrowly ventricose with obtuse apex 8–11 μm wide, the wall 2–5 μm thick in the middle part of the cystidium, the shorter pleurocystidia more or less immersed in the hymenium and clavate to subcylindric, with abundant oil-droplets. Caulocystidia —80 $\times$ 10–16 μm , as the cheilocystidia but more ventricose, scattered or clustered. Pileocystidia as the caulocystidia, sparse to fairly numerous. Fusiform cells —30 μm wide, wall —2 μm thick. Surface of pileus with narrow hyphae 3–5(–6) μm wide in a thin layer, collapsing in old pilei and often with secondarily septate ends; marginal cells of the pileus 7–15 μm wide, clavate.

Collections: — Borneo, Mt. Kinabalu, Bembangan R., 3 March 1964, RSNB 5620; Mesilau, 4 Feb. 1964, Corner s.n.

This species has much in common with both *T. fulvochracea* and *T. lilaceogrisea*, having the guttulate cystidia so evident in the latter. It is close, also, to *T. fuscolutea* with yellow stem and gill-edge, but with longer and non-guttulate pleurocystidia. The collection RSS 508 may be a 2-spored state of var. *metuloidea* because the pleuro-

cystidia were distinctly thick-walled. The species seems close to the South American *Hydropus funebris* (Speg.) Singer with spores 5.5–9.5 μm wide (Persoonia 4, 1967, 364 footnote).

***Trogia fuscolutea* sp. nov.**

Figure 11

Pileus 10–42 mm latus, convexus dein planus, umbone acuto, radiatim rugulosus, citrinoflavus, centro saepe fusco, fibrillis fuscis innatis. Stipes 20–80 $\times$ 1.5–4 mm, ad basim 2–6 mm, fistulosus, pruinosis citrinoflavus. Lamellae adnatae confertae, saepe angustae, interstitiis haud vel vix venosis, primariae 18–30, 1–4 mm latae, ordinibus 3–4, albae, acie flava. Sporae 7–9 $\times$ 5–6 μm , inamyloideae. Basidia 34–38 $\times$ 7–8 μm ; sterigmata 4, 4–5 μm longa. Cheilocystidia ut pleurocystidia breviora, acie sterili instructa. Pleurocystidia – 200 $\times$ 9–15 μm , fusiformia ventricosa, – 100 μm projicientia, apicibus plus minus clavata 10–17 μm latis, tunica haud vel paullo incrassatis, haud guttulata, copiosa, etiam clavata in hymenio immersa. Caulocystidia – 110 $\times$ 8–22 μm , subcylindrica, clavata vel subventricosa. Pileocystidia – 50 $\times$ 5–12 μm , subcylindrica vel subventricosa. Hyphae sarcodimiticae fibulatae; cellulae fusiformes – 2500 $\times$ 27 μm . Ad ramulos dejectos in silva. Ins. Solomonenses. Typus, San Cristobal, RSS 752A; herb. Cantab.

Pileus 10–42 mm wide, convex to plane, *acutely umbonate*, *rugulose* round the umbo or almost to the margin, *lemon yellow*, *often fuscous in the centre*, with fine innate fuscous streaks. Stem 20–80 $\times$ 1.5–4 mm, 2–6 mm at the abrupt base, cartilaginous, hollow, *lemon yellow*, *finely yellow pruinose*. Gills adnate, crowded, often narrow, not or scarcely veined at the base, 18–30 primaries 1–4 mm wide, 3–4 ranks, *pallid white with yellow edge*. Flesh thin, waxy-horny. Smell none.

On fallen twigs in the forest. Solomon Islands.

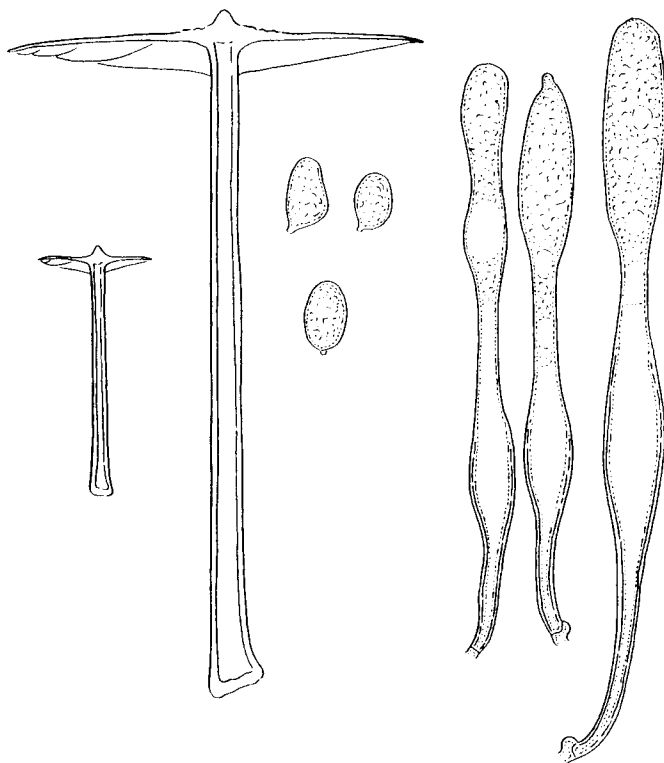


Fig. 11. *Trogia fuscolutea*. Fruit-body, $\times 1\frac{1}{2}$. Spores, $\times 1000$. Pleurocystidia, $\times 500$. Collection, RSS 752A.

Spores $7-9 \times 5-6 \mu\text{m}$, not amyloid. Basidia $34-38 \times 7-8 \mu\text{m}$; sterigmata 4, $4-5 \mu\text{m}$ long. Cheilocystidia as the pleurocystidia but not so long, as a sterile gill-edge. Pleurocystidia $-200 \times 9-15 \mu\text{m}$, fusiform ventricose, projecting $-100 \mu\text{m}$ with a more or less clavate, obtuse or subacute, apex $10-17 \mu\text{m}$ wide, thin-walled distally, the immersed part with slightly thickened wall, very abundant, with transitions to clavate cystidia just reaching the surface of the hymenium, not guttulate. Caulocystidia $-100 \times 8-22 \mu\text{m}$, clavate, subcylindric to subventricose, obtuse, not appendaged, thin-walled, vacuolate, abundant. Pileocystidia $-50 \times 5-12 \mu\text{m}$, as out-turned ends of radiating hyphae or as lateral processes, subcylindric to subventricose, obtuse, very scattered over the limb, more numerous in the centre but not as a compact layer. Hyphae sarcodimitic, clamped; fusiform cells $-2500 \times 27 \mu\text{m}$, walls slightly thickened; shorter in the pileus and forming a compact pseudoparenchymatous hypodermis overlain by a discontinuous layer of narrow hyphae $3-8 \mu\text{m}$ wide; marginal cells of the pileus clavate, $7-14 \mu\text{m}$ wide. Fuscous colour of the pileus centre caused by pale brown sap of the hyphae below the pseudoparenchyma.

Collections: — Solomon Islands, San Cristobal, Warahito R., July 1965, RSS 752, 752A, 752B; also seen on Guadalcanal, Kolombangara and Santa Ysabel.

var. **minor** var. nov.

Differt pileo -10 mm lato, conico-convexo, subumbonato, haud ruguloso, pallide cervinoflavo; stipite $-30 \times 1 \text{ mm}$, flavidulo; lamellis uncinato-adnexis albis vel subincarnatis; sporis angustioribus, $7-9 \times 4.3-5 \mu\text{m}$; cystidiis brevioribus $-75 \times 8-14 \mu\text{m}$. Ad ramum delapsus inter muscos in silva montana. Borneo, Mt. Kinabalu, fl. Bembangan 1800 m alt. , 25 Feb. 1964, RSNB 5489; herb. Cantab.

This was a common species in the Solomon Islands, relating *T. fulvochracea* with *T. fuscoalba*. Compare, also, *T. aurantiphylla*. I describe var. *minor* for convenience of record; it needs more collections to ascertain its position.

T. fuscomellea Corner

Mon. Canth. Fungi (1966) 212, f. 109, 110.

Pileus $3-6 \text{ mm}$ wide, convex to plane and concave, mostly with a small umbo, striate towards the margin, *pale sordid honey-colour or ochraceous isabelline, centre fuscous* and minutely fibrillose. Stem $5-10 \times 0.5-0.7 \text{ mm}$, base abrupt and byssoid, hollow, pruinoso-puberulous, *pale honey-colour to pale yellowish isabelline*. Gills shortly decurrent, scarcely crowded, narrow, often once furcate, $15-19$ primaries 0.5 mm wide, $2-3$ ranks, *pallid white*. Flesh $0.2-0.5 \text{ mm}$ thick in the centre of the pileus, very thin, waxy-soft, hygrophanous, concolorous. Smell none.

On a rotting trunk of *Shorea* (Dipterocarpaceae) in the forest. Singapore, Bukit Timah.

Spores $4-5 \times 3-3.5 \mu\text{m}$, pruiniform, not amyloid. Basidia $18-26 \times 5-6 \mu\text{m}$; sterigmata 4, $3-3.5 \mu\text{m}$ long. Cheilocystidia $25-45 \times 8-13 \mu\text{m}$, subcylindric, subclavate to subventricose, some with a slender appendage $-10 \times 2-3 \mu\text{m}$, numerous near the stem but absent near the margin of the pileus, gill-edge fertile. Pleurocystidia none. Caulocystidia $-40 \times 5-10 \mu\text{m}$, subcylindric to subventricose with a subcapitate apex $2-6 \mu\text{m}$ wide, some with pale umber sap. Pileocystidia similar but sparse, with umber sap. Hyphae clamped; fusiform cells $200-700 \times 10-30 \mu\text{m}$, walls $-0.5 \mu\text{m}$ thick, $70-250 \mu\text{m}$ long in the gills; oleiferous hyphae absent. Pileus without a pseudoparenchymatous hypodermis.

This species comes in the alliance of *T. anthidepas* and *T. mellea*, and is distinguished by the very small size of the fruit-body, the white gills, and the smaller spores. The small size must be characteristic because hundreds of fruit-bodies grew along the large fallen trunk. The yellow colour resides in the internal hyphae but I could not decide if it was in the walls or the cytoplasm.

T. hispidula Corner

Mon. Canth. Fungi (1966) 214, f. 94a, 111, 112, pl. 51.

Pileus 10–28 mm wide, conical then convex to plane or concave, often subumbonate, *puberulous*, striate towards the margin, *at first fuscous umber to almost black, on expansion fuscous ochraceous*; margin slightly incurved at first, *puberulous*. Stem 10–50 × 1–3 mm, attenuate upwards, hollow, waxy-tough, *white puberulous, white*, or slightly fuliginous pruinose. Gills nearly free, adnexed to adnate, rather crowded, not veined, cartilaginous, *hispidulous*, 12–24 primaries 2–4 mm wide, 3–5 ranks, *fuscous umber then white* at maturity. Flesh 1 mm thick in the centre of the pileus, waxy-soft, in stem and gills cartilaginous to almost toughly gelatinous, hygrophanous, concolorous, the pileus pelliculose. Smell none.

On dead wood in montane forest. Malaya (Pahang, Cameron Highlands), Borneo (Mt. Kinabalu).

Spores 6–8 × 4–5.5 µm, not amyloid. Basidia 22–30 × 6–8 µm; sterigmata (2–)4, 4 µm long. Cheilocystidia 50–150 × 13–25 µm, cylindric to subclavate, the obtuse apex 15–27 µm wide, as a sterile gill-edge. Pleurocystidia similar but somewhat ventricose, the obtuse apex 7–15 µm wide, copious. Caulocystidia and pileocystidia – 250 × 25–45 µm, the obtuse apex 15–33 µm wide, subcylindric to subconic, the subventricose base set with short supporting hyphal ends – 30 × 3–10 µm, wall slightly thickened, with densely oleaginous cytoplasm at the apex. Hyphae clamped; fusiform cells – 2000 × 10–25 µm in the stem, – 40 µm wide in the pileus, walls – 1.5 µm thick and subgelatinous; oleiferous hyphae 3–6 µm wide, few. Surface of pileus with radiating hyphae 3–7 µm wide, with submucilaginous walls, forming the colourless pellicle 20–30 µm thick in the centre of the pileus; hypodermis pseudoparenchymatous, 150–200 µm thick in the centre of the pileus, the cells 30–120 × 15–50 µm, walls – 1.5 µm thick and submucilaginous, with umber cell-sap; narrow hyphae internal in the pileus also with umber sap.

var. bispora Corner

Mon. Canth. Fungi (1966) 216, f. 88, 113, 114, pl. 3B.

Spores 7–10 × 4.5–6 µm. Basidia 23–30 × 6–8 µm; sterigmata 2, 4 µm long. Singapore.

Among the species with fuscous brown pileus this is distinguished not only by the non-decurrent gills but by the minutely hispidulous surface to all parts of the fruit-body, caused by the cystidia which are the largest in the genus. It is related with *T. fulvochracea*.

In the primordial state of the fruit-body, stem and pileus are covered with a palisade of colourless, clavate or subventricose, cells – 50 × 7–15 µm, as a sterile hymenium. Some of these enlarge into the long mature cystidia which do not form a palisade. As the inner tissues inflate, so spaces appear in the original palisade and new elements are added. Finally, on full expansion, the original palisades are disrupted and the short clavate cells collapse, though it seems that the narrow superficial hyphae continue to produce more throughout the life of the fruit-body. The original structure can be seen at the margin of the pileus.

T. holochlora (Berk. et Br.) Corner

Mon. Canth. Fungi (1966) 218.

Gerronema holochlora (Berk. et Br.) Pegler, Kew Bull. Add. Ser. 6 (1977) 85; Add. Ser. XII (1986) 85.

T. rubida (Berk. et Br.) Corner, Mon. Canth. Fungi (1966) 233.

This species is redescribed by Pegler who gives the spores as $6.5\text{--}8.5 \times 4.5\text{--}5.7 \mu\text{m}$ and inamyloid. It is remarkable for the reddening of the tissues on drying and on treatment with dilute alkali. It occurs in East Africa and Ceylon which suggests, as I suspect in many species of *Trogia*, that the mycelium grows only on the wood of particular trees. In the case of *T. rubida*, I noticed that the hyphae were encrusted with yellow granules, but this is not noted for *T. holochlora*.

***Trogia icterinoides* sp. nov.**

Figure 12

Receptacula pallide cremea vel pallide ochracea. Pileus – 20 mm latus, convexus dein planus, centro depresso, laevis subviscidus striatus. Stipes – $28 \times 1.5\text{--}2.5$ mm, primo puberulo-pruinosis mox laevis, basi abrupto. Lamellae decurrentes arcuatae distantes, interstitiis haud venosis, primariae 14–19, – 2.5 mm latae, ordinibus (1)–2. Caro ceraceo-cartilaginea. Odor nullus. Sporae $6\text{--}7 \times 5.5\text{--}6.5 \mu\text{m}$, subgloboseae, pallide amyloideae. Basidia $38\text{--}47 \times 7\text{--}8.5 \mu\text{m}$; sterigmata 4, $4\text{--}5 \mu\text{m}$ longis. Cheilocystidia – $18 \mu\text{m}$ lata, clavata, sparsa vel nulla, acie lamellae fertili. Pleurocystidia nulla. Caulocystidia – $110 \times 7\text{--}22 \mu\text{m}$, clavata vel ventricosa, copiosa sed collabefientia. Pileocystidia nulla sed ad marginem pilei ut caulocystidia collabefientia. Hyphae sarcodimiticae fibulatae; cellulae fusiformes – $1500 \times 30 \mu\text{m}$; oleiferae sparsae. Ad lignum putridum gregaria in silva montana. Borneo, Mt. Kinabalu 1600 m alt., Feb. 1964, RSNB 5364; herb. Cantab.

Wholly pale cream drab or very pale ochraceous bistre. Pileus – 22 mm wide, convex then plane, centre depressed, smooth, subviscid, striate. Stem – $28 \times 1.5\text{--}2.5$ mm, finely puberulous pruinose but soon smooth, hollow, base abrupt, dry. Gills decurrent, arcuate, rather distant, not veined, 14–19 primaries – 2.5 mm wide, (1)–2(–3) ranks. Flesh waxy subcartilaginous. Smell none.

On rotten wood, in troops, in montane forest. Borneo, Mt. Kinabalu.

Spores $6\text{--}7 \times 5.5\text{--}6.5 \mu\text{m}$, subglobose, pale violaceous brown amyloid. Basidia $38\text{--}47 \times 7\text{--}8.5 \mu\text{m}$; sterigmata 4, $4\text{--}5 \mu\text{m}$ long. Cheilocystidia – $18 \mu\text{m}$ wide, clavate, very scattered along the fertile gill-edge or absent (even from young gills). Pleurocystidia none. Caulocystidia – $110 \times 7\text{--}22 \mu\text{m}$, clavate to subventricose with obtuse apex, abundant, collapsing. Pileocystidia none or at the margin of the pileus as the caulocystidia and collapsing; margin of pileus with clavate cells $8\text{--}20 \mu\text{m}$ wide. Hyphae sarcodimitic, clamped; fusiform cells – $1500 \times 28 \mu\text{m}$ (? longer); oleiferous hyphae

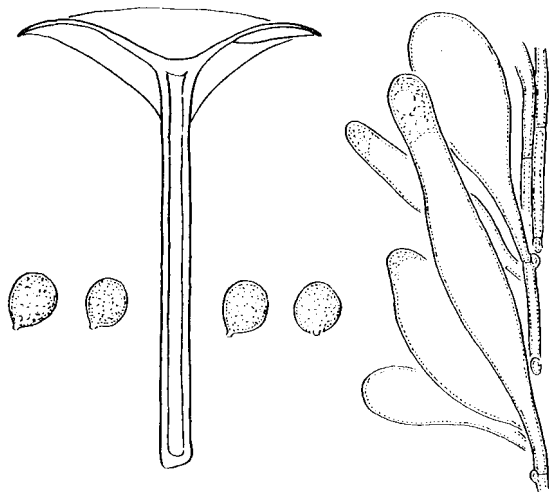


Fig. 12. *Trogia icterinoides*. Fruit-body, $\times 2$. Spores, $\times 1000$. Caulocystidia, $\times 500$. Collection, RSNB 5364.

few, narrow. Surface of pileus without a special layer, the fusiform cells approaching the surface.

Collections: — Borneo, Mt. Kinabalu 1600 m alt., Bembangan R., 19 Feb. 1964, RSNB 5364; 25 Feb. 1964, RSNB 5364A.

Superficially this is very like *T. seriflua* which has a sterile gill-edge, abundant pleurocystidia, and copious oleiferous hyphae. They seem to be extremes of one species.

***T. impartita* Corner**

Mon. Canth. Fungi (1966) 219.

Fruit-bodies white, then sordid or greyish. Pileus 2–20 mm wide, plane, smooth, striate. Stem 6–25 × 0.5–2 mm, hollow, minutely pruinose to glabrous. Gills decurrent, *subdistant*, interstices smooth, 7–20 primaries 1–2 mm wide, 1(–2) ranks. Flesh thin, subcartilaginous. Smell none.

On dead wood in the forest. Borneo to the Solomon Islands, Brazil.

Spores (4.5–)6–8 × (3.5–)3.7–5 μm, pale amyloid. Basidia 25–30 × 6 μm; sterigmata 4. Cystidia none or scattered cheilocystidia –50 × 7–11 μm (Brunei collection). Caulocystidia and pileocystidia –40 × 5–8 μm, clavate to subventricose, sparse. Hyphae clamped; fusiform cells much elongate, –20 μm wide, walls scarcely thickened.

Key to the varieties of *T. impartita*

1. Pileus 2–20 mm wide. Gills in 1(–2) ranks v. *impartita*
1. Pileus 20–35 mm wide. Gills in 2–3 ranks.
 2. Pileus white to yellowish. Gills –2 mm wide, interstices poroid reticulate var. *major*
 2. Pileus greyish. Gills 2–4 mm wide var. *griseola*

var. *impartita*

As above.

Collections: — Brazil, Amazonas, Manaus, 24 Oct. 1948, Corner 243; pileus 2–5 mm wide; stem 6–25 × 0.5–0.7 mm; gills with 11–15 primaries 1.5–2 mm wide, 1(–2) ranks; spores 6–7 × 4–5 μm; gill-cystidia none. — Brunei, Ulu Belalong, 17 Feb. 1959, Corner s.n.; pileus –5 mm wide; stem –12 × 1 mm; gills with 7–10 primaries –1 mm wide, 1(–2) ranks; spores 4.5–6.5(–7) × 3.5–5 μm; cheilocystidia –50 × 7–11 μm, subventricose with short obtuse to subfiliform appendage 2–3 μm wide, scattered. — Solomon Islands, Santa Ysabel, Tetamba, 28 Sept. 1965, RSS 1465; pileus –10 mm wide; stem 6–9 × 0.5 mm; gills with 9–12 primaries –1 mm wide, 1(–2) ranks; spores 6–8 × 4–5 μm; cystidia none. — New Guinea, Lae (original description).

I have given these details to show that here is a widespread species, probably pan-tropical. Being simplified and colourless, it is difficult to relate with others but var. *griseola* with a vestige of colour suggests affinity with *T. obfuscata* and *T. subglobo-spora*. Maybe it merges into *T. raphanolens*.

var. *griseola* var. nov.

Pileus 20–35 mm latus, pallide griseofuscus vel griseolus. Stipes 15–22 × 1.5–3 mm, albus. Lamellae adnato-decurrentes distantae, primariae 11–14, 2–4 mm latae, ordinibus 2–3, raro furcatae, interstitiis haud vel vix rugulosis. Sporae 6–7 × 3.5–4.3 μm, pallide amyloideae. Cheilocystidia –70 × 15 μm, clavata vel subventricosa, obtusa, inappendiculata, sparsa. Pleurocystidia nulla. Caulocystidia –50 × 13 μm, ut cheilocystidia. Pileocystidia –35 μm longa, subcylindrica obtusa sparsa. Hyphae ut in var. *impartita*. Ad lignum putridum in silva. Borneo, Sarawak, Gunong Matang 700 m alt., 20 Aug. 1972, Corner P-117; herb. Cantab.

var. **major** var. nov.

Ut var. *impartita* sed pileo – 30 mm lato; stipite – 30 × 2 mm; lamellis primariis 15–18, 1.5–2 mm latis, ordinibus 2–3, interstitiis leniter poroideo-reticulatis. Ad lignum in silva. Nova Guinea, Lae, 4 Sept. 1960. Corner s.n.

T. inaequalis (Berk. et Br.) Corner

Mon. Canth. Fungi (1966) 219; Pegler (1986) 119.

This species of Ceylon is retained in *Trogia* by Pegler. The genus is said to differ from *Gerronema* in having very narrow or pliciform gills. Those of *T. inaequalis* are now given as linear venose to distinctly lamellate 0.2–1 mm wide; thus, it bridges the generic difference.

T. infundibuliformis (Berk. et Br.) Corner

Mon. Canth. Fungi (1966) 220, f. 115, pl. 5H; Pegler, Agaric Flora Sri Lanka (1986) 121.

I refer to my description of this fairly common paleotropical species. Pegler (1977) records it from East Africa and adds other synonyms. He regards *T. grisea* (Berk.) Pat. as, possibly, only the young state of *T. infundibuliformis*. In my monography (p. 220), the reference of Fig. 115b to *T. grisea* was a mistake; it should be *T. subgelatinosa*. Compare the closely allied *T. venulosa*.

Trogia lateralis sp. nov.

Figure 13

Receptacula parva, breviter pleuropodalia, flavidulo-alba vel alba. Pileus – 12 mm latus, convexus laevis subviscidus, haud striatus. Stipes 2–3 × 1 mm, puberulus. Lamellae adnato-decurrentes distantae, interstitiis haud venosis, primariae 7–9, 1.5–2 mm latae, ordinibus 2(–3). Caro in stipite ceraceo-firma, in pileo subtenax, haud hygrophana. Sporae 6–7.5 × 4–4.5 μ m, late ellipsoideae, inamyloideae. Basidia 27–35 × 5.5–6.5 μ m; sterigmata 4, 4 μ m longa. Cheilocystidia – 35 × 6–15 μ m, clavata vel ventricosa, obtusa, apice aliquando sublobata, ut acie sterili instructa. Pleurocystidia nulla. Hymenium – 100 μ m incrassatum. Caulocystidia – 100 × 4–12 μ m, subcylindrica vel fusiformi-subventricosa. Pileocystidia nulla. Hyphae in stipite sarcodimiticae, in pileo lamellis que monomiticae; cellulae fusiformes 90–800 × 7–23 μ m, tunicis – 1 μ m crassis. Adlignum putridissimum in silva montana. Borneo, Mt. Kinabalu, Mesilau 1600 m alt., 8 March 1964, RSNB 5685; herb. Cantab.

Fruit-bodies very small, shortly pleuropodal, pale yellowish white to white or drab white. Pileus – 12 mm wide, convex, smooth, subviscid, not striate. Stem 2–3 × 1 mm, puberulous. Gills adnato-decurrent, *distant*, with flat smooth interstices, 7–9 primaries 1.5–2 mm wide, 2(–3) ranks. Flesh waxy-firm in the stem, rather tough in the pileus, not hygrophanous. Smell none.

On very rotten wood in the montane forest. Borneo, Mt. Kinabalu.

Spores 6–7.5 × 4–4.5 μ m, rather pruiniform, broadly ellipsoid, not amyloid. Basidia 27–35 × 5.5–6.5 μ m; sterigmata 4, 4 μ m long. Cheilocystidia – 35 × 6–13 μ m, clavate to ventricose, obtuse, apex sometimes obtusely lobed, as a broad sterile gill-edge. Pleurocystidia none. Hymenium thickening – 100 μ m. Caulocystidia – 100 × 4–12 μ m, subcylindric to fusiform-subventricose, obtuse, unevenly inflated, occasionally branched or lobed, as a fairly compact palisade passing at the stem-apex along the gill-edges as cheilocystidia and, by septation of the hyphal ends, into the hymenium. Pileocystidia none. Hyphae sarcodimitic in the stem, monomitic in the pileus and gills; fusiform cells 90–800 × 7–23 μ m, occasionally with broad septa, walls – 1 μ m thick and minutely uneven; narrow hyphae 2–5(–6) μ m wide, with cells – 250 μ m long, the walls often 0.5–1 μ m thick; hyphae in the trama of pileus and gills – 7 μ m wide or, in places, slightly inflated. Surface of the pileus with a mucilaginous layer, – 60 μ m thick in the centre of the pileus, composed of hyphae 1–2.5 μ m wide with lobed tips as the ends of short inflated processes 4–9 μ m wide and derived from hypodermal hyphae (as if

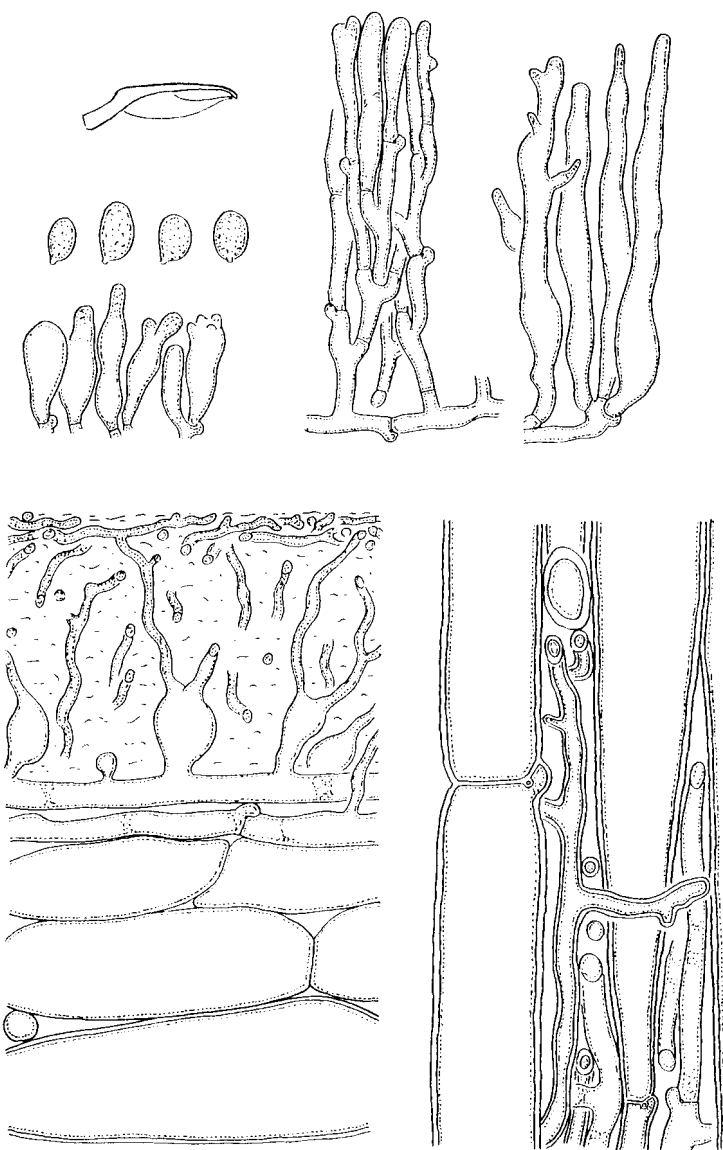


Fig. 13. *Trogia lateralis*. Fruit-body, $\times 2$. Spores, $\times 1000$. Cheilocystidia, $\times 500$. Sterile hymenium at stem-apex (upper centre) and caulocystidia (upper right), $\times 500$. Surface of pileus (lower left) and stem-tissue (lower right), $\times 1000$. Collection, RSNB 5685.

a palisade of transformed pileocystidia); hypodermis $-70\ \mu\text{m}$ thick, composed of inflated cells $-120 \times 18\ \mu\text{m}$, not pseudoparenchymatous; margin of pileus with clavate cells $4-9\ \mu\text{m}$ wide, those on the upper side developing the exrescent mucilage-processes.

This is a degenerate *Trogia* that might be put in *Marasmiellus*, but the stem retains the sarcodimitic construction. Compare *T. decipiens* var. *pleurotella* with pleurocystidia. *T. marasmioides* has the same kind of surface to the pileus.

***Trogia latifolia* sp. nov.**

Figure 14

Pileus —11 cm latus, planus subumbonatus virgatus, in centro furfuraceo-pruinosis, hygrophanus fuscibrunneolus, marginem versus substriatus albidus. Stipes —60 × 9 mm, fistulosus fibroso-cartilagineus, basi abrupto, pallide concolor. Lamellae emarginato-adnatae latissime subconfertae costatae, interstitiis subreticulatis, acie dentata, primariae c. 50, —20 mm latae, ordinibus 4, pallide concolores, marginem versus albidae. Caro in centro pilei 4–5 mm crassa, hygrophana subfissilis, in stipite firma, concolor. Odor fragrans, subsaponaceus. Sporae 5.7–7 × 3.5–4 μ m, inamyloideae. Cystidia nulla, acie lamellae fertili. Caulocystidia et pleurocystidia —45 × 6–10 μ m, cylindrica, clavata vel ventricosa, collabefientia. Hyphae sarcodimiticae fibulatae; cellulae fusiformes —2200 × 17–28 μ m, tunicis —1 μ m crassis; oleiferae 4–7 μ m latae. Pileus sine hypodermate pseudoparenchymatico. Ad truncum putridum in silva montana. Borneo, Mt. Kinabalu, Mesilau 1700 m alt., RSNB 8217; herb. Cantab.

Pileus —11 cm wide, plane, *subumbonate*, *pale fuscous brownish*, pallid whitish and substrate at the margin, fibrillosely streaked, over the disc finely scurfy pruinose, hygrophanous, not viscid. Stem —6 cm × 9 mm, cylindric, hollow, fibrous-cartilaginous, *paler concolorous*, slightly scurfy pruinose downwards, base abrupt. Gills emarginate, adnate, *very broad, rather crowded, becoming strongly ribbed on the sides with subreticulate interstices*, edge uneven and dentate, c. 50 primaries —20 mm wide, 4 ranks, *pale fuscous fawn drab*, paler to the whitish margin. Flesh 4–5 mm thick in the centre of the pileus, thin over the limb, hygrophanous, firm in the stem and somewhat fissile, concolorous. Smell slightly soapy, fragrant.

On a rotten trunk in the forest. Borneo, Mt. Kinabalu 1700 m alt., 10 April 1964.

Spores 5.7–7 × 3.5–4 μ m, not amyloid. Cystidia none, the gill-edge fertile. Caulocystidia and pileocystidia —45 × 6–10 μ m, cylindric, clavate or ventricose, collapsing. Hyphae sarcodimitic, clamped; fusiform cells —2200 × 17–28 μ m, walls —1 μ m thick; narrow hyphae 2–6 μ m wide, many with walls —1 μ m thick; oleiferous hyphae 4–7 μ m wide. Pileus without a pseudoparenchymatous hypodermis.

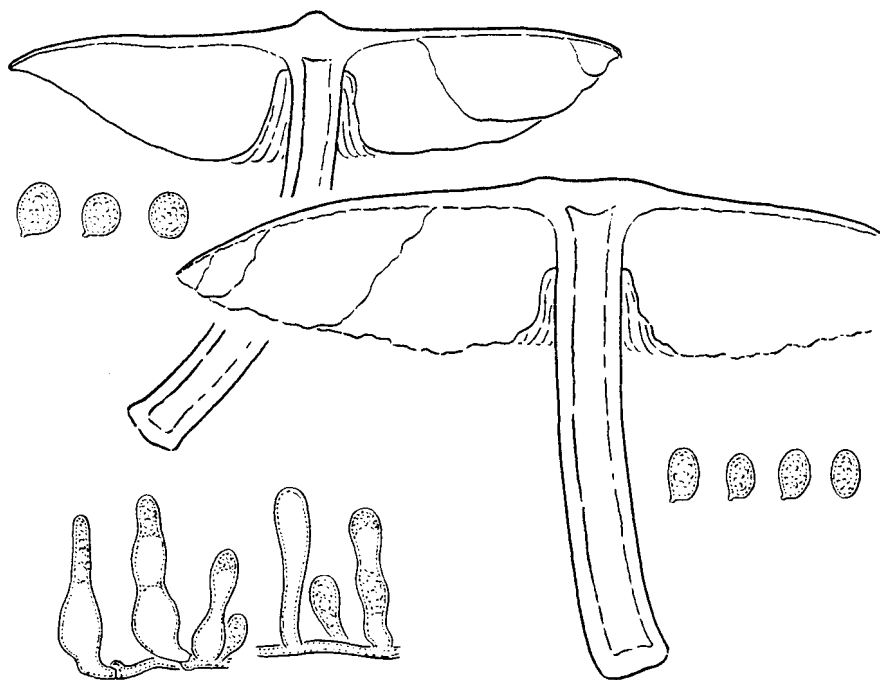


Fig. 14. *Trogia latifolia* (right) and *T. tricholomatoides*. Fruit-bodies, × 1. Spores, × 1000. Pileocystidia of *T. tricholomatoides*, × 500. Type-specimens.

This has the lustiest fruit-bodies that I have yet found in tropical *Trogia*. It is close to *T. tricholomatoides* of Ceylon which has whitish fruit-bodies and slightly amyloid, wider spores. Both resemble the north temperate *Collybia platyphylla* Fr., placed in *Tricholomopsis* by Singer and *Megacollybia* by Kotlaba and Pouzar; it is probably sarcodimitic and, thus, quite different from *T. rutilans*, as the type of *Tricholomopsis*. If it were not for its narrow spores, I would regard *T. latifolia* as a massive form of *T. ceraceomollis*.

***T. lilaceogrisea* Corner**

Plate 1

Mon. Canth. Fungi (1966) 221.

Pileus —9 cm wide, conical to convexo-plane, then concave and undulate, often subumbonate, minutely furfuraceo-squamulose in the centre, the limb virgate with innate fibrils, opaque, *greyish lilaceous or fuscous vinaceous to vinaceous livid*; margin not or slightly incurved, exceeding the gills. Stem —50 × 2.5–7 mm above, 4–9 mm at the abrupt base, hollow, *white*, white to pale fuscous vinaceous pruinose. Gills uncinato-adnexed, sinuato-adnate, to adnato-decurrent, *subdistant*, not or scarcely veined at the base, not forked, 24–30 primaries 3–7 mm wide, 3(–4) ranks, *white*. Flesh 1–2.5 mm thick in the centre of the pileus, hygrophane, cartilaginous. *Smell strong, farinaceous*.

On fallen trunks and branches in montane forest. Borneo, Mt. Kinabalu.

Spores 6.5–8.5 × 4.5–5.5 μ m, broadly ellipsoid, not amyloid. Basidia 20–26 × 6.5–8 μ m; sterigmata 4, 4 μ m long. Cheilocystidia 35–140 × 7–30 μ m, mostly cylindric-subclavate, varying subventricose with obtuse apex 7–16 μ m wide, as a wide sterile gill-edge. Pleurocystidia caulocystidia and pileocystidia similar, some with the wall slightly



Plate 1. *Trogia lilaceogrisea*. Borneo, Kinabalu, 3 March 1964.

thickened. Hyphae clamped; fusiform cells much elongate, $-25\ \mu\text{m}$ wide, wall $-1\ \mu\text{m}$ thick. Pileus with pseudoparenchymatous hypodermis, the cells with pale fuscous sap; the narrow superficial hyphae with many oil-drops (? giving the lilac tint).

var. **bispora** Corner

Mon. Canth. Fungi (1966) 221, f. 116-118, pl. 5C.

Pileus $-4.5\ \text{cm}$ wide, *sulcato-striate to the subvillous rugulose centre*, sometimes with papilliform umbo, fuscous umber with lilaceous tint or merely fuscous grey, paler on expansion. Stem $-20 \times 3.5-5\ \text{mm}$. Gills sinuate to adnato-decurrent, distant, with 13-16 primaries in 2-4 ranks, or rather crowded with 25-32 primaries in 3-5 ranks, paler concolorous with the pileus, whitish towards the edge. Smell ?

On fallen wood in lowland and montane forest. Malay Peninsula (Singapore; Pahang, Cameron Highlands).

Spores $8-11 \times 6-7\ \mu\text{m}$. Basidia $33-48 \times 7-8\ \mu\text{m}$; sterigmata 2, $5-6\ \mu\text{m}$ long. Cystidia with conspicuous oil-drops; pleurocystidia wholly immersed or projecting $-65\ \mu\text{m}$, some with a tramal stalk $-200 \times 3-5\ \mu\text{m}$. Hyphae without clamps; fusiform cells $200-1100 \times 15-65\ \mu\text{m}$ in the stem with walls $1-2\ \mu\text{m}$ thick, $150-500 \times 15-50\ \mu\text{m}$ in the pileus and gills with walls $-0.5\ \mu\text{m}$ thick; narrow hyphae $1.5-5\ \mu\text{m}$ wide, becoming slightly thick-walled in the stem. Surface of pileus with an ill-defined layer of narrow hyphae $3-6\ \mu\text{m}$ wide and $1-3\ \mu\text{m}$ thick, producing the pileocystidia, with oil-drops; hypodermis pseudoparenchymatic, 2-4 cells thick, the cells $45-100 \times 15-45\ \mu\text{m}$, with pale fuscous umber sap.

Later collections have enabled me to improve the original descriptions. The species is rather common on Mt. Kinabalu at 1200-1700 m alt., and I add the collections RSNB 5536, 5536A and 5536B, but I have not met with it elsewhere. Var. *bispora* seems limited to the Malay Peninsula and may prove to be a separate species; its fusiform cells are exceptionally wide. The species is allied with *T. cystidiata* and *T. fulvochracea*. The umber pileus with lilaceous tint and the farinaceous smell are characteristic.

Trogia limonospora sp. nov.

Figure 15

*Receptacula albida dein cremeo-flavidula. Pileus -18 mm latus, convexo-planus laevis striatus. Stipes 12-18 $\times$ 1-2 mm, fistulosus pruinosis basi villosus. Lamellae adnatae vel adnato-decurrentes tenuis angustae, primariae 21-34, -1.5 mm latae, ordinibus 3-4. Caro tenuis ceracea firma. Odor nullus. Sporae 8-11 $\times$ 4.5-5.5 μm , ellipsoideae pruniformes subacuminatae inamyloideae. Basidia 22-26 $\times$ 7-8 μm ; sterigmata 4, 3 μm long. Cheilocystidia -45 $\times$ 6-10 μm , subventricosa, in acie sterili instructa. Pleurocystidia nulla. Caulocystidia ut cheilocystidia. Pileocystidia nulla. Endocystidia ut in *T. endocystidiata*, -12 μm lata. Ad truncum delapsus in silva. Ins. Solomonenses. Guadalcanal, Tsuva, 8 Nov. 1965, RSS 1759; herb. Cantab.*

Fruit-bodies white, then cream yellowish. Pileus $-18\ \text{mm}$ wide, convexo-plane, smooth, striate. Stem $12-18 \times 1-2\ \text{mm}$, cylindric, hollow, wholly pruinose, base white villous. Gills adnate to adnato-decurrent, *crowded, thin, narrow*, primaries 21-24 $-1.5\ \text{mm}$ wide, 3-4 ranks. Flesh $1.5-2\ \text{mm}$ thick in the centre of the pileus, waxy, firm. Smell none.

On a fallen trunk in the forest. Solomon Islands (Guadalcanal).

Spores $8-11 \times 4.5-5.5\ \mu\text{m}$, ellipsoid pip-shaped, often subacuminate, not amyloid. Basidia $22-26 \times 7-8\ \mu\text{m}$; sterigmata 4, 3 μm long. Cheilocystidia $-45 \times 6-10\ \mu\text{m}$, subventricose with subcapitate apex $4-9\ \mu\text{m}$ wide, as a sterile gill-edge. Pleurocystidia none. Caulocystidia as the cheilocystidia, the apex $-11\ \mu\text{m}$ wide, abundant. Pileocystidia apparently absent. Hyphae sarcodimitic, clamped; fusiform cells $-1100 \times 25\ \mu\text{m}$, walls $0.5-1\ \mu\text{m}$ thick; narrow hyphae often with slightly thickened walls; oleiferous hyphae absent; in the pileus monomitric with cells $-350\ \mu\text{m}$ long, and with

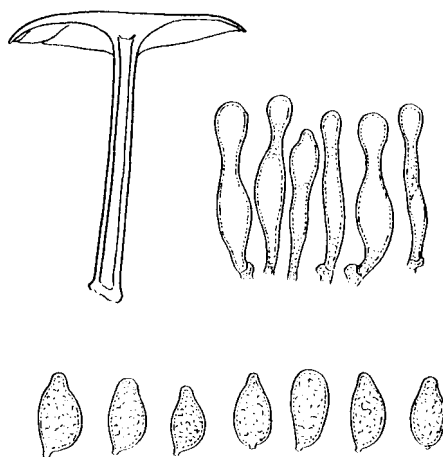


Fig. 15. *Trogia limonospora*. Fruit-bodies, $\times 2$. Spores, $\times 1000$. Cheilocystidia, $\times 500$. Collection, RSS 1759.

abundant endocystidia as in *T. endocystidiata*, $-12\ \mu\text{m}$ wide. Pileus without a pseudo-parenchymatous hypodermis.

This small species, allied with *T. endocystidiata*, is very close to *T. limonosporoides* which has larger fruit-bodies, smaller spores, pleurocystidia and larger endocystidia. Nevertheless, they may be extremes of one species.

***T. limonosporoides* sp. nov.**

Figure 16

Receptacula alba dein flavo-alba, aetate subochracea. Pileus $-35\ \text{mm}$ latus, concavus subumhonatus vel planus, laevis, marginem versus striatus. Stipes $10-25 \times 1.5-2.5\ \text{mm}$, basi subtumido subvillosus, pruinosis. Lamellae adnatae vel adnato-decurrentes, tenues confertae angustae, haud venosae, primariae $26-31$, $1-2\ \text{mm}$ latae, ordinibus $3-4(-5)$. Caro ceraceo-cornea dura. Odor nullus. Sporae $6.5-9 \times 4-5.5\ \mu\text{m}$, pruniformes inamyloideae. Basidia $18-23 \times 7-8.5\ \mu\text{m}$; sterigmata 4, $4-5\ \mu\text{m}$ longa. Cheilocystidia $25-40 \times 5-9\ \mu\text{m}$, cylindrica vel subventricosa, saepe subcapitata, in acie sterili instructa. Pleurocystidia $-75 \times 7-10\ \mu\text{m}$, clavata vel ventricosa, obtusa, intus dextrinoidea et aliquando guttulate, saepe plus minus immersa, copiosa. Caulocystidia $-50 \times 4-8\ \mu\text{m}$, anguste clavata, saepe subcapitata. Pileocystidia ut cheilocystidia. Endocystidia $-180 \times 7-20$, fusiformia multiguttulate, in pileo copiosa, in stipitis superficie sparsa. Hyphae sarcodimiticae fibulatae; cellulae fusiformes $100-1500 \times 7-20\ \mu\text{m}$. Ad lignum emortuum, ad petiolum palmarum emortuum (*Cocos nucifera*) etiam ad terram. Insulae Solomonenses. Typus, RSS 528; herb. Cantab.

Fruit-bodies white to pale yellowish, subochraceous in age. Pileus $-35\ \text{mm}$ wide, convex, subumbonate, then plane, smooth, striate towards the margin. Stem $10-25 \times 1.5-2.5\ \text{mm}$, central or excentric, finely pruinose, base slightly thickened and villous. Gills adnate to adnato-decurrent, crowded, thin, narrow, $26-31$ primaries $1-2\ \text{mm}$ wide, $3-4(-5)$ ranks. Flesh waxy-horny, hard. Smell none.

On dead wood in the forest, on dead petioles of coconut palm, and on the ground. Solomon Islands.

Spores $6.5-9 \times 4-5.5\ \mu\text{m}$, citroniform, not amyloid. Basidia $18-23 \times 7-8.5\ \mu\text{m}$; sterigmata 4, $4-5\ \mu\text{m}$ long. Cheilocystidia $25-40 \times 5-9\ \mu\text{m}$, cylindric to subventricose, mostly more or less capitate, as a sterile gill-edge. Pleurocystidia $-75 \times 7-10\ \mu\text{m}$, clavate to ventricose with an obtuse apex $4-8\ \mu\text{m}$ wide, guttulate, red-brown dextrinoid in Melzer's iodine, often more or less immersed, abundant. Caulocystidia $-50 \times 4-8\ \mu\text{m}$, narrowly clavate to capitate as the cheilocystidia. Pileocystidia as the cheilo-

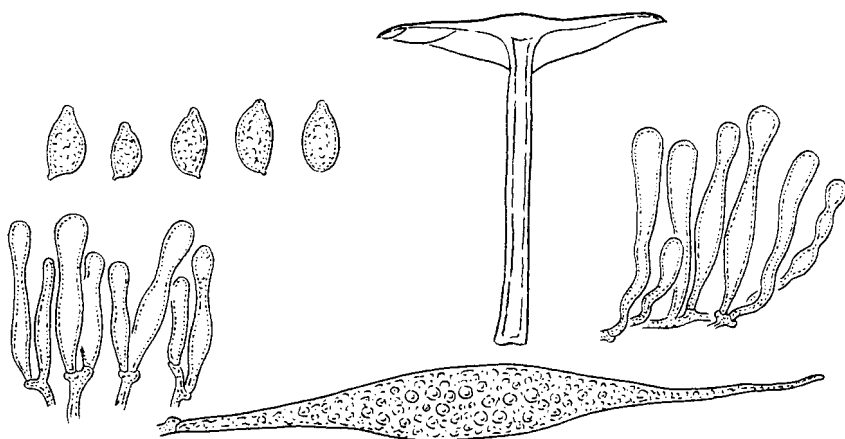


Fig. 16. *Trogia limonsporoides*. Fruit-body, $\times 1$. Spores, $\times 1000$. Cheilocystidia (left), caulocystidia and endocystidium, $\times 500$. Collection, RSS 528.

cystidia, not in a compact palisade. Endocystidia $-180 \times 7-20 \mu\text{m}$, fusiform, thin-walled, multiguttulate, abundant throughout the tissue of the pileus, scattered among and just below the narrow superficial hyphae of the stem. Hyphae sarcodimitic in the pileus with cells $-300 \times 17 \mu\text{m}$; fusiform cells $100-1500 \times 7-20 \mu\text{m}$; oleiferous hyphae few, narrow. Pileus without a pseudoparenchymatous hypodermis.

Collections: — Guadalcanal, Mt. Gallego, 3 July 1965, RSS 528; Nuhu, 4 Nov. 1965, RSS 1728. — Santa Ysabel, Cockatoo Anchorage, 19 Sept. 1965, on coconut petioles, RSS 1409.

This species is similar to *T. decipiens* but differs in the shape of the spores and cheilocystidia and in the presence of large endocystidia. The difference from *T. limonospora* are given under that species. The pleurocystidia of *T. limonosporoides* are rendered very conspicuous in Melzer's iodine. Perhaps, all three species belong in one complex allied with *T. endocystidiata* and *T. seriffua*.

***Trogia macra* sp. nov.**

Figure 17, Plate 2

Receptacula pallide primulino- vel citrino-flavida, etiam mellea, ceraceo-cornea, putrescentia, hygrophana. Pileus 3-9 cm latus, conico-convexus dein planus, submembranaceus laevis, striatus vel sulcato-striatus, sicco centro subsquamuloso. Stipes 20-45 $\times$ 2-4 mm, saepe compressus, fistulosus pruinosulus, basi abrupto. Lamellae breviter decurrentes, angustae, marginem pilei versus pliciformes evanescentes, subdistantae, saepe irregulariter furcatae et subreticulatae, interstitiis plerumque laevibus, primariae 13-20, prope stipitem 0.5-1.5 mm latae, ordinibus 2-3(-4). Caro 0.5-1 mm crassa in centro pilei. Odor nullus. Sporae 7-10 $\times$ 4.5-6 μm , inamyloideae. Basidia 42-55 $\times$ 6-7.5 μm ; sterigmata 4, 4 μm longa. Cheilocystidia nulla. Pleurocystidia 60-140 $\times$ 9-15 μm , $-50 \mu\text{m}$ projicientia, saepe immersa, cylindrica vel subventricosa, apice obtuso 7-12 μm lato, raro attenuato, copiosa. Hymenium haud incrassatum. Caulocystidia et pileocystidia $-100 \mu\text{m}$ longa, ut pleurocystidia. Hyphae sarcodimiticae fibulatae; cellulae fusiformes $-1800 \times 45 \mu\text{m}$, tunicis 1-3 μm crassis; angustae 1.5-5 μm latae. Ad truncos emortuos in silva montana. Borneo, Mt. Kinabalu 1700 m alt. Typus, RSNB 5109B; herb. Cantab.

Fruit-bodies wholly pale primrose or lemon yellow, also honey-colour, subtranslucent, waxy-horny, hygrophanous. Pileus 3-9 cm wide, conico-convex then plane, submembranous, striate or sulcato-striate, smooth or drying subsquamulose in the centre. Stem 20-45 $\times$ 2-4 mm, cylindric, often flattened, hollow, base abrupt, wholly minutely pruinose. Gills shortly decurrent, *subdistant, narrow, vein-like and disappearing*



Plate 2. *Trogia macra*. Borneo, Kinabalu, RSNB 5109.

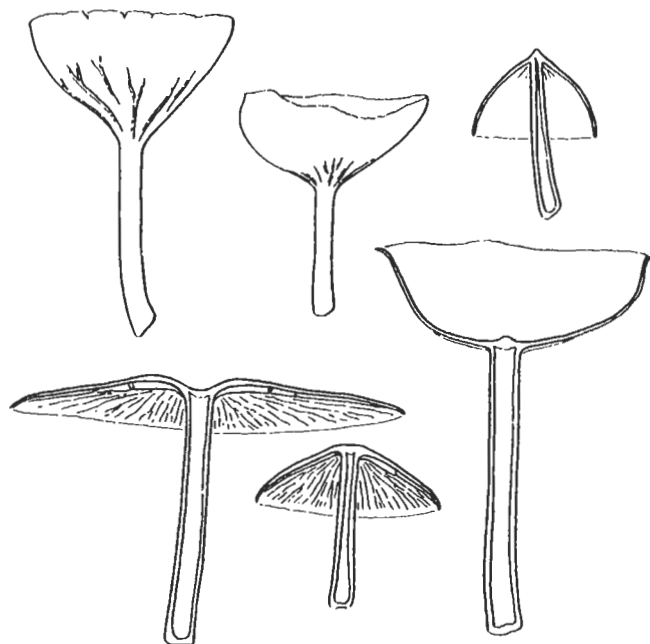


Fig. 17. *Trogia rosea*, (above and lower right, RSNB 5100B) and *T. macra* (lower left, RSNB 5109B). Fruit-bodies, $\times 1$.

towards the margin of the pileus, often irregularly forked or subreticulate, the interstices mostly smooth, 13–20 primaries 0.5–1.5 mm wide near the stem, 2–3(–4) ranks. Flesh 0.5–1 mm thick in the centre of the pileus. Smell none.

On fallen rotting trunks in montane forest. Borneo, Mt. Kinabalu.

Spores $7\text{--}10 \times 4.5\text{--}6 \mu\text{m}$, not amyloid. Basidia $42\text{--}55 \times 6\text{--}7.5 \mu\text{m}$; sterigmata 4, $4 \mu\text{m}$ long. Cheilocystidia none, gill-edge fertile. Pleurocystidia $60\text{--}140 \times 9\text{--}15 \mu\text{m}$, projecting $\sim 50 \mu\text{m}$ but many immersed, cylindric to subventricose with obtuse apex $7\text{--}12 \mu\text{m}$ wide, rarely attenuate, thin-walled, contents cloudy-vacuolate, abundant. Caulocystidia and pileocystidia $\sim 100 \mu\text{m}$ long, as the pleurocystidia. Hymenium not thickening. Hyphae sarcodimitic, clamped; fusiform cells $\sim 1800 \times 45 \mu\text{m}$, walls $1\text{--}3 \mu\text{m}$ thick; narrow hyphae $1.5\text{--}5 \mu\text{m}$ wide. Surface of pileus with radiating appressed hyphae $3\text{--}8 \mu\text{m}$ wide, the cylindric or subclavate ends appressed or divergent, occasionally subfasciculate over the centre of the pileus; without a pseudoparenchymatous hypodermis. Tissue not reddening in KOH.

Collections: — Pinosuk Plateau, 25 Jan. 1964, RSNB 5109, and 28 Feb. 1964, RSNB 5109A; Mesilau, 8 April 1964, RSNB 5109B, 10 April 1964, RSNB 5109C, and 24 April 1964, RSNB 5109D.

The specific epithet refers to the skinny appearance of the fruit-body (*macer*, not *macro*s). It is like a yellowish *T. silvestris* with vestigial gills and without an umbonate pileus. As a typical *Trogia*, it shows the superfluity of *Vanromburghia*. Microscopically the two species are almost identical but *T. macra* lacks the hypodermis on the pileus and its hymenium does not thicken. *T. rosea* is another ally. The three are fairly common in the mountain forest of Kinabalu and there appear to be no intermediates.

***T. mammillata* sp. nov.**

Receptacula alba. Pileus ~ 5 mm latus, convexus, acute umbonatus, striatus. Stipes $\sim 12 \times 0.5$ mm, centralis, basi abrupto. Lamellae decurrentes distantae, saepe pliciformes, interstitiis planis, primariae 8–12, ordinibus 1(–2). Odor nullus. Sporae $5.5\text{--}8(9) \times 4\text{--}5.2 \mu\text{m}$, paullo amyloideae. Basidia $23\text{--}28 \times 7 \mu\text{m}$; sterigmata (21)–2–4. Cystidia nulla. Caulocystidia ut basidia sterilia, sparsa. Pileocystidia nulla. Hyphae sarcodimiticae fibulatae; cellulae fusiformes in stipite $\sim 1100 \times 6\text{--}16 \mu\text{m}$. Ad ramum dejectum in silva montana. Borneo, Mt. Kinabalu, 3100 m alt., 13 Jul. 1961, RSNB 814; typus, herb. Cantab.

Fruit-bodies white. Pileus ~ 5 mm wide, convex, *acutely umbonate*, smooth, striate. Stem $\sim 12 \times 0.5$ mm, central, base abrupt. Gills decurrent, *distant, shallow, often fold-like*, with smooth interstices, 8–12 primaries, 1(–2) ranks. Smell none.

On a fallen branch in montane forest, gregarious. Borneo, mt. Kinabalu, east ridge, 3100 m alt.

Spores $5.5\text{--}8(9) \times 4\text{--}5.2 \mu\text{m}$, ellipsoid or pip-shaped, drying 1-guttate with very hyaline thin wall, pale vinaceous amyloid. Basidia $23\text{--}28 \times 7 \mu\text{m}$; sterigmata (21)–2–4. Hymenium not thickening; no basidioles. Cystidia none. Caulocystidia as small scattered sterile basidia. Pileocystidia none. Hyphae sarcodimitic clamped; fusiform cells in the stem $\sim 1100 \times 6\text{--}16 \mu\text{m}$. Surface of pileus with appressed radiating narrow hyphae; no special hypodermis.

This tiny little toadstool resembles a diminutive *T. impartita*, except for the very prominent umbo, thus showing that the form of the pileus has no generic significance in the alliance of *Trogia*. I found it but once at the high altitude on Kinabalu where the forest was composed mainly of podocarp, oak, laurel, myrtaceous trees, and rhododendron.

Trogia marasmioides sp. nov.

Figures 18, 19

Pileus 10–20 mm latus, mesopodalis concavus vel sublateralis reniformis vel flabelliformis, laevis substriatus, sordide flavido-albus. Stipes 3–6 × 1.5–2.5 mm sublateralis vel –18 × 2 mm cum basi 3 mm centralis, solidus pruinosulus concolor, dein e basi villosus subfuscus. Lamellae adnatae vel subdecurrentes distantae crassiusculae obtusae, primariae 10–16, 2–4 mm latae, ordinibus 3–4, albiae dein flavidulae. Caro tenax. Odor ut *Ganoderma*. Sporae 6–8 × 4–4.7 µm, pseudo-amyloideae. Basidia 30–42 × 6–7 µm; sterigmata 4, 4 µm longa. Cheilocystidia –55 × 5–8 µm, subcylindrica subclavata aut irregulariter ramoso-lobulata, ut acie sterile instructa sed collahefientia. Pleurocystidia nulla. Caulocystidia 35–200 × 5–9 µm, ut cheilocystidia sed multo ramoso-lobulata, hyphis 1.5–2.5 µm investita. Pileocystidia nulla. Hyphae sarcodimiticae dein plus minus sarcotrimiticae, fibulatae; cellulae fusiformes in stipite 120–600 × 6–18 µm, tunicis 0.5–1 µm crassis; angustae 3–6 µm latae, ramulis subligativis. Superficies pilei strato agglutinato 40–70 µm crasso ex hyphis 1–2 µm latis oblecta. Ad truncum delapsus in silva montana. Borneo, Mt. Kinabalu, Mesilau 1700 m alt., 16 March 1964, RSNB 5821; herb. Cantab.

Pileus 10–20 mm wide, centric and concave to sublateral and reniform or flabelliform, smooth, substriate, *pale dingy yellowish white*. Stem 3–6 × 1.5–2.5 mm when lateral or nearly so, –18 × 2 mm and 3 mm at the base when more or less centric, subcylindric, *solid, concolorous then subfuscous* from the villous base, somewhat pruinose. Gills adnate to subdecurrent, *rather thick and distant, obtuse*, firm, 10–16 primaries 2–4 mm wide, 3–4 ranks, *pallid white then dull yellowish*. Flesh c. 11 mm thick in the centre of the pileus, firm, *tough*. Smell somewhat of *Ganoderma*.

On a fallen trunk in the forest. Borneo, Mt. Kinabalu, Mesilau 1700 m alt.

Spores 6–8 × 4–4.7 µm, ellipsoid, obtuse, with oleaginous contents, pseudo-amyloid (pale brownish in Melzer's iodine). Basidia 30–42 × 6–7 µm, narrowly clavate; sterigmata 4, 4 µm long; no acerose basidioles; subhymenium 30–50 µm thick, composed of 1.5–3 µm hyphae divergent and radiating from the trama of longitudinal hyphae, rather compact, subagglutinated (? thickening hymenium). Cheilocystidia –55 × 5–8 µm, subcylindric or subclavate, variously and irregularly lobed at the apex, irregularly branched or nodular, as a sterile gill-edge but eventually collapsing. Pleurocystidia none. Caulocystidia 35–200 × 5–9 µm, subcylindric, often irregular and nodulose, developing short lobes or obtuse hyphal processes with thin or slightly thickened walls, separated into groups by the elongation of the stem, becoming invested with narrow excrescent hyphae 1.5–2.5 µm wide with thin or slightly thickened walls, simple or branching, with forms intermediate to the caulocystidia; narrow excrescent hyphae copious at the base of the stem. Pileocystidia none. Hyphae sarcodimitic, then more or less sarcotrimitic, clamped; in the stem strictly longitudinal, compact, with fusiform cells 120–600 × 6–18 µm, walls 0.5–1 µm thick, with tapered ends or subtruncate; narrow hyphae 3–6 µm wide, with intricate narrower branches 1–2 µm wide, distantly septate with slightly thickened walls; in the pileus with shorter fusiform cells –300 µm long, becoming separated in a mass of narrow hyphae and binding processes, many developing from the stiffly branched and often irregular inflated cells; gill-trama as the flesh of the pileus. Surface of pileus with an agglutinated layer 40–70 µm thick, composed of fine branched hyphae 1–2 µm wide with toughly subgelatinous walls, arising from narrow hypodermal hyphae and from rows of inflated short-celled hypodermal hyphae (cells 20–50 × 7–20 µm); no distinct pseudoparenchyma or pileocystidia.

This species has the structure of *Trogia* modified by the great production of narrow insinuating hyphae, like binding hyphae, which permeate the internal tissue and invest the cystidia on stem and gill-edge, where they assume more or less the form of the cystidia. The agglutinated surface of the pileus resembles that found in *T. lateralis*.

T. mellea Corner

Mon. Canth. Fungi (1966) 223, pl. 4H.

Pileus 4–23 mm wide, convex then plane, often umbilicate, sometimes umbonate, *at first fuliginous furfuraceous or pruinose, then on expansion pale honey-yellow with*

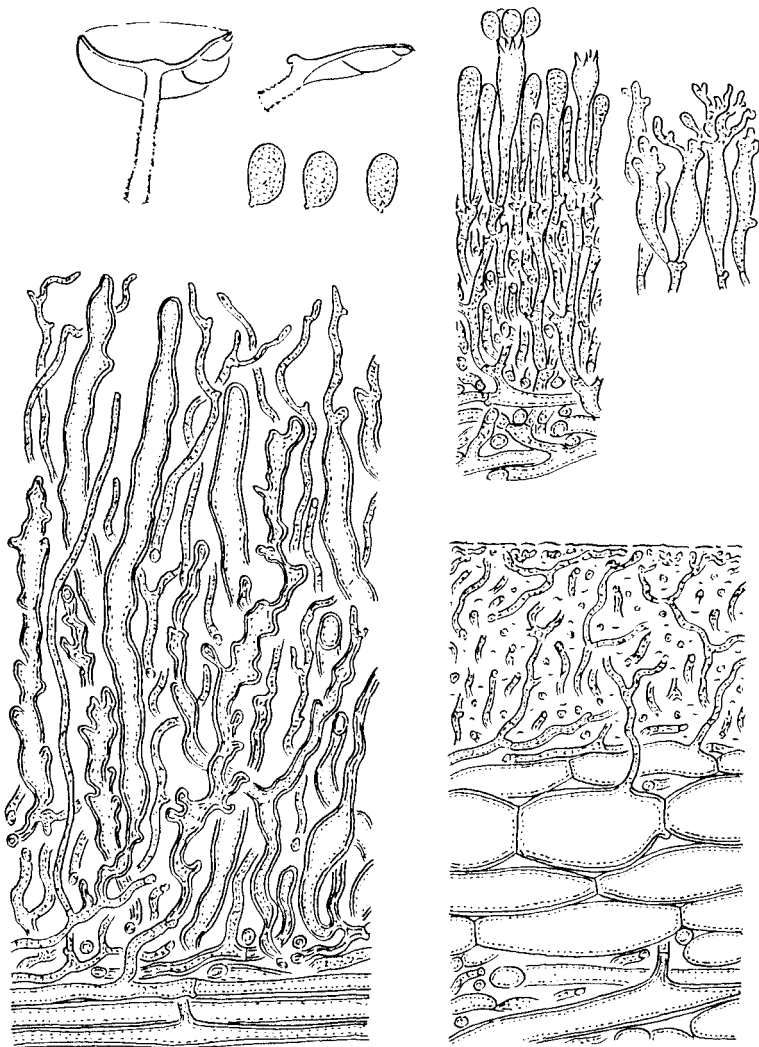


Fig. 18. *Trogia marasmioides*. Fruit-body, $\times 1$. Spores, $\times 1000$. Hymenium and cheilocystidia, $\times 500$. Surface of stem (left) and of pileus (right), $\times 500$. Collection, RSNB 5821.

brownish centre and the limb streaked with innate fuliginous fibrils, striate; margin incurved at first, often lacerate on expansion. Stem 3–10 $\times$ 0.5–1 mm, cylindric or slightly swollen at the abrupt base, fuscous to fuliginous pruinose, honey-yellow. Gills shortly decurrent, subarcuate, subdistant, not or slightly venose-reticulate in the interstices, 11–16 primaries 0.5–2 mm wide, 1–3 ranks, honey-yellow. Flesh thin, waxy-soft, rather tough in the gills, hygrophanous, concolorous.

On dead sticks in the forest. Malay Peninsula, widespread.

Spores 7–9.5 $\times$ 4.5–5.5 μm , not amyloid. Basidia 35–40 $\times$ 6.5–7.5 μm ; sterigmata (2–)4, 5–6.6 μm long. Cheilocystidia 26–44 $\times$ 7–10 μm , subclavate to subventricose, obtuse, thin-walled, hyaline, as a sterile gill-edge 65–90 μm wide. Hymenium not thickening. Pleurocystidia none. Caulocystidia –70 $\times$ 7–12 μm , as the cheilocystidia but with umber sap. Pileocystidia 20–63 $\times$ 9–23 μm , clavate to subventricose, thin-



Fig. 19. *Trogia marasmiioides*. Hyphae of stem (left) and of pileus with lax branching (right), $\times 500$. Collection, RSNB 5821.

walled, with umber sap. Hyphae clamped; fusiform cells $2000 \times 10\text{--}30 \mu\text{m}$, walls $0.5\text{--}1 \mu\text{m}$ thick; narrow hyphae abundant, at the base of the stem with walls $\sim 1 \mu\text{m}$ thick. Pileus without a pseudoparenchymatous hypodermis.

This is close to *T. anthidepas* but the fruit-bodies are smaller, of more uniform colour, and have larger cystidia on stem and pileus. Both of these have umber sap in the cells and they form a continuous palisade over the primordium. Though common in the Malay Peninsula, I have not met with the species elsewhere.

***Trogia minima* sp. nov.**

Receptacula alba, pleuropodalia. Pileus 1–3 mm latus, subeucullatus convexus laevis. **Stipes** 1×0.3 mm, basi abrupto, puberulus. **Lamellae** ut plicis 2–4 prope apicem stipitis. **Caro** c. $250 \mu\text{m}$ crassa in centro pilei. **Odor** nullus. **Sporae** $4\text{--}5.5 \times 3.7\text{--}4.5 \mu\text{m}$, late ellipsoideae, haud vel vix amyloideae. **Basidia** $23\text{--}26 \times 6\text{--}6.5 \mu\text{m}$; sterigmata 4. **Cystidia** nulla. **Caulocystidia** $45 \times 5\text{--}9 \mu\text{m}$, clavata vel ventricosa, basim stipitis versus apice prolongato filiformi. **Pileocystidia** vix evoluta, sed ad marginem pilei ut caulo-

cystidia. Hyphae sarcodimiticae fibulatae; cellulae fusiformes $-500 \times 15 \mu\text{m}$. Ad ramum dejectum in silva, dense gregaria. Ins. Solomonenses, Kolombangara 600 m alt., 6 Sept. 1965, RSS 1291; herb. Cantab.

Fruit-bodies white, pleuropodal. Pileus 1–3 mm wide, subcucullate, convex, smooth. Stem $-1 \times 0.3 \text{ mm}$, puberulous, base abrupt. Gills as 2–4 faint folds about the stem-apex, subdecurrent, the hymenium not venose-reticulate. Flesh c. $250 \mu\text{m}$ thick in the centre of the pileus, c. $100 \mu\text{m}$ thick at the margin. Smell none.

On a rotting log in the forest, densely gregarious. Solomon Islands, Kolombangara 600 m alt.

Spores $4-5.5 \times 3.7-4.5 \mu\text{m}$, broadly ellipsoid, not or very faintly amyloid. Basidia $23-26 \times 6-6.5 \mu\text{m}$; sterigmata 4; no acerose basidioles. Cystidia none in the hymenium (not thickening). Caulocystidia $-45 \times 5-9 \mu\text{m}$, clavate to ventricose with more or less prolonged filiform apex, passing into excrescent hyphae at the base of the stem, thin-walled, smooth; mycelial hyphae at the base of the stem $3-6 \mu\text{m}$ wide with slightly thickened walls, almost forming a minute disc. Surface of pileus with appressed narrow radiating hyphae producing short processes $-20 \times 1.5-3 \mu\text{m}$; margin of pileus with cystidia like the caulocystidia. Hyphae sarcodimitic, clamped: fusiform cells in the stems $-500 \times 15 \mu\text{m}$, the outer stem-hyphae with short cells $22-150 \mu\text{m}$ long with broad septa (not secondarily septate). Pileus without pseudoparenchyma.

This minute fungus has the typical structure of *Trogia* of which it is almost a cyphelliform derivative.

T. montagnei Fr.

Corner, Mon. Canth. Fungi (1966) 224; Pegler, Kew Bull. Add. Ser. VI (1977).

I refer to the brief description which I gave. Nothing more seems to be known about the species which was said to have come from south India. Pegler gave the neotropical *T. buccinalis* as a synonym, but that seems to have been a mistake.

T. mycenoides Corner

Mon. Canth. Fungi (1966) 226, f. 94b, 119–122, pl. 4B.

Pileus 5–30 mm wide, conical or subcylindric then plane and discoidal, smooth, hygrophanous, striate, subsulcate, at first fuscous grey then, on expansion, *pale livid grey with fuscous striae*; margin slightly incurved, then subcrenulate. Stem $20-50 \times 1-1.5 \text{ mm}$, base abrupt and often slightly swollen and substrigose, cylindric, hollow, *pellucid white, fuliginous pruinose*, the apex white pruinose. Gills uncinatate, adnexed, adnate or adnato-decurrent, subventricose, scarcely crowded, interstices not veined, 17–22 primaries $1.5-3 \text{ mm}$ wide, 3–4 ranks, *white*. Flesh thin, waxy-soft but rather tough in the stem. Smell none.

On rotten wood in the forest. Malay Peninsula (Johore, Singapore).

Spores $6-8 \times 4-5 \mu\text{m}$, not amyloid. Basidia $18-25 \times 5-6.5 \mu\text{m}$; sterigmata 4, $3-4 \mu\text{m}$ long. Cheilocystidia $30-70 \times 10-30 \mu\text{m}$, clavate to ventricose, some appendaged and with subcapitate apex $3-9 \mu\text{m}$ wide, as a sterile gill-edge. Pleurocystidia $60-100 \times 10-25 \mu\text{m}$, ventricose with obtuse apex $3-7 \mu\text{m}$ wide, projecting $-70 \mu\text{m}$, rather sparse. Caulocystidia $15-50 \times 8-17 \mu\text{m}$, clavate to subglobose, many with umber sap. Pileocystidia as the caulocystidia but soon evanescent. Hyphae clamped; fusiform cells $300-1500 \times 10-30 \mu\text{m}$, wall $-1 \mu\text{m}$ thick. Surface of pileus with a discontinuous layer of narrow appressed hyphae $3-8 \mu\text{m}$ wide; hypodermis pseudoparenchymatous, $200 \mu\text{m}$ thick in the centre of the pileus, composed of cells $40-100 \times 15-45 \mu\text{m}$, in oblique rows divergent to the surface and with the end-cells at the margin of the pileus forming the evanescent pileocystidia. Colour of the pileus in pale umber sap of the narrow superficial hyphae and those of the pseudoparenchyma.

This *Mycena*-like species is related with *T. fulvochracea*.

***Trogia nigrescens* sp. nov.**

Figures 20, 21

Receptacula sordide subochraceo-alba nigrescentia. Pileus 10–40 mm latus, convexus dein planus, laevis sed in aetate rugulosus, hygrophanus opacus; margine primo incurvo. Stipes 20–50 × 2–4 mm, basi abrupto subclavato subvillosus 4–8 mm lato, cartilagineus fistulosus subtenax pruinosis. Lamellae adnexae, sinuatae vel adnatae, anguste confertissimae, raro furcatae, interstitiis haud venosis, primariae 35–50, 1–3 mm latae, ordinibus 3–4(–5). Caro 1.5–2.5 mm crassa in centro pilei, subtenax fissilis aquosa; succo aquoso brunneo-griseo rufescenti dein nigrescenti. Odor nullus. Sporae (4.3–)5–6 × (3.7–)4–5 μ m, late ellipsoideae, pallide amyloideae. Basidia 23–30 × 5–6 μ m; sterigmata 4, 3 μ m longa. Cheilocystidia – 65 × 5–13 μ m, clavata vel ventricoso-appendiculata, ut acie sterili instructa. Pleurocystidia ut cheilocystidia ventricosa, collabefientia. Caulocystidia – 35 × 2–5 μ m vel – 40 × 4–11 μ m (RSS 657), cylindrica subclavate vel subventricosa. Pileocystidia – 40 × 7–12 μ m, ut cheilocystidia, in strato compacto dein disrupto. Hyphae sarcodimiticae fibulatae; cellulae fusiformes 300–2000 × 12–40 μ m, tunicis paullo incrassatis; oleiferae vel succiferae 3–35 μ m latae, copiosae. Ad truncos putridos in silva, solitaria vel subcaespitosa. Borneo, Ins. Solomonenses. Typus, Borneo RSNB 5012; herb. Cantab.

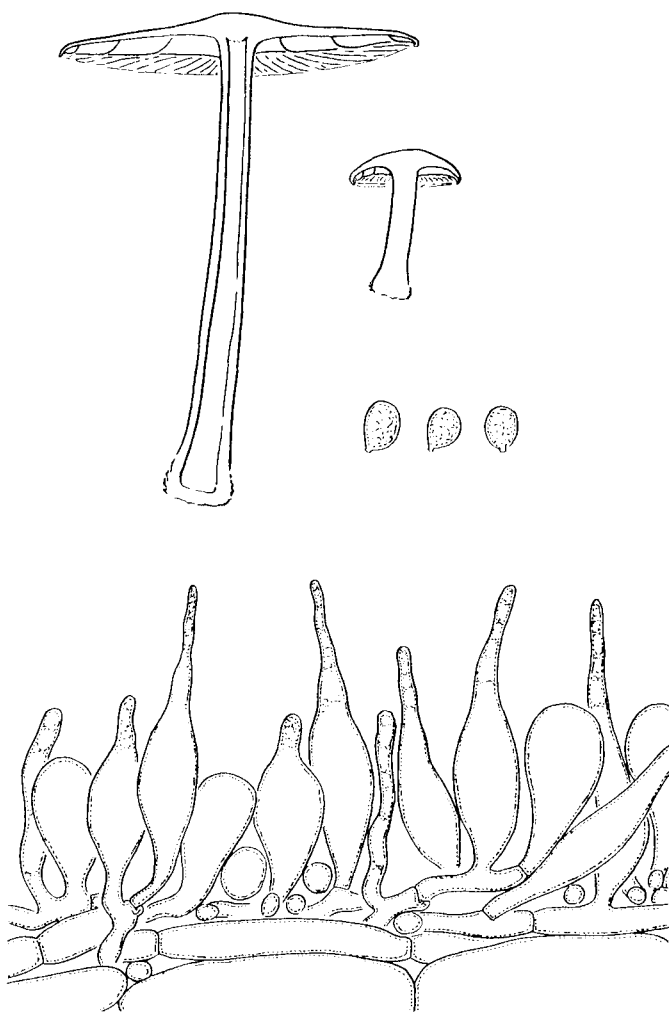


Fig. 20. *Trogia nigrescens*. Fruit-body, $\times 1\frac{1}{2}$. Spores and pileocystidia, $\times 1000$. Collection, RSNB 5012.

Fruit-bodies *sordid subochraceous white, reddening then blackening on bruising or cutting*. Pileus 10–40 mm wide, convex then plane, smooth or rugulose with age, hygrophanous, opaque; margin at first incurved. Stem 20–50 × 2–4 mm above, 4–8 mm wide at the abrupt subclavate subvillous base, often rather excentric, cartilaginous, rather tough, hollow, wholly finely pruinose. Gills adnexed, sinuate or adnate, *narrow, very crowded*, occasionally forked near the stem, interstices smooth, 35–50 primaries 1–3 mm wide, 3–4(–5) ranks. Flesh 1.5–2.5 mm thick in the centre of the pileus, rather tough, fissile, very watery, *exuding a copious brownish grey watery juice* (on cutting) turning red then black on exposure. Smell none.

On rotten trunks in the forest, solitary or subcaespitose. Borneo, Solomon Islands.

Spores (4.3–)5–6 × (3.7–)4–5 μm , broadly ellipsoid, pale violaceous amyloid. Basidia 23–30 × 5–6 μm ; sterigmata 4, 3 μm long. Cheilocystidia –65 × 5–13 μm , forming a broad sterile gill-edge, ventricose along the middle of the edge with a filiform appendage (blackening with age) –20 × 1.5–3 μm , mostly clavate and shorter along the sides of the gill-edge. Pleurocystidia as the ventricose cheilocystidia, –16 μm wide, infrequent, collapsing, easily overlooked. Hymenium not thickening, without acerose basidioles. Caulocystidia as unbranched cylindric, subclavate to subventricose processes –35 × 2–5 μm , or (in RSS 657) –40 × 4–11 μm , abundant as a disrupted palisade, a few ventricose cystidia towards the stem-apex. Pileocystidia –40 × 7–12 μm , clavate

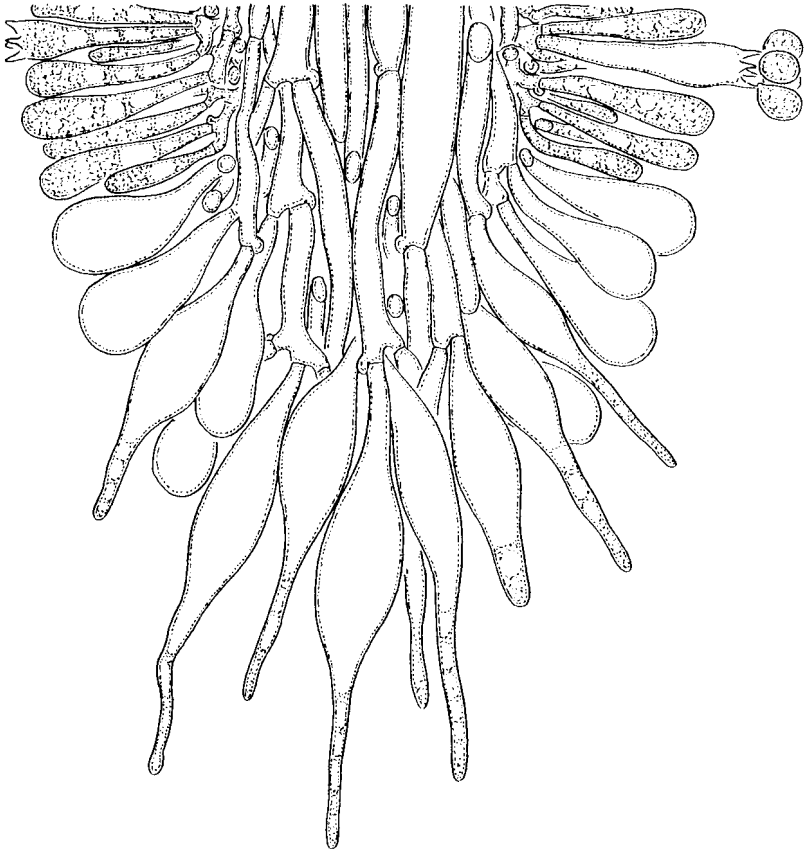


Fig. 21. *Trogia nigrescens*. Gill-edge in section, × 1000. Collection, RSNB 5012.

and ventricose as the cheilocystidia, at first in a compact palisade, then disrupted except near the margin of the pileus. Hyphae sarcodimitic, clamped; fusiform cells $300\text{--}2000 \times 12\text{--}40 \mu\text{m}$, some even longer, walls thin or slightly thickened, very abundant; narrow hyphae $2\text{--}5 \mu\text{m}$ wide, some more or less inflated as transitions to the fusiform cells (especially in the lower part of the stem); oleiferous or succiferous hyphae $3\text{--}35 \mu\text{m}$ wide, abundant throughout the tissue. Surface of pileus with a hypodermis of short-celled inflated hyphae not compacted into a pseudoparenchyma; marginal cells of the pileus $5\text{--}9 \mu\text{m}$ wide, clavate; most of the flesh of the pileus sarcodimitic.

Collections: — Borneo, Mt. Kinabalu 1300–1600 m alt.; Mesilau, 19 Jan. 1964, RSNB 5012; Kundasang, 13 Sept. 1961, RSNB 3015. — Solomon Islands, low alt., Guadalcanal, Monitor Creek, 10 July 1965, RSS 657; Kolombangara, 23 Aug. 1965, RSS 1023.

var. *violascens* var. nov.

Receptacula alba, fractu violascentia dein nigrescentia. Pileus umbonatus. Sporae 3.3–4.5 μm latae. Pilei hypodermis fere pseudoparenchymaticum. Ad lignum emortuum in silva, solitaria vel caespitosa. Ins. Solomonenses, Kolombangara, RSS 1332; herb. Cantab.

Fruit-bodies white, *violaceous (not rufous) on cutting, then blackening*. Pileus 10–30 mm wide, *rather strongly or subacutely umbonate*. Spores $5\text{--}6.5 \times 3.3\text{--}4.5 \mu\text{m}$, pale vinaceous amyloid. Caulocystidia $40 \times 4\text{--}17 \mu\text{m}$, with slightly thickened walls. Pileus with an almost pseudoparenchymatous hypodermis 100–150 μm thick, composed of rounded to oblong cells $8\text{--}37 \mu\text{m}$ wide. Solomon Islands.

Collections: — Kolombangara, sea-level, 30 Aug. 1965, RSS 1166 (immature) 700 m alt., 7 Sept. 1965, RSS 1332; 800 m alt., 3 Sept. 1965, RSS 1223.

This well-defined species is an ally of *T. seriflua*. Var. *violascens* is easily distinguished in the living state. The collection RSS 1332 of this variety was peculiar in two ways. The pileus was not umbonate. The surface of the pileus, in material preserved in alcohol-formalin, had a firmly mucilaginous superficial layer 10–40 μm thick, composed of excrecent hyphae $2\text{--}3 \mu\text{m}$ wide and short pileocystidia, $35 \times 5\text{--}12 \mu\text{m}$, projecting from the almost pseudoparenchymatous hypodermis into the mucilage, but not as a continuous palisade.

Trogia nitrosa sp. nov.

Figure 22

Pileus 9–50 mm latus, conicus dein convexoplanus, vix umbonatus, hygrophanus, fere ad centrum striatus, primo puberulus, pallide cervino-brunneus vel brunneo-melleus, centro obscuriori vel ferrugineo-cervino, marginem versus albidus. Stipes 10–50 $\times$ 1–5 mm, basi abrupto vel (e radicibus emortuis) subradicanti attenuato, minute puberulo-pruinosis, subconcolor, apicem versus albidus. Lamellae adnexae, fere liberae, ventricosae subdistantes, interstitiis subreticulatis, primariae 10–20, 1–10 mm latae, ordinibus 2–3, acie puberulo, concolores. Caro 1–2 mm crassa in centro pilei, ceraceo-mollis dein firma. Odor fortis, fractu nitrosus. Sporae $5\text{--}6 \times 4\text{--}4.8 \mu\text{m}$, vel $6\text{--}7.5 \times 4\text{--}5.5 \mu\text{m}$ (Singapore), pallide amyloideae. Basidia $20\text{--}26 \times 5.5\text{--}6.5 \mu\text{m}$; sterigmata 4. Cheilocystidia $95 \times 16\text{--}25 \mu\text{m}$, ventricoso-conica, apice obtuso $5\text{--}9 \mu\text{m}$ lato, tunicis saepe leniter incrassatis, ut acie sterili instructa. Pleurocystidia nulla. Caulocystidia et pileocystidia $65\text{--}230 \times 20\text{--}44 \mu\text{m}$, ut cheilocystidia, apice obtuso $7\text{--}14 \mu\text{m}$ lato. Hyphae sarcodimiticae, fibulatae; cellulae fusiformes $250\text{--}1500 \times 8\text{--}20 \mu\text{m}$ vel $40 \mu\text{m}$ (Singapore); angustae in stipite paucae. Ad lignum putridum vel e radicibus emortuis in silva. Singapore, Sarawak. Typus, Sarawak, Corner P-101; herb. Cantab.

Pileus 9–50 mm wide, conical then convex to plane, not or scarcely umbonate, at first wholly minutely puberulous, hygrophanous, more or less striate to the disc, *pale fawn brown or brownish honey-colour, deeper or ferruginous fawn in the centre, whitish near the minutely pilose margin* at first incurved and then revolute-undulate. Stem 10–50 $\times$ 1–5 mm, subcylindric, hollow, the base abrupt or subattenuate and rooting, wholly minutely white pilose, *paler concolorous, whitish upwards*. Gills adnexed, nearly

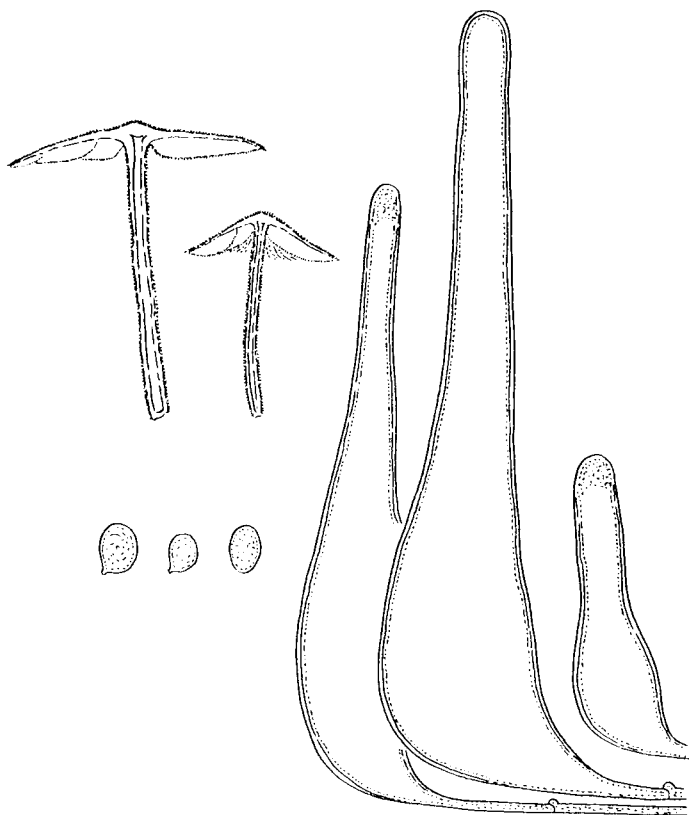


Fig. 22. *Trogia nitrosa*. Fruit-body, $\times 1$. Caulocystidia, $\times 500$.
Collection, Corner P-101.

free, ventricose, subdistant, interstices slightly transversely veined, edge puberulous, 10–20 primaries 1–10 mm wide, 2–3 ranks, *pale fawn brown or pinkish brown*. Flesh 1–2 mm thick in the centre of the pileus, hygrophanous, waxy-soft then firm, concolorous. *Smell nitrous, strong when crushed*.

On rotten wood and from dead roots in the forest. Singapore, Sarawak.

Spores $5-6 \times 4-4.8 \mu\text{m}$ or $6-7.5 \times 4-5.5 \mu\text{m}$ (Singapore collection), pale blue amyloid. Basidia $22-26 \times 5.5-6.5 \mu\text{m}$; sterigmata 4; no acerose basidioles. Cheilocystidia $-95 \mu\text{m}$ long, $16-25 \mu\text{m}$ wide near the base, $5-9 \mu\text{m}$ at the obtuse apex, ventricose-conic, with thin or slightly thickened walls, as a sterile gill-edge. Pleurocystidia none. Caulocystidia and pileocystidia $65-230 \times 20-44 \mu\text{m}$, as the cheilocystidia but the obtuse apex $7-14 \mu\text{m}$ wide, walls thin or slightly thickened, wholly vacuolate, hyaline. Hyphae sarcodimitic, clamped; fusiform cells in the stem $250-1500 \times 8-20 \mu\text{m}$ ($-40 \mu\text{m}$ wide in the Singapore collection), wall $-1 \mu\text{m}$ thick, in the pileus $60-300 \times 8-30 \mu\text{m}$ and not forming a pseudoparenchyma.

Collections: — Singapore, Reservoir Jungle, 25 Aug. 1940. — Sarawak, Semenggoh Forest, 19 Aug. 1972, Corner P-101; Gunong Matang, 400 m alt., 20 Aug. 1972, Corner P-112.

This species comes in the alliance of *T. subglobospora* where it is distinguished by the strong smell, the adnexed gills and the long cystidia on stem and pileus. It can be mistaken for *Marasmius* but lacks acerose basidioles and has the construction of *Trogia*.

Trogia obfuscata sp. nov.

Figure 23

Pileus –28 mm latus, convexus dein planus, centro depresso, laevis hygrophanus, pallide cervino-brunneolus, marginem revolutum versus albidus. Stipes –38 × 1.5–2.5 mm, fistulosus laevis albus dein subfuscus. Lamellae adnato-decurrentes distantae crassiusculae, interstitiis leniter reticulatis, primariae 17–20, –2.5 mm latae, ordinibus 1–2(–3), pallide cremo-albidae dein subfuscae. Caro in pileo ceracea, in stipite cartilaginea. Odor nullus. Sporae 4.3–5.5 × 2.7–3.3 μ m, pallide amyloideae. Basidia 22–26 × 4.5–5.5 μ m, subagglutinata; sterigmata 4, 4 μ m longa. Cheilocystidia 25–65 × 7–20 μ m, clavata, pauca subventricosa, haud in acie sterili instructa. Pleurocystidia nulla. Caulocystidia ut cheilocystidia, sparsa, plerumque apicem stipitis versus. Pileocystidia nulla. Hyphae sarcodimiticae fibulatae; cellulae fusiformes 150–870 × 8–23 μ m, tunicis –1 μ m crassis; angustae in stipite processibus ligativis 1–3 μ m latis tunicis incrassatis copiosis. Ad truncum delapsus in silva montana, caespitosa. Borneo, Mt. Kinabalu, Mesilau 1500 m alt., 10 March 1964, RSNB 5720; herb. Cantab.

Pileus –28 mm wide, convex to plane, centre often depressed, smooth, hygrophanous, *pale fawn drab*, *pallid white towards the crenulate margin* exceeding the gills. Stem –38 × 1.5–2.5 mm, cylindric, hollow, smooth, *white then subfuscous*. Gills adnato-decurrent, *distant, rather thick*, the interstices shallowly reticulate, 17–20 primaries –2.5 mm wide, 1–2(–3) ranks, *pallid drab white then pale fuscous cream*. Flesh waxy in the pileus, tough and cartilaginous in the stem. Smell none.

On fallen trunks in montane forest, densely caespitose. Borneo, Mt. Kinabalu 1500 m alt.

Spores 4.3–5.5 × 2.7–3.3 μ m, pale violaceous brown amyloid. Basidia 22–26 × 4.5–5.5 μ m, subagglutinated in the tough hymenium; sterigmata 4, 4 μ m long. Cheilocystidia 25–65 × 7–20 μ m, clavate, a few ventricose but not appendaged, clustered, not forming a sterile gill-edge. Pleurocystidia none. Caulocystidia as the cheilocystidia, scattered, mostly near the stem-apex, the narrow superficial hyphae of the stem also producing frequent short, often curved and irregularly inflated, processes mostly –20 × 1–2.5 μ m. Pileocystidia none. Hyphae sarcodimitic to more or less sarcotrimitic in the stem, clamped; fusiform cells 150–870 × 8–23 μ m in the stem, many with rather broad septa, walls –1 μ m thick; copious narrow thick-walled binding hyphae, 1–3 μ m wide, mostly aseptate, produced from the thin-walled narrow hyphae 3–7 μ m wide. Surface of pileus with a thin layer, 1–3 hyphae thick, of narrow radiating hyphae 3–5 μ m wide and a hypodermis of inflated cells 40–170 × 12–55 μ m, c. 150 μ m thick in the centre of the pileus but not compacted into a pseudoparenchyma.

If the fruit-body lacked gills, the species would be similar to *T. aphylla*. See the note under *T. raphanolens*.

T. ochrophylla Corner

Mon. Canth. Fungi (1966) 228, pl. 21f.

Pileus –15 mm radius, 20 mm wide, *pleuopodal*, flabelliform becoming lobed, smooth, substrate, *pale fuscous brown*, drying greyish silky; margin crisped. Stem 1–3 × 0.5–0.8 mm, lateral, expanding abruptly into the pileus, subpruinose, *fuscous brown*. Gills decurrent, rather thick, subdistant, the interstices not or slightly veined, sometimes furcate, 7–11 primaries 1–2 mm wide, 3 ranks, *bright ochraceous*. Flesh 0.7–1.5 mm thick at the base of the pileus, rather tough. Smell none.

On dead petioles of the palm *Pinanga*. Singapore Botanic Gardens.

Spores 5–7 × 2.5–3 μ m, not amyloid. Basidia 25–30 × 4.5–5.5 μ m; sterigmata 4. Cystidia none, the gill-edge fertile. Caulocystidia and pileocystidia none, but with sparse narrow, more or less projecting hyphae –50 × 2–3 μ m. Hyphae clamped; fusiform cells 8–18 μ m wide, much elongate, walls –1 μ m thick; narrow hyphae 2–6 μ m, abundant.

This seems allied with the mesopodal *T. inaequalis* of Ceylon. Gill-less, it would be *Inflatostereum*.

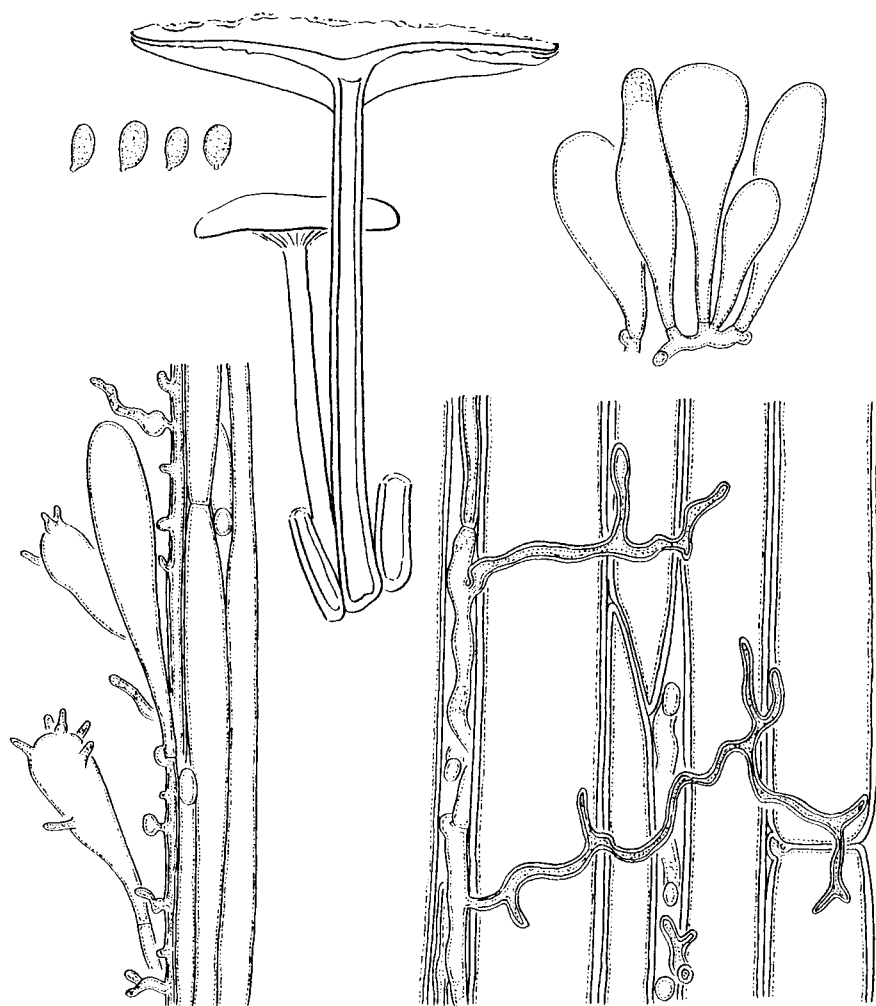


Fig. 23. *Trogia obfuscata*. Fruit-bodies, $\times 2$. Spores, $\times 1000$. Cheilocystidia and caulocystidia (lower left), $\times 500$. Hyphae of stem (lower right), $\times 1000$. Collection, RSNB 5720.

Trogia octava sp. nov.

Receptacula alba. Pileus 4–12 mm latus, convexus dein plano-umbilicatus, subundulatus, vix striatus, laevis; margine recto. Stipes 4–28 $\times$ 0.5–1 mm, basi abrupto subincrassato, pruinosis. Lamellae decurrentes distantiae angustae crassiusculae, interstitiis haud vel vix venosis, primariae 9–13, $\sim$ 0.5 mm latae, ordinibus 1(–2), aliquando marginem pilei versus furcatae. Sporae 4–5.7 $\times$ 3–4 μ m, late ellipsoideae vel subgloboseae, sicco 1-guttatae, inamyloideae. Basidia 17–20 $\times$ 5–5.5 μ m. Cystidia nulla. Caulocystidia $\sim$ 35 $\times$ 3–6 μ m, subcylindrica copiosa. Pileocystidia non visa. Hyphae sarcodimiticae fibulatae; cellulae fusi-formes multo elongato. Ad truncos delapsos in silva, gregaria. Malaya (Pahang), New Guinea (Morobe, Oomsis). Typus, Malaya, Pahang, Tembeling, 2 Dec. 1930, Corner s.n.; herb. Cantab.

This was 'Omphalia 8' of my notes of long ago when I was beginning to study the Malayan fungi. Having only dried material to examine, I have been unable to add some microscopic details.

Trogia odorata sp. nov.

Figure 24

Receptacula intense indigo-coerulea vel cyanea, in aetate fuliginea, lamellis primo pallidis. Pileus 15–60 mm latus, convexus dein planus, centro depresso, furfuraceo-pruinosis substriatus. Stipes 15–25 × 3–5 mm, basi subincrassato 3–7 mm lato, fistulosus, furfuraceo-pruinosis. Lamellae decurrentes arcuatae angustae subdistantes, raro furcatae, interstitiis haud venosis, primariae c. 25, 2–3 mm latae, ordinibus 3. Caro in centro pilei 2–3 mm crassa, ceraceo-cornea, firma, hygrophana concolor. Odor fortis anisetus. Sporae 4–4.7 × 3.5–4 µm, ovoideae vel subglobose, inamyloideae. Basidia 30–40 × 4.5–5.5 µm; sterigmata 4, 3 µm longa. Cystidia nulla, acie lamellae basidiis sterilibus instructa. Caulocystidia – 60 × 4–7(–8) µm, clavata fasciculata tunicis brunneolis. Pileocystidia – 40 × 5–10 µm, clavata vel subventricosa, tunicis brunneis, ut hymenioderma interruptum. Hyphae sarcodimitica fibulatae; cellulae fusiformes 200–2000 × 7–30 µm, tunica vix incrassata. Ad lignum putridum in silva, caespitosa. Ins. Solomonenses, Kolombangara, 23 Aug. 1965, RSS 1007; typus, herb. Cantab.

Fruit-bodies entirely deep indigo or blue green, the gills at first pallid or whitish, entirely dark fuliginous indigo in age, or the stem varying violaceous indigo. Pileus 15–60 mm wide, convex to plane with the centre depressed, wholly finely *scurfy pruinose* with darker particles, substriate. Stem 15–25 × 3–5 mm, the slightly thickened base 3–7 mm wide, hollow, finely *scurfy pruinose*. Gills decurrent, arcuate, *narrow, subdistant*, interstices smooth, c. 25 primaries 2–3 mm wide, 3 ranks, occasionally forked. Flesh 2–3 mm thick in the centre of the pileus, waxy-horny, firm, hygrophane, concolorous. *Smell strong, of aniseed.*

On very rotten wood, caespitose. Solomon Islands, Kolombangara.

Spores 4–4.7 × 3.5–4 µm, ovoid to subglobose, not amyloid but with slight glycogen content. Basidium 30–40 × 4.5–5.5 µm, elongate clavate; sterigmata 4, 3 µm long. Cystidia none but the gill-edge with sterile basidia. Caulocystidia – 60 × 4–7(–8) µm, more or less clavate, with *smooth brown walls*, fasciculate, abundant. Pileocystidia – 40 × 5–10 µm, clavate or subventricose, with *smooth brown walls*, as a disrupted palisade, with many subsequent cystidia and short lobes with brown walls developing

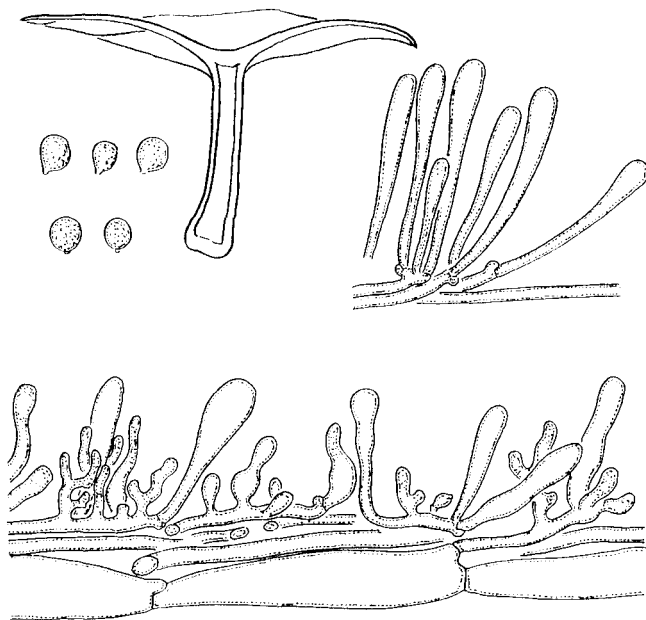


Fig. 24. *Trogia odorata*. Fruit-body, × 1. Spores, × 1000. Caulocystidia (upper right) and surface of pileus, × 500. Collection, RSS 1007.

from the narrow superficial hyphae of the pileus. Hyphae sarcodimitic, clamped; fusiform cells $200\text{--}2000 \times 7\text{--}30 \mu\text{m}$, thin-walled; narrow hyphae on the surface of the stem and pileus often with slightly thickened brownish walls; marginal hyphae of the pileus $2.5\text{--}5 \mu\text{m}$ wide, cylindric to subclavate. Pileus without a pseudoparenchymatous hypodermis.

I found this striking species but once, and then in abundance; it is hardly to be overlooked. It resembles *T. cyanea* but the colour is more intense, the smaller spores tend to be subglobose, cheilocystidia are lacking, and the smell is distinctive. It approaches *T. pleurotoides* but is strictly mesopodal with well formed gills and smooth spores. In the brown walls of many of the cystidia and narrow hyphae on stem and pileus, it resembles the Brazilian *T. subrufescens*, especially its var. *parvispora*, but that has yellow gills and stem and ellipsoid spores. Noteworthy, however, are the rather long basidia in all these species. The flora of the Solomon Islands certainly introduces connections with South America, as opposed to the main run of Malesian affinity.

Trogia omphalinoides sp. nov.

Figure 25

Receptacula alba, in aetate pallide crenea. Pileus 4–12 mm latus, convexus dein planus, plus minus umbilicatus, subpruinosis striatus; margine paullo incurvato, dein crenulato. Stipes 5–17 $\times$ 0.5–1 mm, basi 1.5–2 mm subincrassato, puberulus. Lamellae decurrentes angustae distantae, interstitiis haud vel vix venosis, haud furcatae, primariae 11–16, 0.2–0.8 m latae, ordine 1, secundariis nullis vel vix evolutis. Caro mollis. Odor nullus. Sporae 5–6 $\times$ 3.7–5 μm , ovoideae vel subgloboasae, pallide amyloideae. Basidia 27–35 $\times$ 5–6 μm ; sterigmata 4, vel 1–4 (RSNB 664; monospores 8–9 $\times$ 5.5 μm). Cheilocystidia –65 $\times$ 7–12 μm , clavata vel ventricosa, ut acie sterili istructa. Pleurocystidia nulla. Caulocystidia 25–65 $\times$ 6–11 μm , clavata vel subventricosa. Pileocystidia ut caulocystidia. Hyphae sarcodimiticae fibulatae; cellulae fusiformes –1200 $\times$ 25 μm , tunicis –1 μm crassis; oleiferae 3–10 μm latae in stipite paucae. Ad lignum emortuum in silva, saepe dense gregaria. Malaya (Johore), Borneo (Mt. Kinabalu). Typus, Johore, Gunong Pant, 26 Sept. 1966, Corner s.n.; herb. Cantab.

Fruit-bodies white, pale cream in age. Pileus 4–12 mm wide, convex to plane and more or less umbilicate, subpruinose, striate; margin at first slightly incurved, becoming crenulate. Stem 5–17 $\times$ 0.5–1 mm, 1.5–2 mm at the slightly thickened abrupt base, puberulous. Gills decurrent, narrow, distant, not forked, interstices smooth or slightly veined as the sides of the gills, 11–16 primaries, 0.2–0.8 mm wide, 1 rank, secondaries absent or vague. Flesh rather soft. Smell none.

On dead wood in the forest, often densely gregarious. Malaya, Borneo.

Spores 5–6 $\times$ 3.7–5 μm , broadly ellipsoid to subglobose, pale bluish amyloid. Basidia 27–35 $\times$ 5–6 μm ; sterigmata 4, but 1–4 in the collection RSNB 664 with monospores 8–9 $\times$ 5.5 μm . Cheilocystidia –65 $\times$ 7–12 μm , clavate to ventricose with obtuse apex, as a wide sterile gill-edge. Pleurocystidia none. Caulocystidia 25–65 $\times$ 6–11 μm , more or less subventricose with obtuse, rarely tapered, apex, varying clavate, towards the base of the stem slightly thick-walled and with filiform appendage 1.5–2 μm wide. Pileocystidia similar but mostly –30 μm long, abundant to rather sparse, developed from narrow 3–5 μm superficial hyphae forming an interrupted layer over the inflated hyphae of the flesh. Hyphae sarcodimitic, clamped; fusiform cells –1200 $\times$ 25 μm , walls –1 μm thick; narrow hyphae 2–7 μm wide; oleiferous hyphae 3–10 μm wide, sparse in the stem; pileus without pseudoparenchyma; endocystidia none.

Collections: — Malaya, Johore, Gunong Pant low alt., 26 Sept. 1966. — Borneo, Mt. Kinabalu, east ridge 1100 m alt., 22 June 1961, RSNB 664.

var. confertifolia var. nov.

Lamellae confertae, primariae 20–28, –1.5 mm latae, ordinibus 2–3, haud venosae. Cheilocystidia –55 $\times$ 4–8 μm , subcylindrica vel anguste subventricosa. Ad lignum putridum, gregaria. New Guinea, Lae Botanical Garden, 25 Sept. 1960, Corner s.n.; herb. Cantab.

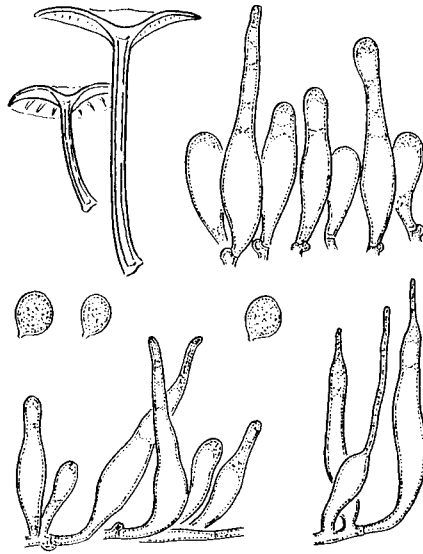


Fig. 25. *Trogia omphalinoides*. Fruit-bodies, $\times 2$. Spores, $\times 1000$. Cheilocystidia (above) and caulocystidia (right, from the base of the stem), $\times 500$. Collection, Johore 26 Sept. 1966.

Pileus ~ 20 mm wide. Stem $\sim 18 \times 1\text{--}2$ mm, centric to excentric, the abrupt base attached by radiating white mycelial fibrils forming a thin arachnoid felt ~ 12 mm wide. Spores $5.5\text{--}7 \times 4\text{--}5$ μm , pale violaceous amyloid. Caulocystidia as the cheilocystidia but the apex often prolonged and the whole measuring up to 120 μm long.

This needs comparison with *T. alba* var. *minor* and *T. octava* (non-amyloid spores, no hymenial cystidia).

Trogia pallida sp. nov.

Figure 26

Receptacula pallide alba. Pileus ~ 15 mm latus, convexus dein planus vel subrevolutus, laevis hygrophanous; margine primo deflexo, haud incurvo, ultimo plus minus incisio. Stipes $12\text{--}18 \times 1\text{--}1.5$ mm, basi abrupto subincrassato, laevis vel aliquando basim versus subpubescens. Hymenium decurrens laeve vel plicis $5\text{--}7$ vix evolutis distantibus simplicibus praeditum. Caro tenuis ceraceo-firma scissilis hygrophana. Odor nullus. Sporae $7\text{--}8.5 \times 4.5\text{--}6.5$ μm , ellipsoideae subclavatae, leniter violaceo-amyloideae. Basidia $30\text{--}38 \times 5\text{--}6.5$ μm ; sterigmata $2\text{--}(3\text{--}4)$, $6\text{--}7$ μm longa ($4\text{--}5$ μm in basidiis 4-sporigeris). Hymenium ~ 100 μm incrassatum. Cystidia nulla. Caulocystidia et pileocystidia ut basidia sterilia, copiosa sed mox collabefientia. Hyphae sarcodimitica fibulatae; cellulae fusiformes ~ 1500 μm vel ultra, $6\text{--}27$ μm latae, tunicis tenuibus vel in stipite ~ 1 μm crassis. Ad terram solitaria et ad radices lignosas emortuas gregaria in silva. Borneo, Mt. Kinabalu 1500 m alt., 27 April 1964, RSNB 8469; typus, herb. Cantab.

Fruit-bodies pallid white. Pileus ~ 15 mm wide, convex then plane and subrevolute, smooth, hygrophanous; margin at first deflexed, not incurved, then incised. Stem $12\text{--}18 \times 1\text{--}1.5$ mm, base abrupt and slightly thickened, smooth or puberulous downwards. Hymenium decurrent, smooth or with $5\text{--}7$ slight simple and distant folds. Flesh waxy-firm, scissile, hygrophanous. Smell none.

Solitary on the ground or gregarious on dead woody roots. Borneo, Mt. Kinabalu 1500 m alt.

Spores $7\text{--}8.5 \times 4.5\text{--}6.5$ μm , ellipsoid-subclavate, slightly violaceous amyloid. Basidia $30\text{--}38 \times 5\text{--}6.5$ μm ; sterigmata $2\text{--}(3\text{--}4)$, $6\text{--}7$ μm long or $4\text{--}5$ μm on 4-spored basidia. Hymenium thickening ~ 100 μm . Cystidia none. Hyphae sarcodimitic, clamped; fusi-

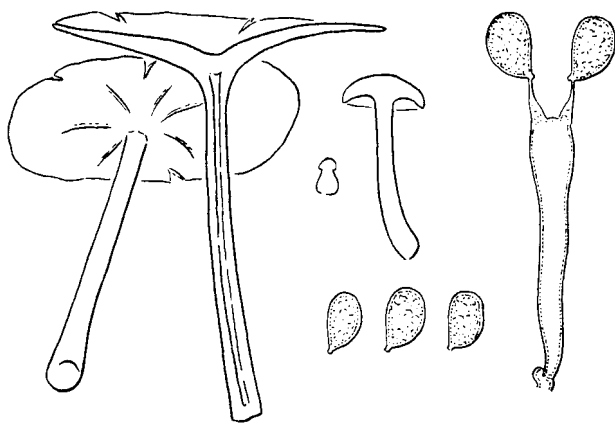


Fig. 26. *Trogia pallida*. Fruit-bodies, $\times 3$. Spores and basidium, $\times 1000$. Collection, RSNB 8469.

form cells $-1500 \times 6-27 \mu\text{m}$, walls $-1 \mu\text{m}$ thick in the stem. Surface of pileus and stem set with rather copious sterile basidia but soon collapsing. Pileus without a pseudoparenchymatous hypodermis.

This is close to *T. furcata* but the colourless fruit-bodies are almost or quite devoid of gills, the spores and basidia are slightly smaller, and the hymenium thickens. The slight amyloid reaction of the spores seems to be caused by their slight glycogen content rather than by an amyloid wall. Without cystidia and pseudoparenchymatous hypodermis the species is parallel with *T. silvestris* in the loss of the gills. Though the basidia are mostly 2-spored, the hyphae are clamped.

***Trogia papillata* Corner**

Mon. Canth. Fungi (1966) 228, f. 93d.

Pileus 10–18 mm wide, convex then plane, *papillate umbonate*, smooth, striate towards the margin, *yellowish white then more ochraceous yellow*, drying pruinose; margin strongly incurved, soon expanding. Stem 30–48 $\times$ 1.5–2 mm, often excentric, cylindric or compressed, hollow, waxy cartilaginous, *white pruinose, pale yellowish white, then straw-colour*, base slightly thickened. Gills *adnexed or nearly free*, varying sinuate, *narrow, very crowded*, neither branched nor veined, c. 48–60 primaries 1.3–1.5 mm wide, 4 ranks, *white*. Flesh 0.8–1.5 mm thick in the centre of the pileus, waxy-firm. *Smell strong, of radish* or *Ganoderma*.

On rotten wood in the forest, densely caespitose. Malaya, Johore (Tebrau 24 Sept. 1939).

Spores $4-4.5 \times 3-3.5 \mu\text{m}$, broadly ellipsoid, not amyloid. Basidia $18-22 \times 5-6 \mu\text{m}$; sterigmata (2-)4, $3 \mu\text{m}$ long. Cystidia none, gill-edge fertile. Caulocystidia $12-50 \times 4-10 \mu\text{m}$, subcylindric, subclavate or subventricose, some with filiform apex $-10 \times 1.5-2 \mu\text{m}$ or entirely filiform. Pileocystidia similar, sparse. Hyphae clamped; fusiform cells $-2000 \times 10-25 \mu\text{m}$, walls slightly thickened; narrow hyphae $3-7 \mu\text{m}$ wide, abundant, slightly thick-walled at the base of the stem; oleiferous hyphae few. Surface of pileus with a layer $20-30 \mu\text{m}$ thick, composed of interwoven hyphae $1.5-4 \mu\text{m}$ wide, without a pseudoparenchymatous hypodermis.

The surface of the pileus has an unusual structure and is not composed simply of appressed radiating hyphae. The species would go in *Hemimycena*, but I can see no sharp separation of this genus from the long run of *Trogia*.

T. partita (Berk.) Pat.

Corner, Mon. Canth. Fungi (1966) 230.

I refer to the brief description that I was able to give. The species came from New Ireland.

T. pleurotoides Corner

Mon. Canth. Fungi (1966) 230, pl. 5A.

Fruit-bodies *indigo to greenish cyaneous*, fuliginous in age, finally fading subochraceous. Pileus 8–40 mm wide, *pleuropodal and flabelliform* ascending, *to mesopodal infundibuliform*, not pervious, smooth, innately streaked, substrate towards the margin, drying minutely pruinose; margin slightly incurved at first. Stem 3–15 × 1–3 mm, lateral, excentric or centric, slightly attenuate downwards, rarely furcate, stuffed, minutely pruinose, base abrupt and thinly villous; mycelium white. Gills *deeply decurrent, very narrow and crowded*, often forked, not veined, thin, 13–30 primaries 0.2–0.5 mm wide, 3–6 ranks; hymenium at stem-apex as a smooth band 1–3 mm wide. Flesh 0.5–1 mm thick, waxy-tough to cartilaginous, drying hard. Smell bitter.

On rotten wood in the forest, often caespitose. Malay Peninsula (Pahang, Singapore), Borneo (Brunei, Sabah).

Spores 4.5–5.5 × 3–4.3 μm , *finely asperulate*, broadly ellipsoid, 1-guttulate, not amyloid. Basidia 33–44 × 6–8 μm ; sterigmata 4. Hymenium slightly thickening –70 μm . Cheilocystidia 20–26 × 6–8 μm , as sterile basidia. Pleurocystidia none. Caulocystidia –40 × 4–8 μm , subclavate, scattered or aggregated. Pileocystidia –35 × 5–10 μm , clavate, sparse, thin-walled. Hyphae clamped; fusiform cells 300–1400 × 12–30 μm , walls –2 μm thick; narrow hyphae 2–8 μm wide, some with walls –2 μm thick. Pileus without a pseudoparenchymatous hypodermis. Blue colour in the hyphal walls and as a slight incrustation on the superficial hyphae of stem and pileus, becoming washed out with rain.

In the manner of modern taxonomy, the asperulate spores of this species would justify a new genus. As its alliance is clearly with the blue-green species of *Trogia*, from *T. odorata* to *T. stereoides*, I do not follow that lead.

Trogia polyadelpha sp. nov.

Figure 27

Receptacula alba. Pileus –22 mm latus, convexo-planus, centro depresso, laevis sulcato-striatus, margine undulato. Stipes 7–11 × 1–1.5 mm, basi abrupto, puberulus, aetate subochraceus. Lamellae arcuato-decurrentes distantae, interstitiis subrugulosis, primariae 6–11, 1–2 mm latae, acie denticulata, secundariae pliciformes, aliquando furcatae et vix evolutae. Caro tenuis ceracea, in stipite subtenax. Odor nullus. Sporae 7–8.7 × 5.5–6.5 μm , late ellipsoideae, pallide amyloideae. Basidia 26–35 × 6–7 μm , without clamps; sterigmata 2, 6–7 μm longa. Cheilocystidia 30–70 × 7–13 μm , plerumque clavata, nonnulla ventricosa obtusa, ut acie sterili instructa. Pleurocystidia 40–70 × 5–8 μm , lanceolato-ventricosa, apicibus elongatis 2–4 μm latis sparsissima. Caulocystidia –70 × 5–10 μm , clavata vel ventricosa, copiosa. Pileocystidia similia sparsa collabefientia. Hyphae sarcodimiticae sine fibulis; cellulae fusiformes 60–1600 × 8–20 μm in stipite pileoque, tunicis –1 μm crassis. Ad lignum putridum in silva montana, dense gregaria. Borneo, Mt. Kinabalu, Mesilau 1400 m alt., 27 March 1964, RSNB 8473; typus, herb. Cantab.

Fruit-bodies white, the stem subochraceous in age. Pileus –22 mm wide, convexo-plane, the centre depressed or umbilicate, radially *sulcato-striate* over the main gills, smooth; margin undulate. Stem 7–11 × 1–1.5 mm, cylindric, finely puberulous, base abrupt. Gills arcuate-decurrent, *distant*, 6–11 primaries 1–2 mm wide, with finely fimbriate denticulate edge, the secondaries as vague, often furcate, folds, the interstices slightly rugulose. Flesh waxy, rather tough in the stem. Smell none.

In dense troops on rotten trunks in the montane forest. Borneo, Mt. Kinabalu 1400 m alt.

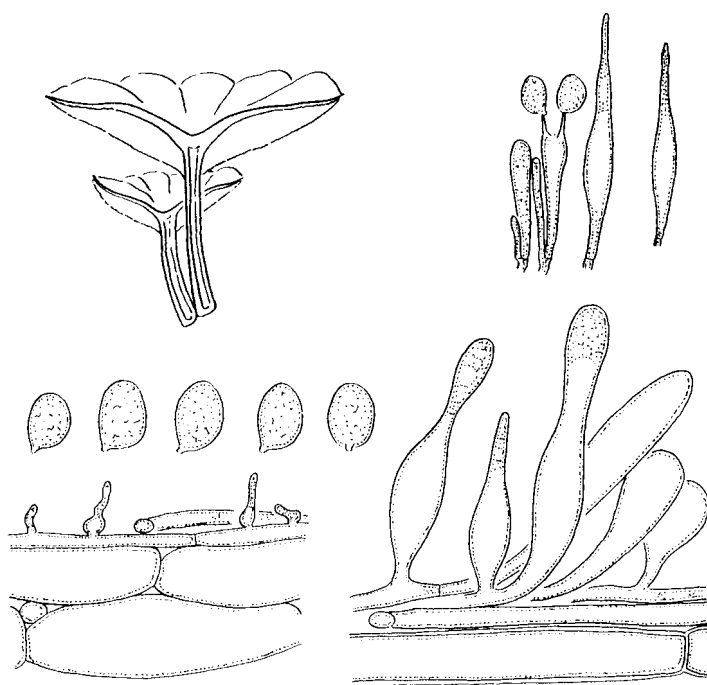


Fig. 27. *Trogia polyadelpha*. Fruit-bodies, $\times 2$. Spores, $\times 1000$. Basidia, pleurocystidia, surface of pileus (lower left) and caulocystidia (lower right), $\times 500$. Collection, RSNB 8473.

Spores $7-8.7 \times 5.5-6.5 \mu\text{m}$, broadly ellipsoid, pale violaceous brown amyloid. Basidia $26-35 \times 6-7 \mu\text{m}$, without clamps; *sterigmata* 2, $6-7 \mu\text{m}$ long. Cheilocystidia $30-70 \times 7-13 \mu\text{m}$, mostly clavate, some more or less ventricose with broad obtuse apex, occasionally with brownish walls, as a sterile gill-edge. Pleurocystidia $40-70 \times 5-8 \mu\text{m}$, lanceolate-subventricose, the prolonged and projecting apex $2-4 \mu\text{m}$ wide, very sparse. Caulocystidia $-70 \times 5-12 \mu\text{m}$, clavate to ventricose with obtuse apex, some rather narrowly appendaged, abundant. Pileocystidia similar, sparse, collapsing. Hyphae sarcodomitic in pileus and stem, *without clamps*; fusiform cells $60-1600 \times 8-20 \mu\text{m}$, walls $\sim 1 \mu\text{m}$ thick; narrow hyphae $2-6 \mu\text{m}$ wide, rather thick-walled at the base of the stem; hyphae near the surface of the stem with short cells and broad septa. Surface of pileus with a discontinuous layer, $1-2$ hyphae thick, of radiating hyphae $3-5 \mu\text{m}$ wide bearing the evanescent pileocystidia and many with a few short cylindric to subventricose processes $-12 \times 1-2.5(-4) \mu\text{m}$. The inflated hyphae near to or reaching the surface, not as a pseudoparenchyma; endocystidia none; marginal cells $6-10 \mu\text{m}$ wide, clavate.

This must be related to *T. delicata* with larger fruit-bodies, more numerous broader adnexed gills with scattered cheilocystidia and no pleurocystidia, clamped hyphae and mostly 4-spored basidia, yet the spores are about the same size.

T. primulina Corner

Mon. Canth. Fungi (1966) 231, f. 123, 124.

Fruit-bodies pale citron- or primrose-yellow, gills becoming whitish. Pileus $5-12 \text{ mm}$ wide, convex then plano-umbilicate to infundibuliform, minutely pruinoso-puberulous striate to the centre; margin slightly incurved, then crenulate-undulate. Stem $3-16 \times$

0.5–1.5 mm, often excentric, hollow, minutely pruinose, base abrupt and byssoid or strigose. Gills decurrent, *distant, narrow*, some furcate, interstices subrugulose, 12–16 primaries 0.6–1 mm wide, 1–3 ranks. Flesh thin, waxy and rather tough, hygrophanous. Smell none.

On dead wood and twigs in the forest, gregarious. Malaya (Perlis, Bukit Besi Hangit), Singapore (Botanic Gardens).

Spores $8\text{--}9.5 \times 5\text{--}5.5 \mu\text{m}$, inamyloid. Basidia $30\text{--}40 \times 7\text{--}8.5 \mu\text{m}$; sterigmata 2(–3, –4), $6\text{--}7 \mu\text{m}$ long. Cheilocystidia $30\text{--}70 \times 5\text{--}8 \mu\text{m}$, subclavate to subventricose and often with a filiform apex $1.5\text{--}3 \mu\text{m}$ wide, even entirely filiform, not as a sterile gill-edge. Caulocystidia as the cheilocystidia. Pileocystidia $50 \times 5\text{--}8 \mu\text{m}$, subventricose with filiform and sometimes shortly branched apex. Hyphae *without clamps*; fusiform cells $150\text{--}850 \times 9\text{--}30 \mu\text{m}$, walls $1 \mu\text{m}$ thick. Pileus with a layer of narrow radiating hyphae, 2–3 hyphae thick, without a pseudoparenchymatous hypodermis. Yellow colour as a diffuse cytoplasmic pigment, not vacuolar.

Though the fruit-bodies are yellow and the pileus is not sulcato-striate, yet this species has much in common with *T. polyadelpha*.

Trogia pusilla sp. nov.

Figure 28

Pileus 3–6 mm *latus, convexo-planus, centro saepe depresso, laevis, minute virgatis, substriatus, fuscigriseus flavidulo-tinctus*. Stipes 8×0.5 mm, *pallide flavidulus*. Lamellae *alte decurrentes subdistantae crassiusculae ceraceae, nec venosae nec furcatae, primariae 9–14, 0.5 mm latae, ordinibus 2–3, albae dein flavidulae*. Odor nullus. Sporae $7\text{--}9 \times 5.5\text{--}7 \mu\text{m}$, *ellipsoideo-mangiformes, inamyloideae*. Basidia $26\text{--}40 \times 7\text{--}8 \mu\text{m}$; sterigmata 2, $5 \mu\text{m}$ longa. Cystidia nulla, *acie lamellae fertili*. Caulocystidia $35 \times 6 \mu\text{m}$, *subclavata vel subventricosa, sparsa*. Pileocystidia $50 \times 5\text{--}10 \mu\text{m}$, *ut caulocystidia sed succo fuscibrunneo*. Hyphae *sarcodimiticae sine fibulis; cellulae fusiformes* $600 \times 7\text{--}20 \mu\text{m}$, *tunicis tenuibus subgelatinosis*. Ad truncum putridum in silva. Ins. Solomonenses, Guadalcanal, Mt. Gallego, 11 July 1965, RSS 686; herb. Cantab.

Pileus 3–6 mm wide, convexo-plane, often depressed in the centre, smooth, minutely streaked, substriate, *fuscous greyish tinged yellowish*. Stem 8×0.5 mm, *pale dingy yellowish*. Gills deeply decurrent, *subdistant*, rather thick, waxy, neither veined nor forked, 9–14 primaries 0.5 mm wide, 2–3 ranks, *pallid white then yellowish*. Flesh thin. Smell none.

On a rotten trunk in the forest. Solomon Islands, Guadalcanal, Mt. Gallego.

Spores $7\text{--}9 \times 5.5\text{--}7 \mu\text{m}$, ellipsoid mango-shaped, not amyloid. Basidia $26\text{--}40 \times 7\text{--}8 \mu\text{m}$; sterigmata 2, $5 \mu\text{m}$ long. Cystidia absent from the hymenium, gill-edge fertile. Caulocystidia $35 \times 6 \mu\text{m}$, subclavate to subventricose, obtuse, rather sparse, with narrow filiform processes $1\text{--}2 \mu\text{m}$ wide from the narrow superficial hyphae of the stem. Pileocystidia $50 \times 5\text{--}10 \mu\text{m}$, similar but with fuscous brown sap, more or less decumbent, abundant over the centre of the pileus, with slender hyphal processes towards the margin of the pileus as on the stem. Hyphae sarcodimitic, *without clamps*; fusiform cells $600 \times 7\text{--}20 \mu\text{m}$, wall scarcely thickened but toughly mucilaginous. Pileus without a pseudoparenchymatous hypodermis.

var. **sublateralis** var. nov.

Pileus *excentricus, etiam fere lateralis, albidus dein mellei-flavidulus centro fuliginis-furfuraceo*. Stipes 25×0.3 mm, *concolor*. Ad corticem emortuum lianae, gregaria. Borneo, Sarawak, Setapok, 27 Aug. 1972, Corner P-124; herb. Cantab.

Pileus 7 mm wide, more or less pleuropodal, scarcely striate, whitish then dingy honey-colour, the centre minutely fuliginous-flecked. Stem $15\text{--}25 \times 0.3$ mm, *concolorous*. Gills adnato-decurrent, 6–9 primaries 0.8 mm wide, 2–3 ranks, *concolorous*.

On dead bark of a liane in the forest, gregarious. Sarawak, Setapok.

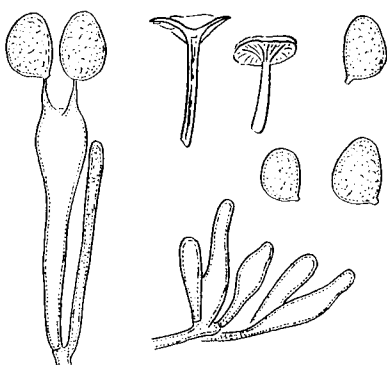


Fig. 28. *Trogia pusilla*. Fruit-bodies, $\times 2$. Spores and basidium, $\times 1000$. Caulocystidia, $\times 500$. Collection, RSS 686.

Spores $7-8.5 \times 5-5.7 \mu\text{m}$, drying 1-guttate, not or very slightly pale vinaceous amyloid. Basidia $30-35 \times 6.5-7 \mu\text{m}$, multiguttulate; sterigmata 2. Hyphae without clamps; fusiform cells $55-240 \times 8-17 \mu\text{m}$ in the stem, $-400 \mu\text{m}$ long in the pileus, walls slightly thickened.

This species comes near to *T. mellea* and *T. primulina* and may, indeed, be a 2-spored state of *T. mellea* though that has a sterile gill-edge and larger cystidia on stem and pileus.

T. raphanolens sp. nov.

Receptacula alba, aetate flavidula. Pileus 3-15 mm latus, convexus dein planus, saepe subumbilicatus, laevis, ad centrum striatus vel subsulcato-striatus, sicco pruinosulus. Stipes 3-16 $\times$ 0.5-1.5 mm, basi abrupto subincrassato, pruinosulus. Lamellae decurrentes distantae crassiusculae, aliquando furcatae, interstitiis rugulosis, primariae (6-)11-15, (0.5-)1-2 mm latae, ordinibus 1-2(-3). Odor raphanaceus, saepe fortis. Sporae 6-9 $\times$ 4.5-6 μm , inamyloideae. Basidia 22-30 $\times$ 6-8 μm ; sterigmata 2-4, saepe 3, 4 μm longa. Cheilocystidia 40-80 $\times$ 6-18 μm , ventricosa apice obtuso elongato 3-6 μm lato, copiosa sed acie lamellarum fertili. Caulocystidia $-50 \times 5-12 \mu\text{m}$, cylindrica vel clavata, copiosa. Pileocystidia ut caulocystidia, plerumque 3-5 μm lata, saepe sparsa. Hyphae sarcodimiticae fibulatae; cellulae fusiformes $180-650 \times 7-23 \mu\text{m}$, tunicis vix incrassatis; oleiferae 5-12 μm latae, numerosae. Ad lignum emortuum in silva. Peninsula Malayana (Singapore, Johore, communis); Typus, Singapore, Bukit Timah, 17 June 1940, Corner s.n.; herb. Cantab.

Fruit-bodies wholly white, yellowish with age. Pileus 3-15 mm wide, convex then plane, often slightly umbilicate, smooth, striate to the disc or slightly sulcato-striate, drying minutely pruinoso-puberulous; margin slightly incurved at first. Stem 3-16 $\times$ 0.5-1.5 mm, slightly thickened at the abrupt base, wholly finely pruinoso-puberulous, opaque. Gills decurrent, sharply delimited, *distant*, rather thick at the base, sometimes forked, (6-)11-15 primaries (0.5-)1-2 mm wide, 1-2 ranks, occasionally with slight linear tertiaries, interstices becoming irregularly rugulose or shortly transversely veined, edge thin and entire. Flesh thin, rather waxy firm. *Smell strong, fresh, of radish*, but sometimes rather faint.

On rotten wood in the forest. Singapore, Johore, common.

Spores $6-9 \times 4.5-6 \mu\text{m}$, ellipsoid, not guttate, not amyloid. Basidia 22-30 $\times$ 6-8 μm ; sterigmata 2-4, commonly 3, 4 μm long. Cheilocystidia 40-80 $\times$ 6-18 μm , more or less ventricose with the apex often prolonged 3-6 μm wide and obtuse, often misshapen to submoniliform, abundant but not forming a sterile gill-edge (? in young specimens). Pleurocystidia none. Caulocystidia $-50 \times 5-10 \mu\text{m}$, cylindric to clavate, abundant. Pileocystidia as the caulocystidia, mostly 3-5 μm wide, irregular, often

sparse. Hyphae sarcodimitic, clamped; fusiform cells $180\text{--}650 \times 7\text{--}23 \mu\text{m}$ in the stem, rather shorter in the pileus and $\sim 30 \mu\text{m}$ wide; oleiferous hyphae $5\text{--}12 \mu\text{m}$ wide, rather frequent in all tissues; endocystidia none. Pileus without a pseudoparenchymatous hypodermis.

Collections: — Singapore, Gardens' Jungle, Reservoir Jungle, Bukit Timah, June and Nov., common. — Johore, Mawai, 10 Nov. 1940.

This small white species is readily distinguished by the smell of radish. It is close to *T. alba* and *T. octava* and, possibly, all are variants of one species. In microscopic structure, *T. raphanolens* is so much like *T. obfuscata* that it suggests the derivation of these white species.

***Trogia revoluta* sp. nov.**

Figure 29

Receptacula alba dein sordide cremeo-alba. Pileus — 40 mm latus, planoconcavus, centro subumbilicato, dein revolutus, sulcato-striatus. Stipes 10–25 $\times$ 2–4 mm, saepe excentricus, fistulosus pruinosulus. Lamellae decurrentes, dein adnatae vel adnexae, distantes, crassiusculae, interstitiis rugoso-costatis, primariae 11–19, 2–6 mm latae, ordinibus 1–2(–3). Caro ceraceo-firma. Odor nullus vel leniter piscium. Sporae $5.7\text{--}6.7 \times 5\text{--}6.3 \mu\text{m}$, subglobosae, pallide amyloideae. Basidia $36\text{--}42 \times 6\text{--}7 \mu\text{m}$; sterigmata 2–4, $4\text{--}5 \mu\text{m}$ longa. Cheilocystidia $35\text{--}70 \times 6\text{--}12 \mu\text{m}$, ventricosa, ut acie sterili instructa sed collabefientia. Pleurocystidia nulla. Caulocystidia $90 \times 4\text{--}10\text{--}(13) \mu\text{m}$, ventricosa, basim stipitis versus $\sim 150 \mu\text{m}$ longa et leniter crassitunicata. Pileocystidia similia collabefientia. Hyphae sarcodimiticae fibulatae; cellulae fusiformes $90\text{--}1200 \times 12\text{--}33 \mu\text{m}$, tunicis $\sim 1 \mu\text{m}$ crassis. Ad lignum emortuum in silva montana. Malaya (Pahang), Borneo (Mt. Kinabalu). Typus, Borneo, RSNB 5227; herb. Cantab.

Fruit-bodies white, then dull cream-white. Pileus — 40 mm wide, plano-concave becoming *revolute*, centre more or less umbilicate, *sulcato-striate*. Stem 10–25 $\times$ 2–4 mm, often excentric, hollow, pruinoso-puberulous. Gills decurrent then adnate to adnexed, *coarse, thick, distant, becoming rugulose costate* at the base towards the margin of the pileus and in the interstices, 11–19 primaries 2–6 mm wide, 1–2(–3) ranks. Flesh thin, waxy-firm. Smell none or slight, of fish.

On dead wood in montane forest. Malaya, Borneo.

Spores $5.7\text{--}6.7 \times 5\text{--}6.3 \mu\text{m}$, subglobose, pale violaceous amyloid. Basidia $36\text{--}42 \times 6\text{--}7 \mu\text{m}$; sterigmata 2–4, $4\text{--}5 \mu\text{m}$ long. Cheilocystidia $35\text{--}70 \times 6\text{--}12 \mu\text{m}$, more or less ventricose with obtusely tapered apex, as a broad sterile gill-edge but collapsing. Pleurocystidia none. Caulocystidia $90 \times 4\text{--}10\text{--}(13) \mu\text{m}$, $\sim 150 \mu\text{m}$ towards the base of the stem and becoming slightly thick-walled, ventricose, often flexuous, abundant. Pileocystidia as the cheilocystidia but sparse, collapsing. Hyphae sarcodimitic, clamped; fusiform cells $90\text{--}1200 \times 12\text{--}33 \mu\text{m}$, walls $\sim 1 \mu\text{m}$ thick. Pileus without a pseudoparenchymatous hypodermis; no endocystidia.

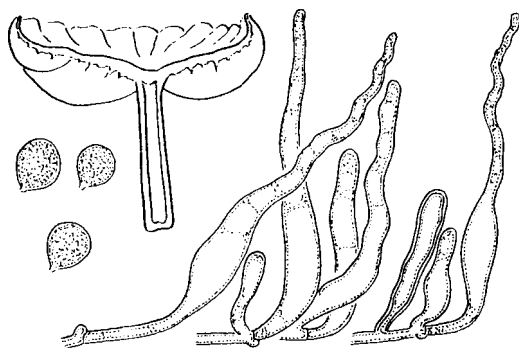


Fig. 29. *Trogia revoluta*. Fruit-body, $\times 1$. Spores, $\times 1000$. Caulocystidia, $\times 500$. Collection, Pahang 2 Oct. 1966.

Collections: — Malaya, Pahang, Cameron Highlands 1700 m alt., 2 Oct. 1966, Corner s.n. — Borneo, Mt. Kinabalu, Mesilau 1700 m alt., 5 Feb. 1964, RSNB 5227.

This is close to *T. delicata* but is coarsely constructed with short stem and thicker gills. It comes between that species and *T. omphalinoides*. The revolute pileus results from the widening of the gills.

***T. rivulosa* Corner**

Mon. Canth. Fungi (1966) 232, pl. 5C.

Fruit-bodies sessile to shortly pleuropodal, stereoid without gills, imbricate. Pileus — 5 cm radius, — 9 cm wide, flabelliform, ascending, smooth, *fuscous to fuliginous livid, innately streaked and rivulose*, drying not or slightly incurved; margin slightly incurved at first, entire. Stem — 5 × 5 mm concolorous. Hymenium smooth, *grey*. Flesh 1–2 mm thick at the base of the pileus, *horny-coriaceous, scissile, pallid wood colour*.

On dead wood in the forest. Malaya (Pahang, Trengganu).

Spores 5–6 × 3.5–4 µm, not amyloid. Basidia 30–45 × 5–6 µm; sterigmata 4. Cystidia none. Hymenium thickening — 200 µm. Hyphae sarcodimitic to sarcotrimitic, clamped; fusiform cells — 1100 × 10–30 µm, walls 2–5 µm thick; narrow hyphae with the walls thin or thickened 2–5 µm; all the hyphae more or less contiguous, but no pseudoparenchyma.

Collections: — Pahang, Kuala Tekai, 7 June 1931; Trengganu, Kemaman, Sungei Banum, 22 June 1932, Corner 1004.

The Trengganu fungus had an extensive mycelium such as I have described for *T. cervina*; it grew over the bark of small dead branches and sticks which became mummified with its hyphae.

***Trogia rosea* sp. nov.**

Figure 17, Plate 3

Ut *T. silvestris* (Holterm.) Corner sed pileo coccineo rubro vel roseo pallescenti; sporis latoribus 5–6.5 µm. Borneo, Mt. Kinabalu, 24 Jan. 1964, RSNB 5100; typus, herb. Cantab.

Pileus — 50 mm wide, convex, usually *papillate-umbonate*, then plane to revolute and cyathiform, finely and closely radially *rivulose or subrugulose*, hygrophanous, atomate on drying, *dull crimson to rose-red*, fading with age; margin straight or, at first, very slightly incurved, entire to minutely denticulate. Stem 30–70 × 2–5 mm, cylindric, hollow, becoming flattened and twisted, cartilaginous, *opaque white*, wholly minutely pruinose, base 4–8 mm wide, abrupt. Hymenium slightly decurrent, *pallid white* (the red colour of the pileus showing through), *smooth or with 12–24 slight vein-like primary gills* — 0.5 mm deep, often not reaching the stem, forking irregularly and not reaching the margin of the pileus. Flesh thin, cartilaginous, rather tough, concolorous. Smell none.

On dead trunks and branches in montane oak forest. Borneo, Mt. Kinabalu 1700 m alt.

Spores 7.5–9.5(–11) × 5–6.5(–6.7) µm, not amyloid. Basidia 45–60 × 6.5–7.5 µm; sterigmata 4, 4–5 µm long. Pleurocystidia — 170 × 7–16 µm, projecting — 100 µm but many immersed, more or less ventricose with prolonged attenuate, obtuse or subacute, apex, thin-walled, vacuolate, smooth, very abundant. Hymenium thickening slightly — 120 µm. Caulocystidia — 80 × 5–14 µm, cylindric to clavate or subventricose, thin-walled, colourless, crowded at the stem-apex and passing into the pleurocystidia. Pileocystidia as the caulocystidia, scattered. Hyphae sarcodimitic, clamped; fusiform cells very long as in *T. silvestris*, — 40 µm wide in the stem, walls — 3 µm thick with a sub-diffuent outer layer, similar in the pileus. Surface of pileus as in *T. silvestris* but with red sap in the superficial hyphae; marginal cells 7–10 µm wide, clavate.



Plate 3. *Trogia rosea*. Borneo, Kinabalu, RSNB 5100.

Collections: — 24 Jan. 1964, RSNB 5100; 27 Jan. 1964, RSNB 5100A; 22 Feb. 1964, RSNB 5100B; 6 April 1964, RSNB 5100C.

This fungus is closely allied with *T. silvestris* and differs mainly in colour. Both were frequent on mt. Kinabalu and I saw no intermediates. *T. rosea* shows well the vestigial gills giving way to the smooth hymenium; if pleuropodal or sessile, it would be stereoid. The red colour bleaches in alkali and is not intensified on so treating dried specimens. Thus, *T. rosea* is not allied with the neotropical *T. papyracea* which lacks pleurocystidia.

Trogia seriflua sp. nov.

Figures 30, 31

Receptacula albida dein cremeo-albida vel subincarnata. Pileus 10–30 mm latus, convexus dein planus, centro subdepresso, vix striatus. Stipes 5–15(–20) × 1–2.5 mm, saepe excentricus, basi abrupto subtumido disco subfibrilloso-strigoso 3–5 mm lato affixo, fistulosus pruinosulus. Lamellae adnatae vel decurrentes, subdistantiae, interstitiis marginem pilei versus subvenosis, primariae 17–34, 1–2.5 mm latae, ordinibus 3–5, breviores saepe pliciformes. Caro 1–2 mm crassa in centro pilei, ceraceo-cartilaginea, fractu succum aquosum exudans. Odor acidus vel nullus. Sporae 5.5–6.7 × 5–6 μ m vel 5–6 × 4.5–5 μ m (Ins. Solomonenses), subgloboae, pallide amyloideae. Basidia 26–38 × 6–7 μ m; sterigmata 4, 5 μ m longa. Cheilocystidia – 70 × 7–17 μ m, clavata vel irregulariter ventricosa, ut acie sterili instructa. Pleurocystidia – 110 × 6–11 μ m, ventricosa, etiam clavata et vix projicientia. Caulocystidia ut cheilocystidia, basim stipitis versus – 150 × 7–16 μ m. Pileocystidia ut cheilocystidia. Hyphae sarcodimiticae fibulatae; cellulae fusiformes – 2500 × 8–25 μ m, tunicis – 1 μ m crassis; oleiferae 4–20 μ m latae, multo elongatae, sparsim ramosae, intus vitreosae. Ad truncos delapsos in silva. Borneo, Ins. Solomonenses. Typus, Borneo RSNB 5817; herb. Cantab.

Fruit-bodies pallid white becoming cream white or tinged flesh colour. Pileus 10–30 mm wide, convex to plane with the centre slightly depressed, not umbonate, smooth, opaque, not or scarcely striate; margin slightly incurved at first. Stem 5–15(–20)

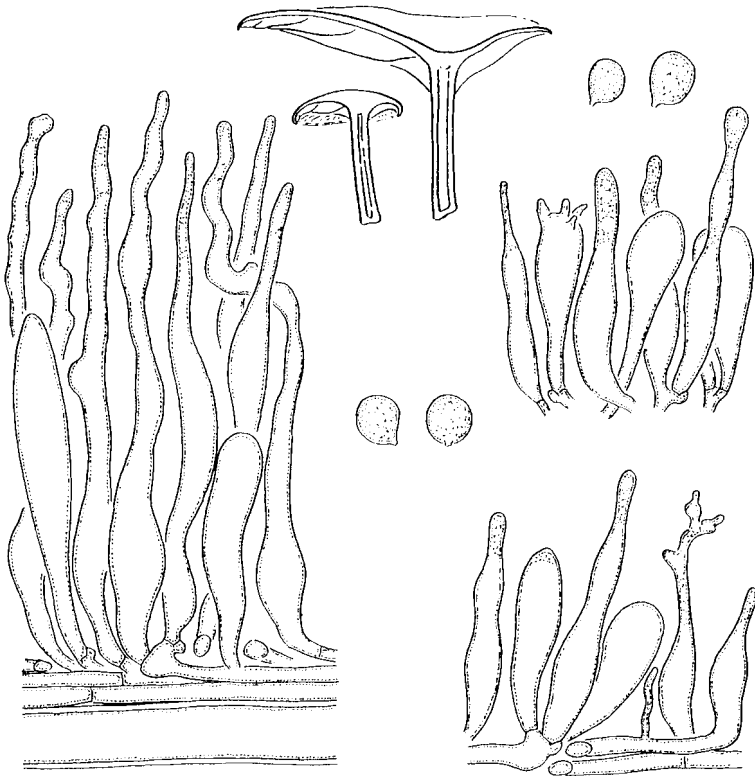


Fig. 30. *Trogia serifflua*. Fruit-bodies, $\times 1\frac{1}{2}$. Spores, $\times 1000$. Cheilocystidia (upper right), caulocystidia (lower right), and pileocystidia, $\times 500$. Collection, RSNB 5817.

$\times 1$ –2.5 mm, more or less *excentric*, not lateral, cylindric, hollow, finely pruinose, the base abrupt and slightly thickened with a fibrillose-substrigose disc 3–5 mm wide. Gills adnate to decurrent, subdistant, interstices slightly veined towards the margin of the pileus, 17–22, 19–23, 20–27 or 25–34 primaries 1–2.5 mm wide, 3–4 or 4–5 ranks, the shorter gills often fold-like. Flesh 1–2 mm thick in the centre of the pileus, waxy-cartilaginous, firm, rather hard, *exuding a copious watery colourless juice on cutting*. Smell sour or none.

On fallen trunks in the forest, in troops or subcaespitose. Borneo, Solomon Islands.

Spores 5.5 – 6.7×5 – $6 \mu\text{m}$ or 5 – 6×4.5 – $5 \mu\text{m}$ (Solomon Islands), subglobose, pale violaceous brown amyloid. Basidia 26 – 38×6 – $7 \mu\text{m}$; sterigmata 4, 5 long. Cheilocystidia 70×7 – $17 \mu\text{m}$, clavate to irregularly ventricose with obtuse apex 4 – $6 \mu\text{m}$ wide, occasionally with 1–4 short obtuse processes like abortive sterigmata, forming a broad sterile edge to the gill, often more or less invested with hyphal processes 1 – $2 \mu\text{m}$ wide from the gill-edge. Pleurocystidia 110×6 – $11 \mu\text{m}$, rather narrowly ventricose with obtuse apex 4 – $7 \mu\text{m}$ wide projecting $55 \mu\text{m}$, but some clavate and just reaching the surface of the hymenium, many with opalescent vitreous contents and some of these as branches from the oleiferous hyphae of the gill-trama. Caulocystidia as the cheilocystidia but, in the lower part of the stem, lengthened 150×7 – $16 \mu\text{m}$ and mostly subcylindric with uneven inflation, hyaline, vacuolate, copious in a fairly close pile, but the caulocystidia rather short and clavate $55 \times 11 \mu\text{m}$ in some Solomon Islands' collections (RSS 530, 1107 and 1109). Pileocystidia as the cheilocystidia, as a more or

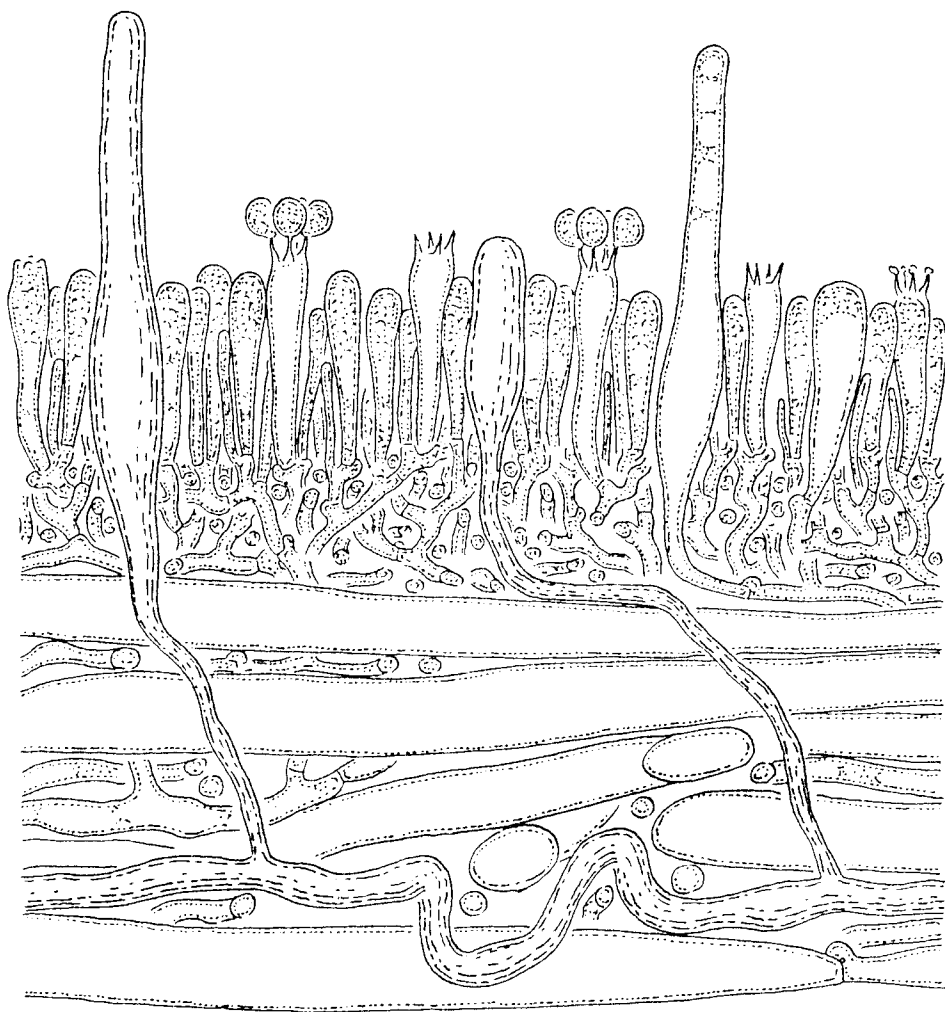


Fig. 31. *Trogia seriflua*. Hymenium with pleurocystidia, and oleiferous hyphae, $\times 500$. Collection, RSNB 5817.

less disrupted palisade, sometimes more or less overgrown with narrow hyphae $1-2\ \mu\text{m}$ wide from the superficial hyphae of the pileus. Hyphae sarcodimitic, clamped; fusi-form cells $2500 \times 8-25\ \mu\text{m}$, but some longer, with firm walls $0.5-1\ \mu\text{m}$ thick, very abundant; oleiferous hyphae $4-20\ \mu\text{m}$ wide, frequent, with opalescent contents, very long, sparingly branched, sometimes coiled (as if intrusive) especially in the gill-trama, with scattered branches ending among the pleurocystidia, caulocystidia and, occasionally, the pileocystidia. Pileus without a pseudoparenchymatous hypodermis.

Collections: — Borneo, Mt. Kinabalu, Mesilau 1600 m alt., 16 March 1964, RSNB 5817. — Solomon Islands, San Cristobal, Warahito R., 28 July 1965, RSS 853; Kolombangara, 27 Aug. 1965, RSS 1107 and 1109; Guadalcanal, Mt. Gallego, July 1965, RSS 530.

The following six species with white fruit-bodies, yellowish in age, and without a pseudoparenchymatous hypodermis to the pileus, are so much alike as to appear as one species, but there are the following microscopic differences:—

| | Spores (μm) | Pleurocystidia | Endocystidia | Oleiferous hyphae |
|--------------------------------|---|----------------|--------------|-------------------|
| <i>T. seriflua</i> | 5–6.7 $\times$ 4–6
pale amyloid | present | none | abundant |
| <i>T. icterinoides</i> | 6–7 $\times$ 5.5–6.5
pale amyloid | none | none | few |
| <i>T. limonosporoides</i> | 6–9 $\times$ 4.5–5.5
not amyloid | present | present | none |
| <i>T. decipiens</i> | 6–9 $\times$ 4.5–5.5
not amyloid | present | none | none |
| <i>T. limonospora</i> | 8–11 $\times$ 4.5–5.5
not amyloid | none | none | none |
| <i>T. alba</i> | 5–6 $\times$ 2.5–3
not amyloid | none | none | few |
| <i>T. alba</i> v. <i>minor</i> | 5.5–7 $\times$ 2.7–3.5
? faintly amyloid | none | none | abundant |

T. silvestris (Holterm.) Corner

Plate 4

Mon. Canth. Fungi (1966) 233, f. 84, 86, 125, 126; Horak Ann. mycol. ser. 11, 33 (1980) 46 (as *Vanromburghia*).

I refer to the description which I gave in 1966. The species is widely distributed throughout Malesia to the Solomon Islands where I found it on Kolombangara (4 Sept. 1965, RSS 1254). That it can be separated from *Trogia* as *Vanromburghia* is disproved by the variously lamellate and non-lamellate species *T. rosea*, *T. pallida*, *T. macra* and *T. aphylla*. In general, it is close to *T. fulvochracea* with well developed gills.

T. stereoides Corner

Mon. Canth. Fungi (1966) 235, f. 85, 127. pl. 5B.

Fruit-bodies sessile to shortly pleuropodal, stereoid without gills. Pileus –4 cm in radius, –6 cm wide, *flabelliform*, ascending, often inciso-lobate, smooth, *fuliginous olivaceous to fuscous fuliginous*, virgate with innate fibrils, drying fuscous and horny; margin straight or slightly revolute. Stem –3 mm long, tomentose, with villous or tomentose discoid base 2.5–5 mm wide. Hymenium smooth, abruptly delimited, *dark greenish cyaneous then fuliginous*, drying pale fuliginous ochraceous. Flesh –1 mm thick at the base of the pileus, softly coriaceous, scissile towards the margin, paler concolorous.

On dead wood in the forest. Malay Peninsula (Negri Sembilan, Johore, Singapore).

Spores 4.7–5.5 $\times$ 3–3.5 μm , pruniform, not amyloid. Basidia 30–45(–50) $\times$ 4.5–6.5 μm , projecting –8 μm ; sterigmata (2)–4, 4–4.5 μm long. Cystidia none. Hymenium thickening –200 μm . Hyphae sarcotritmitic, clamped; fusiform cells 250–1100 $\times$ 10–30 μm , walls 2–4 μm thick; narrow hyphae 2.5–8 μm wide with cells



Plate 4. *Trogia silvestris*. Borneo, Kinabalu, RSNB 5178.

40–300 μm long, walls thin or $\sim 2 \mu\text{m}$ thick as binding hyphae. Surface of pileus with appressed radiating narrow hyphae; no pseudoparenchymatous hypodermis. Tomentum on the stem composed of hyphae 1.5–4 μm wide, not or rarely branched, rarely septate, walls 1–1.5 μm thick.

In form and colour of the fruit-body, *T. pleurotoides* in the cyaneous group of species supplies a narrowly lamellate ancestor.

T. straminea Corner

Mon. Canth. Fungi (1966) 236, f. 128, pl. 4C.

Pileus 20–50 mm wide, convex then plane or concave, rarely umbilicate, sometimes campanulate, *at first dark fuliginous cinereous and subvelutinate, on expansion pale yellowish or straw-colour with fuliginous fuscous subvillous disc*, not darker streaked, striate towards the yellowish margin. Stem 30–60 $\times$ 2.5–4 mm, cylindric, hollow, *white to pale straw-colour*, white fibrilloso-pruinose upwards, pale fuliginous fibrilloso-pruinose downwards to the abrupt base. Gills shortly decurrent, rather crowded, often once furcate, interstices veined and towards the margin of the pileus reticulate, 16–22 primaries 3–5 mm wide, 3–4 ranks, *pale ochraceous yellow to straw-colour*, whitish towards the margin of the pileus. Flesh 1.5–2.5 mm thick in the centre of the pileus, waxy-soft in the pileus, firm in the stem, rather cartilaginous-tough in the gills, hygrophanous, concolorous.

On dead wood in the forest. Malay Peninsula, widespread.

Spores 7–9 $\times$ 4.5–6 μm , not amyloid. Basidia 38–48 $\times$ 7–9 μm ; sterigmata (2)–4, 5–6 μm long. Cystidia none. Caulocystidia 15–80 $\times$ 5–13 μm , subcylindric, subclavate

or sublanceolate, some with filiform apex $-10 \times 2-4 \mu\text{m}$, in the lower part of the stem with pale umber sap. Pileocystidia $30-120 \times 12-30 \mu\text{m}$, as the caulocystidia, with umber sap, at first in a compact palisade, then disrupted over the limb on expansion. Yellow colour cytoplasmic.

This is close to *T. anthidepas* and, perhaps, only a variety, but it has a better developed palisade of pileocystidia, longer caulocystidia, no cheilocystidia and no innate dark streaks on the pileus. A collection from Queensland, (near Brisbane, on fallen wood in *Eucalyptus* forest, Corner s.n. 20 June 1964), would pass as *T. anthidepas* with virgate pileus but it also lacked cheilocystidia and the spores were pale indigo amyloid.

T. subdistans Corner

Mon. Canth. Fungi (1966) 231, f. 129.

Pileus 10–35 mm wide, convex to plano-umbilicate or concave, striate to the centre, subulcate, *at first fuscous grey to fuliginous, on expansion paler to whitish and fuliginous pruinose*, somewhat yellowish towards the centre; margin slightly incurved, then crenulate. Stem 15–45 $\times$ 1.5–4 mm, cylindric, hollow, waxy-cartilaginous, often compressed, base abrupt, *white*, pruinose. Gills decurrent, abruptly delimited, subdistant, interstices slightly veined, sometimes furcate near the margin of the pileus, waxy-tough, 15–24 primaries 2–4 mm wide, 2–4 ranks, *grey then whitish*. Flesh 1–2 mm thick in the centre of the pileus, waxy-soft, tough in the gills, hygrophanous, concolorous. Smell slightly sebaceous.

On dead wood in the forest. Malay Peninsula (Johore, Singapore), Borneo.

Spores $6.5-8 \times 4.5-5.5 \mu\text{m}$, not amyloid. Basidia $30-38 \times 7-8 \mu\text{m}$; sterigmata (2–)4, 4–5.5 μm long. Cheilocystidia $35-80 \times 8-15 \mu\text{m}$, clavate or ventricose, often with a filiform process with clavate to subcapitate apex $5-25(-40) \times 1.5-8 \mu\text{m}$ (at the apex), not as a sterile gill-edge. Pleurocystidia none or sparse and as the cheilocystidia. Caulocystidia $10-50 \times 5-12 \mu\text{m}$, clavate or ventricose often appendiculate, towards the stem-apex as the cheilocystidia. Pileocystidia $30-90 \times 7-17 \mu\text{m}$, as the cheilocystidia, often flexuous, with umber sap. Hyphae clamped; fusiform cells $350-1200 \times 10-30 \mu\text{m}$, walls $0.5-1.5 \mu\text{m}$ thick.

This is close to *T. anthidepas* but lacks its yellow colour, the cheilocystidia are differently formed and the caulocystidia are colourless. A collection from Borneo (Kinabalu 1600 m alt., RSNB 5299) had all the distinctions of *T. subdistans* but the spores were narrower, $6-7.5 \times 3.7-4.7 \mu\text{m}$, and the pleurocystidia, $60-120 \times 9-16 \mu\text{m}$, were more frequent; thus, it approaches *T. mycenoides*. I think that *T. subdistans* may grade into the neotropical *T. guadelupensis* (p. 91).

T. subgelatinosa Corner

Mon. Canth. Fungi (1966) 239, f. 115b (in error called *T. grisea*), pl. 5F; (p. 220, in error as *T. grisea*).

Fruit-bodies *greyish or brownish fuscous, fading white*, or the gills soon white. Pileus 40–70 mm wide, soon deeply umbilicate to infundibuliform, never umbonate, not pervious, smooth or sometimes rugulose in the centre, striate to the centre; margin incurved then slowly revolute. Stem 25–40 $\times$ 4–5 mm, cylindric, hollow, cartilaginous, base abrupt. Gills decurrent, rather distant, not furcate, edge obtuse and rather thick, interstices slightly veined transversely, waxy-soft subgelatinous, 13–18 or 16–24 primaries 2.5–6 mm wide, 2–3 ranks. Flesh 0.5–1.5 mm thick in the centre of the pileus, *waxy-subgelatinous*, tough but becoming rather fragile in the stem. Smell none.

On fallen trunks in the forest, often in troops, sometimes on the ground. Malaya, Sarawak, Solomon Islands.

Spores $6-9 \times 5.2-7 \mu\text{m}$, subglobose to broadly ellipsoid, not amyloid. Basidia $30-40 \times 6-7.5 \mu\text{m}$; sterigmata (2–)4, 4–5 μm long. Cheilocystidia $-60 \times 7-14 \mu\text{m}$, clavate to subventricose, rarely with a short obtuse appendage, sometimes mainly cylindric

–75 μm long, at first finely multiguttulate and forming a sterile edge to the gill but evanescent. Pleurocystidia –70 $\times$ 8–15 μm , clavate and projecting –30 μm or not at all, or 40–130 $\times$ 5–15 μm , subfusiform to ventricose with prolonged obtuse apex 3–9 μm wide, projecting –80 μm , with transitions to the clavate form and to sterile basidia with 1–2 abortive sterigmata, at first finely multiguttulate. Caulocystidia –60 $\times$ 15 μm , clavate to subventricose, at first finely multiguttulate then hyaline, evanescent. Pileocystidia –90 μm long, as the caulocystidia, abundant in the centre of the pileus, sparse over the limb, evanescent. Hyphae clamped; fusiform cells –1800 $\times$ 45 μm in the stem, walls 1–3 μm thick, in the pileus and gills with toughly subgelatinous walls; narrow hyphae 2–7 μm wide with rather diffuent walls, on the surface of stem and pileus at first finely multiguttulate. Pileus with a pseudoparenchymatous hypodermis, several cells thick in the central part, thinning or disappearing towards the margin.

Collections: – Malaya, Pahang, Tembeling, 1 Dec. 1930, on the ground (type); Penang, 300 m alt., 31 July 1972, on rotten wood, Corner P-82. – Sarawak, Kuching, 20 Aug. 1972, on rotten wood, Corner P-109. – Solomon Islands, San Cristobal, Warahito R., 25–27 July 1965, RSS 798 on a fallen trunk, RSS 816 in humus; Santa Ysabel, Cockatoo Anchorage, 20 Sept. 1965, on a fallen trunk of *Casuarina papuana*, RSS 1419.

Further discoveries of this species have enabled me to improve the original description, which was based on mature and ageing specimens. The species comes into line with *T. lilaceogrisea* and especially *T. cystidiata* because it has hymenial cystidia, a sterile gill-edge initially, and the pseudoparenchymatous hypodermis which is the cause of the rugulose centre of the pileus. These features are clear in the half-expanded fruit-body but the cystidia then begin to collapse. The toughly subgelatinous consistency and the finely guttulate superficial hyphae are characteristic. The change of habitat from rotten wood to humus probably results from the mouldering of the trunk into the soil. Unfortunately, a mistake crept into my original description, for I had intended to call the species *T. grisea* until I found that name pre-occupied.

***T. subglobospora* Corner**

Mon. Canth. Fungi (1966) 239.

Pileus 6–35 mm wide, convex then deeply umbilicate, smooth or finely furfuraceous squamulose in the centre, striate, *at first fuscous fuliginous to fuscous brown, on expansion paler to greyish, buff white or livid white*, slightly innately fuscous virgate; margin slightly incurved at first. Stem 8–50 $\times$ 1–4 mm, cylindric, hollow, cartilaginous, minutely pruinose, *fuscous pruinose towards the slightly swollen substrigose base* 2–6 mm wide, *concolorous then whitish*. Gills shortly to deeply decurrent, scarcely crowded, *narrow, often furcate or joined, interstices becoming strongly (if delicately) poroid reticulate* 8–12 or 19–30 primaries 1–2 mm wide, 2–4 ranks, *concolorous then whitish*. Flesh very thin, almost membranous in the pileus, rather tough, hygrophamous. Smell none.

On rotten wood in the forest, often densely caespitose. Malaya, Borneo, Solomon Islands.

Spores 4–5.5 μm , subglobose, or 4–4.7 $\times$ 3–3.5 μm or 6 $\times$ 5 μm and pruiniform, pale violaceous amyloid. Basidia 18–36 $\times$ 5–7 μm ; sterigmata 4, 4–5 μm long. Cheilocystidia –30 $\times$ 4–9(–14) μm , clavate to subventricose, as a narrow sterile gill-edge or scattered or none. Pleurocystidia none. Caulocystidia –50 μm long, as the cheilocystidia, sometimes more or less capitate, towards the base of the stem with fuscous sap. Pileocystidia –75 $\times$ 16 μm , as the cheilocystidia, as a disrupted palisade. Hyphae clamped; fusiform cells 400–1500 $\times$ 8–25 μm . Pileus without a pseudoparenchymatous hypodermis.

Additional collections: – Solomon Islands, Kolombangara, 25 Aug.–7 Sept. 1965, RSS 1058, 1158 and 1329; Guadalcanal, Mt. Popmanasiu 1800 m alt., 25 Oct. 1965, RSS 1594.

var. **mellea** var. nov.

Figure 32

Pileus stipes lamellaeque pallide melleo-flavidi, centro pilei fuscato. Borneo, Ins. Solomonenses. Typus, Ins. Solomonenses, RSS 510; herb. Cantab.

Collections: — Borneo, Mt. Kinabalu 1600 m alt., 6 April 1964, RSNB 8144. — Solomon Islands, Guadalcanal, Mt. Gallego 500 m alt., 2–8 July 1965, RSS 510 and 510A.

The additional collections, cited above, have improved the original description. The species is evidently common in Malasia. It is distinguished among the fuscous brownish species by the small, subglobose and slightly amyloid spores and by the poroid-reticulate gill-interstices. Concerning the cheilocystidia, some collections lack them entirely (as those cited in the original description and the two collections RSS 1058 $\times$ RSS 1329); others have scattered cheilocystidia like sterile basidia along the mainly fertile gill-edge (RSS 1158 and var. *mellea* RSNB 8144), while in RSS 1594 there was a continuous sterile gill-edge of such cystidia.

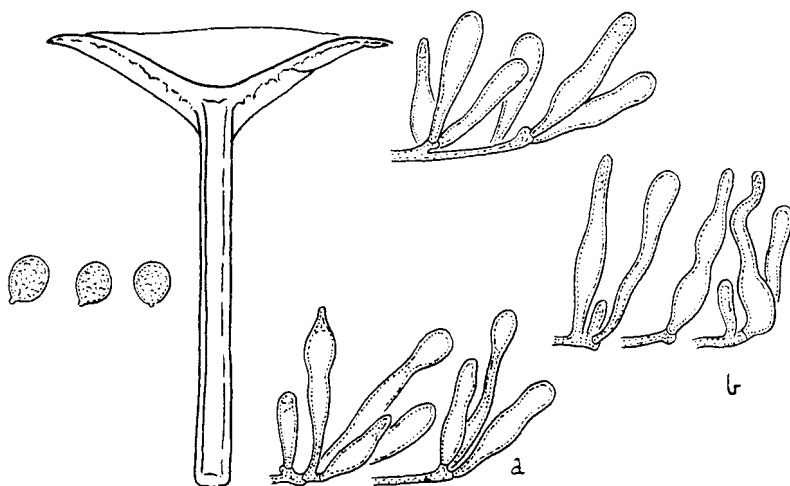


Fig. 32. *Trogia subglobospora* var. *mellea*. Fruit-body, $\times 1$. Spores, $\times 1000$. Caulocystidia, $\times 500$. — Var. *subglobospora*, caulocystidia, *a* from RSS 1594, *b* from RSS 1329.

***Trogia sublateralis* sp. nov.**

Figure 33

Pileus 7–12 mm latus, excentricus usque fere lateralis, convexo-umbilicatus laevis striatus, pallide ochraceus. Stipes 3–5 $\times$ 1 mm, brevis puberulus, flavus dein ochraceus, basi tumido ultimo brunneo. Lamellae decurrentes subdistantae, haud venosae, primariae c. 12, 0.5 mm latae, ordinibus 3–4, pileo concolores. Caro tenuissima. Odor nullus. Sporae 3.3–4.3 $\times$ 2.3–2.7 μ m, ellipsoideae, pallide amyloideae. Basidia 14–18 $\times$ 3.5–4.5 μ m; sterigmata 4, 1.5 μ m longa. Cheilocystidia – 35 $\times$ 6–9 μ m, clavata, raro subventricosa, ut acie sterili instructa. Pleurocystidia 20–40 $\times$ 4–9 μ m, ventricosa, apice obtuso 2–4 μ m lato, copiosa vel sparsa. Caulocystidia 45–90 $\times$ 11–27 μ m, clavata vel subfusiformia, tunicis brunneolis (in KOH incarnato-brunnescentibus). Pileocystidia – 110 $\times$ 11–18 μ m, ut caulocystidia. Hyphae sarcodimiticae fibulatae; cellulae fusiformes 110–700 $\times$ 12–32 μ m in stipe, tunicis 0.5 μ m crassis, in pileo – 45 μ m latae; contextus in KOH plerumque incarnatus sed stipitis superficies rubida. Ad lignum putridum in silva. Ins. Solomonenses, Guadalcanal, Tsuva, 8 Nov. 1965, RSS 1752; typus, herb. Cantab.

Pileus 7–12 mm wide, *excentric to nearly lateral*, convexo-umbilicate, smooth, striate, *pale ochraceous*. Stem 3–5 $\times$ 1 mm, short, stout, puberulous, *yellow then ochraceous, finally brownish from the swollen base*. Gills decurrent, subdistant, interstices not veined,

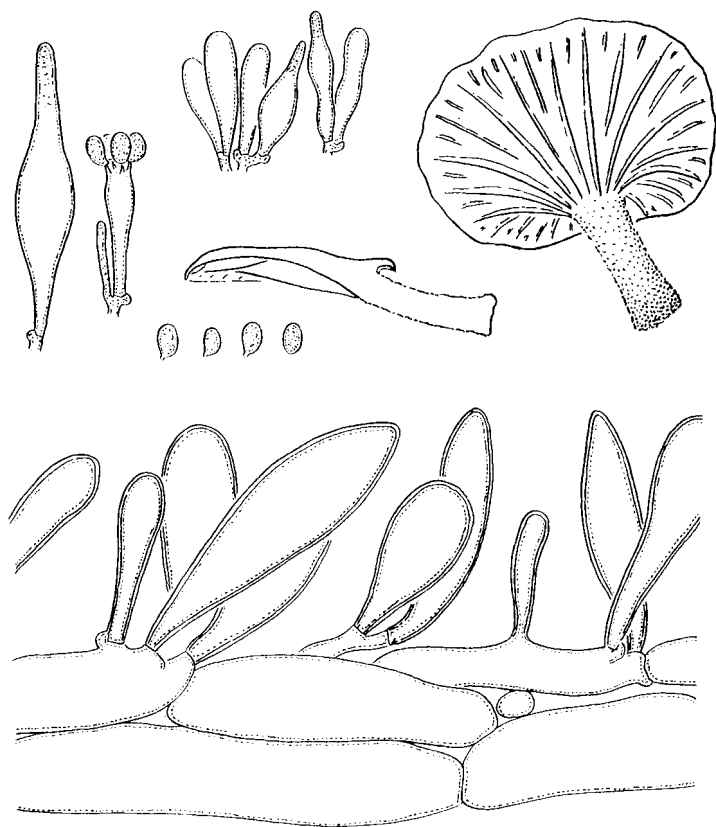


Fig. 33. *Trogia sublateralis*. Fruit-bodies, $\times 6$. Spores, basidium and pleurocystidium, $\times 1000$. Cheilocystidia and surface of stem, $\times 500$. Collection, RSS 1752.

c. 12 primaries -0.5 mm wide, 3–4 ranks, concolorous with the pileus. Flesh very thin. Smell none.

On rotten wood in the forest. Solomon Islands.

Spores $3.3\text{--}4.3 \times 2.3\text{--}2.7$ μm , ellipsoid, pale indigo amyloid. Basidia $14\text{--}18 \times 3.5\text{--}4.5$ μm , without acerose basidioles; sterigmata 4, 1.5 μm long; subhymenium $9\text{--}12$ μm thick. Cheilocystidia $35 \times 6\text{--}9$ μm , more or less clavate, few ventricose and not appendaged, as a sterile gill-edge. Pleurocystidia $20\text{--}40 \times 4\text{--}9$ μm , ventricose with projecting obtuse apex $2\text{--}4$ μm wide, thin-walled, colourless, abundant to rather sparse, easily overlooked. Caulocystidia $45\text{--}90 \times 11\text{--}27$ μm , clavate to subfusiform, with smooth *pale brown walls*, turning pink to madder brown in KOH at the base of the stem, forming a continuous palisade at the base of the stem, scattered or subfasciculate upwards. Pileocystidia $110 \times 11\text{--}18$ μm , as the caulocystidia and changing colour in KOH, but longer and as more or less decumbent hyphal ends, not in a palisade. Hyphae sarcodimitic, clamped; fusiform cells in the stem $110\text{--}700 \times 12\text{--}32$ μm , walls -0.5 μm thick, -45 μm wide in the pileus but not forming a pseudoparenchyma; oleiferous hyphae none. Surface of pileus and stem without a layer of narrow hyphae, the inflated cells lying along the surface, those on the pileus often with a slight subannular incrustation; marginal cells of the pileus $6\text{--}9$ μm wide, clavate subattenuate. *Most of the tissue of the fruit-body turning pink in KOH, the surface of the stem turning dark crimson.*

This is related with *T. tenax*, under which the differences are contrasted. Both seem connected by the reddening of the tissue in potash with *T. inaequalis* of Ceylon, which has a mesopodal fruit-body with larger spores and no hymenial cystidia. Brown-walled caulo- and pileo-cystidia occur also in the Brazilian *T. subrufescens* (p. 93).

***Trogia subtomentosa* sp. nov.**

Pileus 20–50 mm latus, conico-convexus dein planus, obtuse umbonatus, fibrilloso-squamulosus vel subtomentosus, subhygrophanus, pallide cervino-ochraceus, in centro fuscus vel sepiicolor. Stipes 20–45 × 3–5 mm, sursum attenuatus, fibrosus fistulosus, tenuiter pruinoso-subtomentosus, pallide cervino-subochraceus. Lamellae sinuatae ventricosae subdistantes crassiusculae hispidulae, ad bases subreticulatae, primariae 28–38, 3–7 mm latae, ordinibus 3(–4), pallide cremeae. Caro 2.5–4 mm crassa in centro pilei, fibrosa subtenax subdura concolor. Odor nullus. Sporae 5.5–7 × 4.2–5.5 µm, late ellipsoideae, pallide amyloideae. Basidia 26–30 × 6 µm; sterigmata (2)–4. Cheilocystidia 35–90 × 9–20 µm, fusiformia subventricosa, apice 1–3 µm lato, copiosa sed haud in acie sterili instructa. Pleurocystidia –150 µm longa, ut cheilocystidia, copiosa. Caulocystidia 60–130 × 12–25 µm, plerumque subcylindrica, etiam subclavata vel subventricosa. Pileocystidia ut caulocystidia vel ut hypharum septatarum apices –350 µm projicientia. Hyphae in stipite sarcodimiticae, fibulatae; cellulae fusiformes –1500 × 33 µm; in pileo lamellisque monomiticae, cellulis 50–200 × 5–35 µm, saepe moniliformes. Ad basim arboris emortui in silva montana. Borneo, Mt. Kinabalu, Mesilau 1400–1800 m alt., 10 March 1964, RSNB 5712; typus, herb. Cantab.

Pileus 2–5 cm wide, conico-convex then plane, *obtusely umbonate*, subhygrophanous, *wholly finely fibrilloso-squamulose to subtomentose, pallid dingy fawn ochraceous, the disc fuscous fawn to sepia*. Stem 2–4.5 cm × 3–5 mm, slightly tapered upwards, fibrous, subcylindric, hollow, *finely pruinoso-subtomentose, pale dingy fawn subochraceous*. Gills *sinuate, ventricose*, more or less emarginate, subdistant, hispidulous, slightly reticulate at the base, 28–38 primaries 3–7 mm wide, 3(–4) ranks, *pale dingy cream*, sometimes brownish at the uneven edge. Flesh 2.5–4 mm thick in the centre of the pileus, fibrous, rather *tough and hard*, concolorous. Smell none.

Caespitose at the base of a dead tree in montane forest. Borneo (Mt. Kinabalu).

Spores 5.5–7 × 4.2–5.5 µm, broadly ellipsoid, pale vinaceous amyloid. Basidia 26–30 × 6 µm; sterigmata (2)–4; no acerose basidioles. Cystidia 35–150 × 9–20 µm, fusiform subventricose, tapered gradually to an obtuse or subacute apex 1–3 µm wide, thin-walled, colourless, smooth, abundant on the gill-surface and edge but 35–90 µm long on the fertile gill-edge. Caulocystidia 60–130 × 12–25 µm, mostly subcylindric varying subclavate and subventricose, smooth, with firm walls, often on irregularly projecting hyphae composed of cells 3–6 µm wide (many without clamps), or decumbent, scattered and in groups as a disrupted pile of hyphal ends projecting –200 µm or –400 µm towards the base of the stem. Pileocystidia as the caulocystidia, projecting –350 µm as septate hyphae with cells 30–80 × 7–18 µm, many without clamps, forming a disrupted subtomentose pile over the whole pileus, denser than on the stem. Pileus without a pseudoparenchymatous hypodermis. Fruit-bodies turning fuliginous in alcohol-formalin, with the walls of the subtomentum on stem and pileus becoming fuscous brownish.

In modern taxonomy, this would probably be placed in *Tricholomopsis*, if no account is taken of the sarcodimitic stem. In *Trogia*, the thick flesh and subtomentose surface of pileus and stem indicate the primitive construction of the hymenioderm prevalent in other species. The fruit-bodies resemble those of *T. latifolia* and *T. tricholomatoides*, but differ in the presence of pleurocystidia.

***Trogia subtranslucens* sp. nov.**

Figure 34

Receptacula breviter pleuropodalia, stereiformia, pallide livido-grisea vinaceo-tincta subtranslucentia. Pileus –25 mm latus, flabelliformis ascendens laevis margine undulato. Stipes –3 × 2.5 mm, basi discoideo breviter albo-strigoso. Hymenium laeve vel ad basim lamellis pliciformibus vix evolutis sulcatum. Sporae 6–8 × 4–4.7 µm, inamyloideae. Basidia 40–50 × 7–8 µm; sterigmata 4, 3–4 µm longa. Hymenium

–80 μm incrassatum. Cystidia nulla. Caulocystidia –65 $\times$ 3–6(–10) μm , ut in *T. cervina*, capitata vel moniliformia. Pileocystidia ut processus –20 $\times$ 1–3.5 μm , saepe lobulatis. Hyphae in stipite sarcotrititicae ut in *T. cervina*, in pileo sarcodimiticae, fibulatae; cellulae fusiformes 150–1100 $\times$ 10–40 μm , tunicis 1–3 μm crassis. Ad trunci caudicem emortuum in silva. Ins. Solomonenses, San Cristobal, fl. Warahito, 27 July 1965, RSS 828; typus, herb. Cantab.

Fruit-bodies shortly *pleuopodal*, *stereiform*, *wholly pale greyish livid tinged vinaceous* especially in the hymenium, subtranslucent. Pileus –25 mm wide, flabelliform, ascending, smooth, undulate at the margin. Stem –3 $\times$ 2.5 mm, the base as a shortly white-strigose small disc. Hymenium *smooth or with faint short gill-folds* at the base.

On a dead stump in the forest. Solomon Islands, San Cristobal.

Spores 6–8.5 $\times$ 4–4.7 μm , ellipsoid, not amyloid. Basidia 40–50 $\times$ 7–8 μm ; sterigmata 4, 3–4 μm long. Hymenium thickening –80 μm , without cystidia. Caulocystidia –65 $\times$ 3–6(–10) μm , as in *T. cervina*, capitate and moniliform. Pileocystidia as short excrecent, often lobulate, processes –20 $\times$ 1–3.5 μm . Hyphae sarcotrititic in the stem, sarcodimitic in the pileus, clamped; fusiform cells 150–1100 $\times$ 10–40 μm , walls 1–3 μm thick in the older tissue. Pileus without pseudoparenchyma.

This species is interesting because it has vestigial gill-folds such as are improved in *T. venulosa* and *T. infundibuliformis*. Thus, it makes the transition to *T. cervina*, of which it may be regarded as a pale variation.

T. subviridis Corner

Mon. Canth. Fungi (1966) 240, f. 130–132.

Pileus 15–40 mm wide, convexo-plane then umbilicate to infundibuliform, pruinoso-villous and striate over the limb, *greyish tinged greenish ochraceous to greenish bluish*, in age subochraceous; margin at first incurved. Stem 20–40 $\times$ 1.5–4 mm, often excentric, cylindric, hollow, waxy-cartilaginous, base abrupt, white pruinose, *white then yellowish* in age. Gills deeply decurrent, subdistant to rather crowded, thin, interstices often reticulate especially towards the margin of the pileus, *subcartilaginous*, 22–36 primaries 1.5–3.5 mm wide, 2–3(–4) ranks, *white to yellowish*. Flesh 0.7–1.5 mm thick in the centre of the pileus, rather tough, fissile, hygrophanous, concolorous. Smell none.

On dead wood and sticks in the forest, affixed by a thin white mycelium. Malay Peninsula, widespread.

Spores 7–10 $\times$ 4–5 μm , not amyloid. Basidia 32–40 $\times$ 7–8 μm ; sterigmata (2–)4, 4–5 μm long. Cheilocystidia 45–100 $\times$ 7–15 μm , narrowly ventricose with apex 3–7 μm wide, scattered along the fertile gill-edge. Pleurocystidia as the cheilocystidia, the base deeply immersed, numerous. Caulocystidia –80 $\times$ 3–15 μm , clavate to elongate ventricose. Pileocystidia 25–100 $\times$ 8–30 μm , clavate, rarely ventricose, some slightly thick-walled, forming a compact palisade in the centre of the pileus. Hyphae clamped;

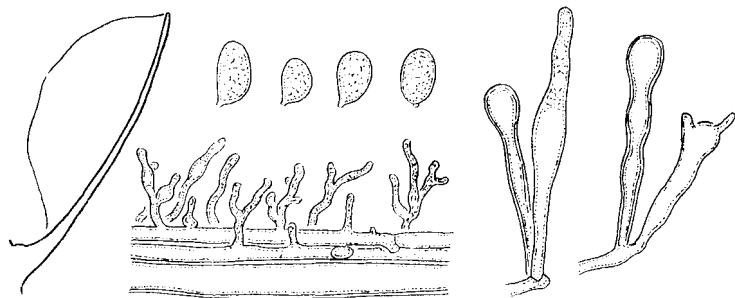


Fig. 34. *Trogia subtranslucens*. Fruit-body, $\times$ 2. Spores, $\times$ 1000. Pileocystidia and caulocystidia (right), $\times$ 500. Collection, RSS 828.

fusiform cells $-2000 \times 10\text{--}30 \mu\text{m}$, walls $-1 \mu\text{m}$ thick. Surface of pileus with appressed radiating hyphae $3\text{--}8 \mu\text{m}$ wide with pale fuscous umber vacuoles; no pseudoparenchymatous hypodermis.

The greenish tint of the grey pileus leads to the recognition of this species and it is confirmed by the large cystidia.

Trogia tenax sp. nov.

Figure 35

Receptacula excentrica pleurotoidea, cervino- vel cinnamomeo-brunneus, saepe aurantiaco- vel ferrugineo-tincta, lamellis pallidis. Pileus -18 mm radio, -25 mm latus, spatulato-flabelliformis vel subdiscoideus, primo margine incurvo, hygrophanus, opacus, tenuiter fibrilloso-pruinosis, in centro furfuraceus. Stipes $2\text{--}7 \times 1\text{--}3 \text{ mm}$, aliquando fere nullus, sublateralis solidus pruinoso-puberulus, basi abrupto. Lamella alte decurrentes, vix confertae, etiam subdistantes, crassiusculae, aliquando connexae, nec furcatae nec venosae, primariae $7\text{--}14$, -1.3 mm latae, ordinibus $2\text{--}5$. Caro dura tenax, succo aquoso exudans, in KOH rufescens. Odor nullus. Sporae $3\text{--}4 \times 2\text{--}2.5 \mu\text{m}$, ellipsoideae, pallide amyloideae. Basidia $12\text{--}18 \times 3.5\text{--}4.5 \mu\text{m}$; sterigmata 4 , $3\text{--}3.5 \mu\text{m}$ longa. Cheilocystidia $-50 \times 7\text{--}13 \mu\text{m}$, clavata vel subventricosa, tunicis in KOH saepe incarnatis, ut acie sterili instructa. Pleurocystidia $25\text{--}65 \times 7\text{--}13 \mu\text{m}$, projicientia, plerumque subventricosa, copiosa. Caulocystidia $30\text{--}95 \times 9\text{--}25(40) \mu\text{m}$, clavata, obtusa vel subattenuata, tunicis brunneolis et in KOH rufescentibus, copiosa. Pileocystidia $30\text{--}200 \times 8\text{--}40 \mu\text{m}$, ut caulocystidia sed longiora, saepe decumbentia, tunicis aliquando leniter incrustatis. Hyphae sarcodimiticae fibulatae; cellulae fusiformes $70\text{--}800 \times 18\text{--}45 \mu\text{m}$, tunicis $0.5\text{--}3 \mu\text{m}$ crassis, in matrice subgelatinoso hypharum angustiarum $1.5\text{--}5 \mu\text{m}$ latarum immersae; oleiferae $2\text{--}7 \mu\text{m}$ latae, aliquando ramosae et fibula-septatae; contextus in KOH rufescens. Ad truncos delapsos in silva, saepe dense gregaria. Borneo, Ins. Solomonenses. Typus, Ins. Solomonenses, RSS 526; herb. Cantab.

Fruit-bodies wholly *fawn brown to cinnamon fawn*, often tinged orange or ferruginous, the gills paler and whitish near the edge, strongly *excentric*, *pleurotoid*. Pileus -18 mm in radius, -25 mm wide, spatulate-flabelliform or subdiscooid, at first convex with incurved margin, finely fibrilloso-pruinose, scurfy over the centre, hygrophanous, opaque. Stem $2\text{--}7 \times 1\text{--}3 \text{ mm}$, almost lateral, sometimes almost absent, clavate with abrupt base, solid, pruinoso-puberulous. Gills deeply decurrent, scarcely crowded to subdistant, rather thick, sometimes joined, neither furcate nor veined, $7\text{--}14$ primaries -1.3 mm wide, 0.5 mm thick at the base, $2\text{--}5$ ranks. Flesh *hard, becoming rubbery, waxy-juicy, exuding a watery juice when cut*, distinctly rufescent in KOH (especially the surfaces and gill-edges). Smell none.

On fallen trunks in the forest, often densely gregarious. Borneo, Solomon Islands.

Spores $3\text{--}4 \times 2\text{--}2.5 \mu\text{m}$, ellipsoid, pale blue amyloid. Basidia $12\text{--}18 \times 3.5\text{--}4.5 \mu\text{m}$; sterigmata 4 , $3\text{--}3.5 \mu\text{m}$ long. Hymenium not thickening; no acerose basidioles; subhymenium *c.* $10 \mu\text{m}$ wide, composed of interwoven hyphae $1.5\text{--}2.5 \mu\text{m}$ wide. Cheilocystidia $-50 \times 7\text{--}13 \mu\text{m}$, clavate or subventricose, obtuse, not appendaged, the walls often pinkish in KOH, as a broad sterile gill-edge. Pleurocystidia $25\text{--}65 \times 7\text{--}13 \mu\text{m}$, projecting $-25 \mu\text{m}$, as the cheilocystidia but mostly subventricose with obtuse apex, very abundant but inconspicuous, some merely subclavate and scarcely projecting, thin-walled, smooth. Caulocystidia $30\text{--}95 \times 9\text{--}25(40) \mu\text{m}$, as the cheilocystidia but *with pale brownish walls* rufescent in KOH, very abundant, as a more or less continuous palisade derived from a thin layer of narrow superficial hyphae. Pileocystidia $30\text{--}200 \times 8\text{--}40 \mu\text{m}$, clavate, obtuse or subattenuate, as the caulocystidia but very variable, very abundant as an irregular disrupted palisade but more or less decumbent in the outer part of the limb, some with slightly encrusted walls. Hyphae sarcodimitic, clamped; fusiform cells $70\text{--}800 \times 18\text{--}45 \mu\text{m}$, walls $0.5\text{--}3 \mu\text{m}$ thick, embedded in a tough subgelatinous matrix formed by the narrow hyphae $1.5\text{--}5 \mu\text{m}$ wide; oleiferous hyphae $2\text{--}7 \mu\text{m}$ wide, sometimes branched and clamped, frequent in the pileus and gills. Surface of pileus with a discontinuous layer of narrow hyphae producing the pileocystidia, overlying the very large inflated cells often with a plaque-like or subannular incrustation (pale rufous in KOH), not pseudoparenchymatous. *Tissue turning reddish in KOH.*

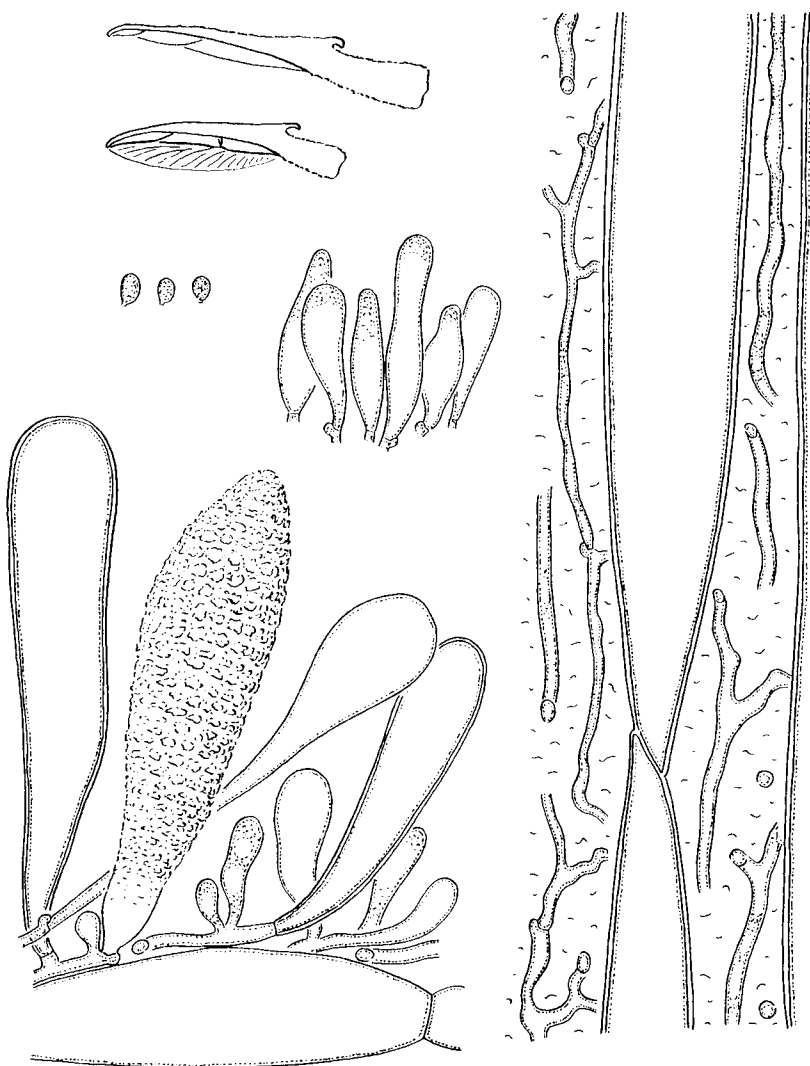


Fig. 35. *Trogia tenax*. Fruit-bodies, $\times 2$. Spores, $\times 1000$. Cheilocystidia, pileocystidia and stem-tissue, $\times 500$. Collection, RSS 526.

Collections: — Borneo, Mt. Kinabalu, Mesilau 1600 m alt., 7 April 1964, RSNB 8102. — Solomon Islands, Guadalcanal, Mt. Gallego, 3 July 1965, RSS 526; San Cristobal, Warahito R., 24 Aug. 1965, RSS 768.

This is allied with *T. sublateralis* but the fruit-bodies are more richly coloured with better developed gills and tougher consistency. They may be merely varieties of one species which resembles *T. inaequalis* of Ceylon in the reddening of the tissue in potash, though *T. inaequalis* lacks hymenial cystidia and has larger spores. This reddening reminds me of the neotropical and gill-less *T. papyracea*, usually regarded as a distinct genus *Hymenogloea*, which Singer allies with *Marasmius* without noting the sarcodimitic construction. The slight incrustation on many of the large outer hyphae of the pileus cause them to appear like 'spiral tracheids'.

Trogia tricholomatoides sp. nov.

Figure 14

Pileus —8 cm latus, convexo-planus, acute umbonatus, siccus, radiatim rugulosus, marginem versus striatus, pallide flavido-albidus, centro ruguloso subfuscus. **Stipes** —5 cm × 7 mm, cylindricus fibrosus fistulosus, basi abrupto subvilloso, albidus. **Lamellae** sinuato-emarginatae subdistantes latissimae, lateribus subrugulosi, primariae c. 22, —15 mm latae, ordinibus 2–3, albae dein flavidulae. **Caro** tenuis fissilis alba. **Odor** subfragrans. **Sporae** 5.5–6.5(–7) × 4.7–5.2 µm, subglobose, non amyloideae. **Basidia** 25–30 × 6.5 µm; sterigmata 4. **Cystidia** nulla, acie lamellae fertili. **Caulocystidia** —45 × 6–11 µm, cylindrica, clavata vel subventricosa, collabefientia. **Pileocystidia** ut caulocystidia, copiosa. **Hyphae** sarcodimiticae fibulatae; cellulae fusiformes in stipite 370–2300 × 17–40 µm, tunicis —1 µm crassis. **Ad lignum emortuum** sub arboribus. Ceylon, Yala National Park, 3 Jan. 1969, Corner s.n.; typus, herb. Cantab.

Pileus —8 cm wide, convexo-plane, acutely umbonate, dry, *pale yellowish white or pale bistre, clouded fuscous over the rugulose disc, radially rugulose* and innately streaked to the thin substriate margin. **Stem** 5 cm × 7 mm, cylindric, fibrous, hollow, the abrupt base white subvillous, *pallid white*. **Gills** *sinuate-emarginate, subdistant, very broad, subrugulose* on the sides, c. 22 primaries —15 mm wide, 2–3 ranks, *pallid white to yellowish*, edge entire. **Flesh** relatively thin, fissile, white. **Smell** slightly fragrant.

On dead wood under trees. Ceylon.

Spores 5.5–6.5(–7) × 4.7–5.2 µm, subglobose, oleaginous, not amyloid. **Basidia** 25–30 × 6.5 µm; sterigmata 4. **Cystidia** none, the gill-edge fertile. **Caulocystidia** —45 × 6–11 µm, cylindric to clavate or subventricose, often irregular, collapsing, many merely incipient. **Pileocystidia** as the caulocystidia, abundant but not in a palisade, apparently persistent. **Hyphae** sarcodimitic in all parts, clamped; fusiform cells in the stem 370–2300 × 17–40 µm, walls —1 µm thick; narrow hyphae 2–6 µm wide, walls —1 µm thick, interweaving. **Pileus** without a pseudoparenchymatous hypodermis.

This is very close to *T. latifolia* under which the differences are given. It does not seem to be in Pegler's work on the agarics of Ceylon (1986), but compare *Dermoloma scotodes*.

T. umbrino-alba Corner

Mon. Canth. Fungi (1966) 243, f. 93c, 133, 134.

Pileus 8–14 mm wide, convex then plane and concave, varying umbilicate to sub-umbonate, substriate, *dark fuscous to umber*, paler towards the margin, drying minutely pruinose; margin incurved at first. **Stem** 10–23 × 0.7–1 mm, cylindric, hollow, cartilaginous, puberulous, base abrupt with a few fibrils, *white then fuscous yellowish or ochraceous* from the base. **Gills** deeply decurrent, *crowded*, rarely furcate, thin, interstices smooth, 18–24 primaries 1 mm wide, 3–4 ranks, *grey then white*. **Flesh** rather thick, soft, hygrophanous, yellowish in age. **Smell** none.

On dead wood. Singapore, ? Brazil (p. 93).

Spores 7–8 × 4.5–5 µm, not amyloid. **Basidia** 20–25 × 6–7 µm; sterigmata 4, 3 µm long. **Cheilocystidia** 35–75 × 9–18 µm, mostly ventricose with the apex 3–6 µm wide and often shortly lobed, varying clavate, as a sterile gill-edge. **Pleurocystidia** none. **Caulocystidia** 15–55 × 6–15 µm, subcylindric to subventricose, hyaline or with pale umber sap. **Pileocystidia** as the caulocystidia, varying subglobose, with umber sap. **Hyphae** calmped; fusiform cells —2500 × 9–30 µm, walls —0.5 µm thick; oleiferous hyphae 3–8 µm wide, in places —13 µm, numerous, often furcate in the pileus. **Surface** of pileus with a discontinuous layer of narrow radiating appressed hyphae 3–6 µm wide and an imperfectly compacted hypodermal pseudoparenchyma of cells 30–100 × 15–39 µm with umber sap, this layer c. 100 µm thick in the centre of the pileus.

Key to the varieties

1. Spores 7–8 × 4.5–5 µm. Cheilocystidia often lobate. Pileus fuscous umber. Stem yellowing. Gills deeply decurrent, grey then white. Singapore var. *umbrino-alba*
1. Spores 5–7 × 3.7–5 µm. Cheilocystidia not lobate. Pileus fuscous grey. Stem not yellowing. Gills white.

2. Gills adnate or subsinuate, 20–23 primaries – 3 mm wide, often veined at the base. Pileus with papilliform umbo. Borneo var. A
2. Gills adnato-decurrent, 16–18 primaries – 1 mm wide, not veined. Pileus not umbonate. Solomon Islands var. B

var. A

Figure 36

Pileus – 16 mm wide, with *papilliform umbo*, *fuscous grey*. Stem – 20×2 mm, *white*, fuscous pruinose downwards. Gills adnate or sinuate, slightly ridged at the base towards the margin of the pileus and even subreticulate, *white*. Spores $5.5\text{--}7 \times 4\text{--}5\ \mu\text{m}$. Basidia $24\text{--}28 \times 5.5\text{--}6.5\ \mu\text{m}$; sterigmata 4, $3\ \mu\text{m}$ long. Cheilocystidia – $50 \times 7\text{--}13\ \mu\text{m}$, clavate to ventricose with short obtuse or filiform apex attenuate – $30 \times 1.5\text{--}3\ \mu\text{m}$, not lobate. Caulocystidia – $85 \times 7\text{--}15\ \mu\text{m}$, subcylindric, clavate or ventricose, not appendaged. Pileocystidia as the caulocystidia, the walls often slightly thickened. Fusiform cells – $1000 \times 25\ \mu\text{m}$ in the stem, $40\ \mu\text{m}$ in the pileus. Surface of pileus with a layer $20\text{--}30\ \mu\text{m}$ thick, composed of $2\text{--}5\ \mu\text{m}$ radiating hyphae; hypodermis composed of short cells $50\text{--}250 \times 12\text{--}30\ \mu\text{m}$, compacted into a pseudoparenchyma $50\text{--}60\ \mu\text{m}$ thick in the central part of the pileus; marginal cells $7\text{--}14\ \mu\text{m}$ wide, clavate.

On dead wood in the forest. Borneo, Mt. Kinabalu 1600 m alt., Bembangan R., 25 Feb. 1964, RSNB 5459.

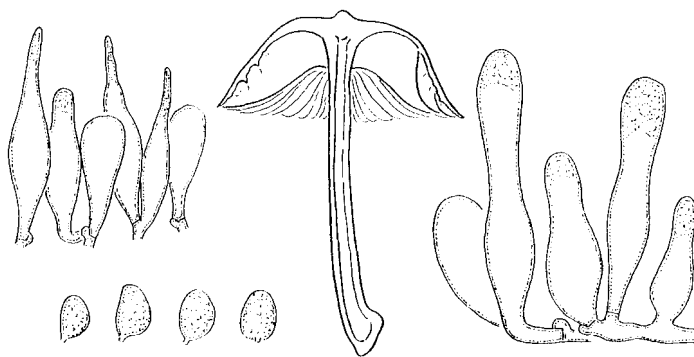


Fig. 36. *Trogia umbrino-alba* var. A. Fruit-body, $\times 2$. Spores, $\times 1000$. Cheilocystidia and caulocystidia (right), $\times 500$. Collection, RSNB 5459.

var. B

Figure 37

Pileus – 10 mm wide, conical, not umbonate, striate, *fuscous grey*. Stem – 14×1 mm, puberulous, base subbulbous, *white*. Gills adnato-decurrent, rather crowded, not veined, 16–18 primaries – 1 mm wide, *white*. Spores $5\text{--}6 \times 3.7\text{--}4.5\ \mu\text{m}$. Basidia $20\text{--}25 \times 5\text{--}6\ \mu\text{m}$; sterigmata 4. Cheilocystidia – $30 \times 7\text{--}10\ \mu\text{m}$, clavate to ventricose, often with a slender tapering appendage – $17 \times 0.5\text{--}1\ \mu\text{m}$, not lobed. Caulocystidia – $35 \times 7\text{--}13\ \mu\text{m}$, as the cheilocystidia but not appendaged, with pale brown sap towards the stem-base. Pileocystidia – $55 \times 7\text{--}15\ \mu\text{m}$, as the caulocystidia, apex obtuse, wall slightly thickened, abundant in the centre of the pileus, scattered over the limb, colourless. Fusiform cells – $1300 \times 7\text{--}20\ \mu\text{m}$. Surface of pileus as in var. A, with thin but well-formed pseudoparenchymatous hypodermis, the cells with fuscous sap.

On sticks in the forest. Solomon Islands, San Cristobal, Warahito R., 23 July 1965, RSS 743.

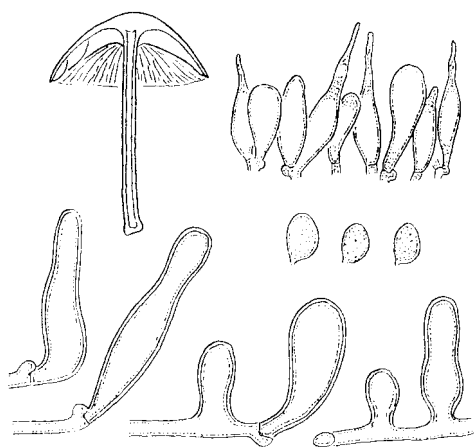


Fig. 37. *Trogia umbrino-alba* var. B. Fruit-body, $\times 2$. Spores, $\times 1000$. Cheilocystidia and pileocystidia, $\times 500$. Collection, RSS 743.

It seems that there is considerable variation about the idea of *T. umbrino-alba* and more collections are needed in evaluation. The two varieties resemble *T. subdistans* but have the sterile gill-edge of *T. umbrino-alba*, and they differ from this species especially in the construction of the surface of the pileus with its skin of narrow hyphae over the well-formed pseudoparenchyma.

Trogia venulosa sp. nov.

Figure 38

Receptacula pallide livido-incarnata, aetate sordida ochracea. Pileus — 45 mm latus, plano-umbilicatus dein infundibuliformis, laevis hygrophanus, sicco tenuiter subtomentosus; margine recto integro. Stipes 5–8 $\times$ 2–3 mm, brevis ferectus, plus minus centralis. Lamellae decurrentes, pliciformes, aliquando furcatae, interstitiis laevibus, c. 30 primariae — 0.2 mm latae, ordinibus 1–2(–3). Caro 1 mm crassa in centro pilei, fissilis, in stipite tenax. Odor nullus. Sporae 7.5–10 $\times$ 5–6 μ m, inamyloideae. Basidia 45–58 $\times$ 7.5–9 μ m; sterigmata 4, 4–5 μ m longa. Cystidia in hymenio nulla, acie lamellae fertili. Hymenium paullo incrassatum, dein hyphis 1–3 μ m latis e subhymenio — 200 μ m longis vestitum. Caulocystidia — 65 $\times$ 3–5 μ m, hinc inde — 9 μ m lata, cylindrica, clavata vel subventricosa, capitata vel moniliformia, tunicis nonnullis paullo incrassatis, ut hymenio hyphis angustis vestita. Pileocystidia ut caulocystidia. Hyphae sarcodimiticae fibulatae; in stipite fere sarcotrimitticae; cellulae fusiformes 100–800 $\times$ 9–26 μ m, tunicis in stipite 1–2.5 μ m crassis; hyphae angustae in stipite crasse tunicatae processus ligativos emittentes. Ad truncum delapsum in silva. Ins. Solomonenses, Kolombangara, 25 Aug. 1965, RSS 1057; herb. Cantab.

Fruit-bodies *wholly pale livid flesh pink*, pale sordid ochraceous in age. Pileus — 45 mm wide, plano-umbilicate to infundibuliform, smooth, hygrophanous, drying finely subtomentose; margin straight, entire. Stem 5–8 $\times$ 2–3 mm, more or less central, short, stuffed. Gills decurrent, *as faint radiating obtuse ridges* — 0.2 mm high, c. 30 primaries in 1–2(–3) ranks, sometimes, furcate, the interstices smooth. Flesh c. 1 mm thick in the centre of the pileus, fissile, tough in the stem.

On a fallen trunk in the forest. Solomon Islands, Kolombangara.

Spores 7.5–10 $\times$ 5–6 μ m, ellipsoid, not amyloid. Basidia 45–58 $\times$ 7.5–9 μ m; sterigmata 4, 4–5 μ m long. Cystidia none in the hymenium, the gill-edge fertile. Hymenium thickening slightly, then in old specimens overgrown with a dense pile of narrow cylindric hyphae 1–3 μ m wide, exrescent from the subhymenium to a distance of 200 μ m. Caulocystidia and pileocystidia — 65 $\times$ 3–5 μ m, swollen in places — 9 μ m, cylindric, clavate or subventricose, capitate or moniliform, with thin or slightly thickened walls, some appearing as sterile basidia, becoming overgrown as the hymenium with a super-

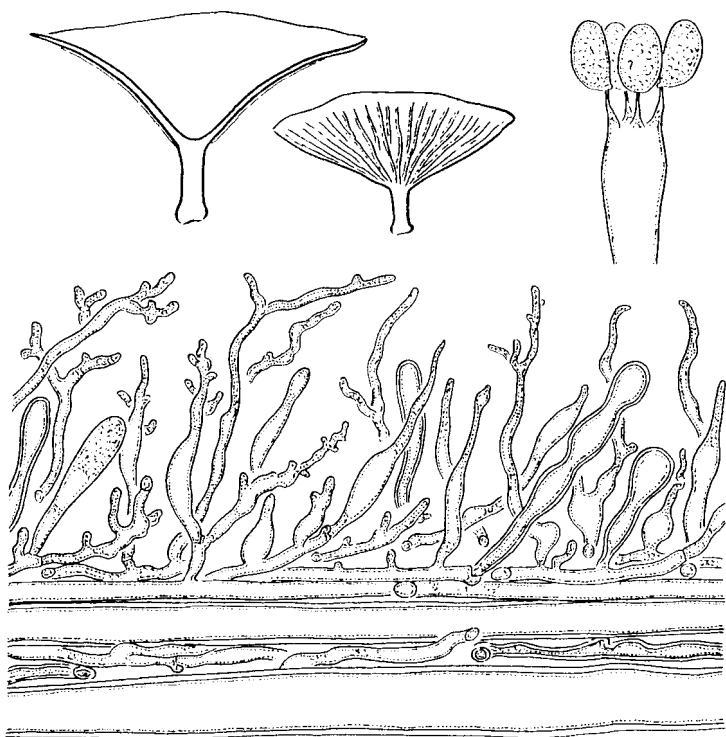


Fig. 38. *Trogia venulosa*. Fruit-bodies, $\times 1$. Basidium, $\times 1000$. Surface of pileus, $\times 500$. Collection, RSS 1057.

ficial felt of narrow hyphae $\sim 100\ \mu\text{m}$ thick. Hyphae sarcotrititic, almost sarcotrititic in the stem, clamped; fusiform cells $100\text{--}800 \times 9\text{--}26\ \mu\text{m}$ (? longer), the walls $1\text{--}2.5\ \mu\text{m}$ thick in the stem; narrow hyphae becoming thick-walled in the stem, some nearly solid, and producing rather infrequent, sparingly branched, binding hyphae; hyphal ends at the margin of the pileus $2.5\text{--}4.5\ \mu\text{m}$ wide, slightly deflexed, developing directly into the incipient sterile hymenium on the upperside of the pileus, without pseudoparenchyma.

This species comes between *T. infundibuliformis* and *T. subtranslucens* which leads in turn to *T. cervina*. The stuffed stem not becoming hollow, the very slight gill-folds (which disappear on drying), and the better developed cystidia on stem and pileus are the distinctions from *T. infundibuliformis*, and these cystidia have the capitate to moniliform shape found in *T. subtranslucens* and *T. cervina*. Thus, here is a line of *Trogia* from the mesopodal and narrowly lamellate form to the pleuropodal with smooth hymenium, distinguished by the lack of brown or umber colour and the lack of hymenial cystidia; in the process, as the gills are lost, so the hymenium thickens and the tissue becomes sarcotrititic. It is possible that *T. venulosa* is the uncertain *T. partita* of New Ireland.

Trogia — neotropical

The following key to such species as have been recognised as *Trogia* is largely artificial. As Singer has remarked, many more will have to be added.

KEY TO IDENTIFICATION

1. Pleurocystidia present.
 2. Fruit-bodies small; pileus red, stem yellow *T. acicula* (p. 88)
 2. Medium size to large; pileus not red.
 3. Pileus fuscous ochraceous with darker fuscous umbo. Spores $8-10 \times 4.5-5.5 \mu\text{m}$ *T. fulvochracea* v. *brasiliensis* (p. 90)
 3. Pileus fuscous fuliginous, not umbonate. Spores $5-6.5 \times 3-4 \mu\text{m}$ *T. fuliginea* (p. 89)
1. Pleurocystidia absent.
 4. Pileus less than 12 mm wide.
 5. White.
 6. Gills ~ 2 mm wide. Spores $6-7 \times 4-5 \mu\text{m}$, pale amyloid. Cheilocystidia none *T. impartita* (p. 91)
 6. Gills ~ 0.7 mm wide. Spores $4.7-5.5 \times 3.7-4.7 \mu\text{m}$, not amyloid. Cheilocystidia as a sterile gill-edge *T. alba* v. *brasiliensis* (p. 88)
 5. Pileus brown or fuscous.
 7. Pileus ~ 2.5 mm wide, excentric to sublateral, pale fawn. Stem ~ 2 mm long. Spores $5-7 \times 3-3.5 \mu\text{m}$ *T. perpusilla* (p. 92)
 7. Larger, mesopodal. Spores $4-5 \mu\text{m}$ wide.
 8. Pileus fuscous brown. Spores $7-8 \mu\text{m}$ long. Cheilocystidia as a sterile gill-edge *T. umbrino-alba* (p. 93)
 8. Pileus fuscous with darker disc. Spores $6-7.5 \mu\text{m}$ long. Cheilocystidia absent *T. buccinalis* (p. 90)
 4. Pileus larger.
 9. Gills more or less yellow.
 10. Gills and stem subrufescent on bruising or with age. Pileus fuscous olivaceous fuliginous. Watery sap copious.
 11. Spores $7-10 \times 4.5-6 \mu\text{m}$ *T. subrufescens* (p. 93)
 11. Spores $5.5-7.5 \times 3.3-4 \mu\text{m}$ var. *parvispora*
 10. Not subrufescent.
 12. Spores $8-9 \times 6-7 \mu\text{m}$ *T. icterina* (p. 91)
 12. Spores $3.5-4.3 \mu\text{m}$ wide.
 13. Spores $7.5-8.5 \mu\text{m}$ long. Pileus umber to fuscous yellowish, innately streaked *T. anthidepas* v. *brasiliensis* (p. 88)
 13. Spores shorter.
 14. Fruit-body pale fawn ochraceous. Spores $5-6.5 \mu\text{m}$ long, pale amyloid *T. laeta* (p. 91)
 14. Fruit-body citron yellow, pileus fuscous in the centre. Spores $6-7.5 \mu\text{m}$ long. Basidia 2-spored, but hyphae clamped *T. citrina* (p. 90)
 9. Gills white, grey or brownish.
 15. Fruit-bodies dingy fawn brown. Stem thickly brownish villous at the base. Gills ~ 2 mm wide, reticulate at the base. Spores $6.5-8 \times 3.7-5 \mu\text{m}$. Cheilocystidia none *T. basivillosa* (p. 89)
 15. Not so. Cheilocystidia as a sterile gill-edge (except *T. aquosa*)
 16. Gills reticulate-poroid at the base.
 17. Wholly dark grey, paler with age. Gills ~ 3 mm wide. Spores $6-7 \times 4.5-5.5 \mu\text{m}$ *T. guadelupensis* (p. 90)
 17. Wholly fuscous tinged flesh colour. Gills ~ 1.5 mm wide. Spores $5.5-7.5 \times 4.2-5 \mu\text{m}$ v. *subincarnata*
 16. Gill-interstices not or scarcely veined.
 18. Pileus fuliginous black. Stem white, black pruinose. Spores $5.5-6.3 \times 2.7-3 \mu\text{m}$, pale amyloid *T. utropruinosa* (p. 89)

18. Pileus fuscous umber to fuscous brown. Stem not black pruinose. Spores 4–5 μm wide.
19. Pileus becoming livid to sordid ochraceous. Spores 4–6 μm long, pale amyloid. Cheilocystidia 7–10 μm wide, not as a sterile gill-edge.
 20. Gills –4 mm wide, subdistant *T. aquosa* (p. 89)
 20. Gills –1.5 mm wide, crowded v. *confertifolia*
19. Not so. Spores 5.5–7.5 μm long, not amyloid. Cheilocystidia as a sterile gill-edge. Gills –2 mm wide.
 21. Cheilocystidia 9–25 μm wide. Pileus fuscous brown *T. umbrino-alba* (p. 93)
 21. Cheilocystidia as sterile basidia 3–7 μm wide. Pileus grey to greyish brown *T. buccinalis* (p. 90)

T. acicula (Fr.) Corner

Mon. Canth. Fungi (1966) 194.

Mycena acicula Fr.; Maas-Geesteranus, Persoonia 11 (1980) 114.

That this species is peculiar in *Mycena* is shown by the fact that it is made the type of a particular section *Aciculae*, and this section has been transferred also to *Hemimycena* and *Marasmiellus*, as listed by Maas-Geesteranus. That it is a species of *Trogia* is clear from its sarcodimitic hyphae. Although my conclusion has not been acceptable, no one has explained why this species should be *Mycena* and not *Trogia* or why, in *Mycena*, it should have the construction of *Trogia*. In Hokkaido, in the north of Japan, I found a fungus on the dead needles of *Picea yedoensis* which was very like *T. acicula* except for its shorter spores 6–7.5 $\times$ 3–4 μm . It had fusiform cells –2500 $\times$ 27 μm in the stem and sparse oleiferous hyphae 2–5 μm wide. The pleurocystidia, –55 $\times$ 8–13 μm , were ventricose with a short subacute appendage mostly capped with an oily globular excretion, as in *T. acicula*. This collection (Corner s.n., 14 Sept. 1966) comes very close to *T. carminea* of Borneo (p. 21).

T. alba Corner (see p. 16)

var. **brasiliensis** var. nov.

Ut *T. alba* var. *minor* sed sporis 4.7–5.5 $\times$ 3.7–4.5 μm late ellipsoideae vel subglobosae; cheilocystidia –22 $\times$ 8–13 μm , clavata; caulocystidia –37 $\times$ 3–6 μm . Ad truncum delapsum in silva, gregaria. Brazil, Rio de Janeiro, Corcovado 500 m alt., 19 Nov. 1948, Corner s.n.; herb. Cantab.

Fruit-bodies white, pallid ochraceous with age. Pileus 3–8 mm wide, convex to plane, not umbonate, minutely pruinose-puberulous then smooth, striate. Stem 3–11 $\times$ 0.5 mm, minutely puberulous, base abrupt. Gills decurrent, scarcely crowded, interstices smooth or slightly reticulately veined towards the margin of the pileus, 10–14 primaries 0.5–0.7 mm wide, 2–3 ranks, sometimes furcate, the secondaries often vague. Spores not amyloid. Basidia –25 $\times$ 6–7 μm ; sterigmata 4. Cheilocystidia as a sterile gill-edge. Pleurocystidia none. Pileocystidia as the caulocystidia but sparse. Hyphae sarcodimitic, clamped; fusiform cells –1100 $\times$ 7–25 μm ; oleiferous hyphae 4–7 μm wide, scattered. Surface of pileus with a thin pseudoparenchymatous hypodermis of short cells –30 μm wide.

This variety combines features of *T. alba* var. *alba* and var. *minor* and differs from both in the spores. Thus, it has small fruit-bodies with few gills as in var. *minor*, short clavate cheilocystidia as in var. *alba* but set in a sterile gill-edge as in var. *minor*, and the short caulocystidia of var. *alba*. Perhaps the slight pseudoparenchymatous hypodermis of var. *brasiliensis* is another distinction.

T. anthidepas (Berk. et Br.) Corner

var. **brasiliensis** var. nov. (p. 17)

Pileus 20–50 mm wide, convexo-umbilicate then more or less cyathiform, smooth, fuscous umber then fuscous yellow on expansion, innately streaked. Stem –40 $\times$

3–6 mm, cylindric, hollow, waxy-horny, base abrupt, *pale yellow*, wholly white pruinose. Gills decurrent, subdistant, more or less veined at the base, 18–21 primaries – 4 mm wide, 3 ranks, *primose yellow to lurid ochraceous yellow*. Flesh waxy cartilaginous without watery juice. Smell none.

On fallen branches in the forest, solitary. Brazil, Mato Grosso, pr. Chavantina, 31 Jan. 1968.

Spores $7.5\text{--}8.5 \times 3\text{--}3.5 \mu\text{m}$, ellipsoid-cylindric, not amyloid. Cystidia none in the hymenium, gill-edge fertile. Caulocystidia – $70 \times 4\text{--}7 \mu\text{m}$, subcylindric, flexuous, irregularly inflated in places, in the lower part of the stem longer and compacted in minute tufts. Hyphae as in var. *anthidepas*.

T. aquosa Corner

Mon. Canth. Fungi (1966) 199.

A collection from Mato Grosso pr. Chavantina, in Brazil (Corner s.n. 21 Jan. 1968) showed that the pileus is at first greyish brown and becomes paler livid to sordid ochraceous on expansion. Microscopic details were: – spores $5\text{--}6.2 \times 3.7\text{--}4.2 \mu\text{m}$, pale bluish amyloid; pileocystidia as the cheilocystidia but soon collapsing; oleiferous hyphae – $11 \mu\text{m}$ wide.

var. **confertifolia** Corner, l.c.

I collected this variety also on Corcovado, Rio de Janeiro, on 19 Nov. 1948.

T. atropuinos Corner

Mon. Canth. Fungi (1966) 200.

Trogia basivillosa sp. nov.

Receptacula sordide cervino-brunnea, aetate pallescentia. Pileus 10–25 mm latus, planus dein infundibuliformis, striatus, saepe striis innatis fuscis virgatus et furfuraceus. Stipes 10–15 $\times$ 1–2 mm, furfuraceo-pruinosis dein laevis, e basi fusco-fuliginosus, basi abrupto dense albobrunneo-villoso. Lamellae decurrentes distantia crassiusculae, interstitiis venoso-subreticulatis, aliquando furcatae, primariae 17–20, 1–2 mm latae, secundariae saepe pliciformes vel nullae. Caro mollis aquosa, in pileo lamellisq. fere subgelatinosa. Odor nullus. Sporae $6.5\text{--}8 \times 3.7\text{--}5 \mu\text{m}$, inamyloideae. Basidia 4-sporigera. Cystidia nulla, lamellae acie fertili. Caulocystidia – $50 \times 4\text{--}9 \mu\text{m}$, ventricosa, saepe subcapitata, irregularia, tunicis subincrassatis brunneolis. Pileocystidia ut caulocystidia, tunicis saepe brunneolis. Hyphae sarcodimiticae fibulatae; cellulae fusiformes 7–29 μm latae, tunicis in KOH diffluentibus. Ad ramum emortuum in silva, subcaespitosa. Brazil, Rio de Janeiro, Corcovado 500 m alt., 18 Nov. 1948, Corner s.n.; herb. Cantab.

Fruit-bodies wholly *dingy fawn brown, pale fawn drab with age, the stem becoming fuscous or fuliginous* from below upwards. Pileus 10–25 mm wide, plane then infundibuliform, striate, often with innate darker streaks and scurfy particles, weathering smooth; margin undulate repand. Stem 10–15 $\times$ 1–2 mm, scurfy pruinose weathering smooth, the *abrupt base thickly brownish white villous*. Gills decurrent, *distant, rather thick*, interstices veined and shallowly subreticulate, sometimes forked, 17–20 primaries 1–2 mm wide, the secondaries usually fold-like or none. Flesh soft, watery, almost subgelatinous in the pileus and gills. Smell none.

On a dead branch in the forest. Brazil, Rio de Janeiro, Corcovado 500 m alt.

Spores etc. as above. Surface of pileus and stem with narrow hyphae developing brownish walls. Pileus without a pseudoparenchymatous hypodermis.

Structurally, this is near to *T. ceraceomollis* but the fawn brown colour, the villous base of the stem, the subgelatinous flesh and the browning of the walls of the superficial hyphae and cystidia are different.

T. buccinalis (Mont.) Pat.

Corner, Mon. Canth. Fungi (1966) 200; Dennis, Fung. Fl. Venezuela (1970) 23; Pegler, Kew Bull. Add. Ser. IX (1983).

The following description of a collection from Iquitos, Peru, seems to fit this little known species, though it had better developed gills and it grew from the ground in the open. Pegler, however, gives the gills as 0.5–2 mm wide with cylindric to clavate cheilocystidia $30\text{--}40 \times 3\text{--}7 \mu\text{m}$.

Pileus 7–11 mm wide, convexo-plane to infundibuliform, *subvillous in the centre*, the limb smooth, faintly striate near to the margin, *fuscous with darker disc*. Stem $10\text{--}22 \times 1\text{--}1.5$ mm, base subbulbous 1.5–2.5 mm wide, puberulous, *pale fuscous*. Gills shortly decurrent, subdistant, often forked, slightly veined in the interstices, 16–19 primaries –1.5 mm wide, 2–3 ranks, *dirty white*, fuscous at the base. Flesh thin, rather firm, fuscous. Smell none.

On bare earth in a pasture. Peru, Iquitos, 10 April 1948, Corner 16/48.

Spores $6\text{--}7.5 \times 4.5\text{--}5 \mu\text{m}$, not amyloid. Basidia 4-spored. Cystidia none, the gill-edge fertile. Caulocystidia $26 \times 4\text{--}8 \mu\text{m}$, subcylindric to subclavate. Pileocystidia ? none. Hyphae sarcodimitic, clamped; fusiform cells $1000 \times 12 \mu\text{m}$, walls $1 \mu\text{m}$ thick, firm and subagglutinated. Surface of pileus with radiating appressed hyphae, some with rather divergent ends especially over the disc, without a pseudoparenchymatous hypodermis.

T. citrina Corner

Mon. Canth. Fungi (1966) 204; Pegler (1981) ut *Gerroneina*.

T. fuliginea Corner

Figure 39

Mon. Canth. Fungi (1966) 207; Singer, Agar. Mod. Tax. (1975) 400 as *Hydropus*.

I give the following notes on large specimens in Brazil. The gills widen by intercalary growth and change from being adnato-decurrent to sinuato-ventricose. The pleurocystidia have oleaginous contents. Pileus 4–11 cm wide. Stem $15\text{--}40 \times 2\text{--}5$ mm. Gills adnato-decurrent when narrow, then widening and sinuate-ventricose, 12–15 or c. 20 primaries 6–20 mm wide, 2–3–4 ranks. Flesh 1.5–3 mm thick in the centre of the pileus, watery, juicy.

On logs in the forest. Brazil, Rio de Janeiro, Corcovado 500 m alt., 11 and 19 Dec. 1948, Corner s.n.

Spores $5\text{--}6.7 \times 3\text{--}4 \mu\text{m}$, very slightly bluish amyloid. Cheilocystidia $65 \times 4\text{--}10 \mu\text{m}$. Pleurocystidia $50\text{--}75 \times 6\text{--}15 \mu\text{m}$, subobtuse, with oleaginous cytoplasm.

T. fulvochracea Corner var. **brasiliensis** var. nov.

This is described on p. 32.

Trogia guadalupensis (Heim) comb. nov.

Dictyoploca guadalupensis Heim, Rev. Mycol. Paris n.s. 10 (1945) 20; Dennis, Trans. Br. Mycol. Soc. 34 (1951) 473.

Marasmiellus guadalupensis (Heim) Singer, Agar. Mod. Tax. (1975) 321; Dennis, Fung. Fl. Venezuela (1970) 31.

Pileus 20–65 mm wide, plano-umbilicate, smooth, striate to the centre, *dark grey then fuscous drab or livid* on expansion. Stem $10\text{--}35 \times 1.5\text{--}5$ mm subcylindric, smooth, rather fibrous, hollow, base abrupt and slightly thickened, *pale livid, sometimes yellowish* towards the base. Gills rather shortly decurrent, *narrow, distant, often forked, beautifully transversely reticulate in the interstices* with meshes 0.3–1 mm deep and 1–2 mm wide,

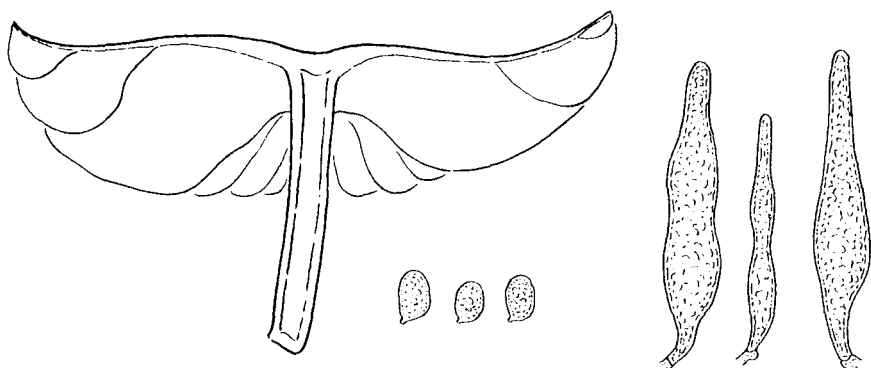


Fig. 39. *Trogia fuliginea*. Fruit-body, $\times 1$. Spores, $\times 1000$. Pleurocystidia, $\times 500$. Collection, Rio de Janeiro 11 Dec. 1948.

17–22 or 24–29 primaries 2–3 mm wide, 2–3 ranks, *dark grey then pale livid white to drab flesh-colour or greyish with pale fuscous edge*. Flesh thin, concolorous.

On rotten logs in the forest. Neotropics.

Spores $6\text{--}7 \times 4.5\text{--}5.5 \mu\text{m}$, subglobose to broadly ellipsoid, not amyloid. Basidia $7.5\text{--}8.5 \mu\text{m}$ wide; sterigmata 4. Cheilocystidia $45 \times 5\text{--}11 \mu\text{m}$, subcylindric, clavate or subventricose, more or less as a sterile gill-edge. Pleurocystidia none. Caulocystidia $95 \mu\text{m}$ long, as the cheilocystidia but more elongate and some with ventricose base $20 \mu\text{m}$ wide. Pileocystidia as the cheilocystidia. Hyphae sarcodimitic, clamped; fusiform cells $23 \mu\text{m}$ wide. Pileus without a pseudoparenchyma.

Collection: — Brazil, Rio de Janeiro, Corcovado 500 m alt., 21 Nov. 1984, Corner s.n.; 8 Dec. 1948, Corner 372.

var. **subincarnata** var. nov.

Differt receptaculis incarnato-tinctis, caulocystidiis brevibus ut cheilocystidiis. Ad lignum putridum. Brazil, Amazonas, Manaus, 24 Oct. 1984, Corner s.n.; herb. Cantab.

Pileus 20–25 mm wide, concave, somewhat sulcate. Stem $10\text{--}12 \times 2\text{--}2.5 \text{ mm}$, short. Gills with 13–15 primaries 1–1.5 mm wide, 3–4 ranks. Spores $5.5\text{--}7.5 \times 4.2\text{--}5 \mu\text{m}$, rather mango-shaped. Cheilocystidia $36 \times 4\text{--}7 \mu\text{m}$, subclavate, as a sterile gill-edge. Fusiform cells $800 \times 6\text{--}18\text{--}(28) \mu\text{m}$, wall $1\text{--}2 \mu\text{m}$ thick in the stem.

This has the pale colour and wide spores of *T. aquosa* but the reticulate gill-interstices of *T. atropruinosa* with which it agrees better in construction. Compare *T. subdistans* p. 75.

T. icterina (Singer) Corner

Mon. Canth. Fungi (1966) 218.

Marasmiellus icterinaus Singer, Sydowia 2 (1948) 30. — *Gerronema icterinum* Singer, Fl. Neotrop. Monogr. 3 (1970) 31.

T. impartita Corner

See p. 40 for the description of a Brazilian collection.

Trogia laeta sp. nov.

Pileus 25 mm latus, convexo-umbilicatus laevis (sicco pruinosulus), striatus, laete pallide cervino-subocbraceus. Stipes $25\text{--}50 \times 1.5\text{--}2 \text{ mm}$, fistulosus tenax, albido-pruinosns, concolor. Lamellae adnato-decurrentes subconfertae, haud venosae, primariae $16\text{--}23 \times 2\text{--}4 \text{ mm}$ latae, ordinibus 2–3, pallide concolores,

aciem versus albidae. Caro tenuis firma, in stipite tenax, hygrophana concolor. Odor subaromaticus. Sporae $5-6.5 \times 3.5-4.3 \mu\text{m}$, pallid amyloideae. Basidia 4-sporigera. Cheilocystidia $-60 \times 4-9 \mu\text{m}$, cylindrica subclavata vel ventricoso-attenuata, primo ut acie sterili instructa dein dispersa. Pleurocystidia nulla. Caulocystidia et pileocystidia ut cheilocystidia. Hyphae sarcodimiticae fibulatae; cellulae fusiformes longissimae $-20 \mu\text{m}$ latae; oleiferae $5-14 \mu\text{m}$ latae sparsae sed in pileo conspicuae. Ad lignum putridum in silva. Brazil, Mato Grosso, pr. Chavantina, 29 Jan. 1968, Corner s.n.; herb. Cantab.

Pileus -25 mm wide, convexo-umbilicate, smooth, drying finely pruinose-puberulous, striate, *light pale fawn subochraceous*. Stem $20-50 \times 1.5-2 \text{ mm}$, cylindric, hollow, tough, wholly whitish pruinose, *concolorous*. Gills adnato-decurrent, rather crowded, interstices smooth, 16-23 primaries 2-4 wide, 2-3 ranks, *paler concolorous*, whitish towards the edge. Flesh thin, firm, not waxy, tough in the stem, hygrophanous, concolorous. Smell faint, aromatic.

On rotten wood in the forest. Brazil, Amazonas, pr. Manaus.

Spores $5-6.5 \times 3.5-4.3 \mu\text{m}$, ellipsoid, pale vinaceous amyloid. Basidia 4-spored. Cheilocystidia $-60 \times 4-9 \mu\text{m}$, cylindric, clavate or mostly ventricoso-attenuate with apex $3-4 \mu\text{m}$ wide, often subflexuous, at first as a sterile gill-edge then scattered in small tufts. Pleurocystidia none. Caulo- and pileo-cystidia as the cheilocystidia, evidently as the remains of a continuous palisade in the primordium. Hyphae sarcodimitic, clamped; fusiform cells very long, $-20 \mu\text{m}$ wide; oleiferous hyphae $5-14 \mu\text{m}$ wide, conspicuous in the pileus. Surface of pileus without a pseudoparenchymatous hypodermis.

This seems near to *T. anthidepas* but the fruit-body is more brightly coloured and not fuscous, and the spores are slightly amyloid.

T. papyracea (Berk. et Curt.) Corner

Mon. Canth. Fungi (1966) 229.

Hymenogloea papyracea (Berk. et Curt.) Singer, Lilloa 22 (1951) 243; Agar. Mod. Tax. (1975) 367. Dennis, Kew Bull. 18 (1961) 100; Fung. Fl. Venezuela (1970) 33.

While maintaining that this fungus is allied with *Marasmius*, Singer remarks that it has no connection with *Trogia* and that it is completely known. As he omits the hyphal construction, however, this is hardly true. As a mesopodal sarcodimitic agaric without gills, it is comparable with *T. silvestris* and its allies; that is with *Vanromburghia* which he excludes from Agaricales as uncertain, though entering it dubiously under *Marasmius*, e.g. *M. silvestris* Singer. *T. papyracea* lacks cystidia and has a hymenoderm on the pileus, both features of *Trogia*. I see no reason to change my opinion; hopefully closer allies will be found.

Trogia perpusilla sp. nov.

Pileus $1-2.5 \text{ mm}$ latus, excentricus vel fere lateralis, convexus laevis, pallide cervinus. Stipes $1-2 \times 0.2-0.3 \text{ mm}$, basi abrupto, albo-furfuraceus concolor, basim versus fuscus. Lamellae adnatae paucae distantes, haud venosae, primariae 6-8, ordinibus 1-3, albae, acie furfuracea. Caro tenuissima mollis subtenax. Sporae $5-7 \times 3-3.5 \mu\text{m}$ subfusiformes inamyloideae. Basidia $18-22 \times 5.5-6.5 \mu\text{m}$, 4-sporigera. Cheilocystidia et caulocystidia ut basidia sterilia fasciculata. Pleurocystidia nulla. Hyphae sarcodimiticae fibulatae; cellulae fusiformes in stipite $60-250 \times 8-14 \mu\text{m}$, tunicis $-1.5 \mu\text{m}$ crassis. Superficies pilei ex hyphis $5-8 \mu\text{m}$ latis inodermea. Ad folia ramulos caulesque bambusarum in silva. Brazil, Rio de Janeiro, Corcovado 500 m alt., 30 Nov. 1948, Corner s.n.; herb. Cantab.

Pileus $1-2.5 \text{ mm}$ wide, *excentric to almost lateral*, *pale fawn*, convex, smooth. Stem $1-2 \times 0.2-0.3 \text{ mm}$, cylindric, slender, abrupt at the base, *finely white scurfy pruinose*, *pale fawn*, apex *whitish*, base *fuscous*. Gills adnate, *few*, *distant*, *thin*, *well-formed*, not veined, 6-8 primaries in 1-3 ranks, *white*, pale fawn at the base, *edge white scurfy*. Flesh very thin, soft, rather tough. Smell not noticed.

On dead twigs, bits of stems and leaves of bamboo in the forest. Brazil, Rio de Janeiro, Corcovado 500 m alt.

Spores $5-7 \times 3-3.5 \mu\text{m}$, subfusiform, aguttate, not amyloid. Basidia $18-22 \times 5.5-6.5 \mu\text{m}$, 4-spored; no acerose basidioles. Cheilocystidia and caulocystidia as clusters of sterile basidia on the gill-edge and stem. Pleurocystidia and pileocystidia none. Hyphae sarcodimitic, clamped, not dextrinoid, not gelatinous; fusiform cells in the stem $60-250 \times 8-14 \mu\text{m}$, walls $-1.5 \mu\text{m}$ thick; narrow hyphae $3-7 \mu\text{m}$ wide, in the pileus mostly with walls $0.5-1 \mu\text{m}$ thick. Surface of pileus with loose appressed, simple or branched, hyphae $5-8 \mu\text{m}$ wide, walls $0.5-1 \mu\text{m}$ thick, often with somewhat divergent subclavate ends $7-10 \mu\text{m}$ wide; no pseudoparenchymatous hypodermis.

The fruit-bodies look like those of *Panellus* and would be ascribed to *Marasmiellus*, but in their sarcodimitic construction in the stem are clearly diminutive and simplified examples of *Trogia*. The species bears comparison with *T. lateralis* of Borneo except in the superficial structure of the pileus which, in *T. perpusilla*, is distinguished by the wide hyphae.

T. subrufescens Corner

Mon. Canth. Fungi (1966) 240, cum var. *parvispora*.

T. umbonata Rick

Iberingia 8 (1961) 273.

I do not know what this may be.

T. umbrino-alba Corner

(See p. 83).

I give descriptions of two Brazilian collections which seem to be this species, though the first has shorter spores and longer cheilocystidia than normal, and both lack oleiferous hyphae. Amazonas, pr. Manaus, Corner s.n. 31 Oct. 1948. — Pileus 15–20 mm wide, convex then concave, hygrophanous, striate near the margin, smooth, *fuscous umber*. Stem 20–25 $\times$ 2–2.5 mm, cylindric, hollow, base abrupt and shortly strigose, *white or pallid ochraceous*, wholly finely white pruinose. Gills shortly decurrent, scarcely crowded, narrow, c. 28 primaries 1.5 mm wide, 3–4 ranks, *pallid white*, fuscous near the base. Flesh rather thick, water-juicy, concolorous. Smell not strong but distinct. Spores $5.5-7.5 \times 4-5 \mu\text{m}$, inamyloid. Cheilocystidia $-110 \times 9-25 \mu\text{m}$, clavate to ventricose with obtuse apex $4-9 \mu\text{m}$ wide, as a broad sterile gill-edge. Caulocystidia similar. Fusiform cells $-2800 \times 23 \mu\text{m}$. Pileus without pseudoparenchyma.

Brazil, Rio de Janeiro, Corcovado 500 m alt., on a dead root, Corner s.n. 20 Nov. 1948. — Pileus 7–10 mm wide, plane, undulate, opaque or subatmate towards the margin, *fuscous brownish*. Stem $-30 \times 1 \text{ mm}$, cylindric, *paler concolorous*, puberulous towards the pale apex, *base white strigose*. Gills decurrent, scarcely crowded, rarely forked, interstices not veined, c. 20 primaries 1 mm wide, 3–4 ranks, *dingy white*. Flesh concolorous, hygrophanous. Smell none. Spores $7-8 \times 4-5 \mu\text{m}$, not amyloid. Basidia c. $30 \times 7-8 \mu\text{m}$, 4-spored. Cheilocystidia $20-65 \times 5-9 \mu\text{m}$, cylindric to subclavate, or ventricose $-12 \mu\text{m}$ wide with obtuse apex, rather scattered but probably as a sterile edge to the young gill. Caulocystidia $-38 \times 6-11 \mu\text{m}$, subclavate to subventricose, some with brown sap. Pileocystidia as the caulocystidia, scattered, more crowded over the disc, some with brown sap. Pileus without pseudoparenchyma.

***Rhodoarrhenia* Singer**

Sydowia 17 (1964) 142; Reid, Trans. Br. mycol. Soc. 50 (1967) 333–4; Dennis, Fung. Fl. Venezuela (1970) 102; Pegler, Kew Bull. 28 (1973) 258; Redhead, Can. J. Bot. 62 (1984) 880.

According to Reid, the fungus which I described in 1966 as *Rimbachia paradoxa* Pat. is *Rhodoarrhenia flabellula* (Berk. et Curt.) Singer. Singer's article came too late

for inclusion in my monograph. However, this raises a tricky point. According to the account of *Rimbachia* given by Redhead (1984), the one important difference between that genus and *Rhodoarrhenia flabellula* lies in the monomitic construction of the former and the sarcodimitic of the latter. Thus, there is vindication of my contention that without hyphal analysis neither the classification nor the identification of basidiomycetes will be correct. Nevertheless, if hyphal construction is disregarded and preference is given to the form of the fruit-body, as in the cases of *Gerronema* and *Mycena*, then *Rhodoarrhenia flabellula* can be introduced into *Rimbachia* alongside *R. paradoxa*. I cite the case of monomitic *Cantharellus albidus* Fr. placed by Singer and Redhead in *Gerronema* along with sarcodimitic *Trogia icterina*. I prefer consistency and, if all species of *Rhodoarrhenia* are sarcodimitic, which is not known, regard the genus as a close ally of *Trogia*: indeed, the strongly poroid-reticulate interlamellar space in some species of *Trogia*, such as *T. guadalupensis*, suggest that intermediates may exist between the two genera.

Concerning my misidentification of *Rimbachia paradoxa*, in the first place the type was not available to me; in the second place, Patouillard's spore-measurements were very inaccurate, as Redhead has corrected. Then in connection with *Rhodoarrhenia*, the only account available to me when my manuscript on cantharelloid fungi was given to the printer was that by Singer in 1962 where the type-species *R. pezizoides* was described with spores purplish red in the mass (Singer 1964). As the fungus was regarded as meruloid and there was nothing 'rhodo' in my interpretation of *R. paradoxa*, it could not be *Rhodoarrhenia*; indeed, I have a tiny cyphelloid fungus with reddish pink spores and monomitic hyphae from South America, which might be *Rhodoarrhenia*. As regards *R. flabellula*, it was described as *Arrhenia* by Dennis in 1952 and, as that genus is monomitic, identification with my interpretation of *R. paradoxa* did not seem possible. Dennis put *Rhodoarrhenia* in Cyphellaceae. Subsequently, Pegler (1973) compared *Rhodoarrhenia*, *Rimbachia* and *Skepperiella*. *Rhodoarrhenia* was transferred to Collybieae and distinguished from *Skepperiella* by the gelatinised context and the lack of hymenial cystidia; neither the red spores nor the hyphal construction were mentioned. According to my specimens, *R. flabellula* has dry context but the hymenial trama and subhymenium are subgelatinous and, thus, intermediate with *Skepperiella* in this respect. *Skepperiella* was said to be monomitic with inflating hyphae; that is, presumably, in the stem and pileus because the three illustrations of the genus show uninflated hyphae in the hymenial trama, just as in my collections referred to *R. flabellula*. Then in Pegler's figures of *S. cochlearis* and *S. spatularia*, inflated fusiform cells are shown in the flesh of the pileus, very like those of *Trogia*. I am not convinced that *Skepperiella* is not sarcodimitic and believe that *R. flabellula* may be *Skepperiella* without hymenial cystidia; such a variation is admitted in several agaric genera, just as in my concept of *Trogia* where subgelatinous flesh may occur.

With these uncertainties unresolved, for I am no longer able to undertake microscopic analysis, I give my notes on a new species of *Rhodoarrhenia*, on the assumption that the fungus which I described as *Rimbachia paradoxa* is *Rh. flabellula*.

***Rhodoarrhenia solomonensis* sp. nov.**

Figures 40, 41

Receptacula alba stipitata dorsifixa decurvata, tenaciter subgelatinosa. Pileus – 12 mm latus, – 10 mm altus, conico-cupularis; margine integro dein inciso. Stipes 2–5 × 1–1.5 mm, horizontalis vel decurvatus, puberulus, basi fusco. Hymenium laeve dein e centro radiatim ruguloso-reticulatum. Caro – 0.4 mm crassa. Odor nullus. Sporae 9–11.5 × 7.5–9 µm, albae ovoideo-ellipsoideae, tunica – 0.3 µm incrassata, inamyloideae. Basidia 40–55 × 8.5–10 µm; sterigmata 4, 6–7 µm longa. Cystidia nulla. Hymenium haud incrassatum. Hyphae sarcodimiticae fibulatae; cellulae fusiformes 150–1200 × 6–45 µm. Superficies stipitis ex hyphis angustis breviter lobulatis vel tuberculatis instructa, vix ut caulocystidia. Superficies pilei similis. Ad lignum emortuum in silva. Ins. Solomonenses, San Cristobal, fl. Warahito, 28 July 1965, RSS 739A; typus, herb. Cantab. Etiam RSS 739, 23 July 1965.

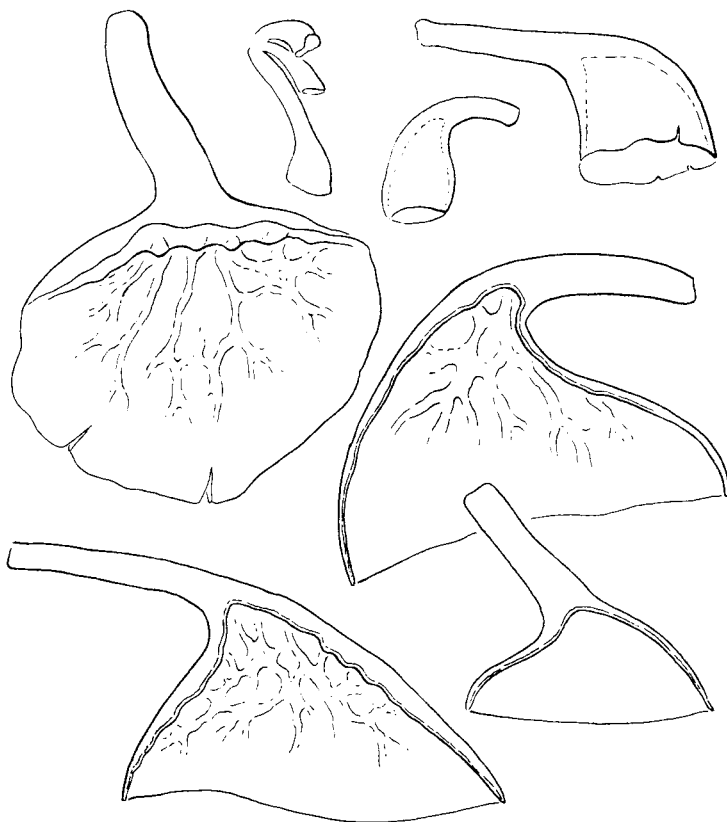


Fig. 40. *Rhodoarrhenia solomonensis*. Fruit-bodies, $\times 5$. Collection, RSS 739.



Fig. 41. *Rhodoarrhenia solomonensis*. Spores, $\times 1000$. Surface of stem, $\times 500$. Collection, RSS 739.

Fruit-bodies *white, decurved, dorsifixed, rather toughly subgelatinous*. Pileus –12 mm wide, –10 mm high, conico-cupular, smooth; edge entire then usually split. Stem 2–5 × 1–1.5 mm, horizontal or sloping downwards, dorsifixed to the pileus, puberulous, the base fuscous. Hymenium *smooth then faintly radially rugulose or subreticulate* (without definite gill outgrowths) from the centre outwards. Flesh 0.2–0.4 mm thick. Smell none.

On the sides and top of logs in the forest, gregarious to subcaespitose. Solomon Islands, San Cristobal.

Spores 9–11 × 7.5–9 μm , white, smooth, ovoid-ellipsoid, the wall slightly thickened –0.3 μm , not amyloid. Basidia 40–55 × 8.5–10 μm ; sterigmata 4, 6–7 μm long; some basidia sterile with 2–3–4 finger-like sterigmata –8(–14) μm long. Hymenium not thickening. Cystidia none. Hyphae sarcodimitic, clamped; fusiform cells 150–1200 × 6–45 μm , more or less embedded in a submucilaginous reticulum of branching and anastomosing narrow hyphae 1–2.5 μm wide. Stem with the inflated fusiform cells longitudinal in a peripheral layer 80–100 μm thick, the centre filled with the mucilaginous narrow hyphae; surface composed of narrow hyphae, here and there inflated –7 μm wide, set with small irregular, often crowded, tubercles or processes –5 × 1–2.5 μm , the end-cells projecting –25 μm and set with similar processes; no distinct caulocystidia; surface hyphae at the base of the stem with brownish walls. Pileus composed mostly of narrow hyphae, with a thin layer (2–3 hyphae thick) of inflated fusiform cells near the surface and overlain by a thin layer of narrow hyphae set with processes as on the stem; no distinct pileocystidia.

This species differs from *R. flabellula*, as I described it under the name *Rimbachia paradoxa*, in the distinctly gelatinous flesh, the less reticulate hymenium, the larger spores with slightly thickened wall, the more densely set processes from the superficial hyphae of stem and pileus, and the absence of distinct caulocystidia.

POSTSCRIPT

Since the submission of this account for publication, another criticism of my interpretation of *Trogia* has appeared, this time in connection with *Mycena acicula*. In the course of his monograph on the north temperate species of *Mycena*, Maas-Geesteranus (1990) concluded that this species might well belong to another genus but would not accept for it a place in *Trogia*. He considered that I was not justified in treating that genus as sarcodimitic. He pointed out, as I have emphasized from the outset, that the hyphal structure of the type-species, *Tr. montagnei*, was not known. The original and only collection has not recently been found but it seems that Patouillard had seen it because he listed six other species in the genus. As he was the authority on tropical agarics and subsequent mycologists have followed his idea of the genus, I followed suit. I examined the types of four of the seven species which he had listed, namely *Tr. bicolor*, *Tr. buccinalis*, *Tr. infundibuliformis* and *Tr. partita*, and found all to be sarcodimitic. The position of these four in *Trogia* has never been disrupted. More recently I have shown that another of the seven, namely *Tr. cantharelloides*, is a species of *Panus* s.str., as it was originally described, or possibly a species of *Pleurotus* (Corner 1981). A sixth species, *Tr. grisea*, has been retained in *Trogia* by Pegler (1986) who considered that it might be only a young state of *Tr. infundibuliformis*. Concerning the type, I indicated that it might be what I had described as *Tr. mellea* (Corner 1966). Unfortunately, a temporary error suggested that *Tr. buccinalis* might be a synonym of *Tr. montagnei* (Pegler 1977), but *Tr. buccinalis* with fuliginous pileus and stem came from French Guiana (see p. 53) and it is extremely improbable that it could be *Tr. montagnei* with apricot yellow stem and gills from southern India. I note, too, that the customary error about *Tr. cantharelloides* has been made by Singer (1975) who has omitted the well-known and fairly common *Tr. infundibuliformis*, described in 1975, the generic position of which has always been accepted.

Thus, so far from having no grounds for regarding *Trogia* as sarcodimitic, I had no alternative but to treat it as such.

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