Monographs of South American Basidiomycetes, especially those of the East Slope of the Andes and Brazil. 3. Reduced marasmioid genera in South America[1])

By Rolf Singer (Tucumán) [2]).

With Plates XXXVII—XL.

1. The genera Gloiocephala, Manuripia, Epicnaphus, and Hymenogloea and their taxonomic position

In all "classical", i. e. obsolete, classifications and keys to the families of the Basidiomycetes, the genera named above would show up respectively key out in the "Thelephoraceae", and indeed, the genera known until now, *Gloiocephala* and *Hymenogloea* have been so disposed of by all authors except Patouillard (1900), and myself (1949). On the other hand, they do not seem to be congeneric with *Marasmius*. If there were this one difference — configuration of the hymenophore — alone that differentiates each of them from a section of the genus *Marasmius*, and transitional forms or stages were available, the reduced genera should have been united with *Marasmius*. Indeed, there is a species, *Cymatella longipes* Martin which is extremely close to other species of the section *Epiphylli* of *Marasmius*, a section where, as we know since the time of Fries, transitions towards reduced hymenophore are not uncommon, and exist even in the type species of the section. In this case, it was necessary to transfer the respective species to the genus *Marasmius*, section *Epiphylli*, as *Marasmius martini* (see Sydowia 12: 70. 1958). In the case of the genera mentioned above, there is, however, no reason for assuming any special affinity with a known section of *Marasmius* and even where they would key out with one of the known sections of that genus, there are important correlated characters separating them from these sections. Moreover, transitions towards the smooth hymenial surface, as observed in section *Epiphylli*, are not observed in other sections. Consequently, we believe that in the case of *Gloiocephala, Manuripia, Epicnaphus,* and *Hymenogloea* a hiatus exists which makes the separate existence of these genera as a reduced series analogous to *Marasmius* justifiable.

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In fact, taking the case of *Gloiocephala inobasis* which, if it were looked for in the keys to the sections of *Marasmius*, would key out with section *Alliacei*, could be equally well a reduced representative of the genus *Cyplotrama* which differs from the section *Alliacei* of *Marismius* basically and in principle by a character which is visible only in a section of the hymenophoral trama, an organ not developed in that species since the hymenium of the scattered low veins is not differentiated from that of the pileus proper. It would therefore be just as difficult, in theory and practice, to combine the reduced genera with the lamellate-pileate ones as it has been to keep them out of the Tricholomataceae and insert them in the Thelephoraceae.

The reduced genera now known belong not only in the Tricholomataceae near the genus *Marasmius* (trib. *Marasmieae*) but also in other groups in and outside the family Tricholomataceae. We have limited ourselves in the present part of our monographs to treating the four genera mentioned above, i. e. the marasmioid ones — having the appearance of any *Marasmius*, excluding for the time being the cyphelloid and clavarioid ones as well as all those that do not enter the same tribus as *Marasmius*.

Using the word "reduced", we do not mean it necessarily in the evolutionary sense, and do not wish to imply that we take it for granted that these forms are derived from *Marasmius*, or at any rate from some similar lamellate and normally pileate form. Relatively few species are known in the "reduced" genera, and if this should be the true taxonomic picture, one would be inclined to accept the thesis that the reduced forms are actually agarics which, in the course of evolution, have lost their lamellae, thus achieving a simplification of their macroscopical structure. But it is also possible that many of these genera contain considerably more species than we now suspect, and perhaps even more than the nearest section of *Marasmius*. In this case, it would become necessary to investigate the possibility of their derivation from very primitive and perhaps originally non-lamellate ancestors. The word reduced, as used at present by this author, does not imply any notion of a rare or exceptional "degradation". It simply designates genera in which the hymenophore, present in most Agaricales in one form or other, is absent, i. e. reduced to nothing or nearly nothing and the pileus has been transformed, i. e. reduced, from its ordinary hat-shape to a simplified organ — disc-shaped, unilateral-flabellate, cup-like, or vesiculose, or to a "papyraceous" sheet-like extension of the stipe.

2. Key to the genera

A. Epicuticular elements vesiculose, smooth, forming a hymeniform layer reminiscent of that of the sections *Epiphylli* and *Alliacei* of the genus *Marasmius* Fr., without setulae.

B. Carpophores large, with basal mycelium, bright colored; pseudoamyloid elements present in all portions of the carpophore; dermatocystidia on pileus, none. IV. *Hymenogloea*

B. Carpophores very small, without basal mycelium or with extremely scanty one (visible only under a lens); pseudoamyloid elements often present; dermatocystidia present on the surface of the pileus (if not differentiated in small white pilei, see *Marasmius* sect. *Epiphylli*) I. *Gloiocephala*

A. Epicuticular elements vesiculose, beset with small setulae, of the Rotalis-type (as common in the section *Marasmius* of *Marasmius*).

C. Basal mycelium absent; hyphae inamyloid; stipe sometimes branching. II. *Manuripia*

C. Basal mycelium present; hyphae pseudoamyloid; stipe simple. . . III. *Epicnaphus*

I. **Gloiocephala** Mass., Grevillea 21: 34. 1892.

Carpophores stipitate pezizoid-marasmioid, i. e. pileate but the pileus often eccentric, so that the carpophore appears (sub)spathuloid, with the hymenial surface inferior but often smooth and then appearing much like some small genus of Pezizales. Pigment present or absent. Hymenophore none, or replaced by scattered or anastomosing veins, rarely consisting of rather narrow lamellae. Dermatocystidia long and striking, often capitate or subcapitate, sometimes pseudoamyloid, often thick-walled at least in lower portion; hymenial cystidia absent or present, and then of a type similar to the dermatocystidia and more frequent near the margin of the pileus; spores ellipsoid to fusoid-cylindric, clavate or oblong, smooth, varying from medium sized to very large. Hyphae strongly or weakly pseudoamyloid, or inamyloid, with clamp connections. On leaves, culms, and wood.

Most species are tropical or subtropical, but there is one known from Europe. The genus comes rather close to the section *Epiphylli* of the genus *Marasmius* from which it differs in (1) the presence of characteristic, mostly large, often thick-walled or pseudoamyloid dermatocystidia, frequently characteristically capitate or subcapitate while the hymenial cystidia — constant in sect. *Epiphylli* — are either present or absent in *Gloiocephala,* and if present, they are frequently homologous with the dermatocystidia; (2) the occasional presence, in some few species, of a distinct pigmentation in the pileus and stipe and of basal mycelial fibrils. The one species which has the cystidial characters of *Gloiocephala* but comes closer to the *Epiphylli* in all other respects is *Gloiocephala confusa Sing.* since it has inamyloid trama and cystidia, white pileus and central stipe, well developed lamellae, and insititious stipe. However, this is not the only lamellate species with typical *Gloiocephala*-cystidia since we have encountered other lamellate species with the same kind of cystidia, but with strongly pigmented pileus. This means that there

is a gradual series of forms leading from the "extreme" Gloiocephalas to the type *Gloiocephala confusa.* On the other hand, the latter differs from the Marasmii of the section *Epiphylli* not merely by the striking dermatocystidia, but by the shape of the hymenial cystidia which are of a kind frequently seen in *Gloiocephala* but never in the section *Epiphylli.* The hyphae of the pileus are weakly gelatinized in *Gloiocephala confusa.* This is a character found in several typical species of *Gloiocephala,* but not in *Marasmius* section *Epiphylli.* We have therefore to look for the hiatus between the two groups, not between *G. confusa* and the bulk of the Gloiocephalas, but between *G. confusa* and the bulk of the species of section *Epiphylli.* We shall then admit lamellate species in *Gloiocephala,* just as we admit species with venose or smooth hymenial surface in *Marasmius* section *Epiphylli.* But we exclude from the section *Epiphylli* and thus from *Marasmius* all those species which have long dermatocystidia, atypical (not thin-walled fusiform) hymenial cystidia, basal fibrils on the stipe, spathulate carpophores, pigmented pileus, gelatinous tissue in the pileus. Doing this, one will find that the excluded species form a very homogeneous and natural group of small agarics which, since they are obviously congeneric with the type species of the genus *Gloiocephala,* are here separated from *Marasmius* under the generic name *Gloiocephala.*

Gloiocephala, in this sense, is easily distinguishable from *Hymenogloea* a genus which is characterized by a completely different habit, covering, size, and, especially an abundance of basal tomentum and strigosity which is never seen in *Gloiocephala.*

The other two genera, in size more comparable with *Gloiocephala,* viz. *Manuripia* and *Epicnaphus,* are easily distinguishable by the setulose epicuticular elements and the absence of dermatocystidia.

The type species of *Gloiocephala* is *G. epiphylla* Mass. Until now only one other species has been described in *Gloiocephala,* viz. *G. zeylanica* Petch. We are now describing seven South American species, in addition to the one tropical Asiatic species already known, and the one European species formerly considered a *Marasmius* so that the total of the species known has now risen to nine.

Key to the species

A. Spores very large, narrow, 11—18 × 3—7.2 μ. Hymenophore venose.
  B. Pileus and stipe covered by slender brown stiff tapering hairs, up to 450 μ long, 5—7 μ broad at base; pileus white, 1—2 mm. broad. 1. *G. albocapitata* var. *occidentalis*
  B. Pileus covered by hairs which are broader and shorter, more like dermatocystidia; pileus white and then broader, or pallid to distinctly colored. On Monocotyledones.
    C. Pileus white; stipe with basal mycelium in form of small scattered fibrils; 2. *G. inobasis* (cf. *G. zeylanica*)

C. Pileus pallid to distinctly colored; stipe insititious;
D. Pileus 4—8 mm. across, on Typha in Europe *G. menieri*
D. Pileus 1—5 mm. across, on palms and other monocots in South America 3. *G. palmarum*

A. Spores up to 12 μ long. Hymenophore smooth, venose, or lamellate.
E. Spores 6—12 μ long, on leaves.
F. Spores 4 μ broad or broader, ellipsoid; pileus brown; hymenophore lamellate. Tropical montane species 4. *G. lamellosa*
F. Spores, at least many of them, narrower than 4 u. Pileus white (cf. *M. minutissimus, G. zeylanica*); hymenophore lamellate or not.
G. Capitate dermatocystidia accompanied by setoid hairs up to 365 μ long, hymenophore venose 5. *G. longifimbriata* (cf. *M. albocapitatus*)
G. Dermatocystidia capitate or not, not accompanied by hairs longer than 160 μ long; hymenophore lamellate, merulioid, or not differentiated.
H. Hymenophore none; stipe 3—8 mm. long 6. *G. epiphylla*
H. Hymenophore lamellate; stipe longer 7. *G. confusa*
E. Spores less than 6 μ long, on wood 8. *G. spathularia*

1. **Gloiocephala albocapitata** (Petch) Sing. comb. nov.

Marasmius albocapitatus Petch, Trans. Brit. Mycol. Soc. 31: 31. 1947.

Crinipellis albocapitata (Petch) Dennis Trans. Brit. Mycol. Soc. 34: 430. 1951 (by implication).

Pseudohiatula albocapitata (Petch) Sing., Sydowia 12: 72. 1950.

Var. **albocapitata**

The type variety does not occur in South America, see "extralimital Species".

Var. **occidentalis** (Dennis) Sing. comb. nov.

Crinipellis albocapitata var. *occidentalis* Dennis, Trans. Brit. Mycol. Soc. 34: 72. 1951.

Pileus white, with scattered stiff brown setae, flat or depressed, 1—2 mm. diameter. Lamellae white, 3—4, adnate, fold-like. Stipe red-brown, bearing numerous setae, very slender, wiry, cylindrical. Spores 12—15 × 3 μ, tear-shaped, hyaline. Hymenium: Basidia about 20 × 5—6 μ, clavate. Cystidia 25—30 × 8 μ; cylindrical, thin- walled, obtuse, hyaline, often secreting a cap of brown gummy material. Covering layers: Epicutis of pileus formed of smooth, thin-walled, cylindrical or piriform cells, somewhat pointed above, hyaline, 20—25 × 5—9 μ. Setae of pileus and stipe up to 450 μ long by 5—7 μ at the base, straight, stiff, tapering, brown with moderately thick walls.

Scattered on dead leaves inforest litter.

Material studied: None.

The description has been copied from Dennis's original account. The description given by Singer (1958) under the name *Pseudohiatula albocapitata* is erroneous since it refers to *G. confusa* Sing.

2. **Gloiocephala inobasis** Sing. spec. nov. Ill.: Plate XXXVII, fig. 1.

Pileus pure white but when dried with brown dots from the exudations of the metuloids, not orbicular in outline but with a sinus on one side which does not reach the center op the pileus, convex, smooth, glabrous, fresh about 9 mm. broad. Hymenophore venose, not lamellar, consisting of about four radial obtuse veins, the whole hymenial surface showing small brown dots from the exudations of the metuloids, otherwise white. Stipe fresh whitish in upper and dark brown in lower half, dried under a lens distinctly fibrillose all over from the dermatocystidia equal but for a macroscopically insititious socle rising from a blackened spot on the host tissue, 11 × 0.7 mm.; basal mycelium well visible under a lens, radiant and somewhat ascendant, its fibrils brown, the base itself up to 2 mm. broad, upper portion straight or oblique, eccentrically attached to pileus so that carpophores appear spathuloid. Context white, thin, inodorous. Spores 11.5—18 × 4—4.3—(4.8) μ, oblong to subfusoid, with a slight suprahilar depression or somewhat curved in the lower portion, thin-walled to almost thin-walled, hyaline (or those near the cystidial exudations brownish), inamyloid, hyaline in KOH. Hymenium: Basidia 30—34 × 8—8.5 μ, clavate, 4-spored, with a clamp at the base. Cystidia of the metuloid type, 40—135 × 16—28 μ, conspicuous but moderately numerous, with slightly thickened wall (wall 0.3—2 μ in diameter), hyaline and not strongly colorable in cresyl blue mounts, but covered with amorphous hyaline to succineous brown resinous material which turns deep violet to bright blue in cresyl blue mounts, with (in NH_4OH) colorless indistinct contents which at times turn partly deep violet in cresyl blue mounts, very weakly pseudoamyloid (in innermost layer of wall) to virtually inamyloid, clavate or clavate-subcylindric, often with a slight constriction underneath the apex and thus almost subcapitate, strongly projecting beyond the basidia and deeper rooting than these. Hyphae: Subhymenium consisting of very irregularly interlaced small hyaline elements. Trama of pileus consisting of irregularly arranged elements which are mostly strongly elongate, not gelatinized, with slightly thickened wall, hyaline, inamyloid, with clamp connections. Hyphae of the stipe distinctly parallel with each other, inamyloid and not metachromatic in cresyl blue mounts (not differentiated in this regard from those of the pileus), with clamp connections. Covering layers: Epicutis of pileus hymeniform, consisting of subisodiametric cells with or without

pedicel, some balloon-shaped, with very slightly thickened wall, smooth, 14—44 × 9—13 µ, slightly pseudoamyloid in the innermost wall layer; some of these cells form transitions to metuloids since they are somewhat larger and exuding brown resinous matter just as the hymenial cystidia. Vestiment of stipe consisting of numerous and almost crowded dermatocystidia of the same type as those of the hymenium, but not forming a continuous palisadic layer anywhere.

On monocotyledonous leaves in inundated rain forest after recession of the water.

Material studied: Bolivia: Pando: Madre de Dios, Santa Teresa, 21-VII-1956 leg. Singer no. B 2296 (LIL), Typus.

3. **Gloiocephala palmarum** Sing. spec. nov. Ill.: Plate XXXVII, fig. 2; plate XXXVIII, fig. 3.

Pileus whitish to pale orange cinnamon, ochraceous, or cinnamon, mostly near 11—G—7 (M&P) when fresh, 12—F—9 when dried, finely (under a lens) distantly and minutely pilose, macroscopically glabrous, smooth, convex, flat, or irregular, with a suborbicular outline but with a sinus where the stipe is attached, 1—5 mm. broad. Hymenophore venose, not lamellar, or lamellae very narrow up to seven, many veins or vein-like lamellae not reaching the stipe or margin, never more than three through-veins or vein-like lamellae, sometimes forking, with obtuse edges, white. Stipe brown to chestnut with whitish apex or with the apex concolorous with the pileus, oblique or appressed to the substratum, or curved, attached to the pileus at or very near its rear (sinuate) margin, thus lateral or sublateral, usually forming a nearly right angle with the pileus in fresh condition, less pilose than the pileus when seen under a good lens, equal or more rarely slightly tapering upwards, solid, insititious, 1—4 × 0.3—0.5 mm. Context white, very thin, inodorous. Spores 11—16.5 × 4.5—7.2 µ, oblong, with rather thin or quite thin walls, hyaline in KOH, smooth, inamyloid. Hymenium: Basidia 27—30 × 7—11 µ, clavate, often filled with conspicuous oily and protoplasmatic contents, hyaline, 2-4-spored, or all 4-spored. Cystidia few, rarely none, if present 51 × 7.5 µ, ventricose or ventricose-subcylindric, with subcapitate obtuse apex and a constriction (there diameter e. gr. 3—4 µ diameter) underneath the apex, the latter e. gr. 4.5 µ in diameter, hyaline, thick-walled. Hyphae: Subhymenium well developed, of thin interwoven hyphae, hyaline. Trama of pileus a very thin layer consisting of very thin filamentous hyphae which are hyaline to very pale cinnamon, inamyloid, with clamp connections, more or less gelatinized. Hyphae of the stipe cortex chestnut brown, thick- and thin-walled ones intermixed, not gelatinized and strictly parallel with each other, filamentous, inamyloid or perhaps extremely weakly pseudoamyloid but in white

interior of stipe merely yellow in the Melzer, with clamp connections. Covering layers: Epicutis of the pileus hymeniform or palisadic, consisting of globose, subglobose or pear-shaped cells 22—40 × 18—28 μ, often with a pedicel up to 6 μ long, intermixed with two kinds of dermatocystidia: (1) hair-like metuloids 55—135 × 12—31 μ, ventricose below, with a strongly elongate obtuse apex about 7 μ thick and 40 and more μ long, rarely subcapitate, hyaline to stramineous, with thick (up to three-layered) wall (wall 1—4 μ thick), weakly to strongly pseudoamyloid, in some specimens some hairs in the middle portion almost amyloid (with a deep steel gray tinge in the Melzer); (2) cystidioid epicuticular cells, broadly ampullaceous, ventricose-subcapitate, or subglobose with a long filamentous mucro or with a conic acute apex, 20—55 × 13.5—14.5 μ, hyaline thin-walled tothick-walled (wall 0.3—1.3 μ in diameter), hyaline to melleous. Vestiment of stipe consisting of the same type of hair-like dermatocystidia as found in epicutis (type 1), but considerably shorter in an average, e. gr. 25—40 μ long, and apex about 5 μ broad, not distinctly pseudoamyloid or not strongly pseudoamyloid, at least less so than epicuticular cystidia of type 1 on pileus.

On monocotyledonous, mostly palm leaves in tropical rain forest.

Material studied: Bolivia: Beni: Vaca Diez, Guayaramerin, leg. Singer, no B 2093, 17-III-1956 (LIL), Para-typus. — 8-III-1956, B 1744 (LIL), typus.

This species differs from *G. menieri* (Boud.) Sing. in slightly smaller pileus, but relatively longer and more lateral stipe, and less ramified hymenophoral veins. The cystidioid epicuticular elements are more often distinctly brown in *G. menieri,* and the metoloid hairs of both pileus and stipe reach only 70 μ in length in the European species. Nevertheless, *G. menieri* is the species most closely related to *G. palmarum.*

4. **Gloiocephala lamellosa** Sing. spec. nov. Ill. Plate XXXVIII, fig. 4.

Pileus brown "Alamo" to "Arab" (M&P), smooth, beset with hyaline long stiff hairs all over, unicolorous and not changing color when dried, neither papillate nor umbilicate, conic-campanulate, obtuse and even slightly flattened at apex, with straight margin, 1.5 × 1.5 mm. Lamellae few (5—6), distant, equal, or with 1 lamellula, moderately broad, not pilose under a lens, white, edges also white. Stipe brown, setose, filiform, hirsute from scattered long hyaline hairs, almost shining, smooth, 18—23 × 0.1—0.2 mm.; basal mycelium varying between weakly developed to well developed in form of star-like radiating white mycelial fibrils around the base. Context paler or pallid, very thin, inodorous. Spores 8.2—10 × 4—6 μ, ellipsoid, hyaline, smooth, thin-walled, inamyloid. Hymenium: Basida 24.5—30.5 × 4.7—8.2 μ, clavate, hyaline,

4-spored. Cystidia present, but very scattered, 31.5—44 × 6.8—7 μ, ventricose with capitate apex, neck about 2 μ in diameter, capitulum about 4.8—5 μ diameter, with thin hyaline walls, sometimes found only on and near the edge. Hyphae: Subhymenium subcellular, consisting of very irregular small elements, hyaline, non-gelatinized. Hymenophoral trama hyaline to stramineous, consisting of thin filamentous hyphae which are interwoven, regular, not or extremely slightly pseudoamyloid; hyphae of the stipe parallel, more or less pseudoamyloid, especially the thicker-walled ones and in superposition, most septa without clamps, but some definitely clamped, an base of basidia also with clamps. Coveringlayers: Epicutis of pileus consisting of a basic hymeniform layer of thin-walled elements which are stramineous and vary from fusiform to ventricose or vesiculose-subclavate, 16—25 × 7.5—9 μ, smooth and not incrusted; in distances of between 25 and 40 μ one from the other, there are dermatocystidia interspersed which are thick-walled, 24—29 × 10—14 μ, cinnamon-stramineous to melleous, varying from ventricose-subampullaceous and short pedicellate to vesiculose-subclavate; long setose hairs, reminiscent of those of *Crinipellis,* are interspersed among the elements of the epicuticular hymenium, but they are not numerous though very conspicuous, (37)—130—255 × 8—16 μ, broadest just above the hyaline or melleous base, above equal, or more rarely slightly tapering towards the obtusely rounded tip and (5)—8—10 μ in diameter, unicellular, hyaline, with moderately thick to thick wall (wall thickest just above the broadest portion of the hair, 2—6 μ in diameter) not incrusted, not or not distinctly pseudoamyloid but often with a slight livid shade in the Melzer. Vestiment of the stipe consisting of the same scattered hairs as described in the epicutis of the pileus, between them surface layer not differentiated from the cortex of the stipe.

On dead fallen dicotyledonous leaves in tropical-montane forest.

Material studied: Bolivia: La Paz: Nor-Yungas, Carmen Pampa, 2000 m. alt. 26-II-1956, leg. Singer no. B 15285 (LIL), Typus.

5. **Gloiocephala longifimbriata** Sing. spec. nov. Ill.: Plate XXXVIII, fig. 5; plate XXXIX, fig. 6.

Pileus white, macroscopically glabrous, under a lens conspicuously long-pilose from scattered hyaline hairs, at least near margin, smooth, rarely indistinctly sulcate in age, convex, broader than high, obtuse, not umbilicate, with eventually upturned or horizontal margin in dried specimens, 1.2—4 mm. broad. Hymenophore at first smooth and often remaining so for a long time, frequently until maturity, but the best developed carpophores eventually with up to seven vein-like lamellae or low veins, and 1—2 of these not reaching the margin or the stipe, generally simple (not forked), white,

attingent, reaching 0.3 mm. high and 85 μ thick. Stipe white at apex, otherwise umber, fuliginous, or black, under a hand lens conspicuously beset with hyaline hairs, but macroscopically not or not distinctly so, and in age sometimes glabrescent, filiform, insititious, 6—13 × 1—0.3 mm.

Context white, extremely thin, inodorous.

Spores (6)—7.5—9.5 × (2)—3—5.2 μ, varying from oblong to broadly ellipsoid, sometimes fusoid, mostly just ellipsoid, smooth, hyaline, inamyloid.

Hymenium: Basidia 22—29 × 3.5—7 μ, clavate, hyaline, 4-spored; basidioles fusoid, then clavate. Cystidia very inconstant, sometimes entirely wanting, other times numerous and versiform, 29—37 × 7.5—11.7 μ mostly ventricose, ampullaceous or subcapitate to capitate, "neck" rather thin, capitulum 2.5—3.5 μ in diameter, wall hyaline, smooth, not incrusted, inamyloid, up to 2 μ thick and therefore cystidia often appearing glassy in ammonia. Very rarely there are some paraphysoid hairs (simple, hyphous) in the hymenium.

Hyphae: Subhymenium in places rather thick, of irregularly interwoven small short-filamentous elements, not gelatinized, hyaline. Hymenophoral trama often obsolete, where recognizable — regular, hyaline, not gelatinized, consisting of filamentous elements. Trama of the pileus extremely thin at places, consisting of hyphae which are radially arranged, hyaline, loosely arranged, weakly to distinctly gelatinized, thin-walled, forming, above the interlamellar spaces and in carpophores without a hymenophore, a layer up to 18 μ thick, inamyloid or at places extremely weakly pseudoamyloid, with clamp connections. Hyphae of stipe mostly thick-walled, ± weakly pseudoamyloid, strictly parallel. Covering layers: Epicutis of pileus hymeniform, or subhymeniform, consisting of swollen cells, melleous-hyaline to hyaline, e. gr. 17 × 11 μ, with thin to moderately thick-walls (wall to 1 μ thick), smooth, not incrusted, intermixed with cystidia of the same type as often found in the hymenium, e. gr. 23—50 × 11—12 μ, often capitate or mucronate, and mucro e. gr. 5—11 × 2.5—5.5 μ. Interspersed among these cells and dermatocystidia are long setoid hairs, causing the pilosity of the pileus, these 120—365 × 7—18 μ (fewer shorter), ventricose at base, cylindric or slightly tapering, sometimes slightly thickened to subcapitate at the apex, diameter of upper portion 5—9.5 μ, wall in lower portion thick and melleous hyaline to hyaline (wall 1—2 μ thick) and pseudoamyloid, upper portion hyaline and with a thin-walled apex, at times with resinous or mucous amorphous and deciduous incrustations, and in this case thick-walled throughout and not tapering but rather thickened and obtuse at tip. — Vestiment of stipe consisting of scattered hairs which are setoid like those of the surface of the pileus and reaching over 1000 μ in length, upper por-

tion often only 2.5 μ thick, lower portion pale melleous sometimes less thickened, accompanied by shorter hairs which are cylindric or spinulose with rounded tip, brownish hyaline, with thinner wall and mostly with widened base, 8—25 × 2.5—6 μ.

On leaves and stems (never seen on woody parts) of Pteridophyta, Myrtaceae, and other plants, in subtropical-montane, tropical-montane and inundated rain forest (in the latter case on leaves covered with earthy particles deposited on them by the river water and left behind.

Material studied: Bolivia: Pando: Manuripi, Santa Rosa, 22-III-1956, leg. R. Singer no T 2146 (LIL), Para-typus. — La Paz: Nor-Yungas, Carmen Pampa, 26-II-1956 (LIL), Para-typus. — Argentina: Tucuman: Sierra de San Javier, Ciudad Universitaria towards Estancia San Javier, 900—1000 m. alt., 9-I-1960, leg. R. Singer no T 3520 (LIL), Typus.

This species is characteristic because of its long hyaline hairs which, on the pileus, are generally dimorphic, its clearly insititious stipe and relatively long centrally attached stipe. The configuration of the hymenophore is very variable, partly according to age, partly according to size of the carpophores, and partly merely as a consequence of intraspecific polymorphism. The Amazonas collection (B 2146) differs in less developed hymenophore, partly because it is composed of younger carpophores than those of the two other collections, partly because there seems to be a hereditary tendency for it. However, we do not wish to propose varieties at this time since it appears that we are dealing here with a geographically widespread very adaptive species which has obviously been overlooked by earlier collectors, probably because of its banal appearance and small size.

6. *Gloiocephala epiphylla* Mass., Grevillea 21 : 34. 1892. Ill.: Plate XXXIX, fig. 7.

Pileus white or whitish, minutely fimbriate-ciliate, smooth, neither glutinous nor mealy- but (under a lens) slightly pubescent in some specimes, concave-cup-shaped, 1—2.5 mm. broad, becoming papillate and nutant while drying. Hymenophore none, hymenial surface smooth, white, not abruptly delimited, dry. Stipe white, in the larger lower portion deep brown, finely pruinate, almost equal, insititious, dry, 3—8 × 0.1—0.3 mm., central or somewhat eccentric, rarely lateral and then carpophores appearing spathuloid. Context white, extremely thin, inodorous. Spores 8.2—8.5 × 3.5—4.3 μ, hyaline, inamyloid, smooth. Hymenium: Basidia clavate, mostly 2-3-spored, hyaline. Cystidia none seen, but cystidioles in overmature specimens numerous, banal, very much like basidioles but "empty", with frequently attenuate or, more rarely subcapitate apex. Hyphae of them trama of the pileus forming a thin layer, hyaline, slightly

gelatinous, very thin, rather loosely arranged, filamentous, inamyloid or very weakly pseudoamyloid, thin-walled, with clamp connections. Hyphae of the stipe not gelatinized, parallel with each other, cylindric, hyaline at apex, brownish at base of stipe, somewhat pseudoamyloid, with clamp connections, the hyaline ones entering the pileus unchanged where they become gradually less pseudoamyloid and more gelatinized. Covering layers: Epicutis of pileus formed by spherocysts which are hymeniformly arranged, hyaline or with rusty brown incrusting pigment, or with chestnut brown resinous incrustations, 15—29 × 9.5—20 μ, inamyloid; among these numerous but scattered dermatocystidia, thin-walled to slightly thick-walled (wall up to 1 μ in diameter), often incrusted like the spherocysts, the apex often destroyed by partial deliquescence of the walls, or in age forming bizarre irregularities of shape, more crowded in the marginal zone of the pileus, deep-rooting in the trama of the pileus, 50—160 × 16—29 μ, ventricose, with an apical constriction (4—14 μ in diameter) underneath a capitate apex (diameter 9—30 μ). — Vestiment of stipe consisting of numerous dermatocystidia of the same type as described from the epicutis of the pileus, accompanied by another type (type II) of dermatocystidia, the latter smaller, ± 30 × 12—13 μ, with subapical constriction (± 4.2 μ) and with or without a subcapitate apex (if subcapitate up to 6.5 μ in diameter) among these two types of dermatocystidia, there are also hyphal ends, simple or forked, hyaline in the upper, brownish in the lower portion of the stipe.

In large colonies on leaves of Euphorbiaceae and Melastomataceae (especially *Miconia, Croton*), fallen to the ground in subtropical and tropical forest.

Material studied: Argentina: Tucuman: Dpto. Chicligasta, Rio Cochuna, 11-II-1952, leg. Singer no. T 1824 (LIL). — T 1824 a (LIL) — Dpto Tafi, Rio de los Sosas, 26-II-1952, leg. Singer no. T 1872 (LIL).

7. **Gloiocephala confusa** Sing. spec. nov.

Pileus white. convex, smooth, dry, glabrous, under a good lens minutely velutinous-pubescent, 1—2.5 mm. broad. Lamellae normal, not vein-like, although rather narrow, well developed, white, not intervenose, distant (5—6 μ), entire, not intermixed with lamellulae, adnate, not collariate. Stipe dark chestnut below and nearly white above, later black with umber apex, subpubescent, under a good lens oblique fine hairs visible over its entire length, filamentous, insititious, 8—39 × 0.1—0.3 mm. Context white, very thin inodorous. Spores 9.7—12 × 2.7—3.3 μ, almost acicular, in profile applanate on inner side, thin-walled, hyaline, where in contact with the resinous mass incrusting the cystidia, they tend to become brownish. Hymenium: Basidia 18—19 × 5—6 μ, 4-spored, clavate. Cystidia

30—50 × 8.8—11 μ (in young specimes mostly 33—38 × 9—11 μ), moderately numerous on both edges and side, conspicuous, cylindric to ventricose and always characteristically broadly capitate, with a succineous brown, resinous incrustation, inamyloid, with thin to thick wall, apparently merulioid in character. Setose hairs none. Hyphae of trama of hymenophore filiform, slightly gelatinized, those of the pileus loosely arranged and ± gelatinized, filamentous, hyaline, inamyloid, with clamp connections: hyphae of the stipe strictly parallel, more thick-walled than in pileus and somewhat opaque, melleous hyaline, below deep chestnut in KOH, inamyloid; trama of pileus a very thin layer, consisting of not parallel, more or less radial elements. Covering layers: Epicutis of the pileus formed by a hymeniform layer consisting of vesiculose elements and some scattered dermatocystidia of the same type as encountered on the surface of the stipe, and some rare metuloid elements which are inconstant; vesiculose elements e. gr. 13—20—(22) × 5.5—13.2 μ, usually with an amorphous or globose body inside, broadly rounded or more rarely somewhat apiculate-protracted above, the apex itself obtuse, the pedicel generally separated from the vesiculose part by a septum and the main part subisodiametric, but some elements relatively elongated a. gr. 22 × 8.8 μ, smooth, hyaline, with usually thin walls, rarely with thick walls; dermatocystidia among these vesiculose elements either with vesiculose-swollen base or at least ventricose below, above tapering to an obtuse tip, or with, thin-cylindric apical portion, 33—39 × 6—6.5 μ, above 1.5—2.5 μ, with or without a capitulum at the very apex, the capitulum about 3.5—4 μ in diameter, mostly with capitulum, often with sterigmatoid prongs at apex, these e. gr. 4.4 × 1.8 μ, 1—4 of them. Rare metuloid elements, if present fusoid, to subulate, acute, thick-walled, e. gr. 28 × 5.5 μ. — Vestiment of stipe consisting of dermatocystidia and hyphal hairs, the former much like those of the pileus, but generally with a swollen broad base, the latter 8—13 × 2.7—3.7 μ, hyaline where the surface hyphae of the trama of the stipe are hyaline, and colored where they are colored, erect or oblique, cylindric or almost so, with very slightly thickened walls, smooth; vestiment intermittent, not forming a palisade.

On various leaves of dicotyledonous plants in tropical coastal forest, gregarious.

Material studied: Brazil: Rio de Janeiro: Angra dos Reis, 1-X-1952, leg. Singer no. B 426 (F, as *Marasmius microepiphyllus, M. albocapitatus*), Typus.

This species has really nothing to do with *Marasmius albocapitatus* with which I identified it incorrectly (Sydowia 12: 71—73. 1958). Its transfer to *Pseudohiatula* is likewise unjustified. The shape of the hymenial cystidia, the dermatocystidia, the more or less

gelatinized trama of the pileus, the habit and size as well as the habitat, make it necessary to transfer this species again and treat it as a *Gloiocephala* in spite of the well formed lamellae. From the present monograph it becomes increasingly evident that the configuration of the hymenophore is here of secundary importance and is barely a specific, certainly not a generic character. Moreover, we have also another species, *G. lamellosa* which can likewise not be separated from very typical Gloiocephalas.

In this genus, the species just described differs from all others by the narrow spores and the combination of white pileus and lamellar hymenophore.

8. **Gloiocephala spathularia** Sing. spec. nov. Ill.: Plate XXXIX, fig. 8.

Pileus white, smooth, macroscopically glabrous, pruinate under a good lens, somewhat diaphanous in the largest carpophores, convex to flat, sometimes with a small papilla, 2—5—(11) mm. broad. Hymenophore none; hymenial surface at first smooth, eventually venose with radial and anastomosing veins and therefore merulioid, veins attingent or subdecurrent, more or less decurrent in age, white, glabrous, but slightly pruinose under a good lens. Stipe white, glabrous, but under a good lens appearing pubescent, smooth, filiform, subcentral or more often concrescent with the lower surface of the margin (lateral) of the pileus (and then carpophore appearing spathuloid), 6—12 × 0.5 mm., insititious. Context white, thin, unchanging, somewhat tough-fleshy or fleshy-membranaceous, inodorous. Spores 4—4.8 × 1.8—2.2 μ, cylindrical, smooth, hyaline. Hymenium: Basidia 16 × 4—4.8 μ, 1-2-3-4-spored; basidioles fusoid. Cystidia 28—60 × 6.5—23 μ, fusoid-ventricose with an apical capitulum or knob, or more often clavate-vesiculose, pedicellate, or not, hyaline, in age becoming incrusted by a tight membranous very thin incrustation which is strictly applicate and not deciduous, and eventually becomes melleous-hyaline in dried material, deep rooting. Hyphae: Subhymenium seemingly cellular but in reality consisting of small strongly interlacing elements which are irregularly shaped, often subcrenate or diverticulate or with all kinds of excrescencies in mature specimes. Hyphae of the trama of the pileus very thin, hyaline, mostly filamentous, interwoven, but loosely arranged, not or weakly gelatinized; all hyphae inamyloid, with clamp connections. Hyphae of stipe parallel, cylindric, hyaline.

Coveringlayers: Epicutis of pileus consisting of a palisade of erect or in age also often somewhat irregular (in position) clavate or vesiculose, but often distorted elements, e. gr. 14—18 × 8 μ, interrupted, occasionally by dermatocystidia which are shaped like the hymenial cystidia and differ from the other epicuticular elements

in projecting more distinctly, differing from the hymenial cystidia in being more variable in shape, often clavate-cylindric to cylindric or clavate but also fusoid, broadly rounded above, or with a small appendage, about 34—36 × 8—9.5 μ or larger, hyaline, rather numerous. — Vestiment of stipe consisting of numerous extremely polymorphous dermatocystidia; these 13—42 × 4.7—14 μ, hyaline, ascendant or erect, sometimes septate in upper portion.

On dicotyledonous tree trunks in the tropical forest of the plain, gregarious to fasciculate.

Material studied: Argentina: Salta: Dpto. Orán, 3—4 km. west of the Río Blanco bridge north of Orán, 17-III-1955, leg. Singer no. T 2308A, (LIL) Typus.

The young carpophores are conical, then a pileus is differentiated from the tip of the cone which shows no external hymeniform layer.

Extralimital Species

Gloiocephala zeylanica Petch, Ann. R. Bot. Gard. Peradeniya 6: 206. 1917. This species has shorter hairs than *G. albocapitatus,* smaller pileus than *G. inobasis,* differs in cystidia and setae from all three white small-spored species described here for South America. *G. spathularia* has furthermore white rather than black stipe, smaller basidia, different hymenophore and habit, and also different habitat. *G. longifimbriata* has longer hairs, but also longer stipe. Only *G. epiphylla* seems to be close, and, allowing for variability and perhaps some exaggerations by both authors e. gr. regarding the gelatinosity of their respective specimens, possibly conspecific with *G. zeylanica.* The obviously extremely wide distribution of *G. epiphylla* would permit such a conclusion, at least if the latter species is accepted in the wide sense admitted in the present paper.

Gloiocephala albocapitata (Petch) Sing. var. *albocapitata.*

I have not studied the type but the description seems to exclude identity with any other species described here.

Gloiocephala menieri (Boud.) Sing. comb. nov.

Marasmius menieri Boud., Bull. Soc. Mycol. Fr. 10: 61. 1894.

Color and microscopical characters of specimens from Europe I have studied place this species near *G. palmarum* from which it differs in a number of characters.

Marasmius minutissimus Peck, Ann. Rep. N. Y. State Mus. 27: 97. 1875.

Dennis has first suggested a relation between this North American species and a representative of the genus *Gloiocephala* comparing it with his *C. albocapitata* var. *occidentalis.* It is indeed

probable that some representative of the genus *Gloiocephala* exists in North America, but only type analyses can establish the fact whether this species actually belongs here, and if so, whether it is closely related to any one of the species treated here. Theissen (in Rick, Fungi Austroamericani no. 201, FH) has interpreted *Marasmius minutissimus* as a *Marasmius* occurring in Brazil, but the specimens seen by me show *Rameales*-structure in the epicutis, and were sterile. I believe this is a *Marasmiellus* sp. I have myself interpreted *M. minutissimus* as a species occurring in Asia (Altai Mts.), but this interpretation was not based on type analysis. The re-examination of the specimen (from Artubasch, Oirotia, no. A 927, LE) which was found on *Populus* and *Betula* leaves is necessary in order to make sure that it is specifically identical with the American type. The Asiatic material seems to belong to *Marasmius* sect. *Epiphylli* rather than to *Gloiocephala.*

II. **Manuripia** Sing. gen. nov.

Carpophores centrally stipitate and pileate, Hymenophore none; hymenial surface smooth or with few low veins; pigment on pileus and stipe present. Dermatocystidia on carpophores none. Epicutis of pileus hymeniform or subhymeniform, consisting of ballon-shaped elements with short divergent setulae (epicuticular elements of the "Rotalis-type"). Hymenial cystidia none. Spores ellipsoid, inamyloid, medium sized. Hyphae inamyloid. Stipe sometimes branched, rising from rhizomorphs.

The type of the genus and only species known is described below. *Manuripia* roughly corresponds to section *Hygrometrici* of *Marasmius,* but differs in the rhizomorphigenous stipes which may be branched and, of course, the absence of lamellae. It differs from the section *Marasmius* — where rhizomorphigenous and branched stipes are common in the tropics — in the absence of a collarium, and the combination of smooth, flat pileus and inamyloid hyphae. It differs from both these sections in the crust-like aggregation of the setulae of the epicuticular broom cells.

Manuripia bifida Sing. spec. nov. Ill.: Plate XL, fig. 9.

Pileus brownish yellow, becoming cinnamon brown, with a dark umbo, at first conical-papillate, then convex to applanate with a slight dark wart-like center, not umbilicate, not sulcate, dry, 1—2 mm. broad. Hymenophore none; hymenial surface smooth or with up to three low veins, subconcolorous with pileus or paler. Stipe black, shining, simple or branched, equal, glabrous, arising from a rhizomorph, 1—3 × 0.1 mm.; rhizomorphs black, dried be-

coming brownish fuscous, hirsute from (under a lens) brownish hairs, long, 0.2 mm. thick i. e. thicker than the stipe, insititious where entering the substratum. Primordia with white uper portion of stipe. Spores 8—9.7 × 3.8—4.8 μ, ellipsoid, hyaline, smooth, inamyloid. Hymenium: Basidia 20—21 × 5.5—5.7 μ, Cystidia, none. Cheilocystidia none. Hyphae of the pileus filamentous, interwoven, hyaline, inamyloid, with clamp connections; those of the interior of the rhizomorphs hyaline, not or extremely weakly pseudoamyloid. Covering layers: Epicutis of the pileus hymeniform or subhymeniform, consisting of elements like those of the Rotalis-type in *Marasmius,* i. e. balloon-shaped, or vesiculose-clavate, upper portion covered by divergent short setulae, main body hyaline to pale melleous, 12—22 × 10—18 μ, often pedicellate, setulae deep melleous, about 1.5 μ long, often aggregating to form crust-like surfaces over the apex of the main body. — Vestiment of stipe, none, or inconspicuous. — Vestiment of rhizomorphs consisting of setoid hairs, 15—95 × 8—8.5 μ, fuliginous or fuliginous-castaneous, with thick (3.5 μ) walls, with occasional small thorn-like excrescencies on the sides, and angular-verrucose or with several very small appendages at the apex, the larger ones cylindric to cylindric-subcapitate, the smaller ones cylindric to cone-shaped, numerous.

On a dead fallen woody stick of a dicotyledonous plant in rain forest.

Material studied: Bolivia: Pando: Manuripi, Conquista, 26-III-1956, leg. Singer, no B 2272 (LIL), Typus.

III. **Epicnaphus** Sing. gen. nov.

Carpophores mycenoid-stereoid, stipitate with a central stipe with basal mycelium. Pigment present in pileus and stipe. Hymenophore none, hymenial surface on lower side of pileus smooth. Dermatocystidia none. Hymenial cystidia none. Spores ellipsoid, inamyloid, medium sized. Epicutis of pileus hymeniform to subhymeniform, consisting of clavate or clavate-subvesiculose elements which on their upper portion are beset with thin diverging setulae (elements of the "Rotalis-type"), Hyphae not gelatinized, pseudoamyloid, at least the ones with thick walls.

The type of the genus and the only species known at present is *E. phalaropus* Sing., described below. *Epicnaphus* corresponds roughly to the section *Sicci* of *Marasmius,* but differs from all species of that section by its smooth hymenial surface and the type of epicuticular elements, viz. broom cells of the Rotalis-type. In those sections where broom cells of the Rotalis-type occur, the stipe is insititious on rhizomorphs or directly on the substratum.

Epicnaphus phalaropus Sing. spec. nov. Ill.: Plate IV, fig. 10.

Pileus orange, glabrous, smooth, dry, convex or campanulate, then applanate and tending to be papillate especially when dried, 3—4 mm. broad.

Hymenophore, none; hymenial surface smooth on lower side of pileus, white.

Stipe blackish, smooth, glabrous, central, equal, 5—6 × 0.1 mm.; rhizomorphs none; basal mycelium white, sometimes scanty so that the stipe appears insititious when seen macroscopically, but always distinctly fibrillose at base when seen under a lens. Context extremely thin in the pileus, inodorous. Spores 6.8—7 × 3—3.8 μ, ellipsoid to ellipsoid-oblong, smooth, hyaline, inamyloid. Hymenium: Basidia 20—21 × 3.8—4.2 μ. Cystidia, none. Hyphae of the trama of the pileus hyaline, filamentous, subparallel-subinterwoven, not gelatinized, pseudoamyloid, with clamp connections; those of the stipe parallel with each other, thick-walled, having the aspect of *Crinipellis*-hairs when seen individually, especially in the Melzer, hyaline to mellous in KOH, strongly pseudoamyloid if thick-walled, weakly amyloid in the connective tissue which is very scanty, all filamentous, not gelatinized, in the blackish rind of the stipe distinctly pigmented, brown. Covering layers: Epicutis of pileus consisting of a hymeniform or subhymeniform layer of cells which are clavate to clavate-subvesiculose or pear-shaped (broadest above), in their upper portion beset by thin short setulae which are divergent (Rotalis-type), main body hyaline, 12—20 × 6.5—10 μ, setulae pale melleous, 1.5—2 μ long. Hypodermium not containing swollen or pigment-incrusted elements, poorly developed.

On a dead dicotyledonous branch fallen to the ground in rain forest.

Material studied: Bolivia: Pando: Manuripi, Conquista, 24-III-1956, leg. Singer no. B 2175 (LIL), Typus.

IV. **Hymenogloea** Pat.,

Essai tax. p. 146. 1900.

Carpophores collybioid-stereoid, i. e. reminding one of the large tropical stipitate species of *Stereum* sensu lato and at the same time of a large species of *Marasmius* section *Alliacei* or *Sicci,* stipitate with a central stipe; hymenophore none; hymenial surface on the lower side of the pileus smooth. All parts of the carpophore well pigmented. Base of stipe with abundant basal tomentum and strigosities. Dermatocystidia none. Epicutis of pileus hymeniform, consisting of swollen smooth cells without setulae. Spores cylindric to fusoid, medium sized, inamyloid. Hyphae pseudoamyloid.

The genus *Libellus* Lloyd is a synonym.

The type of the species is *Stereum riofrioi* Pat. = *Hymenogloea riofrioi* (Pat.) Pat., apparently the only species of the genus since I can hardly see much difference between this and *Craterellus papyraceus* Berk. & Curt. The genus is very striking and distinctive in fresh as well in dried condition. The very thin trama of the pileus and the completely smooth hymenial surface and also the bright pigment, changing color on dehydration and disappearing (bleaching) when dissolved in alkali, are characters which separate *Hymenogloea* from the section *Globulares* of *Marasmius* which is otherwise roughly parallel, but never shows the slightest tendency towards smooth or even venose hymenium.

Hymenogloea papyracea (Berk. & Curt.) Sing., Lilloa *22:* 343. 1949 (published 1951). Ill.: Plate IV, fig. 11.

Craterellus papyraceus Berk. & Curt., in Berk. Trans. Linn. Soc. 22: 129, 1859.

Stereum riofrioi Pat., Bull. Soc. Mycol. 8: 117. 1892.

Hymenogloea riofrioi (Pat.) Pat., Essai tax., p. 146. 1900.

Libellus papyraceus (Berk. & Curt.) Lloyd, Mycol. Writ. Letters 45: 6. 1913.

Pileus "cadmium orange", later "ta ming" (a warm yellow), on drying in the dryer becoming **"holly berry" (bright red)**, glabrous or subglabrous, smooth, convex at first later applanate and often helvelloid contorted, with entire acute margin, very thin (1 mm.), 32—118 mm. broad. Hymenophore, none; hymenial surface quite smooth, at maturity pallid spots forming irregularly over the lower surface of the pileus, the latter at first and basically concolorous with the upper surface and likewise turning red on dehydration. Stipe light yellow with "cadmium orange" apex and bright ferrugineous ("rust", 6-A-12, M&P) base, later with "ta ming" apex, otherwise deep chestnut brown ("Hindu", 8-J-9, M&P), glabrous, smooth, cylindric, 50—125 × 2.2—4 mm.; basal mycelium pallid, tomentose and strongly strigose, abundant. Context of pileus and stipe cartilagineous, flexible, thin, almost inodorous but with a distinct raphanaceous taste. Spores 8.3—9.7 × 3—4 μ, cylindric to subfusoid, smooth, hyaline, inamyloid. Hymenium: Basidia 19—24.6 × 6—7 μ, 4-spored; basidioles fusoid. Cystidia in young hymenium not differentiated from the basidioles and basidia, later — cystidioles? — extremely numerous in relation to basidia, but not clearly differentiated from them except by broader, and occasionally rather irregular shape and opaque appearance from thickened walls, but clavate, hyaline, not projecting and only slightly deeper rooting the basidia, rarely with a constriction in the middle or with horn-like or bulge-like excrescencies, 23.5—29 × 7—9.7 μ. Hyphae of the

trama of the pileus subparallel with each other, hyaline in ammonia, rather dense and radially arranged, not appreciably gelatinous in KOH, with thin to slightly thickened walls, generally filamentous, occasionally somewhat inflated, strongly pseudoamyloid, with clamp connections. Hyphae of stipe parallel with each other, brownish in colored lower portion, not gelatinized, with clamp connections. Covering layers: Epicutis of pileus hymeniform or subhymeniform, consisting of balloon-shaped or clavate elements, rarely constricted in the middle, with slightly thickened not or not distinctly pseudoamyloid wall, smooth, hyaline in KOH and ammonia, forming a continuous homogeneous layer. No covering layer on stipe. Epicuticular elements 28—29 × 8—12.5 μ.

On leafmold in tropical-montane forest.

Material studied: Venezuela: Leg. Fendler, Typus (FHK). — Merida, above La Mucuy, leg. Dennis 1787, 8. VIII. 1958 (K). — Colombia: Salto de Tequendama, 24-VII-1960, leg. Singer no B 3516 (LIL); also material at the Nat. Herbarium, Bogotá. — Ecuador: Pichincha, Gualea, leg. Riofrio, January 1892, (FH), Typus of *S. riofrioi* — Bolivia: La Paz: Nor-Yungas, Carmen Pampa, 17-II-1956, leg. Singer no B 1219 (LIL) — 26-II-1956, B 1537 (LIL).

The pigment becomes macro- and microscopically glassy hyaline to pale yellowish after a while if exposed to ammonia water or KOH. The change from yellow to red on dehydration is comparable with a similar phenomenon in *Marasmius ruber* Sing.

Diagnoses latinae specierum generumque novorum

Gloiocephala inobasis Sing. spec. nov. Pileo candido, dehydratationis causa brunneo-maculato ex exudationibus dermatocystidiorum, haud orbiculari, 9 mm. lato: Hymenophoro venoso, e 4 venis constituto, mox brunneo-maculato. Stipite albido in apice, atrobrunneo ad basin, mycelio basali praedito, 11 × 0.7 mm., excentrico. Sporis 11.5—18 × 4—4.3 μ; cystidiis clavatis vel clavato-subcylindricis, frequenter subcapitatis, incrustatione resinacea colore succineo gaudente incrustatis, 40—135 × 16—28 μ; tramate pilei haud gelatinoso, inamyloideo; epicute pilei hymeniformi, eius elementis interdum cystidiis hymenialibus simillimis; eiusque typi etiam dermatocystidiis stipitis numerosis. — Ad folia monocotyledonea in silva pluviali. Pando, Boliviae. Typus in Herbario Lilloano conservatus est.

Gloiocephala palmarum Sing. spec. nov. Pileo albido vel pallide aurantiaco-cinnamomeo, ochraceo, cinnamomeo, levi, suborbiculari, 1—5 mm. lato. Hymenophoro venoso vel venoso-sublamelloso lamellis angustissimis, usque ad septem, aciebus obtusis praeditis, albis. Stipite brunneo vel castaneo, apice albido, interdum apice pileo concoloroi, obliquo vel substrato appresso, laterali vel

sublaterali, insititio, 1—4 × 0.3—0.5 mm. Sporis 11—16.5 × 4.5—7.2 μ; cystidiis paucis, ventricosis vel ventricoso-subcylindraceis, subcapitatis, crassitunicatis; tramate pilei plus minusve gelatinoso, inamyloideo; hyphis stipitis leniter subpseudoamyloideis; epicute pilei hymeniformi vel palissadica, dermatocystidiifera, dermatocystidiis dimorphis, et criniformibus, 55—135 × 12—31 μ, et cellulis epicuticularibis vesiculosis cystidioideis quod ampullaceae sunt aut conici-apiculatae vel apicem mucronatum vel subcapitatum exhibent 20—55 × 13.5—14.5 μ; stipitis vestimento e dermatocystidiis criniformibus composito. — Ad folia praecique palmarum, Beni Boliviae. Typus in Herbario Lilloano conservatus est.

Gloiocephala lamellosa Sing. spec. nov. Pileo brunneo, levi, conico-campanulato, 1.5 × 1.5 mm. Lamellis paucis, distantibus, aequalibus, rarius una cum lamellula, modice latis, albis. Stipite brunneo, setoso, hirsuto, mycelio basali praeditum 18—23 × 0.1—0.2 mm. Sporis 8.2—10 × 4—6 μ; cystidiis sparsis, 31.5—44 × 6.8—7 μ, ventricosis, apice capitatis, membrana tenui hyalina instructis; hyphis tramatis hymenophoralis regulari; hyphis stipitis partim crassitunicatis et pseudoamyloideis, fibulis praesentibus sed sparsis; epicute pilei hymeniformi e cellulis 16—25 × 7.5—9 μ consistente, dermatocystidiis et pilis longis intermixtis; dermatocystidiis pilei crassitunicatis, 24—29 × 10—14 μ; pilis setiformibus, unicellularibus, haud incrustatis, 130—255 × 8—16 μ; eisdem pilis in superficie stipitis quoque numerosis. — Ad folia dicotyledonea delapsa in silva tropicali-montana, La Paz, Boliviae. Typus in Herbario Lilloano conservatus est.

Gloiocephala longifimbriata Sing. spec. nov. Pileo albo, piloso e crinibus hyalinis, 1.2—4 mm. lato. Hymenophoro primum nullo, dein plerumque venoso, albo. Stipite fuligineo, apice albo, hyalino-piloso, interdum glabrescente, 6—13 × 0.1—0.3 mm. Sporis 7.5—9.5 × 3—5.2 μ. Cystidiis inconstantibus; tramate pilei tenuissimo, leniter vel manifeste pseudoamyloideo; epicute pilei hymeniformi vel subhymeniformi, e cellulis inflatis consistente, sed dermatocystidiis 23—50 × 11—12 μ, saepe capitatis vel mucronatis interspersis nec non pilis longis setoideis intermixtis, his 120—365 × 7—18 μ, ad basin ventricosis, hyalinis vel subhyalinis, crassi-tunicatis sed frequenter in parte superiore tenuitunicatis. — Ad folia et stipites Pando Boliviae. Typus in Herbario Lilloano conservatus est.

Gloiocephala confusa Sing. spec. nov. Pileo albo, convexo, levi, glabro, 1—2.5 mm. lato. Lamellis haud veniformibus, distantibus, aequalibus. Stipite nigro apice umbrino, filamentoso, insiticio, 8—39 × 0.1—0.3 mm. Sporis 9.7—12 × 2.7—3.3 μ, subacicularibus. Cystidiis 30—50 × 8.8—11 μ, cylindraceis vel ventricosis et persistenter insigniter que late capitatis, incrustatione succineobrunnea resinosa instructis, inamyloideis, membrana tenui vel crassa

praeditis, pilis setoideis nullis; hyphis plus minusve gelatinosis, inamyloideis, in pileo tenue tantum stratum efficientibus; epicute pilei hymeniformi, e cellulis vesiculosis consistente quae 13—20 × 5.5—13.2 μ; dermatocystidiis 33—39 × 6—6.5 μ, versiformibus; stipitis vestimento e pilis hyphoideis nec non pilis setoideis eis pilei simillimis consistente. — Ad folia varia plantarum dicotyledonearum in silva tropicali. Rio de Janeiro, Brasiliae. Typus in Herbario Fieldiano conservatus est.

Gloiocephala spathularia Sing. spec. nov. Pileo albo, 2—5 mm. lato. Hymenophoro nullo, dein merulioideo. Stipite albo, insiticio, 6—12 × 0.5 mm.; carpophoris plerumque spathuloideis. Sporis 4—4.8 × 1.8—2.2 μ. Cystidiis 28—60 × 6.5—23 μ, capitulatis; hyphis inamyloideis; epicute pilei palissadica, demum subirregulari, dermatocystidiis praesentibus, cystidiis hymenialibus similibus sed magis variabilibus; stipitis vestimento e dermatocystidiis numerosis admodum variabilibus consistente. — Ad truncos arborum Dicotyledonum in silva tropicali, Salta, Argentinae. Typus in Herbario Lilloano conservatus est.

Manuripia Sing. gen. nov. Carpophoris centraliter stipitatis pileoque orbiculari praeditis, hymenophoro nullo vel sparse subvenoso; pileo stipiteque pigmentatis; dermatocystidiis in carpophoris nullis. Epicute pilei hymeniformi vel subhymeniformi, ex elementis vesiculosis setuligeris typi *Marasmii rotalis* efformata; cystidiis hymenialibus nullis; sporis ellipsoideis, inamyloideis, mediocribus; hyphis inamyloideis. Stipite interdum ramoso, rhizomorphigeno. Typus: *M. bifida* Sing.

Manuripia bifida Sing. spec. nov. Characteribus suis cum descriptione generis congruit. Typus in Pando Manuripi collectus et in Herbario Lilloano conservatus est.

Epicnaphus Sing. gen. nov. Carpophoris pileo tenui stipiteque centrali cum mycelio basali praeditis, in pileo stipiteque pigmentatis, hymenophoro destitutis. Dermatocystidiis nullis; cystidiis hymenialibus nullis. Sporis ellipsoideis, inamyloideis, mediocribus; epicute pilei hymeniformi vel subhymeniformi, ex elementis celluliformibus in parte superiore setulis obsitis efformata (typi *Marasmii rotalis*); hyphis haud gelatinosis, pseudoamyloideis. Typus generis: *Epicnaphus phalaropus* Sing. spec. nov.

Epicnaphus phalaropus Sing. spec. nov. Characteribus suis cum descriptione generis congruit. Typus in Pando Boliviae collectus et in Herbario Lilloano conservatus est.

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Explanation of the illustrations

Plate XXXVII.

Fig. 1. *Gloiocephala inobasis,* hc, hyamial cystidia, × 1000, b, basidium, × 1000, sp, spores × 2000, ca. carpophore, × 1. — Fig. 2. *Gloiocephala palmarum,* cec, cystidioid epicuticular elements; h. m., hairlike metuloids; b, basidia, bl, basidiole, hc, hymenial cystidium, all × 1000. —

Plate XXXVIII.

Fig. 3. *Gloiocephala palmarum,* ec, epicuticular cells, × 1000; sp, spore × 2000; ca, carpophores, × 1, and × 10. — Fig. 4. *Gloiocephala lamellosa,* h, hairs, × 1000; sp, spore × 2000; dcy, dermatocystidia of the pileus, × 1000; e.c., epicuticular cells, × 1000; ca, carpophore × 10. — Fig. 5. *Gloiocephala longifimbriata,* sp, spore, × 2000; ca, carpophores, × 1; st, stipe surface layer (l. h., long hairs) × 1000.

Plate XXXIX.

Fig. 6. *Gloiocephala longifimbriata,* e. c., epicuticular cells, × 1000; h, hair; dc, dermatocystidia of pileus, both × 1000. — Fig. 7. *Gloiocephala epiphylla,* pc, dermatocystidia of pileus, × 1000; ee, epicuticular elements, × 1000; cc, dermatocystidia of stipe, × 1000; ca, carpophore, × 10. — Fig. 8. *Gloiocephala spathularia,* dc. p., dermatocystidia of pileus, × 1000; e. c., epicuticular cells, × 1000; hc, hymenial cystidia, × 1000; dc. st., dermatocystidia of stipe, × 1000; sp, spore, × 2000.

Plate XL.

Fig. 9. *Manuripia bifida,* rh, rhizomorph, × 1000; epi, element of epicutis × 1000; ca. h, carpophores, habit, × 1; ca × 4, carpophore, × 4. — Fig. 10. *Epicnaphus phalaropus,* ca, carpophores, × 1 and × 4, epi, epicuticular broom cells × 1000, sp, spore, × 2000.— Fig. 11. *Hymenogloea papyracea,* ca y, young carpophore, × 1; ca m, mature carpophore, × 1; b, basidium, × 1000; sp, spore, × 2000; epi, three epicuticular elements, × 1000.