

GALERINA (AGARICALES) IN NEOTROPICAL SOUTH AMERICA. TYPE STUDIES, ADDITIONAL MATERIAL, COMMENTS, KEY

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Summary *Galerina* (Agaricales) in neotropical South America. Type studies, additional material, comments, key. Type material or authentic specimens of about 50 neotropical taxa of *Galerina* Earle have been re-examined. The obtained results of the microscopical analysis have been critically evaluated and subsequently compared with the data provided in the pertinent literature. In several cases it was necessary to correct original observations which led to new conclusions about the taxonomical position and relationships of the taxa involved. Nine neotropical species are considered to be contaxic and thus are reduced to synonyms. The holotype material of three neotropical taxa is reported as missing and hence their taxonomical status remains open. A key is provided to identify 28 of the finally recognized taxa of neotropical *Galerina*.

INTRODUCTION

Within the *Agaricales*, *Galerina* Earle (1909, ss. Kühner 1935) is one of the few genera which has been reported from all continents, including Antarctica. Thanks to the monograph of Smith & Singer (1964), the systematics, ecology and distribution of the majority of its species, recorded both in the northern and southern hemisphere, is (at least compared with other genera of the *Cortinariaceae*) exceptionally well documented.

This general rule, however, does not hold true concerning the neotropical representatives. Taking into account the vast area and the numerous ecologically diverse biota of the Neotropis on the South American continent, the actual number of taxa so far described between Panama (excluding the Caribbean region) and the parallel of 30° southern latitude is comparatively low. In addition, many species have been collected only once at the type locality. Accordingly, there are few data available about the range of variation of taxonomically relevant characters (i.e. size of basidiomes, presence-absence of veil remnants, shape and size of spores, etc.). At the same time, many ecological parameters viz. spatial distribution, preference of substrate, seasonal productivity, etc. are still largely unknown.

To present date, the list of publications dealing with taxonomical and ecological aspects of neotropical *Galerina* is still amazingly short. The

principal sources of information are found in Singer & Digilio (1952), Singer (1953a), Rick (1961), Smith & Singer (1964), and Dennis (1970). The aim of this contribution (which merely represents a side product of a forthcoming monograph of *Galerina*) are as follows:

- 1) compilation and enumeration of the neotropical species,
- 2) revision of the type material (and if possible of additional collections), and
- 3) key to identify and to separate the taxa of neotropical origin.

After being involved with neotropical *Galerina* for several years, it became imperative that a sound interpretation of any material can only be achieved by comparing those specimens with related taxa reported from adjacent regions in Central and North America and in southern temperate South America. For that reason, data relating to about 50 different species of *Galerina* from the Antarctic-Subantarctic region (Singer 1953b, Singer & Corte 1962; Dennis 1968; Singer 1969; Horak 1979; 1982, Pegler & al. 1980) and from North America (Smith & Singer 1964; Wells & Kempton 1969; Horak & Miller 1992) has been routinely consulted and taken into consideration in order to define their taxonomic position and possible infrageneric relationships.

It is a deplorable fact, however, that due to the lack of reliable basic information or loss of type material, a number of taxa will remain enigmatic for the time being. To close these open gaps in the present knowledge on neotropical *Galerina*, fresh material (preferably collected at the type localities)

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is urgently needed to create neotypes which subsequently will yield those yet missing data to render progress in further research.

CRITICAL REMARKS TO THE ENUMERATED
NEOTROPICAL SPECIES OF GALERINA

1. *Galerina aimara* Singer in Smith & Singer.
1964. *Galerina*, 112.

Material examined: BOLIVIA: *Prov. Nor-Yungas, Cota-pata*, 3000 m, on various mosses (*Polytrichum, Hypnum*), 25-I-1956, Singer B 502 (*Holotypus* MICH !).

Remarks: This taxon is characterized by the amygdaliform to sublimoniform spores (9-10.5 x 5-6 μ m) whose isolated or to short ridges connected warts are rather coarse and delimit a well marked plage. Furthermore, the lecythiform cheilocystidia and the scattered dermatocystidia of the same shape and size are additional distinctive features of *G. aimara*.

In discussing the taxonomic position of *G. aimara*, Smith & Singer (1964) emphasize its close relationships to *G. pistillicystis* (Atkinson) Smith & Singer (1958) originally described from temperate eastern North America. The revision of the type material demonstrated, however, that due to its significant bean-shaped spores the latter taxon clearly belongs to the *G. heterocystis*-complex, and accordingly is not related to *G. aimara*.

2. *Galerina arenaria* Singer. 1953a. *Lilloa* 26: 124.

Material examined: BRAZIL: *Rio Grande do Sul, Prov. Curitiba, São Leopoldo, Pareci, ad terram arenosam in silva subtropicali*, 2-XI-1951, Singer B 70 (*Isotypus* MICH !).

Remarks: As indicated by Singer (in Singer & Digilio, 1952) *Galerina arenaria* is readily distinguished by the following macroscopical characters: small pileus with abrupt papilla, well developed veil remnants on the stipe and absent odor. In addition it is remarkable that the 2-spored basidia discharge comparatively small spores (8-8.5 x 5 μ m) which are covered with coarse warts embedded in a rather thick perispore. Further noteworthy sporal features are the distinct plage and the present but often inconspicuous germ pore. Contrary to the majority of taxa belonging to sect. *Physocystis* (Singer & Smith 1958) which prefer rotten wood as substrate, the basidiomes of this annulate taxon have been gathered on sandy soil in subtropical forest of Rio Grande do Sul, Brazil.

From the same general area, another closely related species viz. *G. minor* (13) has been reported by Singer (1953a). The present taxon, however, is

readily separated by its exannulate lignicolous basidiomes, 4-spored basidia, capitate-uteriform pleurocystidia and slightly larger spores.

For further discussion cf. *G. papillata* (17).

3. *Galerina boliviana* Singer in Smith & Singer.
1964. *Galerina*, 58.

Syn.? *Galerina cerina* var. *yungensis* Smith & Singer. 1964. *Galerina*, 78. (*syn. nov.*, no type material seen !).

Galerina cerina var. *nebularum* Smith & Singer. 1964. *Galerina*, 76. (*syn. nov.*).

Galerina laeta Singer in Smith & Singer. 1964. *Galerina*, 185. (*syn. nov.*).

Galerina nubigena Smith & Singer. 1964. *Galerina*, 60. (*syn. nov.*).

Material examined: BOLIVIA: *Prov. Nor-Yungas, Cota-pata*, 3000 m, 28-I-1956, Singer B 628a (*Holotypus* of *G. boliviana* MICH !); *Prov. Nor-Yungas, Cerro Uchumachi*, 2100-2200 m, 25-II-1956, Singer B 1471 (*Holotypus* of *G. cerina* var. *nebularum* MICH !); *Prov. Nor-Yungas, cerro Uchumachi*, 2200 m, 25-II-1956, Singer B 1469 (*Holotypus* of *G. nubigena* MICH !).

Remarks: In the neotropical region, *Galerina boliviana* actually is the only representative of sect. *Calyptrospora* Smith & Singer (1958).

As pointed out above, three other Bolivian taxa are considered to be synonyms. This proposal is firstly supported by the fact that the pertinent type collections are identical regarding the shape and the size of all microscopical characters. Secondly, the lack of apparent macroscopical differences does not allow to separate the above mentioned taxa convincingly. The only distinguishing feature is the veil reported to be strongly and persistently developed in *G. boliviana* and *G. cerina* var. *nebularum* but is found only as rather inconspicuous appressed fibrils in the case of *G. laeta*, *G. nubigena* and *G. cerina* var. *yungensis*, respectively. A third reason to back up the synonymisation is the fact that all taxa prefer *Sphagnum* as substrate. Finally, the type localities of the cited taxa are situated in the same geographical region, i.e. between 2100-3000 m on the eastern slopes of the Bolivian Andes (*Prov. Nor-Yungas*).

The fourth taxon in the list viz. *G. cerina* var. *yungensis* also appears to be contaxic with the sympatric *G. boliviana*. Unfortunately, the search to locate the type material of the former species has been unsuccessful. Hence a question mark is added to its proposed new taxonomic position.

To present knowledge, *G. boliviana* is restricted to a rather small endemic area in Bolivia. On the South American continent, taxonomically its very next relatives are *G. austrocalypttrata* Smith & Singer

(1964; from Patagonia) and *G. tibiicystis* (Atkinson) Kühner *s.l.* recorded so far only from several subantarctic *Sphagnum* bogs in Tierra del Fuego (Horak 1979, 1982). The poor representation of neotropical species with calyptrate spores is surprising insofar that North American biota are renowned for their comparatively numerous taxa belonging to sect. *Calyptrospora* (Smith & Singer 1964, Wells & Kempton 1969, Horak & Miller 1992).

4. *Galerina bullulifera* Singer in Singer & Digilio. 1952. *Lilloa* 25: 374.

Material examined: ARGENTINA: *Prov. Tucumán*, Parque Aconquija, *ad truncos*, 10-VII-1949, Singer T 600 (*Isotypus* MICH!).

Remarks: Although the isotype material of *Galerina bullulifera* is in very fragmentary condition, all taxonomically relevant characters could be examined. Contrary to the original description (Singer in Singer & Digilio 1952), this species actually has numerous pleurocystidia which due to their small size, however, can be readily overlooked. Taking this new data into account, the monotypical subject. *Bulluliferinae* Smith & Singer (1958) has to be removed from the current concept of *Galerina* (Smith & Singer 1964).

Relying upon the additional pertinent features, this species therefore finds its proper taxonomical position near *G. physospora* Singer (in Singer & Digilio 1952). It is worth mentioning that both taxa have been collected (at the same date) under similar ecological conditions in the Selva Tucumana of northern Argentina.

5. *Galerina subpapillata* Smith & Singer in Dennis 1961. *Kew Bull.* 15: 143.

Bas.? *Galerina subpapillata* Singer in Smith & Singer (in Dennis) 1961. *Kew Bull.* 15: 143 (inval.).

Syn.: *Galerina cingulata* Singer in Smith & Singer. 1964. *Galerina*, 218 (*syn. nov.*)

Material examined: VENEZUELA: *Prov. Mérida*, Sierra de Santo Domingo, Laguna Negrá, 3440 m, on rotten wood in forest, 1-VIII-1958, Dennis 1774 (*Holotypus* K!). Same locality, in very wet moss, 26-VII-1958, Dennis 1727 B (K!). BOLIVIA: *Prov. Nor-Yungas*, Carmen Pampa, 2000 m, on rotting dicot leaves and moss, 26-II-1956, Singer B 1536 (*Holotypus* of *G. cingulata*, MICH!).

Remarks: The type material of both *Galerina subpapillata* and *G. cingulata* is in fragmentary condition, and accordingly the latter taxon's synonymy is proposed with hesitation only. The follow-

ing data, however, favour the transfer viz. the size, shape and the ornamentation of the spores, the 2-spored basidia, and the broadly fusoid to uteriform pleurocystidia are more or less identical in both taxa. The slender fusoid cheilocystidia, however, mentioned in the original description of *G. cingulata* have not been observed in the two examined collections of *G. subpapillata*. But the poor specimens did not allow a thorough re-examination to establish the value of this single distinguishing microscopical feature. Furthermore, the comparison of the macroscopical characters yields no data which render the separation of these two Andean species. Finally, it must be emphasized that the type material of *G. cingulata* (LIL, T 816, incorrectly cited as "paratype" of *G. subpapillata* whose actual type material must be referred to K, Denis 1774!, cf. Dennis 1961, Smith & Singer 1964) has been collected at the same locality in Bolivia.

6. *Galerina columbiana* Singer. 1973. *Sydowia*, Beih. 7: 89.

Material examined: COLUMBIA: *Boyacá*, Arcabuco, 29-VII-1960, Singer B 3608 (*Holotypus* of *G. columbiana*. F 1015582!).

Remarks: This remarkable evelate species is readily recognized by its subelliptical spores (10-12 x 6-7 μ m) whose generally smooth walls are roughened along a narrow zone close to the clearly delimited plage. The perispore is poorly developed but forms a more or less defined bulge along the borderline of the plage. Furthermore, *Galerina columbiana* is microscopically well characterized by rather polymorphic, slender lecythiform or cylindrical cheilocystidia and caulocystidia.

Employing the key published by Smith & Singer (1964), *G. columbiana* seems to be close to taxa of the *G. inconspicua*-complex (Smith & Singer 1958, Singer 1969), originally described from several localities in the Argentinian provinces Río Negro and Neuquén.

7. *Galerina discernibilis* Singer. 1973. *Sydowia*, Beih. 7: 90.

Material examined: COLUMBIA: *Prov. Valle del Cauca*, Cali, Saladito, 1800, *ad lignum putrescente in silva tropicali-montana*, 15-IV-1968, Singer B 6150 (*Holotypus* F!, 1014363; *Isotypus* MICH!).

Remarks: Despite careful search on the fairly well preserved type specimens, no clavate or vesiculose cells have been discovered at the edges of the lamellae which are exclusively occupied by

fusoid to lageniform cheilocystidia. In addition, *Galerina discernibilis* is characterized by rather coarsely warted spores (8-9 x 4-5 μm) enveloped by a thick perispore.

Discussing the taxonomical position of the annulate *G. discernibilis*, Singer (1973) points out that this species belongs to the *G. helvoliceps*-complex. Undoubtedly, the microscopical features observed in these two species are similar in many respects except the size of the spores. In my opinion *G. helvoliceps* (Berkeley & Curtis) Singer (1949) is an enigmatic Cuban species whose interpretation of the macroscopical characters is difficult due to the fact that these data apparently have been drawn from the dried specimens. As a result, the absence or presence of an annulate veil as a key character is unknown and accordingly the taxon's position is open to speculation.

8. *Galerina dominici* Singer in Dennis. 1961. *Kew Bull.* 15: 141.

Material examined: VENEZUELA: Prov. Mérida, Sierra de Santo Domingo, Laguna Negra, 3440 m, in moss on trees, 31-VII-1958, Dennis 2506 (*Holotypus* K!).

Remarks: Several characters (and their combination) make *Galerina dominici* an unique taxon which has been reported only once from the type locality in the montane forest of the Sierra de Santo Domingo, Venezuela. Its elliptical spores (10-11 x 5-6 μm) are covered by minute verrucose warts that are coarser near the distinctly delimited plage. As a rule, the perispore is poorly developed but several spores have been observed having scattered perispore blisters. Another specific feature worth mentioning are the rather slender fusoid cheilocystidia (and caulocystidia) with elongate neck occasionally bearing a subcapitate apex.

Except the size of the spores, the remaining microscopical features of *G. dominici* are similar to those described for the Californian *G. filiformis* Smith & Singer (1958). The two taxa, however, are unmistakably separated by macroscopical characters.

9. *Galerina "heterocystis"* (Atkinson) var. A. in Smith & Singer 1964. *Galerina*, 37.

Syn.: *Galerina clavata* (Velenovsky) Kühner ss. Singer (in Singer & Digilio 1951: 373) (later corrected to "heterocystis", Singer *in litt.*; reported from the Prov. Salta, Tucumán and Buenos Aires).

Material examined: ARGENTINA: Prov. La Rioja, Quebrada de la Sébila, 600 m, shady place in deep ravine, on deep sandy soil among mosses, 23-V-1959, Singer T 3350

(LIL), authentic material). BRAZIL: Paraná, General Carneiro, Fazenda São Pedro, on humus in forest, solitary, 30-XI-1989, de Meijer 1395 (ZT 4539).

Remarks: The examined material for this taxon has been mentioned in Smith & Singer (1964: 37). Collected among moss on sandy soil in the Province of La Rioja (Argentina), its most notable characters are the broadly adnate to decurrent lamellae, the 4(2)-spored basidia, the rather small almond-shaped to subfusiform minutely punctate spores (7-9 x 4-4.5 μm) with poorly defined plage, the short cheilocystidia and the absent clamp connections. These observed features actually are typical for sect. *Tubariopsis* Kühner (1935) but its close relationship to *Galerina heterocystis* proper as proposed by Smith & Singer (1964) appears doubtful.

A second collection probably also representing this species has been gathered in Paraná by de Meijer (ZT 4539). Except the present clamp connections, the remaining microscopical data for this collection compare well with those of the before mentioned material. Macroscopically, the most distinguishing characters of the Brazilian fungus are its adnexed lamellae and the evelate stipe being dark brown towards its base.

Additional south American material is needed to establish the correct taxonomical position for this yet unnamed *Galerina*. For further discussion cf. *Galerina* sp. 1 (27).

10. *Galerina hypsizyga* Singer in Smith & Singer. 1964. *Galerina*, 174.

Bas.: *Galerina hypsizyga* Smith & Singer in Dennis 1961. *Kew Bull.* 15: 142 (inval.).

Material examined: VENEZUELA: Prov. Mérida, Sierra de Santo Domingo, Laguna Mucubaji, 3560 m, on peaty soil among mosses and *Cladonia*, 22-VII-1958, Dennis & Buza 1700 (*Holotypus* K!).

Additional material: GUADELOUPE: La Soufrière, on soil along trail, \pm 1400 m, 20-VII-1973, Pfister & Sarriera DHP 589, det. Pegler (FH!).

Remarks: The type material of *Galerina hypsizyga* Smith & Singer (in Dennis 1961) refers to specimens collected by Dennis & Buza 1799 (K) in Venezuela, and not - as later erroneously published in Smith & Singer (1964) - to a collection made by Singer in Catamarca, Argentina (LIL).

G. hypsizyga is readily recognized by its amygdaliform coarsely verrucose spores (9-10.5 x 5.5-6 μm) and the slender fusoid cheilocystidia and caulocystidia with subcapitate apex. Based upon the scarce records, *T. hypsizyga* has far been reported only from two localities in the Neotropis

and Caribbean region viz. in the Sierra de Santo Domingo (Venezuela, 3560 m a.s.l.) and also in the mountains of Guadeloupe (1400 m a.s.l.; Pegler 1983).

As indicated in the key, *G. hypsizyga* is taxonomically close to *G. polytrichorum* Singer (18), another taxon of *Galerina* whose type locality is also situated at high altitude (3000 m a.s.l.) in the Nor-Yungas, Bolivia.

11. *Galerina infernalis* Singer in Smith & Singer. 1964. *Galerina*, 268.

Material examined: ARGENTINA: *Prov. Tucumán*, Abra del Infiernillo, 3000 m, *ad terram in alpinis*, 2-I-1960, Türpe-Singer B 3046 (*Holotypus* LIL !).

Remarks: Within the swarm of polymorphic taxa classified in stirps *Marginata* (Smith & Singer 1964), the identification of *Galerina infernalis* is readily achieved if its distinctive ecology (on rotten tufts and debris of *Stipa* in 3000 m a.s.l., northern Argentina), and its most significant micromorphological characters viz. the remarkably large elliptical spores (10-12.5 x 6-6.5 μm) and the numerous ventricose-fusoid cheilocystidia and pleurocystidia (30-60 x 7-15 μm) are taken into account. Cf. also *Gl. pseudomycenopsis* (19).

12. *Galerina machangaraensis* Singer. 1977. *Nova Hedw.* 29: 67.

Material examined: ECUADOR: *Pichincha*, Río Machangara, 2600 m, 20-V-1973, Singer B 7545 (*Holotypus* F 1017952 !).

Remarks: In spite of the very fragmentary condition of the type collection, all essential characters reported for *Galerina machangaraensis* have been recovered. Its typical features are the almond-shaped to phaseoliform warted spores (9-11 x 4.5-5 μm) both lacking a perispore and a plage. Contrary to *G. montivaga*, the cheilocystidia, caulocystidia and also dermatocystidia (Singer 1977) of *G. machangaraensis* are slender lecythiform with the distinctive globose apex sitting on a comparatively long neck. Its taxonomic position in sect. *Tubariopsis* Kühner (1935) is further supported by the absence of clamp connections at all septa.

All characters registered for this Ecuadorian taxon make it necessary to compare it with the type material of *G. heterocystis* s. str., originally described by Atkinson (1918) from Jamaica (Cinchona, about 1400 m a.s.l.). For further discussion cf. *G. subtibiocystis* (22).

13. *Galerina minor* Singer. 1953a. *Lilloa* 26: 125.

Material examined: BRAZIL: *Rio Grande do Sul*, São Leopoldo, Parecí, *ad lignum putridissimum inter Hepaticas*, 2-XI-1951, Singer B 65 (*Isotypus* MICH!). BRAZIL: *Paraná*, *Prov. Curitiba*, General Carneiro, Fazenda São Pedro, on soil under bamboo in native forest, 4-X-1989, de Meijer 1370 (ZT 4538); same locality, on soil in forest, 20-XII-1989, de Meijer 1427 (ZT 4540).

Remarks: *Galerina minor* represents a typical exannulate member of sect. *Physocystis* Smith & Singer (1958). The most remarkable microscopic features are firstly the broadly fusoid to uteriform and capitate pleurocystidia and secondly the amygdaliform and coarsely warted spores (8-10 x 5-6 μm). As indicated by its specific name, the pilei of the type material (from Rio Grande do Sul, Brazil) are described to reach 3 mm diam. only. On fresh material gathered by A. de Meijer in Paraná caps of up to 11 mm diam. have been measured. In the same two additional collections, the stipe of the basidiomes has been reported to be much longer (up to 23 mm) as described in the original diagnosis (Singer 1953a).

For further discussion cf. *G. arenaria* (2) and *G. papillata* (16).

14. *Galerina montivaga* Singer. 1969. *Nova Hedw.*, *Beih.* 29: 306.

(Type material lost?, no specimens in LIL or F).

Syn.; *Galerina sanctixaveri* Singer. 1973. *Sydowia*, *Beih.* 7: 91.

Type lost; examined (topotypical) material comes from same are as type: Tucumán, San Javier, 900 m, 28-II-1962, Singer T 3776 (BAFC: not available).

Material examined: ARGENTINA: *Prov. Tucumán*, San Javier, 1550 m, among moss in montane woods, 7-I-1959, Singer T 3200 (LIL !, topotypical material); *Tucumán*, San Javier, 900 m, on moss-covered trunk of hardwood in subtropical forest, 6-III-1962, Singer T 3776 (LIL !, topotypical material). *Jujuy*, Lagunas de Yala, 2000 m, *inter muscos in alneto*, 9-II-1969, Singer T 3900 (F!, 1015248). BRAZIL: *Paraná*: General Carneiro, Fazenda São Pedro, between moss on decayed dicot trunk, solitary, 16-VII-1987, de Meijer 1349 (ZT 4537). *Bocaiuva do Sul*, Parque Estadual de Campinhos, 13-VII-1990, de Meijer 1846 (ZT 4757).

Remarks: The type material both of *Galerina montivaga* (from northern Argentina) and of its purported synonym *G. sanctixaveri* (also reported from the same geographical region) have not been located. The presented interpretation of the taxon is based upon material collected by Singer in the Provinces of Jujuy (*G. montivaga*?, T 3900 in F), and

Tucumán ("*G. heterocystis*", T 3200, T 3776, LIL). In addition, two collections from Paraná (southern Brazil) have been found to represent the same taxon.

As pointed out in the key, *G. montivaga* is characterized by rather stout lecythiform cheilocystidia devoid of a long neck. This character, in combination with clamp-less hyphae and almond-shaped or phaseoliform spores (9.5-11 x 5-6 μm) without plage and perispore, make this species a typical member of sect. *Tubariopsis* Kühner (Smith & Singer 1964) that is closely related to *G. heterocystis* (Atkinson) Smith & Singer (cf. Singer 1969), a taxon commonly encountered in the northern hemisphere.

15. *Galerina nana* (Petri) Kühner. 1935. *Encycl. Myc.* 7: 219.

Bas.: *Naucoria nana* Petri. 1904. *Ann. Myc.* 2: 10.

Material examined: BRAZIL: Paraná, Prov. Curitiba, São José dos Pinhais, ADEA, Reserva Biológica Cambui, on decayed dicot stub, in small group, 30-VI-1979, de Meijer 63 (ZT 4546); same locality, on very decayed tree stub, in large group, 24-V-1980, de Meijer 63 c (ZT 4547).

Further records (material not examined): ARGENTINA: Prov. Tucumán, Cerro Alto de Taficillo, on rotten wood of *Alnus jorullensis* var. *spachii*, 6-I-1950, Singer T 832 (LIL; cf. Singer & Digilio 1952: 384). BOLIVIA: Localities unknown (2 collections mentioned in Smith & Singer 1964: 342).

Additional material: CHILE: Prov. Osorno, Pucatrihue, on soil among moss in coastal rain forest, 26-IV-1963, Horak (ZT 66/330).

Remarks: In the southern hemisphere, *Galerina nana* is a widely distributed agaric which occurs within a broad ecological range (Horak 1983).

In tropical-subtropical South America, this species has been previously recorded from the "Selva Boliviano-Tucumana" (Singer in Singer & Digilio 1952) and from the province Nor-Yungas in Bolivia (Smith & Singer 1964). The two collections referred to in this contribution represent the first records of this taxon in Brazil.

The South American area of distribution of *G. nana* is not exclusively restricted to the neotropical region. This striking species has also been reported from several localities in temperate Argentina and Chile (Singer 1969, Horak ZT 66/330).

16. *Galerina papillata* Singer in Singer & Digilio. 1952. *Lilloa* 25: 382.

Material examined: ARGENTINA: Prov. Tucumán, Anta Muerta, 27-III-1949, Singer T 294 (*Paratyphus* MICH!).

Remarks: The type material of *Galerina papillata* has been found growing on rotten wood in the montane-subtropical broadleaved forest in the province of Tucumán, northern Argentina. Its papillate basidiomes and several microscopical characters are strongly reminiscent of those observed in *G. arenaria* (2) reported from southern Brazil. The two taxa, however, can be separated by the sparse or absent veil and the 4-spored basidia in the latter species (cf. also *G. minor*, 13).

17. *Galerina physospora* Singer in Singer & Digilio. 1952. *Lilloa* 25: 381.

Material examined: ARGENTINA: Prov. Tucumán, Parque Aconquija, 10-VII-1949, Singer T 597 (*Isotyphus* MICH!).

Remarks: The type material of *Galerina physospora* is well preserved and thus all relevant microscopical characters could be analysed in detail. To the list of its pertinent characters must be added that i) the pileipellis is gelatinous (not mentioned in the original diagnosis), and ii) the average length of the spores is larger as given by Singer (in Singer & Digilio, 1952).

All distinctive features reported for *G. physospora* clearly emphasize its close taxonomical relationship to *G. bulullifera* from which it is separated, however, by the constantly smaller and much coarser spores.

18. *Galerina polytrichorum* Singer in Smith & Singer. 1964. *Galerina*, 194.

Material examined: BOLIVIA: Prov. Nor-Yungas, Coto-pata, 3000 m, on *Polytrichum*, 28-I-1956, Singer B 619 (*Holotyphus* MICH!).

Additional material: COLUMBIA: Boyacá, Arcabuco, 28-V-1960, Singer B 3571 (*Holotyphus* of *G. oligocalyptata*, F!). - USA: Washington, Pierce Co., Mt Rainier National Park, 5 October 1952, Smith 40607 (*Holotyphus* of *G. subfiliformis* MICH!).

Remarks: The type material of *Galerina polytrichorum* has been collected on *Polytrichum* in Bolivian cloud-forest (Cejas, about 3000 m a.s.l.). The taxon is in particular characterized by its large (10-12.5 x 6-6.5 μm) and marbled spores that bear scattered perispore blisters. Further distinctive microscopical characters are the fusoid cheilocystidia (and caulocystidia) with obtuse or subcapitate apex.

According to Singer (in Smith & Singer 1964), *G. polytrichorum* is considered to be closely related to the North American *G. subfiliformis* Smith (1953). The re-examination of its type material (MICH, 40607) has revealed, however, that the two taxa

actually do not belong to the same sect. *Mycenopsis*.

Unfortunately, the authentic collection of *G. oligocalyptrata*, described by Singer (1989) from Colombia, is represented only by a single basidiome in fragmentary condition. The result of the microscopical analysis has shown that this taxon must be classified near *G. polytrichorum*. Except taste and veil conditions, the two species appear to be identical at least concerning most of their remaining taxonomically relevant features. Fresh material must be awaited to reach a final conclusion about this question.

For further discussion cf. *G. hypsizyga* (10).

19. *Galerina pseudomycenopsis* Pilat & Nannfeldt. 1954. *Friesia* 5: 19.
("form B", cf. Horak & Miller 1992).

Syn.: *Galerina moelleri* Bas. 1960. *Persoonia* 1: 310.

Material examined: ARGENTINA: Prov. Tucumán, Tañi, Monte Negro, 3200 m, in swampy alpine grassland, 15-III-1962, Horak (ZT 66/416).

Remarks: Based upon the presently known world wide distribution pattern, *Galerina pseudomycenopsis* is a typical arctic-alpine species (Horak & Miller 1992) which in the southern hemisphere also occurs on Antarctica (Singer & Corte 1962), on the subantarctic islands (South Georgia: Dennis, 1968; Pegler & al. 1980) and in Tierra del Fuego (Horak 1979: as "*G. riparia*", Horak 1982).

The above mentioned record from alpine meadows (3200 m) in the Andes of the Province of Tucumán connects the disjunct area of distribution on the northern and southern hemisphere. The taxonomic interpretation of this very polymorphic species closely follows the outlines published by Horak & Miller (1992), i.e. the cited Argentinian record represents "form 2" characterized by mucronate spores having a distinct germ pore.

G. infernalis Singer (11), another species from the Ecuadorian Andes, has been collected on tufts of *Stipa* sp. Its general appearance is similar to *G. pseudomycenopsis*, however, the two taxa are readily distinguished by the shape and size of the spores.

20. *Galerina recedens* (Singer) Horak. 1987.
Sydowia 40: 77.

Bas.: *Pyrrhoglossum recedens* Singer. 1973. *Sydowia*, Beih. 7: 91.

Material examined: ARGENTINA: Prov. Jujuy, Lagunas de Yala, 2400 m, on rotten wood of *Alnus jorullensis* var. *spachii*, 14-II-1966, Singer T 5143 (Holotypus F !).

Remarks: A full description of this taxon is published in Horak (1987: l.c.).

21. *Galerina stylifera* (Atkinson) Smith & Singer 1958. *Sydowia* 11: 449.

Bas.: *Galerula stylifera* Atkinson. 1918. *Proc. Amer. Philos. Soc.* 57: 365.

Material examined: BRAZIL: Paraná, Bocaiuva do Sul, Parque Estadual de Campinhos, 13-VII-1990, de Meijer 1847 (ZT 4758).

Remarks: This is the first record of *Galerina stylifera* in South America. Its habitat indicates that this taxon probably has to be regarded an introduced species.

The present material (from Paraná, Brazil) has been gathered from rotten wood under planted *Pinus*. It agrees in all essential macroscopical and microscopical characters with specimens from Europe or North America (Smith & Singer 1964).

The most remarkable features of *G. stylifera* are the rather large basidiomes with viscid pilei, the lack of a membranaceous ring, the small and smooth spores and the distinctly lecithyform cheilocystidia.

22. *Galerina subtibiicystis* Singer. 1953a. *Lilloa* 26: 146.

Material examined: BRAZIL: Rio Grande do Sul, Taimbesinho, 1000 m, 5-XI-1951, Singer B 102 (*Isotypus* MICH !).

Remarks: *Galerina subtibiicystis* has been recorded by Singer (1953a) from *Sphagnum* swamps in Rio Grande do Sul (Brazil) where it occurred together with *G. taimbesinhoensis* (= *G. semiglobata*) at the same locality.

Unfortunately, the type material of *G. subtibiicystis* consists of fragments only and hence it was difficult to corroborate several data mentioned in the original diagnosis viz. presence of dermatocystidia and clamp connections in the pileipelli.

Following the key published in Smith & Singer (1964), the present taxon is separated from *G. tibiicystis* (Atkinson) Kühner by the absence of veil remnants and by the lack of clamp connections on the septa of the pileipellis hyphae. However, careful examination of the Brazilian type material yielded numerous clamp connections in the epicuticular layers both of pileus and stipe. Under these

circumstances, only few minor characters remain to clearly distinguish these two taxa which probably are contaxic.

23. *Galerina taimbesinhoensis* Singer. 1953a.

Lilloa 26: 148.

Syn.: *Galerina semiglobata* Singer. 1953a. *Lilloa* 26: 147. (syn. nov.).

Galerina sphagnum (Persoon: Fries) Kühner ss. Singer. 1953a. *Lilloa* 26: 149.

Galerina andina Singer in Smith & Singer. 1964. *Galerina*, 144. (syn. nov.).

Galerina uchumachiensis Singer in Smith & Singer. 1964. *Galerina*, 150. (syn. nov.).

Material examined: BRAZIL: Rio Grande do Sul, Taimbesinho, 5-XI-1951, Singer B 101 (*Isotypus* of *G. taimbesinhoensis* MICH !). Rio Grande do Sul, 1000 m, 5-XI-1951, Singer B 100 (*Isotypus* of *G. semiglobata* MICH !). BOLIVIA: Prov. Nor-Yungas, Cotopata, 3000 m, 25-I-1956, Singer B 509 (*Holotypus* of *G. andina* MICH !); Prov. Nor-Yungas, Cerro Uchumachi, 2200 m, 25-II-1956, Singer B. 1470 (*Holotypus* of *G. uchumachiensis* MICH !).

Remarks: The type material of *Galerina taimbesinhoensis* and of its proposed new synonyms listed above are in very poor condition. Nevertheless, the careful examination yielded enough microscopical data in support to consider these three other sphagnicolous taxa and one record (in the literature described as *G. sphagnum*) as contaxic with *G. taimbesinhoensis*.

The most typical features of the present species (which clearly belongs to stirps *Sphagnum* ss. Smith & Singer, 1964) are the distinctly almond-shaped or sublimoniform spores whose wall surface is roughened or covered with very minute warts. The perispore is poorly developed and accordingly the plage is often poorly defined. Besides the rather small carpophores and the constant habitat in *Sphagnum* bogs (or at least peat), *G. taimbesinhoensis* is also characterized by its slender fusoid cheilocystidia and the inconspicuous and fugaceous veil remnants. As pointed out by Singer (1953a) earlier, the combination of the recorded criteria points towards a close relationship to *G. sphagnum* (Kühner 1935). Further research is needed to find out whether or not the South American taxon actually represents additional records of *G. sphagnum*, a widely distributed *Galerina* in the northern hemisphere.

24. *Galerina velutinoaffinis* (Singer) Horak. 1987.

Sydowia 40: 78.

Bas.: *Crepidotus velutinoaffinis* Singer in Dennis. 1961. *Kew Bull.* 15: 145.

Material examined: VENEZUELA: Prov. Mérida, Sierra de Santo Domingo, Laguna Negra, 3440 m, 31-VII-1958, Dennis (*Holotypus* K !).

Remarks: A full description and illustrations of *Galerina velutinoaffinis* (Singer) have been published in Horak (1987).

25. *Galerina velutipes* Singer in Smith & Singer. 1964. *Galerina*, 284.

Material examined: ARGENTINA: Prov. Misiones, Puerto Iguazú, on rotting dicot trunk, 12-IV-1957, Singer M 932 (*Isotypus* MICH !).

Additional material: CUBA (and JAMAICA): On logs, Wright 69 (K !; *Holotypus* of *Galerina subpectinata* (Murrill) Smith & Singer 1964. *Galerina*, 286).

Remarks: As already emphasized by Singer (in Smith & Singer 1964) *Galerina velutipes* has close taxonomical relationships to *G. subpectinata* (Murrill) originally described by Berkeley & Curtis, 1868, as "*A. pectinatus*" from Cuba. Upon re-examination of the Caribbean type material, Singer's assumption has been corroborated because at least all microscopical characters (except the shape of the pleurocystidia) are about identical. Under these circumstances, it remains open whether these two taxa are actually contaxic or not.

Referring to Murrill (1917), the area of distribution of *G. subpectinata* is not exclusively restricted to Cuba but extends also into Jamaica. Further records (from Ecuador and Mexico) published by Singer (1977) illustrate that this taxon apparently is widely distributed in the Neotropis.

In order to resolve the systematics of *G. velutipes*, it can be expected that *G. helvoliceps* (Berkeley & Curtis, 1868) s.str. (another Cuban species, cf. Singer, 1952) turns out to be closely related to both before-mentioned taxa.

26. *Galerina yungicola* var. *yungicola* Singer in Smith & Singer. 1964. *Galerina*, 114.

Material examined: BOLIVIA: Prov. Nor-Yungas, Corico, 1700 m, on slightly burned woody humus, 5-II-1956, Singer B 932 (*Holotypus* MICH !).

Remarks: The microscopical characters observed on the type material (MICH) strongly indicate that *Galerina yungicola* probably does not represent an actual member of the genus *Galerina*. The rather small (7.5-9.5 x 4.5-5 µm), subamygdaliform and coarsely warted spores with an ill-defined plage turn deep rust brown in KOH. In addition, both the plasmatic pigment in the caulocystidia and cheilocystidia and the conspicuous encrusting pig-

ment on the pileipellis hyphae are brilliant yellow to golden brown as observed in the same solvent. According to these features, it appears that this Bolivian taxon rather belongs to *Gymnopilus* than *Galerina*. Further research (analysis of the pigment, SEM pictures of the spores) is needed before a formal transfer to *Gymnopilus* can be proposed.

27. *Galerina* sp. 1

Material examined: ARGENTINA: *Prov. Jujuy*, Las Lagunas, 2100 m, on soil among moss under *Alnus jorullensis* var. *spachii*, 10-III-1963, Horak (ZT 66/440).

Description of the above material:

Pileus up to 10 mm diam., hemispherical to obtusely conico-convex; ochre to argillaceous; if moist obscurely striate, hygrophanous, dry, smooth, without veil remnants. Lamellae 10-12 (1-2-3), broadly adnate to subdecurrent with short tooth; concolorous with pileus, even edges concolorous. Stipe up to 40 x 1 mm, cylindrical, slender, solitary; concolorous or paler as pileus; apex pruinose, smooth and without veil remnants; dry, hollow. Odor and taste not distinctive.

Spores 9.5-10.5 x 5.5-6 μm , almond-shaped, yellow-brown, minutely punctate, perispore, plage and germ pore absent. Basidia 4-spored. Cheilocystidia (and caulocystidia) 35-50 x 5-7 μm , slender fusoid, elongated neck with globose capitulum (5 μm diam.). Pleurocystidia and dermatocystidia absent. Clamp connections absent at all septa.

Remarks: Regarding the broadly adnate to subdecurrent lamellae, this collection is strongly reminiscent of *Galerina heterocystis* var. A (cf. 9) ss. Smith & Singer (1964). The two taxa, however, are separated by the size of the spores and the lack of clamp connections in the material gathered in Jujuy.

28. *Galerina* sp. 2

Material examined: ARGENTINA: *Prov. Misiones*, Puerto Iguazú, on rotten dicot wood in subtropical forest, 5-II-1980, Horak 238 (*Holotypus* ZT !).

The description of this *Omphalina*-like *Galerina* (sp. 2) is based upon material collected with numerous basidiomes in perfect condition:

Pileus -18 mm diam., already in young specimens with distinctive and persistent conical papilla in the depressed to subumbilicate centre, non-sulcate margin incurved; ochre at papilla becom-

ing pale argillaceous or pale ochraceous towards margin; dry, hygrophanous, conspicuously striate if moist, smooth, membranaceous, veil remnants absent. Lamellae 16-24 (-3), arcuate-decurrent, up to 1.5 mm wide; at first pale cream-pink, gradually turning to argillaceous-pink, smooth edges concolorous. Stipe -40 x -2 mm, cylindrical, slender occasionally slightly enlarged at base, often curved; concolorous with pileus, yellow-brown towards base; dry, apex subpruinose, smooth towards base which is covered with a white substrigose tomentum, fistulose, tough or cartilaginous, solitary or cespitose, any veil remnants absent. Odor and taste subfarinaceous to acidulous.

Spores 6.5-7 x 3.5-4 μm , subamygdaliform (to pip-shaped), verrucose, warts embedded in conspicuous perispore occasionally forming ear-shaped appendages near apiculus, plage well delimited, germ pore none, rust brown in KOH. Basidia 17-25 x 5-6 μm , 4-spored cylindrical to subclavate. Cheilocystidia 20-40 x 6-10 μm , clavate to subvesiculose, hyaline, forming a sterile gill edge. Pleurocystidia 35-55 x 8-12 μm , subfusoid to lageniform, numerous, hyaline, thin-walled. Caulocystidia in shape and size as cheilocystidia, scattered, borne on thick-walled hyphae of the stipe. Pileipellis a cutis of repent non-gelatinised cylindrical hyphae (2-4 μm diam.) with cylindrical to subfusoid inconspicuous terminal cells, subpellis composed of entangled densely compacted rather short-celled hyphae (-8 μm diam.) with thickened membranes. Oleiferous hyphae absent. Clamp connection at all septa.

Remarks: This is a remarkable (probably yet undescribed) *Galerina*. In the field, its habit and habitat strongly remind of *Omphalina* sp., however, the pinkish lamellae and the tough context rather indicate a taxon belonging either to *Entoloma* or *Ripartites*. It is noteworthy that even on very young basidiomes no traces of veil have been observed. The present *Galerina* is also outstanding due to its comparatively very small verrucose spores with a strongly developed perispore.

For the time being, the formal description for this unique taxon from subtropical NE-Argentina is postponed until further putatively related species have been examined and compared.

DOUBTFUL SPECIES AND RECORDS

The following list refers to taxa whose type material or authentic specimens have not been located in the appropriate herbaria.

1. *Galerina cedretorum* var. *austroandina* Singer in Smith & Singer 1964. *Galerina*, 281.

ARGENTINA: *Prov. Río Negro*, Paso de las Nubes (Laguna Frías), 16-III-1959, Singer M 1849 (Holotypus LIL).

2. *Galerina helvoliceps* (Berkeley & Curtis) Singer 1949. *Lilloa* 22: 572. (cf. Singer 1952: 508; Smith & Singer 1964: 271).

ARGENTINA: *Prov. Tucumán*, Estancia Las Pavas, 19-VII-1949, Say & Singer T 572 (LIL).

3. *Galerina marginata* (Batsch: Fries) Kühner 1935. *Encycl. Myc.* 7: 225. (cf. Singer & Digilio 1952: 378).

ARGENTINA: *Prov. Tucumán*: Río de las Pavas, 19-VI-1949, Say & Singer, T 572 (LIL); Cerro Alto de Taficillo, 4-III-1951, Singer T 1342 (LIL).

4. *Galerina nigripes* Smith & Singer 1958. *Mycologia* 50: 480.

ARGENTINA: *Prov. Tucumán*: Cerro Alto de Taficillo, in montane forest on humified *Alnus jorullensis* var. *spachii*, 4-III-1951, Singer T 1342 (LIL); Río de las Pavas, 19-VI-1949, Say & Singer T 572 (LIL).

5. *Galerina saltensis* Singer in Singer & Digilio. 1952. *Lilloa* 25: 382.

ARGENTINA: *Prov. Salta*, Corralitos, in montane forest among mosses (mostly *Polytrichum*), 24-III-1951, Singer T 1418 (Holotypus LIL).

According to Smith & Singer (1964) this taxon resembles in many respects *Galerina oreina* which

KEY TO NEOTROPICAL SPECIES OF GALERINA

1. Spores absolutely smooth, 6-6.5 x 3-4 μm, ovoid to subphaseoliform, perispore absent; cheilocystidia 15-40 x 3-5 μm, fusoid with distinct capitate apex; pileus -25 mm, umbonate, viscid; lamellae broadly adnate; veil absent; on decayed wood of *Pinus*?, probably introduced; Brazil (Paraná).

1'. Spores different.

2. Spores smooth to minutely punctate-warted; perispore absent, inconspicuous, calyprate (ear-shaped) or covered with or without blister (cf. also *G. dominici*, *G. polytrichorum*); clamp connections present.

2'. Spores distinctly warted or marbled; perispore absent or if present not forming blisters; clamp connections present or absent.

3. Spores 10-12 x 6-7 μm, smooth, amygdaliform; perispore distinctly calyprate, with blisters, cheilocystidia 30-55 x 6-10 μm; pileus -17 mm; veil evanescent, fibrillöse to annulate; on *Sphagnum* or on soil among Hepatics and organic debris, 2100-3000 m; Bolivia (Nor-Yungas).

2. *G. boliviana*

has originally been described from localities above timberline in the Mt. Rainier National Park, Washington (USA).

6. *Galerina sphagnum* (Persoon: Fries) Kühner. 1935. *Encycl. Myc.* 7: 179. (cf. Singer 1953a: 149).

BRAZIL: *Prov. Rio Grande do Sul*, São Leopoldo, Taimb-esinho, 1000 m, on *Sphagnum*, 5-XI-1951, Singer B 99 (LIL).

7. *Galerina subbullulifera* Singer. 1953a. *Lilloa* 26: 137.

BRAZIL: *Prov. Rio Grande do Sul*, São Leopoldo, Estação São Salvador, on rotten dicot wood in subtropical forest, 9-XI-1951, Singer B 126 (Holotypus LIL).

Relying upon the original description, *Galerina subbullulifera* closely resembles *G. bullulifera* which is distinguished, however, by the "vesiculose mucronate and ampullaceous pleurocystidia and the absence of pigment incrustation in the hyphae, in lighter colors, and other minor characters".

8. *Galerina subpectinata* (Murrill) Smith & Singer 1964. *Galerina*, 286. (cf. Smith & Singer 1964: 286).

ECUADOR: *Prov. Napo*, Lago Agrio, 9-V-1973, Singer B 7324 (F); 16-V-1973, Singer B 7492 (F).

9. *Galerina viatica* Singer in Smith & Singer. 1964. *Galerina*, 231.

BOLIVIA: *Prov. Nor-Yungas*, Carmen Pampa, 2000 m, on sandy soil rich in organic matter, date unknown, Singer B 1247 (Holotypus LIL).

- 3'. Spores smooth to minutely punctate all over or only near margin of plage; perispore (and plage) distinctive or inconspicuous, blisters absent. 4
4. Spores 9-10 x 5.5-5.5 (-6) μm , amygdaliform with mucronate apex, minutely punctate all over; perispore and plage inconspicuous; cheilocystidia 25-55 x 5-9 μm , fusoid, apex not capitate; pileus -10 mm; veil fibrillose, evanescent (rarely subannulate); on *Sphagnum* (rarely also on peat); from lowlands to 3000 m; Brazil (Rio Grande do Sul), Bolivia (Nor-Yungas). 23. *G. laimbeshinhoensis*
- 4'. Spores 11-13 x 5.5-6 μm , subelliptical, minutely punctate along borderline of distinctive plage (with bulge from perispore); cheilocystidia 35-60 x 4-7 μm , slender fusoid-capitate; pileus -5 mm; veil absent; on mossy bark in *Quercus* forests; Columbia (Boyacá). 6. *G. columbiana*
5. Cheilo-, pleuro- and caulocystidia 40-60 x 12-20 μm , metuloid, encrusted with crystals; spores 9-11 x 5-6 μm ; amygdaliform; basidia mostly 2-spored; pileus -8 mm; veil absent; on decayed wood of dicot trees in subtropical and montane forest; Argentina (Tucumán), Brazil (Paraná), Bolivia. 15. *G. nana*
- 5'. All cystidia thin-walled, crystals absent. 6
6. Cheilo- and caulocystidia distinctly capitate (lecythiform) or with swollen apex; pleurocystidia absent (cf. also *G. laimbeshinhoensis*); plage ill-defined (for exceptions cf. *G. aimara*, *G. yungicola*). 7
- 6'. All cystidia without distinctly capitate apex, but vesiculose, fusoid-elongate, or utriform; plage mostly conspicuous, rarely not well defined. 14
7. Clamp connections absent, spores punctate-verrucose, phaseoliform or amygdaliform; plage absent or present; distinct veil remnants absent. 8
- 7'. Clamp connections present; spores amygdaliform. 11
8. Cheilo- (and caulocystidia) fusoid with rather broad subcapitate apex (without elongated neck), -35 x -10 (-9) μm ; spores 9.5-11 (-12) x 5-6 μm , amygdaliform (rarely also phaseoliform); pileus -10 mm, umbonate; veil fibrillose, evanescent; on soil among moss or on mossy logs in subtropical to montane forests; Argentina (Tucumán, Jujuy), Brazil (Paraná). 14. *G. montivaga*
- 8'. Cheilo- and caulocystidia with distinctive elongate neck, similar dermatocystidia scattered in pileipellis (except *G. yungicola*); spores phaseoliform (to cylindrical) or amygdaliform. 9
9. Spores 9-11 x 4.5-5 mm, phaseoliform to cylindrical; cheilocystidia -35 x -10 (-6) μm ; pileus -7 mm; lamellae adnate; veil absent; on soil among moss, 2600 m; Ecuador (Pichincha). 12. *G. machangaraensis*
- 9'. Spores amygdaliform; lamellae broadly adnate to triangular-subdecurrent. 10
10. Spores 7-9 x 4-4.5 μm ; cheilocystidia -50 x -12 (-6) μm ; pileus -8 mm; veil absent; on mossy soil in subtropical forests; Argentina (Tucumán), Brazil (Paraná). 9. *G. "heterocystis" var. A*
- 10'. Spores 9.5-10.5 x 5.5-6 μm ; cheilocystidia -50 x -7 (-5) μm ; pileus -10 mm; veil absent; among moss in montane forest under *Alnus jorullensis* var. *spachii*, 2100 m; Argentina (Jujuy). 27. *Galerina* sp. 1 (ZT 66/440)
11. Spores marbled to rather minutely verrucose, plage absent or inconspicuous. 12
- 11'. Spores (very) coarsely warted, plage conspicuous. 13
12. Spores 7-8.5 x 4.5-5 μm , minutely punctate; cheilocystidia -65 x -5 (-4) μm ; pileus -6 mm; veil absent; 2400 m, in montane forest on rotten wood of *Alnus jorullensis* var. *spachii*; Argentina (Jujuy). 20. *G. recedens*
- 12'. Spores 9-10.5 x 4.5-5 μm ; occasionally phaseoliform; cheilocystidia -40 x -6 (-5) μm ; pileus -15 mm; veil fibrillose, fugaceous; on *Sphagnum*; Brazil (Rio Grande do Sul). 22. *G. subtibiocystis*
13. Spores 7.5-9.5 x 4.5-5 μm ; cheilocystidia -30 x -7 (-5) μm ; often with brilliant yellow plasmatc pigment; dermatocystidia inconspicuous; pileus -9 mm; veil absent; on burned wood and humus, 1700 m; Bolivia (Nor-Yungas). Taxonomic position uncertain. 26. *G. yungicola*

- 13'. Spores 9-10.5 x 5-6 μm ; cheilocystidia -50 x -7 (-5) μm , hyaline; dermatocystidia present; pileus -20 mm; veil fibrillose, inconspicuous; on soil among *Polytrichum-Hypnum*, 3000 m; Bolivia (Nor-Yungas).
1. *G. aimara* 15
14. Pleurocystidia absent. 18
- 14'. Pleurocystidia present; spores amygdaliform to subelliptical, plage always well defined. 18
15. Spores broadly ovoid to elliptical. 16
- 15'. Spores distinctly amygdaliform, smooth to minutely punctate (cf. also *G. taimbesinhoensis*), marbled or verrucose. 17
16. Spores 10-11 x 5.5-6 μm , minutely verrucose, occasionally with perispore blisters; cheilocystidia -70 x -9 μm ; pileus -12 mm; veil absent; 3440 m, on mossy bark of trees in cloud forest; Venezuela (Mérica).
8. *G. dominici* 17
- 16'. Spores 8-10 x 6.5-8 μm , broadly ovoid, very coarsely verrucose.
24. *G. velutinaaffinis* 17
17. Spores 9-10.5 x 5.5-6 μm , verrucose; cheilocystidia -55 x -7 μm ; pileus -6 mm; veil absent; on peat or soil among moss Venezuela (Mérica), Guadeloupe.
10. *G. hypsizyga* 17
- 17'. Spores 10.5-12 x 6-6.5 μm , marbled, occasionally with perispore blisters; cheilocystidia -45 x -10 μm ; pileus -12 mm; veil absent or consisting of fugaceous fibrils; on soil among moss or hepatics; Bolivia (Nor-Yungas: with *Polytrichum* in 3000 m); cf. *G. oligocalyptata* Singer (1989).
18. *G. polytrichorum* 17
18. Pleurocystidia (and cheilocystidia) \pm fusoid or elongate lageniform, apex not capitate. 19
- 18'. Pleurocystidia (and cheilocystidia) ampullaceous; pileus -12 mm. 26
19. Cheilocystidia exclusively fusoid; stipe with distinct, persistent, membranous annulus. 20
- 19'. Cheilocystidia fusoid but mixed with vesiculose, balloon-shaped cells (10-30 x 6-18 μm) which are readily overlooked; veil present or absent. 23
20. Spores 10-12.5 x 6-6.5 μm , elliptical, perispore inconspicuous; pleurocystidia -60 x -15 μm ; pileipellis not distinctly gelatinized; pileus -47 mm, convex to umbonate; 3000-3400 m, on tufts of *Stipa* and among herbaceous debris; Argentina (Tucumán).
11. *G. infernalis* 21
- 20'. Spores amygdaliform to pip-shaped; basidiomes much less robust; pileipellis subgelatinised. 21
21. Spores 10-11 x 6-6.5 μm , mostly pip-shaped, marbled, pleurocystidia inconspicuous; cheilo- and pleurocystidia -90 x -12 μm , fusoid with gradually tapering elongate neck (subuliform), pileus -20 mm; 3200 m, in alpine swampy grassland; Argentina (Tucumán).
19. *G. pseudomycenopsis* 22
- 21'. Spores distinctly amygdaliform, verrucose, plage well defined; cheilo- and pleurocystidia not tapering towards apex; in forest. 22
22. Spores 8-9 x 4.5 μm , perispore conspicuous; pleurocystidia -60 x -15 μm ; pileus -14 mm, umbonate, margin not sulcate; veil white; 1800 m, on rotten wood in montane forest, Columbia (Valle del Cauca).
7. *G. discernibilis* 22
- 22'. Spores 9-11 x 5-6.5 μm , perispore poorly developed; except on margin of plage; pleurocystidia -70 x -20 μm , ampullaceous, occasionally encrusted with resin; Bolivia, Venezuela.
cf. 5. *G. subpapillata* 22
23. Pileus -40 mm, umbonate to convex, margin smooth; veil annulate, off-white, persistent; spores 9-10 x 4.5-5 μm , often subelliptical; cheilocystidia -60 x -18 μm , lageniform; cheilocystidia balloon-shaped -30 x -18 μm ; on rotten trunk of deciduous trees in subtropical forests; Argentina (Tucumán).
17. *G. physospora* 24
- 23'. Pileus umbonate with prominent papilla, centre often depressed in mature specimens. 24
24. Lamellae adnate-adnexed; pileus -15 mm, margin not sulcate; stipe with pallid subpersistent annulus; spores 7.5-8 x 4-4.5 μm ; cheilocystidia -17 x -10 μm , vesiculose; pleurocystidia -35 x -12, lageniform; on rotten wood in subtropical forests; Argentina (Tucumán).
4. *G. bullulifera* 24

- 24'. Lamellae arcuate-decurrent, pileus -35 mm, conspicuously sulcate; stipe smooth to velutinous (at least at apex); veil absent or inconspicuous, fibrillose. 25
25. Spores 6.5-7 x 3.5-4 μm ; pleurocystidia -55 x -12 μm ; pileus -18 mm; lamellae pink to argillaceous-pinkish; veil absent; on rotten wood in subtropical forest; Argentina (Misiones). 28. *Galerina* sp. 2 (ZT 238)
- 25'. Spores 7.5-9 x 4.5-5 μm ; pleurocystidia -90 x -15 μm ; pileus -35 mm; lamellae yellow-brown; veil fibrillose, evanescent; on rotting wood of dicot trees in subtropical forest; Argentina (Misiones). 25. *G. velutipes*
26. Veil remnants fibrillose, subpersistent or none; pileus with acut papilla or distinctly umbonate; cheilo- and pleurocystidia -55 x -15 μm , fusoid with subcapitate apex. 27
- 26'. Veil remnants persistent, annulate or zonate; cheilo- and pleurocystidia -70 x -20 μm , lageniform or ampullaceous, occasionally encrusted with resin. 28.
27. Spores 7.5-9 x 5-5.5 μm ; cheilocystidia -50 x -10 μm ; veil fibrillose, evanescent; on rotten wood of dicot trees in montane-subtropical forests; Argentina (Tucumán). 16. *G. papillata*
- 27'. Spores 8-10 x 5-6 μm ; cheilocystidia -55 x -15 μm , often distinctly capitate; veil absent; on soil among Hepatics or on rotten wood in subtropical forests; Brazil (Rio Grande do Sul, Paraná). 13. *G. minor*
28. Spores 8-8.5 x 5 μm ; cheilo- and pleurocystidia -50 x -12 μm , pileus with acute papilla; annulus subpersistent; on soil, in subtropical forest; Brazil (Rio Grande do Sul). 2. *G. arenaria*
- 28'. Spores 9-11 x 5-6.5 μm ; cheilo- and pleurocystidia -70 x -20 μm ; pileus campanulate or papillate; annulus well developed; on leaf mold of dicot trees in montane forest; Venezuela, Bolivia (Nor-Yungas). 5. *G. subpapillata*

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