

## The Agarics of the Argentine Sector of Tierra del Fuego and limitrophous Regions of the Magallanes Area.

### Part 2. The brown-spored genera (except *Cortinarius*).

By Rolf Singer (Chicago, USA).

The present paper is the continuation of a previous account on the white and pink-spored agarics of Fireland and adjacent subantarctic territories\*), and has been edited according to the same principles. The author's expedition (1950) to the southern limit of the *Nothofagus* area of South America has yielded not only the majority of the data published here but has made it possible to understand some of the older species described from dried material gathered during the classical voyages to that distant area. The author expresses again his indebtedness to Dr. Descote, Mr. Bridges, the family Sutherland, and also to the Directors of the Herbarium of Kew Gardens and the Naturhistoriska Riksmuseet and the Museo C. Spegazzini, for access to the valuable type material preserved there.

As in the white- and pink-spored agarics, the similarity in the generic and at times even the specific names recorded from the *Nothofagus* area on one hand, and the boreal mycoflora on the other is rather striking. The two species of *Conocybe* observed here are both known from the northern hemisphere, and so are the remaining species of the *Bolbitiaceae*. There are different species in the *Strophariaceae*, subfamily *Pholiotoideae*, yet, the generic names are all familiar to the European and North American mycologist. In the *Cortinariaceae*, we have indicated a new genus not known from other parts of the world, and on the other hand, we want to draw attention to the fact that the genera *Rozites* and *Hebeloma* are absent in the *Nothofagus* zone, at least as far as can be seen from the material now at hand. The absence of *Alnicola* is less surprising since this genus does not find suitable hosts in the region. *Inocybe* and *Cortinarius* are represented by a very large number of species, perhaps as many as in any association of the Fageion. The most remarkable fact is the presence of extremely aberrant species of the

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\*) Singer, Rolf — The White- and Pink-spored Agarics of ... Tierra del Fuego and limitrophous Regions of the Magallanes Area. Sydowia VI. 165—226, 1952.

*Paxillaceae* as compared with those of the northern hemisphere. One of them is *Paxillus boletinoides* Sing. remarkable for its veil and thus reminding one of the rare *P. argentinus* Speg. from the La Plata region, the other, *P. defibulatus* Sing. being the first known species of the family without clamp connections.

Key to the genera

- A. Epicutis of the pileus a palisade of short piriform cells or an epithelium. Spores with a broad truncate germ pore . . . *Bolbitiaceae*
- B. Spore print bright rust color
  - C. Cheilocystidia capitate . . . . . *Conocybe*
  - C. Cheilocystidia not capitate
    - D. Pileus viscid or subviscid; clamp connections present; not on wood . . . . . *Pholiotina*
    - D. Pileus glutinous; clamp connections absent; on wood *Bolbitius*
- B. Spore print not bright rust color . . . . . *Agrocybe*
- A. Epicutis of the pileus with a different structure
  - E. Stipe lateral or strongly eccentric, sometimes absent in mature material. *Crepidotaceae* . . . . . *Crepidotus*
  - E. Stipe central or very slightly eccentric
    - F. Hymenophoral trama regular: *Cortinariaceae*
      - G. Spores smooth or nodose, not warty or rough, without germ pore
        - H. Thick-walled metuloids absent; spores not nodose
          - I. Cystidia present on the sides of the lamellae; trichodermial palisade, even in the most reduced form, completely absent (see *Galerina*)
          - I. Cystidia absent on the sides of the lamellae; trichodermial palisade distinct, or sometimes reduced to depressed, or replaced by numerous dermatocystidia
            - J. Dermatocystidia of pileus and stipe hyaline; spore print not bright rust color; pileus hygrophanous without non-hygrophanous flocons . . . . . *Naucoria*
            - J. Elements of the trichodermium of the pileus with a distinct membrana pigment, often incrustated by pigment; pileus hygrophanous or not, always with non-hygrophanous particles; spore print usually bright rust color . . . . . *Phaeomarasmius*
        - H. Thick-walled metuloids present; spores nodose or not. *Inocybe*
      - G. Spores punctate, warty, or with short crests, never with nodose outline, and never quite smooth and homogeneously walled, or else with apical germ pore (although rarely truncate) and then smooth
    - K. Spores punctate or warty: *Cortinariaceae*
      - L. Spores without plage; organisms mycorrhizal with *Nothofagus*; spore print brownish yellow to bright rust color
        - M. Spore print brownish ochraceous; cortina none *Descolea*
        - M. Spore print bright rust color; Cortina present *Cortinarius* (not treated here)

cent, conical to more often campanulate, not expanding further, 1—20 mm. broad, up to 11 mm. high. — Lamellae light fuscous-ochraceous at first, eventually more rusty from the spores, with pallid edge, close, narrow, ascendant; spore print rust-colored. — Stipe whitish and pruinose at the apex, ocher brownish and pubescent, eventually sometimes entirely brown, and the pubescence replaced by appressed fibrils, fistulose, usually very slightly longitudinally striolate, 50—90  $\cong$  1.5 mm. (at apex), gradually thickened to just above a non-marginate bulb which has 3.5—5 mm. diameter; veil none. — Context thin, paler to subconcolorous, without distinct odor.

Spores 16.5—17.8  $\cong$  8.8—9.7  $\mu$ , well colored, smooth, with broad truncate germ pore, with triple wall (exo-, epi-, endosporium), ellipsoid, Basidia 4-spored. Cheilocystidia ventricose with abrupt capitulum (3—4  $\mu$  diameter), hyaline, 21—23.3  $\cong$  7.3—9.5  $\mu$ . Hyphae of the typical *Conocybe*-trama with clamp connections. Dermatozystidia of the middle of the stipe forming larger clusters, occasionally one or two of the elements of these clusters capitate but in many larger clusters not a single capitate dermatocystidium present (capitate dermatocystidia e. gr. 25  $\cong$  11  $\mu$ . capitulum 3.5  $\mu$  in diameter), many to most of the elements proliferated above into a hyphous outgrowth causing the pubescence of the young specimens, these outgrowths about 2.2  $\mu$  in diameter. All preparations without needle formation in ammoniacal media.

Directly, but without formation of pseudorhiza, on cow and horse manure in small to large groups, fruiting in February and March, Tierra del Fuego, also in Europe (exact area unknown).

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, R. G., on cow dung, R. Singer no. M 216, 12-II-1950, LIL. — On cow dung, no. M 225, LIL. — On horse manure, very young material, 13-II-1950, no. M 251, LIL.

I have not studied this species in Europe, but Kühners very complete description (l. c.) leaves no doubt but that this is the same species. I did, however, not observe any veil or remainders of a veil although my no. M 251 consists of very young carpophores. Judging from my experience with *Conocybe subvelata* Sing., I would assume that this character is rather inconstant.

*C. pubescens* is most closely related to *C. pilosella* (Pers. ex Fr.) Kühner sensu Atkinson, Kühner which differs in much smaller spores, and *C. magnispora* (Murr.) Sing. which seems to be the form intermediate between *C. pubescens* and *C. ochracea*. The typical form of *C. magnispora* has smooth margin and can easily be distinguished from *C. pubescens* by that character. However, there is also a striate form, and the latter may be distinguished by smaller

quantity of pubescence on the surface of the stipe which is glabrous or almost so, and shining below the apex, also by the absence of capitate dermatocystidia on the stipe, usually less bright color of the pileus, or at least more variable color range, and only occasional occurrence on dung. *C. magnispora*, moreover, is a species of the warm-temperate to tropical zones, from Florida, USA, south to the La Plata region in Argentina, whereas *C. pubescens* appears to be less thermophilous. The less developed pubescence of the stipe in the American species (*C. magnispora*) also shows in preparations of dried material since the number of pilose elongations of the non-capitate cystidioid elements of the vestiment of the stipe is rather small and those pilose elongations present are in an average rather short in comparison with *C. pubescens*. This may be due to the climatic conditions most favorable to each of these species, and it is quite possible that *C. magnispora* is but a climatic-geographic race of *C. pubescens*. Unfortunately, the geographic distribution of these species cannot be clearly outlined since too few collections of well determined material exist, and until further studies prove them to be conspecific, we shall separate them as autonomous species.

*Galera pseudotenera* (Speg.) Sacc., Sylloge Fung. 9: 113. 1891.

This species is described as being very close to *Galera tenera* but differing by its acute and umbonate pileus. No such species of *Conocybe* has been found by the author in Tierra del Fuego, and the type has not been preserved. Since this would be the only species with acute umbo in the genus *Conocybe* — if indeed it belongs in *Conocybe* — at least as far as the *Conocybe* flora of Tierra del Fuego is concerned, it should be easy to recognize.

*Galera tenera* (Schaeffer ex Fr.) Kummer var. *pubescens* (Gillet Hym. Fr. p. 553, 1876) was indicated by Bresadola from Chile, Punta Arenas. I have not found the specimen at Stockholm, but it seems reasonable to assume that this variety refers to the true *C. pubescens* as described above since it was found on meadows. *Galera tenera* sensu Spegazzini (1922) from meadows near Rio Grande, March 1921, is evidently the same species.

### *Pholiotina* Fayod

*Pholiotina coprophila* (Kühner) Sing., Sydowia 4: 141. 1950.

*Conocybe coprophila* Kühner, Le Botaniste 17: 169. 1926.

*Galera coprophila* (Kühner) Svrcek, Cesk. Mycologie 2: 70. 1948.

Pileus "Hispano" to "golden corn", or "Inca gold" (orange ocher to ochraceous brown) with usually paler margin (e. gr. "Leghorn", or "ivory"), hygrophanous, pl. 11, E-6 or pl. 11, D-5 when dry, viscid, or subviscid, usually rather light colored when dried (pallid), almost hemispherical to convex, not transparently striate or indistinctly so

up to half of the radius of the pileus in wet condition, smooth or indistinctly subsulcate when dry, always obtuse without umbo, 8—19 mm. broad. — Lamellae pl. 14, H-9, "sorrel", or "sayal br.", subascendant at first, adnexed to mostly adnate, very slightly ventricose to ventricose, with distinct or indistinct white edge, moderately broad to mostly broad, subclose to distant (very variable in this regard); spore print bright rusty as in *Conocybe*. — Stipe white or whitish, sometimes reaching pl. 11, D-6 when old, or even deeper ochre brown when old, at first striate longitudinally and pruinose all over, with the apex more pruinose-mealy and the basal portion more pruinose-fibrillose, straight or flexuous, equal or tapering upwards, 13—32  $\Rightarrow$  1—3 mm., at the base sometimes reaching up to 4.5 mm. in diameter; veil none. — Context when wet light brownish in parts of the pileus or the entire pileus and in the base of the stipe, with a watery brownish line above the lamellae and at the very apex of the stipe, otherwise and in dry condition predominantly white; odor none or insignificant. — Development: The smallest buttons available show internal hymenium similar to the photos showing development of *Conocybe pubescens* (Kühner, l. c. 1949).

Spores 11.7—16  $\Rightarrow$  6.8—8.7  $\mu$ , mostly 13.5—13.7  $\Rightarrow$  7.5—8  $\mu$ , well colored (intensely ferruginous in  $\text{NH}_4\text{OH}$  and  $\text{KOH}$ ), smooth, with broad truncate germ pore, with triple wall, ellipsoid, never rhomboid, but some rare spores have a concave inner outline. Basidia 4-spored, 20—24  $\Rightarrow$  10.8—12.8  $\mu$ . Cheilocystidia with ventricose or globose base and subulate or cylindrical short or long apex which is obtuse and, if cylindrical, about 3.5—5.5  $\mu$  in diameter, hyaline, non-capitate, not making the edge of the lamellae heteromorphous in all portions of the hymenophore of all specimens (but often with heteromorphous edge over wide stretches), 20—37  $\Rightarrow$  5—13  $\mu$ . Epicutis of the pileus formed by a pavement-like hymenium of usually somewhat pedicellate spherocysts which are globose to obpyriform, about 10—30  $\mu$  in diameter; among them are long hairs which originate in a cystidiate ventricose portion inserted among the spherocysts (10—10.5  $\mu$  in diameter), at least 120  $\mu$  long and about 4  $\mu$  broad hyaline or brown; on the place of some of the spherocysts there are similar elements but with acutely mucronate, rarely broadly and obtusely mucronate apices (e. gr. 20  $\Rightarrow$  8.3  $\mu$ ). Dermatocystidia of the stipe similar to the cheilocystidia or to the dermatocystidia of *Conocybe pubescens*, cylindrical-subulate, subulate-fusoid, rarely subulate subcapitate, some of them giving rise to long hairs similar to the hairs of the epicutis. All hyphae with clamp connections. Ammonia reaction nil.

Always on dung (cows and horses), especially in wide open places, open pastures, steppes, prairies (pampa), solitary or in small

groups Tierra del Fuego, and north to North Argentina, also in Europe (France, Spain, Czechoslovakia) and Asia (Central Asiatic steppes).

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, R. G., 23-II-1950, R. Singer no. M 451, LIL. — 22-II-1950, no. M 431, LIL. — Prov. Tucumán, Tafi del Valle, Quebradita (2200 m. alt.). Coll. A. Martinez, det. Singer 23-X-1949, Herb. A. Martinez. — Prov. Buenos Aires, Chascomús, coll. R. Singer 4-VI-1949, no. S 76, LIL. — USSR, Oirotia (Central Asia), Kurai-Steppe, R. Singer & L. N. Vasilieva, 7-VIII-1937, no. A 607, LE.

This is a very characteristic species, and our material is in close agreement with Kühner's description. The spores of the South American material are slightly larger than in the Altai material (there  $10-13.5 \Rightarrow 6.5-8 \mu$ , about as in Kühner's and Svrcék's European material). But this slight difference has hardly any importance unless it were correlated with slightly stronger pigmentation (as is shown in our specimens) thus indicating a geographic race restricted to this continent. Yet, this correlation does not seem to be constant.

#### *Bolbitius* Fr.

*Bolbitius aleuriatus* (Fr.) Sing., Lilloa **22**: 490. 1949 (1951).

*Pluteolus aleuriatus* (Fr. ex Fr.) Karst., Bidr. Finl. Nat. & Folk **32**: 1879.

*Agaricus aleuriatus* Fr. ex Fr., Syst. Mycol. **1**: 238. 1821.

Pileus pl. 15, H-12 or deeper on disk and striae, otherwise "camel's hair" i. e. brown to spadiceous with grey margin, slightly hygrophanous (pale slate grey when dry), glutinous, densely striate-subsulcate on the margin, not reticulate, striations reaching halfway to the center, convex and usually umbonate, later becoming concave, 16—25 mm. broad. — Lamellae pl. 12, F-8 or "oakbuff" with "cigarette" spots from the spores when mature, sometimes somewhat ventricose, 1.5—2 mm. broad, i. e. narrow, close to crowded, free; spore print in thin layer "cigarette" and in thicker layer more intensely rusty colored. — Stipe white or whitish but at the base sometimes with a citrinous discoloration, fibrillose-pruinose at least at the apex, dry, tapering upward, hollow, 25—41  $\Rightarrow$  about 1.5 mm at the apex, 2.5—3.5 mm. at the base; veil none. — Context white or whitish or hyaline, unchanging, inodorous.

Spores 8.2—10—(11)  $\Rightarrow$  4.8—5.7—(6.2)  $\mu$ , smooth, well colored, with broadly truncate germ pore, with triple wall, ellipsoid, smooth; basidia 4-spored, 16—22.7  $\Rightarrow$  7—9  $\mu$ ; cheilocystidia cylindrical or cylindrical and capitate, or capitate and ventricose below, more rarely ampullaceous, 26—35  $\Rightarrow$  4—8  $\mu$ , occasionally up to 10.5  $\mu$  broad, never with abrupt capitulum as in *Conocybe*; epicutis cellular; hyphae without clamp connections.

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Spores 8.2—10—(11)  $\Rightarrow$  4.8—5.7—(6.2)  $\mu$ , smooth, well colored, with broadly truncate germ pore, with triple wall, ellipsoid, smooth; basidia 4-spored, 16—22.7  $\Rightarrow$  7—9  $\mu$ ; cheilocystidia cylindrical or cylindrical and capitate, or capitate and ventricose below, more rarely ampullaceous, 26—35  $\Rightarrow$  4—8  $\mu$ , occasionally up to 10.5  $\mu$  broad, never with abrupt capitulum as in *Conocybe*; epicutis cellular; hyphae without clamp connections.



On rotten trunks in *Nothofagus* woods, solitary or in small groups; fruiting in February, Tierra del Fuego, also in Europe.

Material studied: Argentina, Tierra del Fuego, Cabecera del Lago, Lago Fagnano, R. Singer, 19-II-1950, no. 377, LIL. — Estancia Nueva Argentina, R. G., R. Singer, 23-II-1950, no. M 477, LIL. — France, Bois de Meudon, near Paris, 15-VIII-1935, R. Singer, P. Pellston Hills, Mich. U.S.A. 15-VII-53, no. N 576, FM.

The European material has slightly broader spores (but see also Lange who indicates them narrow!) and more ampullaceous cheilocystidia which are broader below than ours usually are. Nevertheless I think the specimens cited are conspecific.

### *Agrocyste* Fayod

*Agrocyste praecox* (Pers. ex Fr.) Fayod var. *cutefracta* (Lange) Sing. comb. nov.

*Pholiota praecox* (Pers. ex Fr.) Kummer var. *cutefracta* Lange, Dansk Bot. Ark. **2** (11): 7. 1921.

*Pholiota praecox* (Pers. ex Fr.) Kummer f. *cutefracta* Lange, Flora Agar. Dan. **3**: 62. 1938.

Pileus whitish, then buffish, breaking into large areolae in age, somewhat hygrophanous, whitish when dry except for very old specimens, slightly opimous-subviscidulous, smooth except for the cracks, naked, glabrous, convex, eventually applanate at least in the center, obtuse, 40—59 mm. broad. — Lamellae pale grey, broad (about 6 mm.), close, broadly adnexed to adnate; spore print "Clove". — Stipe white, eventually often slightly buffy, stuffed, eventually narrowly hollow, mostly tapering downward, but also sometimes equal or tapering upward, 40—60  $\Rightarrow$  6—8—(15) mm.; veil white, membranous, forming a well developed annulus. — Context white, rather thick and fleshy in the pileus, unchanging; odor slight, farinaceous; taste farinaceous and slightly bitterish.

Spores 8.8—10.2  $\Rightarrow$  5.5—6.5  $\mu$ , melleous, smooth, with triple wall, with broad truncate germ pore, ellipsoid; basidia 4-spored, 22—28.8  $\Rightarrow$  6.6—8.2  $\mu$ ; cystidia on edges and sides of the lamellae, rather numerous, hyaline, ventricose below, with ampullaceous broadly cylindrical or mucronate apex (the latter 6.5—8.5  $\mu$  in diameter), 39—54  $\Rightarrow$  19—22  $\mu$ , in young specimens also often without attenuate apex (merely balloon-shaped and narrowed: 13—17  $\mu$  broad), and so frequently found at the edges of mature specimens but no special cheilocystidia differentiated; hymenophoral trama hyaline, regular; epicutis distinctly cellular; hyphae with clamp-connections.

On grassy places near trees in large groups, or solitary, fruiting in February (in the southern hemisphere); Tierra del Fuego, also in Europe and Asia.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 13-II-1950, R. Singer, no. M 257, LIL. — 21-II-1950, no. M 415, LIL. — USSR, Kazakhstan, Alma Ata, beyond Tur barya, on the river banks of the M. Almaatinka, 1800 m. alt. leg. Nevo do v s k i, det. R. Singer, no. 37, LE. — Also various European collections.

This is exactly the form illustrated and described by Lange, Flora Agaricina Danica 3: 62, pl. 106, fig. D, 1938.

### Family *Strophariaceae* Sing.

In this family, only the subfamily *Pholiotoideae* is treated because the other subfamily, *Stropharioideae* does not belong to the brown spored agarics treated in this paper. However, there are two species in Tierra del Fuego which have a spore print somewhat intermediate between the spore print of the *Stropharioideae* and that of the *Pholiotoideae*, and these species may be mistaken for species of the subfamily *Pholiotoideae*. These species will key out with the species of the *Pholiotoideae* in the present paper but they will not be described here.

#### *Pholiotoideae* Sing.

#### *Pholiota* Kummer

#### Key to the Species

- A. Species with elongate thin stipe, occurring in Sphagnum swamps, with chrysocystidia; spore print "cocoa" (Not treated here!)
  - B. Spores 9.5—12.3  $\mu$  long . . . . . *Naematoloma elongatipes*
  - B. Spores larger . . . . . *Naematoloma myosotis* var. *lapponicum*
- A. Stipe not strongly elongated, not occurring in Sphagnetum, or else without chrysocystidia; spore print between "cinnamon br." and "clove" or between "cognac" and "russet br."
  - C. Chrysocystidia present . . . . . *P. subflammans*
  - C. Chrysocystidia none
    - D. Spores large: 9—11  $\Rightarrow$  5.5—6.2  $\mu$  . . . . . *P. megalosperma*
    - D. Spores small: 4.8—6.2  $\Rightarrow$  3—3.5  $\mu$  . . . . . *P. baeosperma*

*Pholiota subflammans* (Speg.) Sacc., Syll. 9: 91. 1891.

*Agaricus subflammans* Speg., Bol. Acad. Nac. Cienc. Cordoba 11: 10. 1887.

Pileus "tortoise shell", becoming "cocoa", especially when exposed to the light, eventually cinnamon (pl. 12, G-8) with distinct brownish squarrose floccons all over if growing in sheltered position, the floccons soon disappearing as soon as exposed to the rain, naked after removal of the superficial covering, subviscid or viscid, but drying rather rapidly, almost hemispheric, then convex and often subumbonate, eventually more or less subapplanate, 20—38 mm. broad. — Lamellae light grey, then creamy grey, with yellowish edge, eventually with traces of the spore print color, with entire

edge, moderately broad (3—4.5 mm), close to subclose, sinuate, or broadly adnexed to adnate; spore print between "Mandalay" and "clove" in thick, "cinnamon brown" in thin layer. — Stipe on brownish pallid ground brownish squarrose, excepting the apex which is subglabrous to glabrous and naked, with some of the scales sometimes pallid-tipped, central, subequal to thickened at base, sometimes curved at base, hollow, 24—47  $\hat{=}$  3—5 mm.; veil connecting the margin of the pileus with the apical line around the stipe where the squarrose covering ends, pallid brownish, scanty, cortinoid, easily overlooked in mature specimens; basal mycelium white, sometimes scanty, sometimes abundant and strigose. — Context whitish, in stipe concolorous with ground color of surface; odor of carpophores of *Inocybe dulcamara* or *I. geophylla*.

Spores 5.5—7  $\hat{=}$  3.7—4.2  $\mu$ . smooth, well pigmented (melleous-ochraceous), with germ pore; basidia either predominantly 4-spored, or predominantly bisporous (thus in T 180, with spores 6.2—7  $\mu$ ), clavate, 19—24  $\hat{=}$  6.2—8.2  $\mu$ ; cheilocystidia vesiculose-clavate, then ventricose with slightly attenuate apex, then ampullaceous or ampullaceous-subcapitate, hyaline, 17—22  $\hat{=}$  6—8.2  $\mu$ ; chrysocystidia on sides and edges of lamellae, vesiculose with a small, narrow apiculus at apex, or else vesiculose with slightly attenuate, broadly rounded apex, with yellowish amorphous internal body (in alkalic medium); hymenophoral trama regular; hyphae with clamp connections.

Gregarious or fasciculate-subcespitose on wet grassy ground in the woods, rarely on very rotten trunks of *Nothofagus*, *Berberis*, etc., February until May, Tierra del Fuego.

Material studied: Argentina, Rio Grande, Estancia Nueva Argentina, 11-II-1950, R. Singer, T 180, LIL. — 16-II-1950, T 307, 307 a, LIL. — Chile, Voces Bay, May 1882, C. Spegazzini, LPS, type.

This species is closely allied to *P. digilii* Sing. (Northern Argentina) *P. carbonicola* A. H. Smith and *P. terrestris* Overh. from North America.

### **Pholiota megalosperma** Sing. spec. nov.

Pileo pallido, ochraceo-brunneo-fibrilloso (fibrillis "Saratoga"), fibrillis laxe dispersis ad marginem ita ut margo stramineo-pallidus videatur, densioribus in centro ubi impressio coloris generalis aequivalet pl. 14, B-11 vel obscuriori colori (M. & P.), pellicula viscida instructo, levi, superficie plana instructo, subhygrophano, convexo-subumbonato, dein applanato, 18—20 mm. lato. — Lamellis argillaceo-griseolis, ventricosis, adnexis. — Stipite pallido, subbrunneo ad basin, nudo, aequali cum basi incrassata, 25—35  $\hat{=}$  2—3 mm., ad basin 4—5 mm. lato; vel pallido, in stipite fibrilloso, plerumque annulum haud formante, sed raro annulatim apicaliter cingulato, sed cingulato neque persistenter neque conspicue. — Carne brunneola

subhygrophana, in stipite saepe obscurius brunneolo, in pileo saepe pallide flavo vel flavido-albidulo, in apice stipitis et in pileo siccis flavidi-alba; odore *Naematolomatis fascicularis* debili praesente vel absente; sapore amaro.

Sporis ochraceo-brunneis vel ochraceo-brunneo-melleis,  $9-11 \Rightarrow 5.5-6.2 \mu$  poro germinativo instructis sed haud truncatis, ovoideo-ellipsoideis vel ellipsoideis, applanatione levi suprahilari praeditis vel destitutis, numquam depressione suprahilari praeditis, numquam reniformibus, membrana crassiuscula duplici instructis; basidiis tetrasporis, clavatis, hyalinis,  $24-29 \Rightarrow 8.8-9.7 \mu$ ; cystidiis ad latera lamellarum sat numerosis, ventricosis ad basin, apice subulato vel cylindrico instructis, tenuitunicatis, contentu amorpho destitutis, profunde oriuntibus,  $44-65 \Rightarrow 8.7-9.7 \mu$  parte superiore (si cylindrica est) cc.  $6-7.5 \mu$  diametro; cheilocystidiis  $33.3-36 \Rightarrow 11.7-17.8 \mu$ , hyalinis, clavatis vel vesiculososo-ventricosis, mucrone apicali praeditis vel frequentius destitutis, raro subampullaceis, ex eis acie lamellarum heteromorpha.

Ad truncos muscosos *Nothofagi pumilionis*, gregatim, Tierra del Fuego.

Material studied: Argentina. Tierra del Fuego, Estancia Nueva Argentina, R. G., 17-II-1950, R. Singer, no. M 336, LIL, typus.

This species has somewhat the habit of *Pholiota scamba* but differs in several characters.

### **Pholiota baeosperma** Sing. spec. nov.

Pileo in centro ferrugineo ("Arab" vel "Alamo"), margine flavo (pl. 17, J-1), pallescente usque ad "pond lily" in centro et in margine, centro subtiliter granulosulo in vivis humidis, radiatim innato-fibrilloso, supra fibrillositatem minute tenuiterque membranaceo-maculoso e velo generali, quod est deterabile, quamquam interdum cum difficultate, glutinoso, convexo, demum centro depresso, obtuso vel subumbonato,  $15-59$  mm. lato. — Lamellis pallide flavis, demum "powdered gold" (M&P), late adnexis, demum adnato-decurrentibus, confertis, mediocriter latis,  $5.5$  mm. latis; sporis in massa "cognac" et prope "russet br." ubi in stipitis superficiem delapsae sunt. — Stipite flavido, pl. 9, D-1 in apice, pl. 10, D-5 in parte inferiore, fibrilloso (sed haud veli causa) in parte inferiore, cavo, plus minusve aequali, sed plerumque basi incrassata, interdum apice incrassato, raro ventricoso,  $46-76 \Rightarrow 7-9$  mm.; velo crasse denseque cortinoideo, flavo ("Martius y."), numquam formante anulum, sed saepe cum fibrillis superficialibus in stipite adulto notato; tomento myceliali ad basin stipitis albo, in majoritate individuorum fortiter evoluto. — Carne pallide flavida, linea aquose subconcolori supra lamellas nec non in cortice stipitis, subinodora, miti.

Sporis ochraceo-brunneolis submelleis, 4.8—6.8  $\Rightarrow$  3—3.5  $\mu$ , poro germinativo satis indistincto praeditis, rarius poro germinativo distinctiore et tunc sporis 6.8—9.2  $\Rightarrow$  4—6.2  $\mu$ , numquam truncatis, semper applanatione suprahilari gaudentibus, ellipsoideis vel (visis lateraliter) ellipsoideo-subreniformibus, levibus, membrana crassiuscula haud simplici praeditis; basidiis tetrasporis, 17.5—23  $\Rightarrow$  6.2—7.5  $\mu$ ; cystidiis numerosissimis, ad latera et aciem lamellarum, ad aciem flavidis, ad latera plerumque hyalinis ampullaceis, i. e. parte inferiore ventricosa inter basidia immersa et parte superiore longe attenuata praeditis, pedicellatis, rarius ventricosus in parte media et attenuatis in ambis directionibus, tenuitunicatis vel subcrassiuscule tunicatis (membrana 0.3—1.2  $\mu$  crassa), crassius tunicatis in speciminibus vetustis, et tunc membrana interdum 1.7  $\mu$  diametro attingente praeditis, tuncque succo homogeno luteo impletis, sed semper contentu amorpho (chrysocystidiorum) destitutis, 37—73  $\Rightarrow$  8.2—20.5  $\mu$ : cheilocystidiis basidiomorphis vel clavato-mucronatis, 19—25  $\Rightarrow$  6.2—9  $\mu$ , cystidiis typi profunde radicantis interruptis sed basidiis haud interruptis; tramate hymenophorali regulari, ex hyphis filamentosis parallelis flavidulo-hyalinis (in ammoniaco) consistente; hyphis omnibus fibuliferis.

Inter Bryophyta ad ligum putridissimum in silva nothofaginea montana, Februario mense et usque ad Aprilem mensem fructificans, Tierra del Fuego et in Territorio Neuquén Patagoniae.

Material studied: Argentina: Tierra del Fuego, Lago Fagnano, Cabecera del Lago, 19-II-1950, R. Singer no. M 368, LIL, typus. — Neuquén, San Martín de los Andes, 7-IV-1951, Cei & Tomsic, comm. Singer no. M 471, LIL.

The type and the material from Patagonia are not absolutely identical, yet I believe they are conspecific. It is the material from Patagonia that has the somewhat larger spores and the thick-walled yellow cystidia in age. *P. baeosperma* is close to *P. spumosa* and *P. lubrica* but different.

#### Dubious species.

*Agaricus privignus* Speg., Bol. Ac. Nac. Cienc. Cordoba 11: 148, 1887.

The position of this species, considered to be a *Tubaria* by Spegazzini, is not quite obvious from the data obtainable from the type material (LPS). It is preserved in two specimens. The authentic material is in poor condition and consists of several tiny pressed fragments which are badly moulded. The type itself is in comparatively good condition. It has the shape of *Naematoloma elongatipes*, but differs microscopically. Nothing quite like it has been found by the author. The macroscopical description reproduced here is that given by Spegazzini, the microscopical data are those obtained by the author from the authentic material:

Pileus fulvous to reddish cinnamon and often rusty orange, with straight margin, entirely smooth and glabrous, with rather thick cuticle, at first conical-subcampanulate, then expanded to subapplanate, 5—10 mm. broad. — Lamellae concolorous with the pileus or slightly paler, polydymous, very straight, acute at the margin, subattenuate-truncate at the stipe, not decurrent, adnate. — Stipe concolorous with the pileus, distinctly attenuate above, straight to more rarely revolute various times, fibrillose, slightly striate to smooth, quite glabrous, tough, somewhat thickened at the base, obtuse below, very long, 50—60  $\Rightarrow$  2—4 mm.

Spores 9.6—13.7  $\Rightarrow$  6.2—9.6  $\mu$ , mostly 11.5—12.3  $\Rightarrow$  6.5—8  $\mu$ , remarkably pale melleous to melleous in both  $\text{NH}_4\text{OH}$  and  $\text{KOH}$ , with germ pore which is sometimes somewhat broad (truncate), sometimes narrow and not very striking, smooth, with a triple wall. Basidia not clearly seen. Metuloids on the sides of the lamellae as well as on the edge thickwalled, without refringent central body, very much like the metuloids of *Inocybe*, with melleous resinous incrustation in the upper half or on the tip, short-ventricose, or more often ampullaceous with thin cylindric upper portion, 41—68  $\Rightarrow$  13—17.8  $\mu$ , rather numerous. Cheilocystidia more thin-walled and with transitions to the normal metuloids of the sides of the lamellae. Epicutis consisting of hyphae forming a cutis (at least so it appears although the uppermost layer of the cuticle is badly destroyed by molds), its elements hyphous and elongate, thin, somewhat gelatinized.

On *Sphagnum* in swamps. Staten Island and throughout Tierra del Fuego, fruiting in summer and fall.

The generic position of this fungus is obvious. It belongs in *Pholiota*, near *P. baeosperma* Sing. described above. I had even doubts whether or not all three species, i. e. *Agaricus privignus* and *A. puellulus* as well as *Pholiota baeosperma* are the same thing. In spite of the fact that the spores of Spegazzini's species are much larger than those observed in our own recent collections, there is a chance that the old type material consists of retarded material with sterile hymenium except for a few gigantic spores, a condition sometimes observed in the *Strophariaceae*. On the other hand, the shape of the carpophores is quite different also, a feature that might be explained by their (exceptional?) habitat in "turberas" or at least sphagnose places. Furthermore, there is the description of the colors of *A. puellulus* where the deeper pigment of the center of the pileus is entirely absent. This is a condition often found in other regions and seems to depend on ecological or climatical factors, yet all three differentiating characters, viz. spore size and habit *A. privignus* and

color, in *A. puellulus*, taken together, make it absolutely impossible to identify our own recent collections with those made by Spegazzini. If they are nevertheless specifically identical, this will have to be proved by careful observations in the area of these species, especially at the type localities of *A. privignus* and *A. puellulus*. For the time being, Spegazzini's names cannot be used.

On the other hand, *P. baeosperma* is extremely close to a well known European species, quite common all over Europe including the boreal regions: *Pholiota spumosa*. The macroscopical characters are nearly identical in the material collected by Cei & Tomsic and me, and material obtained from Europe. Indeed, if it had been material from coniferous woods rather than constantly from *Nothofagus*, and if it were not for the different cystidia with eventually strongly thickened walls so as to resemble *Inocybe*-metuloids, the Argentine specimens and the European check material would be considered identical without hesitancy. If the geographic areas of both fungi were adjacent, or overlapping it would be possible to consider the South American form as a geographic race or a mycoecotype. Under the present circumstances, however, there does not seem to be another solution than the publication of a new species.

There is also a slight possibility that our species is identical with *Flammula tilopoda* K. & McOwan as described in Saccardo. Since I have seen no type material further discussion of this possibility is senseless.

### *Kuehneromyces* Sing. & Smith.

There are two rather aberrant species of this genus, found in Tierra del Fuego, differing, in one case, by rather larger spores as compared with the species of the northern hemisphere, in another case distinguished by the presence of pleurocystidia, a feature never before observed in this genus.

#### Key to the Species

- A. Cystidia on the sides of the lamellae absent; spores 9.5—11  $\mu$  long;  
on the earth . . . . . *K. macrosporus*
- A. Cystidia on the sides of the lamellae present; spores 6.5—8.2  $\mu$  long;  
on dead trunks . . . . . *K. cystidiosus*

### ***Kuehneromyces macrosporus* Sing. spec. nov.**

Pileo ferrugineo ("Arab" vel "Cocoa"), "Titian"-tincto ad marginem, hygrophano, flavido-alutaceo in statu sicco, sed interdum ad obscure tabacinum vergente (in pileis nimis humidis), glabro, subviscidulo, levi, nec transparenter striato, campanulato-convexo (haud alto), dein convexo, demum centro depresso, semper distincte et manifeste papillato, 6—14 mm. lato. — Lamellis argillaceis, acie albofimbriatulis, distantibus vel subdistantibus, adnato-subdecurrentibus,

interdum decurrentibus, latissimis; sporis in cumulo "oak briar" (M&P).—Stipite hyalino-albido, infra zonam velarem fibrilloso, cavo, aequali vel basin versus incrassato,  $25-32 \cong 1-2.5$  mm.; velo albo plerumque formante anulum apicalem, album, membranaceum, anguste distantem, bene evolutum et pro ratione persistentem, sed interdum appendiculationes marginales in pileo neque anulum formante. — Carne pallidiore superficie, immutabili, inodora.

Sporis  $9.4-11 \cong 6.2-6.8$   $\mu$ , melleo-ochraceo-brunneis, ovoideis, levibus, poro germinativo plus minusve bene evoluta praeditis (in nonnullis sporis porus germinativus haud truncatus est!), membrana composita instructis, haud lentiformibus; basidiis tetrasporis, clavatis, hyalinis; cheilocystidiis  $34-36 \cong 7.2-8.9$   $\mu$ , basidiomorphis vel clavato-cylindraceutis vel constrictione subapicali ornatis, tuncque interdum subcapitatis, hyalinis, ex eis acie lamellarum heteromorpha; cystidiis ad latera lamellarum nullis; tramate lamellarum regulari, hyphis nonnullis oleiferis brunneolis tenuibus intermixtis; hypodermio ex hyphis intertextis filamentosis brunneis (ex incrustatione pigmenti forti) consistente; epicute ex hyphis filamentosis, repentibus, tenuibus, hyalinis consistente; hyphis omnibus fibulatis.

Ad terram inter Gramineas in silvis sparsis et locis apricis prope arbores (*Nothofagus antarctica*) solitario, Februario, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Rio Grande, Estancia Nueva Argentina, 16-II-1950, R. Singer, no. M 310, LIL, typus.

**Kuehneromyces cystidiosus** Sing. spec. nov.

Pileo atrocastaneo vel brunneo ("Java", sed obscuriore, dein "Mohawk"), hygrophano, estriato in juvenilibus, dein usque ad quintam partem radii ex margine centrum versus pellucide striatello, opimo, nitente, subviscido, convexo, dein convexo-applanato et umbonato, plus minusve 13 mm. lato. — Lamellis ferrugineo-brunneis "Alamo" dein "Bombey", late adnatis, vel adnatis, latis, demum secedentibus, moderate confertis; sporis in cumulo haud visis. — Stipite pileo concolori, sed parte basali subatra praedito, subfibrilloso, aequali vel basin versus subincrassato,  $18-20 \cong 1.5$  mm. ad basin interdum usque ad 2 mm. lato; velo haud manifesto. — Carne superficie pallidiore, immutabili, inodora.

Sporis  $6.5-8.2 \cong 4-5.3$   $\mu$ , ferrugineo-melleis, levibus, poro germinativo manifesto, truncatis, ellipsoideis, membrana duplici ex endosporio consistente gaudentibus, hoc illoque aequaliter crassis; basidiis tetrasporis, clavatis, hyalinis,  $19-22.7 \cong 5.5-7.5$   $\mu$ ; cheilocystidiis  $28-51 \cong 5.5-9.7$   $\mu$ , hyalinis, plerumque ventricosus in parte inferiore, breviter apiculato-ampullaceis in parte superiore, rarius subbulato-subcylindraceutis, interdum manifeste ampullaceis apice longe attenuatis; cheilocystidiis typi alterius eis *K. vernalis* comparabili-



bus, hyalinis, brevibus, vesiculosus, sparsis, paucis; cystidiis ad latera lamellarum 22—53  $\Rightarrow$  16.5  $\mu$ , hyalinis, tenuitunicatis, cheilocystidiis simillimis, plerumque ampullaceis, parte superiore longe attenuata praeditis, levibus et sine incrustatione, corpusculo interno amorpho carentibus, plerumque paulum maioribus cheilocystidiis; tramate hymenophorali regulari, hyphis magnitudine cellularum inaequalibus composito, nonnullis filamentosis, aliis tumidis brevis-simis visis, sed elementis omnibus incrustatione forti pigmenti ferrugineo-ochracei gaudentibus; hypodermio structura simili gaudente sed elementis magnis intertextis; epicute ex hyphis subhyalinis, repentibus, magis laxe dispositis consistente; hyphis omnibus fibuligeris.

Ad truncos emortuos *Nothofagorum*, Febrero, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, Rio Grande, 14-II-1950, R. S i n g e r no. M 276, LIL, typus.

*Cortinariaceae* Roze.

*Inocybe* (Fr.) Fr.

Key to the Sections and Species

- A. Metuloids absent in the middle of the stipe; cortina connecting the margin of the pileus with the apex of the stipe, or with the surface of nearly the entire stipe except for a small apical zone which is sometimes covered by an extrahymenophoral hymenium.
  - B. Spores with entire outline, smooth . . . Section *Lacerae*
    - C. Pileus yellow, neither squamose nor rimose; stipe white; odor slight and fruitiy . . . . . *I. lutescens*
    - C. Not combining these characters
      - D. Lamellae olive argillaceous; pileus rather larger, larger than 50 mm. in diameter in most carpophores . . . *I. eutheles*
      - D. Lamellae never with an olive tinge; pileus smaller than 50 mm. in diameter in most specimens
        - E. Stipe with a curious network of brownish fibrils in its lower portion; spores 6.8—8.2  $\Rightarrow$  4.7—6.2  $\mu$ ; base of stipe in well dried material with a yellow tinge . . . *I. retipes*
        - E. Stipe more or less fibrillose, but the fibrils not forming a distinct reticulation in its lower portion; spores as indicated above, or larger; base of dried specimens without a yellow tinge . . . . . *I. bridgesiana*
  - B. Spores with nodose outline, not with even surface Section *Cortinatae*  
Only species: . . . . . *I. cerasphora*
- A. Metuloids present in the middle of the stipe; cortina connected with the base of the stipe
  - F. Spores with entire outline, smooth . . . . . Section *Splendentes*
    - G. Metuloids large, many of them more than 90  $\mu$  long; all spores more than 10  $\mu$  long
      - H. Pileus whitish . . . . . *I. geophyllomorpha*
      - H. Pileus deep reddish brown . . . . . *I. gigacystis*
    - G. Cystidia or spores, or both, considerably smaller than indicated above

- I. Center of the pileus "Walnut, taffy"; dermatocystidia of the stipe thin-walled and homologous with the metuloids of the hymenium . . . . . *I. dissocystis*
- I. Center of the pileus differently colored; dermatocystidia of the stipe of two types, one corresponding to the metuloids of the hymenium and distinctly thick-walled, the other saccate and thin-walled . . . . . *I. fuscocinnamomea*
- F. Spores with nodose outline, not with even surface
- J. Pileus whitish, or avellaneous . . . . . *I. subfibrosoides*
- J. Pileus brown . . . . . *I. fuscata*

Section *Lacerae* Fr. (= *Fibrillosae* Heim). This section corresponds to the section *Cortinatae* of the nodulose-spored group, and contains numerous species grouped in various stirpes by Heim. The stirps *Lucifuga* is here represented by *I. eutheles*; the stirps *Discissa* (with hollow stipe) seems to be absent, and even the stirps *Lacera*, so dominant in North America and Europe, is not represented at all. It seems to me that the Friesian section *Lacerae*, whose type species is obviously *I. lacera*, should not be discarded in favor of a new sectional name. *I. lutescens* belongs possibly to the section *Lactiferae* in the broad sense of Heim, but since no chemical characters were observed to corroborate its position among that section, it is temporarily left within the *Lacerae*.

**Inocybe lutescens** Sing. spec. nov.

Pileo luteo, levi, glabro, margine fibrilloso haud rimoso, haud squamuloso, subviscido, centro verrucoso, umbonato. Lamellis argillaceis ventricosis. Stipite albo, solido. Carne alba, immutabili, odore fructuum levissimo praesente. Spories 8.8—13.7  $\Rightarrow$  5.5—7  $\mu$ , levibus. Metuloideis ampullaceis vel ventricosis et subcapitatis constrictis, 52—78  $\Rightarrow$  11—18  $\mu$ , crasse tunicatis. Dermatocystidiis ad apicem stipitis praesentibus, crasse tunicatis, infra nullis. Habitat in Nothofagetis ad terram. Tierra del Fuego.

Pileus "nugget, bronze y." smooth and glabrous, but margin fibrillose, cente warty, not rimose, not squamulose, subviscid, with obtuse umbo, other wise from convex to subapplanate, 22 mm. broad, when dried. — Lamellae argillaceous ventricose, broad sinuate-adnexed, moderately close. — Stipe white, glabrous or subfibrillose, pruinat at the very apex, solid, equal but slightly bulbous below, 40  $\Rightarrow$  2.5 mm. when dried; cortina indistinct. — Context white, unchanging with a very slight fruity odor.

Spores of three types (1) the small type 8.8—10.3  $\Rightarrow$  5.5  $\mu$ , (2) the large and broad type 10—11  $\Rightarrow$  6—7  $\mu$  (3) the elongate type, often curved, less numerous than 1 and 2, 11.5—13.7  $\Rightarrow$  5.5—5.8  $\mu$ , all smooth and variable in shape, with double wall and a slight callus, normally pigmented. Basidia about 26  $\Rightarrow$  9  $\mu$ . Metuloids of the hymenium 52—87  $\Rightarrow$  11—18  $\mu$ , hyaline or stramineous, thick-walled (walls 1.3—2  $\mu$  thick), ventricose below with ampullaceous apex which is long and

beset with a crystal incrustation at the tip, more rarely with 1—2 constrictions and then often subcapitate above. Hymenophoral trama regular, and with very broad elements (old specimen), reaching  $20\ \mu$  in diameter. Metuloids of the apex of the stipe thickwalled. No dermatocystidia in the middle of the stipe. All hyphae with clamp connections.

On the ground in *Nothofagus* woods, solitary, rare, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, R. G. 10-II-1950. R. Singer, no. M 160, LIL, type.

This resembles the picture published by Bresadola called by him *I. geophylla* var. *lutescens*. The dried pileus is somewhat brownwer.

*Inocybe eutheles* (Berk. & Br.) Sacc. 5: 776. 1887.

*Agaricus eutheles* Berk. & Br., Ann. Nat. Hist. 1865.

Pileus ocher brown (pl. 12, J-9 to pl. 13, K-9), not viscid, fibrillose-rimose in the outer half or three quarters of the radius, smooth and glabrous in the center, convex then appanate with distinct hemispherical umbo, 50—60 mm. broad. — Lamellae olive-argillaceous ("khaki", ventricose, subclose, adnate broad, with pallid edge. — Stipe buff pallid on white ground, with fibrillose-pruinose apex, otherwise only slightly fibrillose, solid tapering upwards from an almost truncate but not truly bulbous base, 50—55  $\approx$  about 10 mm., base to 14 mm. upper portion of the stipe longitudinally sulcate in dried material. — Context white, unchanging, without characteristic odor.

Spores 7.5—10.3  $\approx$  5.7—6.5 (6.8)  $\mu$ , ellipsoid, often with suprahilar depression, or appanation, with the upper third attenuate toward the rather distinct callus, smooth, normally pigmented. Basidia 4-spored, clavate, 24—32  $\approx$  8.2—9  $\mu$ . Metuloids numerous in the hymenium, on edges as well as on sides, with thickened walls. especially just underneath the apex, characteristically fusoid, 47—66  $\approx$  12—14  $\mu$ . Cheilocystidia about 25  $\mu$  long, and 5.5—10.5  $\mu$  broad, cylindrical or more often balloon shaped to basidiomorphous. Hymenophoral trama regular, consisting of strikingly broad (up to 40  $\mu$  broad) elements in mature material. Metuloids absent in the middler of the stipe.

On grassy ground in open woods of *Nothofagus antarctica*, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, R. G. 13-II-1950, R. Singer, no. M 248, LIL.

This seems to agree best with the material from the Pourquoi pas Mission, coll. Dolfus, on Iceland, at least according to the data mentioned by Heim (Le Genre *Inocybe*, p. 217, 1931). This

others appear to be endemic, or at least undescribed as the *Inocybe* flora of the *Nothofagus* area is practically unknown.

***Inocybe retipes*** Sing. spec. nov.

Pileo rufobrunneo, fibrilloso-subsquamuloso, haud viscido, umbone umbilicato praedito, 20 mm. lato. — Lamellis argillaceis, latis, profunde emarginatis. — Stipite albo, basin versus subtiliter reticulato-costato e fibrillositate brunnea, aequali vel subventricosos, numquam bulboso, solido,  $25 \approx 5.5$  mm. — Carne alba inodora immutabili. — Sporis 6.8—8.2  $\approx$  4.8—6.2  $\mu$ , ellipsoideis vel ellipsoideo-subfusiformibus, apice late rotundatis vel subattenuatis, ad latus interius applanatione depressioneque destitutis, Metuloideis hymenialibus numerosis ad aciem lateraque, parietibus in parte superiore 1.5—2  $\mu$  crassis praeditis, 40—63  $\approx$  9.5—15.7  $\mu$ . Dermatocystidiis in parte media stipitis nullis.

Pileus "Martinique, fibrillose-subsquamulose, non-viscid, with umbilicate obtuse umbo 20 mm. broad. — Lamellae argillaceous, broad (4 mm. broad), deeply emarginate, subclose. — Stipe white, very finely with the fibrillose above below with a curious network which consists of fibrillosity forming tiny riblets which are brown, ochraceous-yellow near "spruce y" in dried material equal or subventricose, without bulb solid,  $25 \approx 5.5$  mm. — Context white, unchanging, without odor.

Spores 6.8—8.2  $\approx$  4.7—6.2  $\mu$ , smooth, normally pigmented, with double wall, ellipsoid or sometimes ellipsoid-subfusoid, with the apex broadly rounded or slightly attenuated towards the slight callus, without applanation or depression at the inner side. Basidia 4-spored, 23—24  $\approx$  8.7—9  $\mu$ . Metuloids of the hymenium on edges and sides of lamellae equally numerous, slightly to strongly ventricose below or in the middle and attenuate above, or with a cylindric apex, the less ventricose type more frequent at the edge, hyaline, thin-walled below but thick-walled at the apex (the wall there reaching 1.5—2  $\mu$ ), with a crystal crown at the tip, 40—63  $\approx$  9.5—15.7  $\mu$ . Dermatocystidia in the middle of the stipe absent. All hyphae with clamp connections.

On the ground under *Nothofagus*, solitary, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Lago Fagnano, U., Cabecera del Lago, foothills of the Cordillera, 19-II-1950, R. Singer, no. M. 380, LIL, type.

This species is remarkable for its small spores, rather small cystidia, the brownish network in the lower half of the stipe, the ochraceous yellow color of the dried base and its occurrence in the Cordillera.

A similar species has been described from the *Nothofagus* area of Chile, viz. *Naucoria marylueanensis* Speg. In order to make it possible to compare the Fuegian species described below with the Chi-

lean one, we reproduce Spegazzini's macroscopical description (the question marks are mine!), adding the microscopical data according to my type studies.

*Inocybe mariluanensis* (Speg.) Sing. Lilloa **22**: 534. 1949 (1951).

*Naucoria mariluanensis* Speg., Bol. Acad. Nac. Ciec. Cordoba **25**: 15 (p. 17 of the reprint pagination), 1921.

Pileus terra cotta, smooth, slightly flocculose, with entire margin, and there with the remainders of the fibrillose whitish veil, subglobose, then convex-applanate, obtuse, i. e. without race of an umbo, 20—30 mm. broad. — Lamellae concolorous with the pileus (?), medium broad (?), 2.5—3 mm. broad, rounded at both extremes (?), slightly attached to the apex of the stipe, with pubescent pallescent edges. — Stipe concolorous with pileus, smooth, in the upper quarter of its length fibrillose from the remainders of the veil (?), otherwise glabrous and quite smooth hollow slightly enlarged at both apex and base, especially at the base where it appears to be slightly bulbous (3—4 mm. in diameter), easily separable from the trama of the pileus.

Spores  $6.2-8.2 \Rightarrow 4-4.8 \mu$ , much like those of *I. retipes* although perhaps slightly narrower; cystidia are metuloids these with thick (2—3  $\mu$ ) walls, fulvous-stramineous above, or entirely so, or hyaline, ventricose below, with cylindrical, rarely slightly mucronate apical portion, or else cylindrical-ampullaceous,  $55-72 \Rightarrow 8-18 \mu$ ; hyphae of the hymenophoral trama rather thin; dermatocystidia in the middle of the stipe absent.

On buried rotten chips of wood of *Nothofagus obliqua*, Chile.

Material studied: Chile: Mariluán, near Victoria, May 1918, J. A. Camp, LPS, typus.

If Spegazzini's diagnosis is based on the dried material alone it is conceivable that some macroscopical characters could have been misinterpreted, for instance the hollow stipe may have resulted by worm-eaten material carelessly dried, also the colors especially of the lamellae and the stipe may have changed considerably. However, even so, there are several differences between this species and *I. retipes* which cannot be explained by this assumption: The stipe is not bulbous in *I. retipes*; the spores are narrower in *I. mariluanensis*, the cystidia (metuloids) are slightly longer and broader than in *I. retipes*, the stipe is longer and more slender than in our species, etc. On the other hand, if Spegazzini's indication of a hollow stipe is correct, this species would enter the stirps *Descissa* as defined by Heim where it would be quite isolated because of its abundant cortina. It is certainly different from *I. microspora* Lange because of its obtuse pileus.

**Inocybe bridgesiana** Sing. spec. nov.

Pileo brunneo, sublanato-fibrilloso vel fibrilloso-squamuloso disco incluso, convexo, dein applanato, plerumque umbonato, 18—40 mm. lato. — Lamellis argillaceo-griseis, confertis, latis, adnexis. — Stipite flavidulo-pallido, sed fibrillis brunneis obsito, ad apicem pruinato vel subglabro, solido cylindraceo vel subattenuato apicem versus haud vel vix bulboso, 30—48  $\cong$  1.5—10 mm.; cortina pileo concolori. — Carne cremeo-pallida vel alba, immutabili, odore subtilius spermatico vel nullo.

Sporis levibus 6.8—10  $\cong$  4—6.5  $\mu$ ; basidiis 23.5—29  $\cong$  7—9.3  $\mu$  tetrasporis metuloideis breviusculis vel longiusculis (mediocribus), hyalinis 34—63  $\cong$  9.5—21  $\mu$ ; cheilocystidiis 16—25  $\cong$  5—11  $\mu$ , basidiomorphis vel vesiculosus vel ventricosus-subfusoides; dermatocystidiis in medio stipite nullis.

Ad terram in silvis nothofagineis, gregatim, Tierra del Fuego.

Pileus "raw sienna", mixed with "chipmok", strongly, almost woolly-fibrillose to fibrillose-subsquamulose, on the disc usually subsquamulose to appressedly squamulose, non-viscid, convex then flattened—usually umbonate, rarely without umbo, or even umbilicate, or subumbonate with an umbilicus in the center, 18—40 mm. broad. — Lamellae agrillaceous gray, broad, 3—5 mm. broad, ventricose, close, adnexed. — Stipe yellowish pallid as ground color, but with "raw sienna" fibrils almost all over, the fibrilosity becoming much looser at the apex where it may almost disintegrate, apex often pruinose or subglabrous never squamose, equal or slightly tapering upwards above and the base non-bulbous or more rarely slightly bulbous but never marginate, solid, 30—46  $\cong$  1.5—10 mm.; cortina concolorous with the pileus. — Context cream pallid, whitish, or white, unchanging, without odor or with a slight odor of *Berberis* flowers.

Spores 6.8—10.2  $\cong$  4—6.)  $\mu$ , mostly around 8.2  $\mu$  long and 4.8—5.2  $\mu$  broad ovoid-ellipsoid to ellipsoid-subfusoid, with the apex broadly rounded or somewhat attenuate towards the slight callus, the inner side sometimes somewhat flattened, normally pigmented, smooth. Basidia 23.5—29  $\cong$  7—9.3  $\mu$ , 4-spored. Metuloids of the hymenium rather numerous to scattered on both sides and edges, comparatively short to medium sized, hyaline, more rarely stramineous or with brownish contents with thin or thick walls, if thick-walled the walls thickest above the constrictions (if there are any) or else just above the thickest portion, more rarely equally thick everywhere (reaching 1.5—2  $\mu$ ), if thin-walled about 0.5—0.8 (1.2)  $\mu$  thick, either the thick-walled and the thin-walled ones mixed, or else predominantly with thick-walled or predominantly with thin-walled metuloids (always in mature material!), cylindric with a constrict-

tion in the middle, or above the middle. or else ampullaceous, or broadly ventricose and mucronate, the apical portion very short or long, attenuated towards the tip, or cylindric, with crystalline incrustation crowned in almost all individual metuloids,  $34-63 \approx 9.5-21 \mu$ , mostly  $45-48 \approx 11-13 \mu$ , but very variable from collection to collection and from carpophore to carpophore. Cheilocystidia  $16-25 \approx 9.5-11 \mu$ , basidiomorphous, balloon-shaped or ventricose-subfusoid. Hymenophoral trama regular consisting of broad and more thin elements mixed (up to  $21 \mu$  in diameter) in mature material. Dermatocystidia in the middle of the stipe none, but there is a rusty colored tissue on the surface (membrana-pigment) with the terminal members of the hyphal chains often individualized (ampullaceous, vesiculose, fusoid, cylindric, always with equal or attenuate but broadly rounded tip, and thin to slightly thickened walls, without crystalline incrustation,  $5-18 \mu$  thick). All hyphae with clamp connections.

On the earth in mesophytic vegetation and in very humid places, in the woods, always under *Nothofagus* (*antarctica* and *pumilio*), usually gregarious, Tierra del Fuego, fruiting in February.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, R. G. 11-II-1950, R. Singer, no. M 201, LIL, type. — no. 204, LIL, syntype. — 16-II-1950, no. 305, LIL, syntype. — 17-II-1950, M 319, LIL, syntype.

This is one of the commonest *Inocybes* of the Rio Grande woods. It is closest to *I. retipes* and *I. mariluanensis*. Among the northern species it might be comparable to *I. atripes* but differs in the microscopic measurements as well as in the absence of a deep brown stipe in older specimens. *I. microspora* Lange differs in hollow stipe but is otherwise rather close. It occurs in the parks of Buenos Aires where it forms microrrhiza with the *Populus* in plantations and gardens. In the Fuegian plant, the stipe is constantly solid even in age.

Section *Cortinatae* Boursier & Kühner.

### ***Inocybe cerasphora* Sing. spec. noc.**

Pileo fusco, fibrilloso-subsquamuloso, dein toto squamuloso supra foundationem fibrillosam, umbone incluso, sicco,  $15-25$  mm. lato. — Lamellis cinnamomeo-isabellinis, subconfertis, adnexis. — Stipite fusco, dilutiore apicem versus, tenuiter fibrilloso ubique, solido,  $25-40 \approx 204$  mm., cortina haud abundante, superficiei stipitis concolori basi albomyceliosa, subradicante. — Carne ochro-pallida in pileo, fusco-pallida in stipite; odore nullo. Sporis nodosis (nodulis projicientibus moderate numerosis),  $11-13 \approx 7.5-10.5 \mu$ . Metuloideis ampullaceis, apicibus integris rotundatisque aut 2-3-partitis, plerumque tenuitunicatis, numerosis,  $40-78 \approx 13-20.5 \mu$ . Dermatocysti-

diis in stipite absentibus. Habitat ad lignum nothofagineum putridum in silvis. Tierra del Fuego.

Pileus "coffee", fibrillose-subsquamulose, then squamulose all over on fibrillose fundament, especially so on the disc, dry, convex-umbonate, 15—25 mm. broad. — Lamellae "Tuscan tan Sauterne" to "dogwood", with white edges, broad, rather close, adnexed. — Stipe "Madrid" at the base, lighter colored upward, thinly fibrillose all over, solid, without bulb, subequal or tapering upward, 25—40  $\cong$  2—4 mm; cortina distinct if not abundant on the surface of the stipe, concolorous with the surface of the stipe; mycelium at the subradicant base white. — Context ocher pallid in the pileus, and brownish-fuscous-pallid in the stipe; odor none.

Spores 11—13  $\cong$  7.5—10.5  $\mu$ , nodose with 13—16 prominent gibbous nodules (projecting about 2—3  $\mu$ ), well colored. Basidia 30  $\cong$  19  $\mu$ , 4-spored. Metuloids of the hymenium ampullaceous, extremely numerous at the edge, numerous on the sides, ventricose at or below the middle, with the tip of the attenuate portion either broadly rounded and entire, or with 2—3 obtuse prongs reminding one of the metuloids of the *Pluteus cervinus* group, thin walled, few with slightly and evenly thickened walls, hyaline, 40—78  $\cong$  13—20.5  $\mu$ . Hyphae making up the cortina brown with the terminal members more or less cylindric with broadly rounded tips. Dermatocystidia in the middle of the stipe absent. All hyphae with clamp connections.

On rotten wood of *Nothofagus* in the woods, with the stipe entering deeply into the substratum without being modified or transformed into a typical pseudorhiza. Fruiting in February. Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 15-II-1950, R. Singer, no. M 290, LIL, type.

This species is intermediate between the *Lanuginosa*-group to which it apparently belongs, and *Inocybe subcarpta* Kühner. It differs from all other *Inocybes* in having pronged metuloids.

Section **Splendentes** Sing. sect. nov. Dermatocystidia in medio stipitis metuloideis praesentibus. Sporibus haud nodulosis. Species typica: *Inocybe splendens* Heim.

This section corresponds to the section *Marginatae* Boursier & Kühner, but contains only the species with smooth spores. These species are divided among the sections *Scabellae* Heim and *Gibbosporae* Heim.

**Inocybe geophyllomorpha** Sing. spec. nov.

Pileo albido, appresse fibrilloso, haud rimoso, haud viscido, convexo-obtusato vel convexo-subumbonato, 18—21 mm. lato. — Lamellis argillaceis, ventricosis, anguste adnexis, subconfertis, latis. — Stipite



albo, apicem versus cinnamomeo-carneo, ex integro pruinoso bulbo immarginato excepto, solido, 30—35  $\Rightarrow$  3—3.5 mm., basi 5—5.5 mm. lata. — Carne alba; odore ligni putridi. Sporis 11—11.7  $\Rightarrow$  5—6.5  $\mu$ , late ellipsoideo-subfusiformibus, levibus. Metuloideis hymenii ad latera aciemque, crasse tunicatis, ampullaceis, 55—93  $\Rightarrow$  13.5—22  $\mu$ . Dermatozystidiis in medio stipitis praesentibus. — Ad terram in silvis umbrosis, Tierra del Fuego.

Pileus whitish, appressedly fibrillose but neither squamulose nor rimose, not viscid, not even subviscid when young and after rains, convex and obtuse to convex-subumbonate, 18—21 mm. broad. — Lamellae argillaceous-greyish, pallid edge ventricose, broad, subclose, narrowly adnexed. — Stipe white cinnamon pinkish above, pruinose all over, except for the bulb, solid, subequal or very slightly tapering upward with distinct bulb (5—5.5 mm. in diameter), 30—35  $\Rightarrow$  3—3.5 mm. — Context white, unchanging; odor mawkish, of rotten wood as in many Cortinari.

Spores 11—11.7  $\Rightarrow$  (4.5)—5—6.5  $\mu$ , broadly ellipsoid- subfusoid, without suprahilar depression, rounded below and attenuate towards the slight callus, well colored with one round oil droplet. Basidia 4-spored, few 2—3-spored), 22—30  $\Rightarrow$  9—9.7  $\mu$ , clavate, hyaline or brownish hyaline. Metuloids on edge and sides of the lamellae thick-walled on sides and edge (wall 2—3.5  $\mu$  thick) and besides there are some thin-walled ones at the edge, hyaline, ampullaceous, ventricose below, with cylindrical apex (5.5—8.2 in diameter), with crystal incrustation at the tip, 55—93  $\Rightarrow$  13.5—22  $\mu$ . Dermatozystidia of the middle of the stipe of the same general type as the metuloids of the hymenium, rather numerous, hyaline, erect, or occasionally approximate, with thick (1—1.5  $\mu$ ) walls, with or without (and then 6.5—7  $\mu$  in diameter) ventricose portion at the base, with cylindric upper portion, 68—86  $\Rightarrow$  9.5—13.7  $\mu$  (if ventricose). Hyphae with clamp connections.

In shady woods of *Nothofagus pumilio* on the humus, fruiting in February. Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, R. G. 14-II-1950, R. Singer no. M 272, LIL, type.

This species has the aspect of *I. geophylla* but differs in dry pileus, colored apex of the stipe (but not violet), larger spores, basidia and metuloids, presence of dermatocystidia in the middle of the stipe, and different odor. It is not even related to this species.

It corresponds better to *Inocybe sindonia* in the sense of Lange, but is slightly smaller, has slightly larger spores, less umbonate pileus, more colored apex of the stipe, more bulbous base and more definitely and persistently solid stipe, and other habitat (frondose woods instead of coniferous woods). I do not know whether or not

Lange's *I. sindonia* belongs in this section. If so, it would be the species most closely related to *I. geophylломорpha*.

**Inocybe gigacystis** Sing. spec. nov.

Pileo obscure rufo-brunneo, fibrilloso-subrimoso, convexo, dein depresso circum umbonem vel obtuse depresso, 17 mm. lato. — Lamellis pallide brunneolis, ventricosis, latis, adnexis, subdistantibus. — Stipite albedo, cinnamomeo apicem versus, ex toto pruinato, aequali, bulbo carente,  $30 \approx 2$  mm. — Carne alba; odore debili, subcamphorato (?). — Sporis  $10-11 \approx 6.2-6.5$   $\mu$ , ellipsoideis vel late ellipsoideo-subfusiformibus subinaequalibus, levibus. Metuloideis maximis  $65-107 \approx 11-20.3$   $\mu$ , ex toto crassitunicatis, hyalinis, ampullaceis, crystallo-coronatis. Dermatocystidiis in medio stipitis numerosissimis, metuloidiformibus.

Pileus deep reddish brown, fibrillose-subrimose, appressedly fibrillose, with inconstant small umbo, convex, then depressed around the umbo (if present), or with concave center, about 17 mm. broad. — Lamellae light brownish, adnexed, ventricose, broad, subdistant. — Stipe whitish below, cinnamon above, equal, solid without any bulb, pruinose all over, about 30 mm. long and about 2 mm. broad. — Context white, unchanging, with a very slight characteristic (camphorous ?) odor, not spermiatic or fruity.

Spores  $10-11 \approx 6.2-6.5$   $\mu$ , some reaching  $12.5 \approx 6.5$   $\mu$ , ellipsoid, or broadly ellipsoid-subfusoid, in profile often with a central applanation on the inner side, more or less well colored, smooth, with callus. Basidia  $26 \approx 9$   $\mu$ , 4-spored. Metuloids of the hymenium very large:  $65-107 \approx 11-20.3$   $\mu$ , with thick ( $2-3.5$   $\mu$ ) wall, not only in the apical portion, hyaline, or with brownish contents, ampullaceous, ventricose below, with a long cylindric apical portion ( $8-10$   $\mu$  in diameter), with distinct coarse crystal incrustation at the tip; same type of metuloids on the sides of the lamellae and on the edges where they also occur with slightly smaller measurements and thinner walls. Dermatocystidia in the middle of the stipe very numerous, mostly of the same shape as in the hymenium but sometimes without the cylindric apical portion, with thick wall ( $1.3-2$   $\mu$  in diameter everywhere),  $48-110 \approx 12-22$   $\mu$ . All hyphae with clamp connections.

This differs from all other brown species by the size of the metuloids of the hymenium coupled with the pruinose cystidiferous stipe.

**Inocybe dissocystis** Sing. spec. nov.

Pileo avellaneo in centro, rufofusco ad marginem, rimoso (et tunc carne alba aperta) vel fibrilloso ad marginem, grosse fibrilloso-tomentoso, umbonato vel subumbonato,  $24-35$  mm. lato. — Lamellis argillaceo-avellaneis, latis sinuato-adnexis, confertis vel sub-

confertis. — Stipite albo, cinnamomeo apicem versus, solido, aequaliter subfibrilloso-pruinato usque ad bulbum obsoletum immarginatum, 30—50  $\Rightarrow$  4.5—6 mm. — Carne alba, in apice stipitis cinnamomea; odore debili, specifico nec spermaticeo nec fructuum. — Sporibus I, *gigacystis* simillimis, 8.8—12.3  $\Rightarrow$  4.8—6.5  $\mu$ . Metuloideis hymenii apicem versus crasse tunicatis, ampullaceis crystalliferis, 50—73  $\Rightarrow$  12—23.5  $\mu$ . Dermatocystidiis medii stipitis ampullaceis metuloideis sed tenuitunicatis, numerosis. — In silvis nothofagineis ad humum. Tierra del Fuego.

Pileus "walnut taffy" in center and remaining so when dried, "Mandaley" on the fibrils of the margin but appearing lighter colored (reddish brown) when fresh because of the white flesh showing through the coarse fibrils of the cuticle, pale reddish brown in dried specimens on the marginal third of the radius, coarsely tomentose-fibrous all over and subrimose in many caps at the margin, convex umbonate or subumbonate, 24—35 mm. broad. — Lamellae argillaceous-avellaneous, broad, siluate-adnexed, close or subclose. — Stipe white with cinnamon towards the apex, subfibrilloso-pruinato equally all over, solid, slightly bulbous at the base, but not marginate, 30—50  $\Rightarrow$  4.5—6 mm. — Context white except for the apex of the stipe which is cinnamon inside; odor weak but characteristic, neither spermaticeo nor fructuum.

Spore 8.8—12.3  $\Rightarrow$  4.8—6.5  $\mu$ , ellipsoid to broadly ellipsoid-subfusoid, with rounded base and sometimes attenuate upper portion, often with a central applanation on the inner side when seen in profile, smooth, more or less well colored, with callus. Basidia 4-spored, 26  $\Rightarrow$  9  $\mu$ . Metuloids of the hymenium 50—73  $\Rightarrow$  12—23.5  $\mu$ , thick-walled above (wall 2—3.5  $\mu$  in diameter), less thick-walled below (0.6—1  $\mu$ ), ampullaceous, ventricose below, the upper portion attenuate towards the tip which is incrustated by coarse crystals, or cylindric. Dermatocystidia on the middle of the stipe numerous, much like the metuloids of the hymenium but thin-walled, ampullaceous, hyaline, ventricose in the middle or below, 55—68  $\Rightarrow$  13.5—16.5  $\mu$ . All hyphae with clamp connections.

In *Nothofagus* woods, on humus, fruiting in February, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, R. G. 10-II-1950, R. S i n g e r, no. M. 159, LIL, type.

This differs from *I. Friesii* which seems to be closest, in other odor, more coarse fibrillosity on the pileus, color, and microscopical measurements.

*Inocybe Friesii* Heim occurs in Argentina, in the plantations and parks where it forms mycorrhiza with imported *Tilia* and other trees. Its dermatocystidia of the stipe are thickwalled.

**Inocybe fuscocinnamomea** Sing. spec. nov.

Pileo atrorufobrunneo, vel rufobrunneo fibrilloso vel fibrilloso-squamuloso, squamulis appressis, interdum subrimoso, fibrillis saepe grandiusculis lanam radiatim "pectinatam" formantibus, convexo, demum circa discum umbonatum vel subumbonatum depresso, 14—22 mm. lato. — Lamellis argillaceo-griseis vel griseolo-cinnamomeis, ventricosis, latiusculis, sinuato-adnexis vel subliberis, moderate confertis vel subdistantibus. — Stipite cinnamomeo, interdum albedo basin versus, ex toto pruinoso, bulbo destituto, solido, vel bulbo immarginato praedito, 31—35  $\cong$  1.5—5 mm. — Carne pallida vel alba, interdum brunneolo-alba, odore specifico praedita. — Sporis 6.8—10.3  $\cong$  4—6.2  $\mu$ , ellipsoideis apice attenuatis, levibus. Metuloideis hyemii 34—75  $\cong$  10—23  $\mu$ , crasse tunicatis, crystallo-coronatis, ventricosis, apice attenuatis vel ampullaceis. Dermatocystidiis stipitis dimorphis, aliis metuloideiformibus aliis cheilocystidiiformibus, in cumulis mixtis aggregatis per stipitis superficiem. — Habitat in silvis nothofagineis ad terram et humum. Tierra del Fuego.

Pileus near "Raw sienna" and "chipmonk", or "Montella", woolly-fibrillose, the fibrils forming the woolly surface coarse and appearing like they were "combed" radiately, sometimes subrimose at the margin, sometimes almost appressedly subsquamulose in certain parts, convex, or rather conico-convex when young, then often depressed around the center or in the center, umbonate or subumbonate, dry 14—22 mm. broad. — Lamellae argillaceous grey to pallid, then leather brown near the context of the pileus and "Aloma" towards the edges, the edges themselves pallid fringed, sinuate and narrowly adnexed, or plainly adnexed to subfree, rather broad to broad, 3—4 mm. broad moderately close, subdistant. — Stipe "wild honey" to "leather brown", sometimes whitish below, entirely strongly pruinose and remaining so in dried specimens, but sometimes eventually glabrescent, eventually often longitudinally striate, central or rarely eccentric, solid, with or without a bulb, more often without bulb, never with a marginate bulb, and, if bulbous, with an indistinct bulb, 31—35  $\cong$  1.5—5 mm., tapering upward or downward above the bulb (if present); mycelial tomentum white to pallid, loose. — Context when quite fresh in wet weather vitreous-pallid and somewhat hygrophanous, soon becoming brownish pallid, pallescent whitish in dry weather except for the stipe where it is avellaneous-cinnamon to cinnamon-flesh-color or pale brownish; odor absent, or slight and characteristic, not spermiatic and not fruity.

Spores 6.8—10.3  $\cong$  4—6.2  $\mu$ , mostly about 8.2—9.5  $\cong$  5.5  $\mu$ , ellipsoid with more or less attenuate apex, with callus, smooth, normally colored. Basidia 4-spored, 22—28  $\cong$  8.2—10  $\mu$ . Metuloids of the hyme-

nium 34—86  $\Rightarrow$  10—23  $\mu$ , mostly 55—66  $\Rightarrow$  16—18.8  $\mu$ , fusoid ventricose with attenuate upper portion or ampullaceous with rather broad subcylindric apex, with crystalline incrustation at the tip, with thick walls, at least in the upper portion reaching 2—3.3  $\mu$  in diameter, numerous on sides and edges. Some basidiomorphous cheilocystidia at the edges present, thin-walled. Dermatocystidia of the middle of the stipe forming large clusters, somewhat as in some *Conocybes*, of two different types, (1) the metuloid type, much like the metuloids of the hymenium, thickwalled or with some thin-walled ones intermixed, 31—78  $\Rightarrow$  10—25.5  $\mu$ . with a crystalline incrustation crown at the tips, (2) in most clusters of the surface of stipe, there are also a few to very numerous dermatocystidia corresponding to the cheilocystidia, and sometimes these bodies form clusters which do not contain any metuloids; they are thin-walled, clavate to balloon-shaped, broadly rounded above, without or rarely with very scanty crystalline incrustation, hyaline, 16—30  $\Rightarrow$  9—17  $\mu$ . All hyphae with clamp connections.

Under *Nothofagus* in dense shady woods and in comparatively open woods on humus and earth, usually gregarious, fruiting from February until April Tierra del Fuego, north and to Neuquén.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, R. G., 11-II-1950, R. Singer, no. M 204 A, LIL, — no. M 167 A, 10-II-1950, LIL. — No. M 306, 16-II-1950, LIL, Type. — Neuquén, San Martin de los Andes, 1-IV-1951, Cei & Tomsič, comm. Singer, no. M 456, LIL.

This species is obviously closely related to the European *Inocybe reducta* Lange, which differs in being slightly larger, having smaller spores, distinctly bulb and more minutely fibrillose pileus. It may also be close to *Inocybe Friesii* which has dermatocystidia of only one type on the middle of the stipe as shown in specimens studied by the author in the plantations of European trees around Buenos Aires.

This is a species common in Tierra del Fuego and rather characteristic because of its somewhat distant lamellae, the structure of the covering of the stipe, and the cinnamon inge of lamellae and stipe.

Section *Marginatae* Boursier & Kühner.

***Inocybe subfibrosoides* Sing. spec. nov.**

Pileo albo vel avellaneo, convexo-applanato, umbonato, subtiliter lubrico-subviscido, fibrilloso, saepe subrimuloso, glabro levique in centro, 22—48 mm. lato. — Lamellis dilute griseis vel griseis, angustius adnexas vel sinuato-adnexas, latiusculis confertis, rarius subconfertis. — Stipite albo, pruinoso, praesertim apicem versus, solido, subaequali sed bulbo marginato praedito, 32—95  $\Rightarrow$  4—8 mm. — Carne alba, immutabili; odore nullo. — Sporibus nodosis, 9.6—11.7

(12.3)  $\Rightarrow$  6.2—8.2 (9.6)  $\mu$ , nodulis cc. 2  $\mu$  projicientibus, septem vel undecim, brunneis. Basidiis 4-sporis. Metuloideis hymenii ad latera et aciem numerosis, ad latera plerumque ampullaceis, crasse tunicatis, crystallo-coronatis, 48—77  $\Rightarrow$  11—33  $\mu$ . Dermatocystidiis medii stipitis variabilibus, numerosissimis typi metuloideorum membranis crassis instructis, nonnullis tenuitunicatis et nonnullis typi alteri (inflato-late-rotundatis, brevibus tenuitunicatis, haud coronatis) interdum praesentibus. — Habitat ad terram in silvis nothofagineis, Tierra del Fuego.

Pileus white or avellaneous (pl. 11, D-6, 11, D-5, or 10, E-5) the whitish color usually predominant in young specimens, slightly lubricous-subviscid, appressedly fibrillose and only in the marginal region occasionally becoming subrimose or rimose-splitting, usually with entire cuticle and quite smooth and subglabrous in the center, convex, umbonate in the center, eventually flattened and the umbo sometimes becoming less prominent, 22—48 mm. broad. — Lamellae light grey, then "gravel", 4—5 mm. broad, i. e. rather broad, rounded and very narrowly adnexed, or plainly adnexed, or deeply and broadly sinuate and subdecurrent, crowded to subclose. — Stipe white, pruinose all over, especially so at and near apex, solid, subequal except for the bulb which is always distinct, and usually obliquely marginate to strongly marginate all around and reaching 13 mm. in diameter, 32—95  $\Rightarrow$  4—8 mm. Context white, unchanging, without any odor.

Spores 9.6—11.7 (12.3)  $\Rightarrow$  6.2—8.2 (9.6)  $\mu$ , with (5)—7—11 obtuse but distinct nodules (projecting about 2  $\mu$  and easy to count), brown. Basidia 4-spored, 22.3—30  $\Rightarrow$  8.8—10.3  $\mu$ . Metuloids of the sides of the lamellae 48—77  $\Rightarrow$  11—33  $\mu$  most frequently ampullaceous with the ventricose portion at or just beneath the middle, with more or less short apical portion which is either slightly attenuated, or cylindric, or else slightly subcapitate, rarely absent and replaced by a mucro, with thick (lamellate) wall, especially directly underneath the apex, where it reaches 2—5  $\mu$  in diameter, hyaline, with crystalline incrustation at the apex; on the edges there are the same metuloids present, but some of them are more irregular in shape and in an average less incrustated at the tips, often cylindric or broadly ventricose, even broadly rounded above. Dermatocystidia in the middle of the stipe in their majority like the metuloids of the hymenium, e. gr. 45  $\Rightarrow$  15  $\mu$  but some of the same shape but thin-walled can be observed, and occasionally there are some intermixed which are comparable to the cheilocystidia (inflated, balloon-shaped, broadly rounded above, short and devoid of crystalline incrustation, thin-walled). Cheilocystidia balloon-shaped-pedicellate, hyaline, thin-walled, broadly rounded above, without crystalline incrustation, 22—45  $\Rightarrow$  8.2—13.7  $\mu$ .

Trama of the stipe consisting of parallel hyphae with some oleiferous hyphae also present. All hyphae with clamp connections.

On the earth in *Nothofagus* woods, mostly near *Nothofagus pumilio*, usually solitary or in small groups, fruiting in February, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, R. G., 15-II-1950, R. Singer, no. M 291, LIL, type. — 23-II-1950, no. M 445, LIL.

This is a striking species, very close to *I. fibrosoides* Kühner of the Alps, but differs constantly by larger spores, and habitat in frondose instead of coniferous woods, thus becoming comparable to the group *trivialis* Lange and the following species (*Inocybe fuscata* Sing.). It differs from the European *I. fibrosa* as described by Metrod (Rev. Mycologie 2: 58, pl. 3, 1937) in being less stout, having larger spores, growing under frondose trees, lacking the sulphur yellow to ochraceous tinge in the stipe, and the spermiac odor of the flesh, and having fibrillose pileus. The Fuegian species differs from *I. trivialis* in absence of brown colors, absence of bisporous basidia and (consequently?) absence of spores larger than 12.3  $\mu$ , by fibrillose pileus which is more regularly shaped, and by entirely pruinose stipe. All these species are very close to each other and to the *I. praetervisiva* complex (forms with still larger spores in the sense of Kühner and with more ochraceous yellow color on the pileus).

### ***Inocybe fuscata* Sing. spec. nov.**

A species praecedente differt praecipue colore pilei umbrino-brunneo. Sub *Nothofagus* in Tierra del Fuego.

Pileus "burnt umber" in the center, "cigarette" on the margin, rimose over half of the radius, naked, non-viscid in our mature specimens, convex, then flat around the hemispheric umbo, about 38 mm. broad. — Lamellae grey, broad (4–5 mm.) deeply sinuate and subfree, close, splitting along the trama as in some *Fayodias*. Stipe pure white, with slightly spiralling substriate lines, pruinose all over, solid, with a marginate bulb (12 mm. in diameter), from just above the bulb tapering slightly and gradually toward the apex, or almost cylindrical, 80–88 mm. long and 4–5 mm. broad above the bulb. — Context white, unchanging, inodorous.

Spores 9–11.8  $\mu$   $\approx$  6.2–8.2  $\mu$ , with 10–13 prominent obtuse nodules. Metuloids 48–65  $\mu$   $\approx$  12–22  $\mu$ , numerous on edge and on sides of the lamellae, thick-walled with crystalline incrustation at the apex. Thickwalled incrustated dermatocystidia similar to the type of metuloids found in the hymenium numerous in the middle of the stipe; both these and the metuloids of the hymenium similar in shape and

variability to those of the preceding species. All hyphae with clamp connections.

In *Nothofagus* woods, solitary or in small groups on the ground, fruiting in February, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, R. G., 13-II-1950, R. Singer, no. M 249, LIL, type.

This species is extremely close to the preceding one, and may be considered a variety of it if this would clear up its status. As it is, we find no transitions, and assume that the brown color of the pileus is a hereditary character, similarly as this is assumed in regard to the European species close to *I. fibrosoides*, viz. *I. trivialis* Lange which differs amply in habit and presence of 2-spored basidia, also in glabrous stipe and the paler color of the center of the pileus whereas in our species the center of the pileus is rather darker than the margin, the basidia are all 4-spored, and the shape of the pileus is regularly convex-applanate and umbonate. *Inocybe praetervisa* differs in other colors (more yellow-ochraceous).

#### Dubious Species.

*Inocybe fuegiana* (Speg.) Sacc.

The only *Inocybe* Spegazzini described, in fact the only species of this genus ever described from the Magallanes aerea, is probably not an *Inocybe*, or if it is, it belongs in a group not represented in our collections. The sorry looking pressed fragments which are all that is left of the type specimen do not show any metuloids, and the specimen was either substerile or too young. As it is, it will have to be regarded as a nomen dubium.

#### *Naucoria* Kummer.

Only one true *Naucoria* is known from Tierra del Fuego and adjacent regions, a rather inconspicuous one, and widely distributed at that.

***Naucoria polytropa*** Sing. spec. nov.

Pileo umbrino-brunneo, plus minusve hygrophano, transparenter striato ad marginem, levi, 12—20 mm. lato. — Lamellis sordide isabellino-griseis, brunnescentibus, confertis, adnatis. — Stipite pileo concolori, evelato, pruinato,  $18 \approx 0.7$  mm. — Carne inodora.

Sporis  $6.8-8.5 \approx 4.8-5.5$   $\mu$ , levibus, callo subindistincto instructis, poro germinativo destitutis; apice late rotundatis vel subattenuatis, frequenter reniformibus; cheilocystidiis versiformibus,  $35-45 \approx 4-8.5$   $\mu$ ; cystidiis nullis; epicute ex dermatocystidiis versiformibus constante.



Ad lignum putridum in silvis frondosis arborum dicotyledonearum, solitarie, aestate et autumnno, in America (boreali, centrali, australi).

Pileus "bamboo", center almost "brown sugar" to "Aztec" with paler margin, somewhat hygrophanous and becoming near "Partridge, raw umber" when dried, transparently striate when wet, smooth when dry, finely subpruinose to glabrous, non-viscid, convex, appanate when mature, about 12—20 mm. broad. — Lamellae "Manila" or pl. 13, G-7 when fresh, between "oak" and "Cochin" when dried, moderately broad to rather broad, close, or varying to subdistant, adnate; spore print not obtained. — Stipe concolorous with the margin of the pileus, pruinose all over except for the extreme base which is pure white from the mycelial tomentum, glabrescent,  $18 \approx 0.7$  mm. or slightly larger, often somewhat eccentric and curved; veil none. — Context concolorous-paler, inodorous.

Spores  $6.8-8.5 \approx 4.2-5.5$   $\mu$ , with thin double wall consisting of endo- and epispore, smooth, light brownish, without callus or with an indistinct one, without germ pore, with broadly rounded or somewhat attenuate apex, frequently reniform when seen in profile; basidia 4-spored,  $23-28 \approx 6.8-9$   $\mu$ ; cheilocystidia  $35-45 \approx 4-8.5$   $\mu$ , rather inconstant in shape, most frequently with a thickening above (subcapitate) and below (ventricose), but also subulate, ampullaceous, cylindrical-irregular, or filamentous in some cases, at times filamentous-subcapitate or cylindrical and slightly ventricose in the middle, hyaline, making the edge of the lamellae heteromorphous; cystidia on the sides of the lamellae none; subhymenium subcellular, consisting of very irregular usually broad elements (rarely somewhat elongate, hyphous) which are intricately interlaced and small and brownish, presenting a very distinct if narrow layer; hymenophoral layer consisting of rather broad but filamentous elements, regular, brownish; epicutis of the pileus consisting of single or fasciculate dermatocystidia which are hyaline, versiform but most frequently subulate or ampullaceous or cylindrical-filamentous with suddenly enlarged base (the latter being an element of the hypodermium in many instances; hypodermium brown, with membrana pigment but not distinctly incrustated walls, some of the latter somewhat thickened at places, the hyphae forming this layer quite irregularly interlaced and its elements versiform; covering layer of the stipe with similar dermatocystidia as the epicutis of the pileus but the dermatocystidia of the stipe often shorter, mostly hyaline (middle of the stipe, in KOH medium); all hyphae with clamp connections.

On rotten wood and on small rotten sticks and chips in the humus of dense woods, rare and rather solitary, fruiting in summer and fall (February in Tierra del Fuego), in the montane zone of

South America and Central America, in the *Nothofagus* zone of Eastern Tierra del Fuego, and in North America as far north as the State of New York.

Material studied: Argentina: Tierra del Fuego, Rio Grande, Estancia Nueva Argentina, 17-II-1950, R. Singer, no. M 337, LIL, type. — Province of Tucumán, Rio de los Sosas, 21-I-1951, R. Singer, no. T 1120, LIL.

This species seems to have been overlooked by all collectors. Its description is somewhat reminiscent of that of *Naucoria umbrina* Bres. from Punta Arenas, Chile and Rio Grande, Argentina, but the carpophores of that species are much larger, the basidia longer, the cystidia (cheilocystidia?) longer and the lamellae rounded behind, the surface of the pileus silky and the spores narrower. Specimens are missing in Bresadola's herbarium, now at the Ricksmuseet in Stockholm. It must be considered a nomen dubium unless material more exactly identical with Bresadola's description can be found.

Among the known *Naucorias*, *N. polytropa* comes closest to *N. subvelutina* Sing. from the Altai Mts. which differs in the more or less velutinous chestnut colored pileus, the pallid stipe, etc. It is remarkable as one of the very few species common to both North and South Argentina, yet not distributed beyond South America.

#### Genus *Cortinarius* Fr.

This genus, very abundantly represented in Tierra del Fuego and Patagonia, will be treated in a separate paper.

#### Genus *Descolea* Sing.

This genus is endemic in Tierra del Fuego and the *Nothofagus* area of Western Patagonia. It has been claimed that it is identical with *Cuphocybe* Heim\*) but this statement\*\*) is not born out by the facts\*\*\*).

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\*) Heim, C. R. d. séances Acad. Sciences 230: 2246. 1950 ex Revue d. Mycologie 16 (1): 8. 1951.

\*\*) See Heim, in litt., and Revue d. Mycologie, l. c., p. 9.

\*\*\*) *Descolea* differs from *Cuphocybe* in the structure of the episporium and its color, lamellae not adnate and even less decurrent, annular veil, distinct cheilocystidia, and complete lack of bright pigments. Genera in the *Cortinariaceae* and other families have been distinguished on fewer characters. Heim's remark about the probable identity of these genera is partly due to my own suggestion based on a comparison of notes on southern *Cortinariaceae* of the *Nothofagus* area at a personal meeting at the VIIth International Botanical Congress in 1950, but a close comparison of the published data does not bear out the supposition voiced then.

There is only one species.

*Descolea antarctica* Sing., Schweiz. Zeitschr. Pilzk. **23** (11): 187. 1950 ex Singer, Lilloa **23**: 257. 1950 (1952).

Pileus ochraceous brown or brown, then pale brownish, hygrophanous and slightly viscid to nearly dry, sometimes with the fragments of the whitish veil which may also be ochraceous-brownish and cover the margin of the pileus, more commonly naked, rarely entirely floccose with the floccons distributed over the surface of the pileus in the manner of the *Amanitas*, smooth or with rugose margin, companulate-convex, then convex, obtuse, somewhat fleshy or fleshy, 17—52 mm. broad. — Lamellae sordid grayish (“Manila”), then sordid ochraceous-alutaceous (pl. 11, H-6), narrow to broad, ventricose or subventricose, emarginate to adnexed; spores in print “buff” (on white paper), or “spruce yellow” or pl. 11, G-4 (as fallen on the annulus). — Stipe white or pale ochraceous, then often becoming brown, above the annulus appressedly fibrillose as in many *Galerinas*, at the base of some specimens less appressedly fibrillose, solid, equal, or thickened toward the base, the very base rounded-obtuse or acute, the surface in old specimens longitudinally sulcate all over, annulate or subannulate; veil thick, rarely rather thin, firm, membranous, in carpophores with thick veil, the latter always forming a persistent annulus, in the others — which are rarer — the stipe is only subannulate and the margin of the pileus appendiculate from the remainders of the veil, the latter being white, eventually sometimes subochraceous; annulus distant, rather broad, eventually pendulous, and then narrower, with the outer margin crenulate to fimbriate, more rarely lacerate; basal mycelium white. — Context white, unchanging, in the peripheric portion sometimes brownish, somewhat fragile, or firm; odor none or very weak, not farinaceous.

Spores 11.5—12.5  $\cong$  7.5 (—9)  $\mu$ , rarely (from bisporous basidia) up to 18.5  $\mu$  long, fusoid, acute on both ends, mucronate at the apex, below obliquely recurved, with an indistinct callus but without germ pore, with hyaline endosporium, with brownish melleous episporium, with a (probably exosporial) punctation which is neither visibly immersed in the episporium nor visibly different in color from the latter, almost smooth in optical section, rarely (from bisporous basidia) completely smooth and without any punctation, without plage; basidia tetrasporous, very few bisporous, the latter especially near the gill edge, all hyaline, clavate, 35—45  $\cong$  8.8—11  $\mu$ ; cheilocystidia 20—42  $\cong$  5—7  $\mu$ , hyaline, clavate-cylindrical, sometimes somewhat constricted, smooth and simple, making the edge of the lamellae heteromorphous; cystidia and pseudocystidia on the sides of the lamellae none; hymenophoral trama regular, consisting of rather

dense hyphae which are filamentous and incrustated with a ferruginous pigment; the superficial velar layer of the pileus fugacious, consisting of applicate irregular hyaline hyphae; epicutis, below the velar layer, or at full maturity usually exposed, consisting of a trichodermium whose elements tend to form an epithelium because of the pressure of the veil whereby the individual cells often become compressed, claviculate and sometimes subinterwoven with one another, but generally more or less upright, but often here and there one strongly shortened and broadened and ellipsoid to ovoid to globose, rather frequently thick-walled, or with many thin-walled ones intermixed, the spherocysts among them up to 7—18  $\mu$  in diameter; hypodermium consisting of a double stratum, the upper one formed by subhorizontal hyphae, the lower one quite intermixed and irregular, both consisting of rusty-incrustated elements; all hyphae with clamp connections.

On the humus, sometimes among Gramineae, under *Nothofagus antarctica* more rarely under *N. pumilio*, in woods, gregarious or almost solitary, frequently seen in the wooded areas, and apparently forming mycorrhiza with the *Nothofagi*, also unter *Nothofagus* spec. (indet.), through the entire *Nothofagus* area from northern Neuquén south to Tierra del Fuego.

Material studied: Neuquén, San Martín de los Andes, 7-IV-1951, Cei & Tomasic, comm. Singer M 472, LIL. — Tierra del Fuego, Ushuaia, Lago Fagnano, Cabecera (oriental) del Lago, R. Singer. — Rio Grande, Estancia Nueva Argentina, 18-II-1950, R. Singer, M 144 a, Type, LIL. — Ibidem, idem, 10—16-II-1950, R. Singer, M 144, M 218, M 219, M 306 a, paratypes, LIL.

### Genus *Galerina* Earle.

#### Key to the Species

- A. Spores quite smooth, without a trace of a plage. In grassy woods. *G. fuegiana*
- A. Spores more or less ornamented with a granular to warty exosporial ornamentation with distinct plage
  - B. Apex of the stipe with numerous subulate or ampullaceous dermatocystidia; dermatocystidia often reaching far into the basal region of the stipe; pleurocystidia present; on mosses and on earth *G. muricellospora*
  - B. Apex of the stipe with few or no dermatocystidia; pleurocystidia present or absent. On mosses, on earth, or else on rotting wood, or stems of *Bolax*
    - C<sub>1</sub>. Cystidia on the sides of the lamellae absent; not on *Bolax* *G. hypnorum*
    - C<sub>2</sub>. Cystidia on sides of lamellae present; not on *Bolax* *G. riparia* cf. *G. marginata*, p. 250
    - C<sub>3</sub>. Cystidia not known. On *Bolax* in the Malvinas group *A. glebarum*

**Galerina (?) fuegiana** Sing. spec. nov.

Pileo melleo-ochraceo-brunneo vel cinnamomeo-brunneo, hygrophanus, fortiter pallescente in statu sicco, striato in humidis, haud viscido, fibrilloso e velo praecipue marginem versus, sed mox glabrescente, convexo, obtuso, 10—30 mm. lato. — Lamellis brunneolo-ochraceis vel subcinnamomeis, latiusculis vel latis, subdistantibus, adnatis. — Stipite albo, albido, pallide brunneolo, apice excepto ex integro squarruloso-fibrilloso vel squamuloso, cavo, cylindraceo vel basi incrassata, 43—50  $\cong$  3—5 mm.; velo pallide brunneolo, anulum haud efformante. — Carne pallidioris superficie vel albida, fragili, inodora. — Sporis 8.2—11.8  $\cong$  4.8—8  $\mu$ , plerumque 9.5—10.2  $\cong$  6.2—6.8  $\mu$ , ellipsoideis, plerumque apice late rotundatis et callo haud interruptis, membrana duplici instructis, levibus, brunneolo-melleis, moderate intense coloratis. Cystidiis cum cheilocystidiis identicis, ad latera et aciem lamellarum occurrentibus tenuitunicatis, hyalinis vel brunneolis, ampullaceis, rarius cylindricis, 30—90  $\cong$  4.7—13.8  $\mu$ . Epicute ex hyphis repentibus consistente. Hyphis omnibus fibulatis. — Ad *Sphagna* emortua nec non ad terram humidam inter muscos vel gramina prope *Nothofagos* antarctis. Tierra del Fuego.

Pileus melleous-brown, later cinnamon-brown, hygrophanous, becoming pale ocher to nearly white when drying out, transparently striate when wet, not viscid, fibrillose, especially toward the margin (from the veil) but soon glabrescent convex obtuse, 10—30 mm. broad. — Lamellae brownish ochraceous then almost cinnamon, rather broad to broad, subdistant, adnate; spore print not obtained but probably cinnamon brownish. — Stipe pale brownish, eventually whitish or white, squamulose to squarrulose-fibrillose all over except for the apex, hollow, cylindrical or with thickened base, 43—50  $\cong$  3—5 mm. broad (reaching 5 mm. only at the thickened base); veil pale brownish, palescent, fugacious, not forming an annulus. — Context paler than the surface to whitish, white or whitish when dry and dried; odor none.

Spores 8.2—11.8  $\cong$  4.8—8  $\mu$ , most frequently 9.5—10.2  $\cong$  6.2—6.8  $\mu$ , ellipsoid, mostly with broadly rounded apex, rarely with some spores which show a mucronate apex as some *Crepidoti* of the *Mollis*-group do, somewhat attenuate toward the apex as in some species of *Inocybe* but apex not acute, without a callus, or rarely with a very indistinct one, without germ pore, without ornamentation of any kind, absolutely smooth and without trace of an exosporium, without trace of a plage, never, or very exceptionally subreniform, brownish melleous, remaining hyaline for a long time until immediately before maturity but eventually becoming about as intensely colored as those of *Naucoria subantarctica* or the average *Neucorias* of the *N. centunculus* group. Basidia usually all 4-spored, but frequently many

2—3-spored ones intermixed, clavate, hyaline,  $22-37 \Rightarrow 7.2-11 \mu$ . Cystidia on edge and sides equal, crowded at the edges which they make subheteromorphous (with few if any basidia and pseudoparaphyses intermixed), hyaline or brownish,  $30-90 \Rightarrow 4.7-13.8 \mu$ , most frequently  $51-60 \Rightarrow 8.8-12.3 \mu$ , or, in a larger carpophore with about the same length dominant, but breadth between  $4.7$  and  $8.2 \mu$ , thin-walled, ampullaceous, rarely cylindrical, often with a constriction in the ventricose lower portion, originating in the lower layer of the subhymenium, the upper attenuate portion shorter or longer cylindrical comparatively thin above, without incrustation of any kind, sometimes (in larger older specimens where they are narrower) with subcapitate apex, numerous on the sides of the lamellae but in age becoming scattered there. Pseudoparaphyses at edge subbasidiomorphous, hyaline, e. gr.  $27.5 \Rightarrow 10.3 \mu$ . Subhymenium subcellular, consisting of small elements which are very irregular in shape and often very broad, deeper brownish colored than the trama. Hymenophoral trama regular, consisting of very slightly brownish-hyaline later more distinctly brownish hyphous elements which are parallel with each other and considerably broader in the central stand (mediostratum proper), especially in age (reaching  $18 \mu$  diameter in average); elements of the case in the trama proper. Epicutis of the pileus somewhat more hyaline than the hypodermium, consisting of repent filamentous hyphae. Hypodermium with repent elongate medium thick hyphae which are strongly pigmented by an incrusting membrana pigment. Fibrils of the stipe consisting of hyphal fascicles with cystidioid elements which are very variable in size and shape, most frequently broadened below or in the middle (to about  $8 \mu$  diameter),  $2.7-5.5 \mu$  broad above not incrustated by pigment.

On peat underlying the recent vegetation of mosses and herbs in wet place where the Sphagnum is retreating, or else on wet soil among grasses, not in the dense woods, but usually not too far from *Nothofagus antarctica*. Fruiting in February. Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego. Estancia Nueva Argentina, R. G., 17-II-1950, R. Singer, no. 327, LIL, type. — 23-II-1950, no. M 449, LIL. — 20-II-1950, no. M 387, LIL.

This species is not rare but scattered in Tierra del Fuego. It is the most puzzling species as far as its taxonomic position is concerned. The spores are those of a *Tubaria* yet without the thin, collapsing walls and somewhat deeper colored. The presence of pleurocystidia is unknown in that genus. Nevertheless, it was collected as a *Tubaria*, and has undoubtedly much in common with that genus. We consider it now as a *Galerina* since it is here that it will key out in most modern generic keys, and the only species which seems to be comparable in the literature, *Galerina clavus* Romagnesi, Bull.

Soc. Myc. Fr. **58**: 149. 1942 was also tentatively inserted in *Galerina* by its author. This latter species, collected in France, has likewise adnate distant lamellae and spores which are obtuse at the apex, pleurocystidia of an ampullaceous shape, and dries excessively rapidly exactly like our species. It differs in having a more vivid color in pileus and stipe, and in being much smaller, with somewhat narrower spores. I feel certain that whatever generic position will eventually be given to this European plant will also be the position of *Galerina fuegiana* Sing.

*Galerina vittaeformis* (Fr.) Sing. Act. Inst. Bot. Kom. II. Pl. Crypt. **6**: 480. 1950.

*Agaricus vittaeformis* Fr. Syst. Myc. **1**: 267. 1821.

*Galerula muricellospora* Atk., Proc. Amer. Phil. Soc. **57**: 360. 1918.

Pileus melleous, brownish ochraceous, ocher brown, ("spice", center "Alamo"), hygrophanous, much paler (e. gr. pl. 10, F-5) when dry, one third to three quarter of the radius transparently striate when wet, smooth and glabrous, campanulate, hemispheric or convex, umbonate (papillate) or subumbonate or obtuse (in Tierra del Fuego most frequently obtuse), with the margin eventually often upturned, 4—13 mm. broad, 4.5—5.5 mm. high in most specimens. — Lamellae brownish ("Peruvian br.", pl. 11, I-7, or pl. 12, J-8), usually with pallid edge horizontal or ascendant, or arcuate, adnexed, adnate, or somewhat decurrent, more rarely sinuate-decurrent, narrow then moderately broad (1—2 mm.), rarely broad (to 3 mm.), moderately close to subdistant. — Stipe "desert" at the "apex, and "Raw sienna" below", or else concolorous with the lamellae at the apex, and concolorous with the pileus below, usually becoming "burnt umber" but deeper (as plate 8, J-12), or deeper, or else "amber br", or blackish brown from the base upward, entirely strongly pruinete, glabrescent from the base upward, but the apical third always distinctly pruinete, appressedly white silky or fibrillose in the dark lowest zone, tubulose, tapering upward in the very young ones, equal or tapering downward when mature, 15—40  $\Rightarrow$  0.7—1.5 mm.; veil very slight and pallid, sparse, soon disappearing rarely leaving a linear belt at the apex, usually consisting of a few indistinct fibrils; mycelial tomentum white. — Context paler than surfaces, inodorous.

Spores (7.5)10.8—16.5  $\Rightarrow$  (6.2)6.5—8.5(9)  $\mu$ , most frequently between 11 and 13  $\mu$  long, short-ovoid-ellipsoid, ellipsoid, or ellipsoid-almond shaped, often with mucronate apex, with callus, with plage, grossly to thinly dotted-asperulate to verrucose, well colored, with compound wall. Basidia (1)—2-spored 20—33  $\Rightarrow$  5.5—10  $\mu$ . Cystidia on edges and sides of the lamellae, 34—75  $\Rightarrow$  7—23  $\mu$ , mostly comparatively short in the Fuegian collections (to 55  $\Rightarrow$  13.8  $\mu$ ), thin-walled, rarely with slightly thickened walls, especially in the ventricose por-

tion, hyaline, subulate or pedicellate below the ventricose portion and attenuate upwards, often ampullaceous with cylindric upper portion (e. gr. 3—6.7  $\mu$  in diameter there), more crowded and sometimes with longer attenuate portion at the edges, but otherwise identical and no cheilocystidia differentiated. Pruina of the stipe consisting of dermatocystidia which are ventricose below, often subulate, or else ampullaceous, sometimes very slightly subcapitate at the apex, and then the latter about 7  $\mu$  in diameter, very rarely with mucronate tip, most frequently more or less subulate but tip not acute, hyaline, thin-walled, or rarely with very slightly thickened walls, numerous, 35—140  $\Rightarrow$  6—20  $\mu$ , in the Fuegian material reaching 65  $\Rightarrow$  15  $\mu$ . Epicutis with repent hyphae; hypodermium with pigment-incrusted hyphae. All hyphae with clamp connections.

On various mosses in very wet locality, with peat ground, but also among *Polytricha*, on heaps of dead *Carex*, even on rotting wood, usually gregarious, fruiting in February, in the northern hemisphere from spring until fall. Tierra del Fuego, also in North America and Europe.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina 12-II-1950, R. Singer, no. M 243, LIL. — 22-II-1950, no. M 432, LIL. — USSR., Altai Mountains, Left shore of the Biya 4-IX-1937. Singer & Vasilieva, no. A 928, LE. — Leningrad Summer Park (Sovkhoz), September 1936, R. Singer, no. 4-104, LE. — Botanical Garden, cultures of *Polytrichum* from Novaya Zemlya, 17-VI-1937, R. Singer, no. 4-363, LE.

The form occurring in Tierra del Fuego is completely identical with the northern forms such as that from Novaya Zemlya, only with the cystidia and dermatocystidia not reaching the same length as in the northern collections, and the veil being somewhat more visible though still very fugacious in our southern collections (cf. especially var. *subannulata*, below). The Fuegian forms are all two-spored. The four-spored form was collected by me in Central Asia (near Kurai A 169, and has spores 8.5—10  $\Rightarrow$  5.5—6.5  $\mu$ ; otherwise it is identical with the 4-spored form). This species being rather common in the wet places in Tierra del Fuego, it is most probable that the four-spored form will eventually be encountered also. The size of the carpophores is rather smaller in our material than indicated by Kühner, and coincides much rather with the North American material described by Atkinson, but all these variations are minor. The fact remains that again, the Magallanes region shows a separated area of a fungus common in the north without any remarkable differences due to the formation of races — climatic or ecological or otherwise — and here as in the case of *G. hypnorum*, *Inocybe eutheles*, *Bolbitius aleuriatus*, etc., we cannot but profer our



most sincere doubts about the theory of migration from the north to the south, along the mountain ranges of the three continents. Not only are these species absent from the montane woods (*Alneta*) now existing in these mountain ranges, but there is a gap of considerable breadth where it is very doubtful that migration from the north to the south passed through.

Var. **subannulata** Sing. var. nov. Differt a *G. vittaeformi* velo distinctiore in stipite. Locis siccioribus, Tierra del Fuego.

Pileus between "burnt umber" and "Alamo" when wet, hygrophanous, pl. 10, F-5 when dry, short transparently striate when wet obtusely campanulate, naked and glabrous, 4—11 mm. broad. — Lamellae "Peruvian br.", planely adnate to sinuate-adnate, broad, moderately close to subdistant. — Stipe "Alamo", deeper colored below (as in the type variety), with an apical narrow annular belt which is rather fugacious, appressedly fibrillose below the belt and strongly pruinose above the belt, equal or tapering upward, 18—25  $\cong$  1—2 mm. — Context paler than the surfaces, inodorous.

Spores finely to medium finely verruculose with distinct plage, 9.5—13.7(14.5)  $\cong$  7.5—8.3(9)  $\mu$ , ovoid-amygdaliform to almost ellipsoid, with compound wall, rather well colored to well colored, often with mucronate apex, with callus. Basidia (1)—2—(3)-spored, 24—32  $\cong$  8.2—11  $\mu$ . Cystidia varying from ventricose-vesiculose without mucro, to ampullaceous with a comparatively long narrowed upper portion, with ventricose-mucronate cystidia forming the transition between the two types, the upper portion, if ampullaceous either attenuate to the tip or cylindrical, more often so at the edges, and more rarely so on the sides of the lamellae, 38—57  $\cong$  10.2—20.5  $\mu$ . Dermatocystidia subulate, fusoid, or ampullaceous all over the stipe. Hymenophoral trama regular. All hyphae with clamp connections.

Dry place on a exposed slope among *Empetrum*, small group. Fruiting in February Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego. Estancia Nueva Argentina, R. G., 22-II-1950, R. S i n g e r, no. M 429, LIL, type of the variety.

This variety may be an adaptation to drier situations which would account for a more persistent veil and consequently a more reduced pruinosity below the velar attachment, and, under the influence of the veil, for broader, more vesiculose cystidia at the edge of the lamellae.

If it is understood that a more developed veil is a sign of less highly developed races or forms, one would take this as an additional argument against a north south migration of boreal agarics to Tierra del Fuego. However, it may also be that there is no natural competition in the drier places, on the side of other fungi while there

is such competition in the boreal zone. And it may further be that a more strongly veiled form will be discovered somewhere in the northern hemisphere. Consequently, it is dangerous, at present, to make premature conclusions. Nevertheless, the existence of this variety is of certain interest beyond the plain taxonomic fact.

It may be worth mentioning that otherwise fully identical (with the type variety) material was twice and exclusively found on decayed coniferous wood in the Altai Mountains.

*Agaricus kerguelensis* Berk. may be either this or one of the other *Galerinas* described here.

*Galerina hypnorum* (Schrank ex Fr.) Kühner, *Le Genre Galera*, p. 194, 1935.

*Agaricus hypnorum* Schrank ex Fr., *Syst. Mycol.* **1**: 267. 1821 (ss. Ricken, *Blätterpilze* **1**: 229. 1910—15).

*Galera hypnorum* (Schrank ex Fr.) Kummer, *Führer i. d. Pilzk.*, p. 75. 1871.

*Galerula hypnorum* (Schrank ex Fr.) Atk., *Proc. Am. Phil. Soc.* **57**: 363. 1918.

*Galerula subhypnorum* Atk., l. c. p. 363.

*Galera hypni* (Batsch ex) Sacc., l. c. p. 782.

?*Agaricus pumilus* Secr., *Mycologie Suisse* **2**: 375. 1833.

Pileus much deeper and darker than "Alamo", or with the striae and center between "Sudan br." and "burnt umber" and almost reaching "Kis kilim", "Pablo" between the striae, hygrophanous, drying from the center outward and becoming buff when dry, transparently striate and sometimes sulcate over about one half to two thirds of the radius, subglobose at first, then convex to campanulate or conical, eventually convex-subapplanate, usually with papilla or umbo rarely umbilicate, 3—14 mm. broad, 2.5—9.5 mm. high. — Lamellae ocher brown to rusty with pallid edge, adnate, eventually separating from the apex of the stipe, rather thick and distant, or more rarely moderately close, moderately broad to broad; spore print rusty. — Stipe lighter colored than the pileus, usually "oak" with the apex "Pablo", equal, more rarely slightly tapering upward, with pruinose apex or without pruina, finely appressedly fibrillose or silky, 18—25  $\Rightarrow$  0.7—3 mm.; veil present, pallid, connecting the margin of the pileus with the apex of the stipe, but very rarely forming a very indistinct and very fugacious annulus at the apex, usually not leaving more than the fine fibrillosity which soon collapses almost without a trace. — Context paler than the surface, subinodorous.

Spores 9.5—12.3  $\Rightarrow$  6.2—7.5  $\mu$ , in Tierra del Fuego most frequently 10.2—12.3  $\Rightarrow$  6.2—6.8  $\mu$ , varying from completely smooth to finely verrucose, rough with an exosporial ornamentation contrasting little

in color with the epispodium which is brownish melleous, with a perispodium which is usually quite inconspicuous and closely agglutinated to the spore and therefore scarcely demonstrable, with pallid endospodium, with callus, with (in most spores) distinct plage, with moderately thick wall and normally intense pigmentation, ellipsoid to amygdaliform; basidia mostly 4-spored, often with a minority of 2-spored ones intermixed, and with very few 3-spored ones, hyaline or sometimes melleous in herbarium material, ventricose to clavate,  $24-30 \Rightarrow 8.2-10.3 \mu$ ; cheilocystidia  $24-52 \Rightarrow 4-10 \mu$ , usually ventricose at the very base, with a gradually tapering attenuate portion which is about  $4-5 \mu$  broad immediately above the ventricose portion, and reaches a minimum diameter of  $2.3-2.8 \mu$  just below the tip, the tip itself sometimes subcapitate and  $4-4.2 \mu$ , rarely up to  $7.5 \mu$  in diameter, hyaline, rarely brownish; cystidia on the sides of the lamellae none, except for occasionally a few cheilocystidia very close to the edge; hymenophoral trama regular, hyaline, in age intermixed with brown incrustated hyphae; epicutis consisting of parallel hyphae arranged radially, rather thin and with rusty pigment incrustation; hyphae of the hypodermium thicker and more irregular, more interwoven and pigmented; there are some swollen subhyaline hyphae intermixed in both epicutis and hypodermium, but very scattered; all hyphae with clamp connections; base of basidia also clamped.

On mossy rotten trunks of *Nothofagus pumilo*, also on short moss in general, fruiting from February until March (in the northern hemisphere in summer and fall), Tierra del Fuego and following the high mountain ranges to Northern Argentina where it occurs in the alpine zone, also in North America, Europe and Asia.

Material studied: Argentina: Tierra del Fuego. Estancia Nueva Argentina R. G., 11-II-1950, R. Singer, no. M 187, LIL. — 10-II-1950, no. 168, LIL. — Catamarca, Cuesta de Negrilla, 3000 m alt. 2-III-1952, R. Singer, no. T 1925, LIL. — Cerro Negro, 3600 m alt. Slemmer & Sparre comm. Singer, no. T 1931, LIL. — Quebrada del Corral Viejo, 3200 m. alt., 3-III-1952, R. Singer, no. T 1916, LIL. — Also numerous collections in North America, Europe and Asia.

The form described above is the subantarctic-alpine form of South America. It may be generally characterized as the type form of the species. What seems to be the same form was also observed in the Caucasus Mts. where, for a long time it held the altitude record for any agaric in the temperate zones (Singer, Mt. Elbrus, on moss on moraines at 3600 m., glacier Asau, August 1929, see Beih. Botan. Centralbl. 48. II: 530. 1931). It is remarkable that this same form is also present in the alpine flora of South America.

The Catamarca habitats are alpine-subxerophytic.

Two-spored forms have been observed in both Europe and North America, yet, in Tierra del Fuego only mixed and 4-spored carpophores were gathered.

What seems to be the same form as the one described above has been observed by Spegazzini in Rio Grande, March 1921.

**Galerina riparia** Sing. spec. nov.

Ab aliis Galerinis sphagnicolis differt praesentia cystidiorum ad latera lamellarum. Tierra del Fuego.

Pileus brownish ocher to ocher brown ("Alamo", between striae and on extreme margin "Yucatan"), 2—3 mm. long to one third of the radius transparently (short) striate, often slightly lubricous, glabrous and naked, hygrophamous, almost hemispheric to (more frequently) convex, obtuse, subumbonate, or umbonate, somewhat appanate in the center when old in the obtuse caps, 8—29 mm. broad. — Lamellae light brown to avellaneous brown (lighter colored than the pileus), horizontal, adnate to decurrent, rather broad to broad, moderately close to distant. — Stipe ochraceous melleous all over or concolorous with the pileus, sometimes fuscous below and whitish at the apex, tubulose, equal or tapering upward, entirely appressedly white-fibrillose and glabrescent in age, 18—59  $\Rightarrow$  1—4 mm.; veil strongly developed, white, forming an apical (later often mediane) annulus in most specimens, the annulus membranous, simple, ascendant-funnel-shaped, distant an often recurved, smooth or sulcate above, persistent or collapsing in age. — Context paler than the surface or concolorous, inodorous.

Spores 9.5—13.8(16.5) Q 6.2—8.2  $\mu$ , rather variable in size from one collection to the other and also within a single carpophore, but never larger or smaller than indicated above, with an exosporial low ornamentation which forms nevertheless distinct, rarely in some spores indistinct granules and warts, with distinct plage, with very thick compound wall, callus, without distinct suprahilar depression or appanation, amygdaliform-ellipsoid, rather well colored to very deeply pigmented. Basidia 4-spored, either all of them or with some 2-spored ones intermixed, 35—37  $\Rightarrow$  8—10.3  $\mu$ . Cystidia on both edges and sides of lamellae 40—67  $\Rightarrow$  8.2—19  $\mu$ , more numerous and in an average less voluminous at the edges, ventricose-pedicellate in the lower portion, or subulate, above ampullaceous-attenuate or with cylindric upper portion which is rarely mucronate, and an apical swelling (subcapitate) is of inconstant occurrence (from exceptional to about half the individual cystidia). Cheilocystidia not differentiated, or vesiculose to vesiculose-mucronate bodies with all transitions to ordinary cystidia with hyaline walls, mixed in with the cystidia and some basidia at the edge of the lamellae; these cheilocystidia, if present are about 12.3—15.5  $\mu$  broad, more rarely thinner or thicker, all cysti-

dial bodies thin-walled. Hymenophoral trama regular, melleous to melleous-hyaline. Epicutis of repent hyphae. Hypodermium of strongly intervoven but more or less repent, strongly rusty incrustated hyphae. All hyphae with clamp connections.

On moist mossy pastures, often on peat base, among mosses, usually in very wet places along rivulets and in swamps, often directly in the Sphagnetum (turbera) among living Sphagna, outside the woods, or at least independent of their presence, usually in groups, fruiting from February until March. Tierra del Fuego.

One would be inclined to believe that *Tubaria stagnina* in the sense of Spegazzini is this species but Spegazzini indicates the spores  $18-20 \approx 9-10 \mu$ . I have not found any comparable species in Tierra del Fuego, least of all in the meadows along Rio Grande where Spegazzini's specimens came from. If this is a *Galerina* at all, I must have overlooked it. However, this may be *Naematoloma myosotis* var. *lapponicum* (Fr.) Sing.

#### Species incertae sedis.

*Pholiota marginata* (Batsch ex Fr.) Quél. = *Galerina marginata* (Batsch ex Fr.) Kühner was indicated by Bresadola from the Magallanes region, coll. Dusén no. 182, 12-IV-1896, on rotten trunks. The spores are said to be  $8-9 \approx 4.5-6 \mu$  the basidia  $20-25 \approx 6-8 \mu$ , the cystidia ampullaceous-clavate subcylindric or fusoid-ventricose. No annulate *Galerina* with such small spores has been observed by me.

*Agaricus glebarum* Berk. in Hooker, Flora Antarctica 1: 447. 1844 is unique because of its habitat and small spores,  $8-9.5 \approx 4.8 \mu$ , but has been collected only once. It is most certainly a *Galerina*, but the section and subsection is uncertain.

#### Genus *Phaeomarasmius* Scherffel.

##### Key to the Species

- A. Covering of the pileus consisting of, or containing numerous spherocysts *P. ciliatus*
- A. Covering of the pileus without spherocysts
  - B. Spores up to  $10.3 \mu$  long
    - C. Cheilocystidia ventricose with a long rostrate apex, the ventricose base often more than  $8.2 \mu$  broad . . . . . *P. rostratus*
    - C. Cheilocystidia elongate-basidiomorphous, few cylindric or narrowly fusoid, up to  $8.2 \mu$  broad . . . . . *P. limulatellus*
  - B. Spores larger than  $11 \mu$  . . . . . *P. exquisitus*

#### **Phaeomarasmius ciliatus** Sing. spec. nov.

Pileo sordide ochraceo-brunneolo, granulis ferrugineis ornato, subhygrophano vel non hygrophano, margine serrulato, campanulato-semiglobato, cc. 9—13 mm. lato. — Lamellis argillaceo-brunneis, la-

tiusculis, horizontalibus, subventricosis, rotundato-adnexus. — Stipite pileo concolori eodem modo granulato vel spinoso-squarruloso, apice opace flavo, fibrilloso-pruinoso ad apicem, basi apiceque incrassatis praedito, subaequali, 27—28  $\Rightarrow$  1—1.5 mm. — Carne pallidiore superficie, fragiliore, inodora. — Sporis ferrugineo-melleis, bene coloratis in KOH, interius ad latum applanatis, vel subconcavis, apice obliquis, rotundatis vel attenuatis, callo forti (subporiformi in nonnullis sporis) praeditis, levibus, episporio et endosporio praeditis, 7.5—8.2 (9.3)  $\Rightarrow$  4.8—(5.5)  $\mu$ . Cheilocystidiis filamentosis, basin versus subincrassatis vel ventricose incrassatis (2.7—5.5  $\mu$  in diametro), 39—66  $\Rightarrow$  2.7—5.5  $\mu$ . Granulis pilei (epicute) e conglomerationibus sphaerocystium (nonnullis sphaerocystibus piliformiter elongatis vel ellipsoideis) consistentibus. — Habitat ad ramulum emortuum ad humum silvae delapsum nothofagineum, Tierra del Fuego.

Pileus rusty granular on dull ocher brownish ground, with serrulate margin, campanulate-hemispheric, not or very little hygrophanous (i. e. hygrophanous underneath the granulosity) about 9—13 mm. broad, about 6 mm. high. — Lamellae argillaceous brown, with white edge, rather broad (to 3 mm.) horizontal, subventricose, adnate to rounded-adnexed behind, spore print not obtained. — Stipe rusty spinose squarrulose and or granulose on dull ocher brownish ground, with dull yellowish apex, fibrillose-pruinose at the apex, somewhat thickened at the apex and base, nearly subequal, tubulose, 27—28  $\Rightarrow$  1—1.5 mm. — Context paler than the outside, rather fragile, inodorous.

Spores 7.5—8.2(9.3)  $\Rightarrow$  4.8(5.5)  $\mu$ . well colored when quite mature but hyaline for long time, and some remaining so, with distinctly thickened (bistratous) walls which are smooth and consist of a darker episporium and a subhyaline endosporium, with conspicuously appanate inner side, sometimes even concave on the inner side and then appearing phaseoliform (subreniform), with remarkably oblique apex in many specimens, broadly rounded above or else attenuate toward the callus or even almost subacute, callus very strongly developed and sometimes almost pore-like but never truncate, never with angular outline. Basidia 4-spored, clavate, 17.5—19.5  $\Rightarrow$  6.2—6.8  $\mu$ . Cheilocystidia 39—66  $\Rightarrow$  2.7—5.5  $\mu$  (at the broadened portion in the lower half), 2—4.8  $\mu$  (above), filamentous, or subfilamentous, not distinctly ampullaceous, with obtuse or almost subacute apex, thin-walled, the majority of the cheilocystidia near the lower limits in breadth, hyaline, making the edge of the lamellae heteromorphous. Cystidia at the sides of the lamellae absent. Granular covering of the pileus consisting of thickenings of the uppermost layer of the cuticle which is made up of densely accumulated spherocysts, some of which are perpendicularly elongated into cylin-

dric "hairs" or into ellipsoid-subclavate elements, thick-walled, with rusty membrana pigment, 16—26  $\mu$  in diameter, if round, e. gr. 30  $\cong$  15  $\mu$  if elongated. Spinose or granular covering of the stipe consisting of similar bodies but few of them spherocysts, most of them members of hyphal chains which are cylindric, rhomboid-short-fusoid, or pyramidal, 20—44  $\cong$  9.5—22  $\mu$ . Pruina of the apex of the stipe consisting of occasional dermatocystidia which are much like (and homologous with) the cheilocystidia. All hyphae with clamp connections.

On fallen branches and twigs in woods of *Nothofagus pumilio*, solitary or almost so fruiting in February, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego. Estancia Nueva Argentina, R. G., 15-II-1950, R. Singer, no. M 288, LIL, type. — 18-II-1950, no. M 348, LIL, syntype.

This species is close to *Phaeomarasmius carpophila* and *Phaeomarasmius granulatus*. I think, however, that it is different from both.

**Phaeomarasmius rostratus** Sing. spec. nov.

Pileo brunneo, hygrophano, demum manifeste fibrilloso, convexo-campanulato sed haud elevato, dein repando cc. 17 mm. lato. — Lamellis isabellinis, adnatis, subconfertis vel moderate confertis, latis. — Stipite subconcolori pileo sed fibrillis pallidis instructo, apice pallidiore sed isabellino-furfuraceo usque ad interstitia lamellarum, aequali, cavo, cc. 33  $\cong$  2.5 mm. — Carne brunneola, pallidiore in siccis, inodora. — Sporis ellipsoideis, perpaucis subreniformibus, nonnullis apicem versus attenuatis sed plerumque crassissimis in media parte et late rotundatis poro germinativo calloque distincto destitutis, levibus, brunneolis, membrana leniter incrassata ex endosporio tenui et episporio colorato consistente 8.8—10.3  $\cong$  6—7  $\mu$ . Cheilocystidiis rostratis, ventricosis ad basin et plerumque longe filamentosis sursum, rarissime parte superiore reducta, 48—69  $\cong$  7.5—11.7  $\mu$ . — Epicute ex hypharum latarum incrustatarum catenulis longiusculis partim subrectis partim superficiei pilei applicatis consistente. — Habitat ad lignum emortuum in Nothofagetis, Tierra del Fuego.

Pileus pl. 13, H-11 in center, nearer "Pekinese" on margin, hygrophanous becoming pl. 10, G-7 when dry and drying in small spots usually simultaneously on the margin and the center, remaining marbled for some time, eventually appearing fibrillose, campanulate-convex, becoming somewhat applanate, about 17 mm, broad. — Lamellae between "Pablo" and "Aztec", with pallid fimbriate edges, adnate, gradually becoming very broad from the edge toward the stipe, not ventricose but the edges forming an almost straight line, very broadly adnate, subclose to moderately close, 3.5 mm. broad; spore print not obtained. — Stipe subconcolorous with the pileus but with paler

apex, with pale tan colored fibrils, at the apex and up into the inter-lamellar spaces furfuraceous, the furfuraceous particles being concolorous with the lamellae, equal, hollow, about  $33 \approx 2.5 \mu$ .; veil scanty, not leaving other trace than the pale tan colored fibrilosity on the surface of the stipe. — Context brownish, strongly hygrophalous, becoming paler when dry, odor none.

Spores  $8.8-10.3 \approx 6-7 \mu$ , smooth, often appearing somewhat rough but this is because of internal granulosity which disappears in the Melzer where the spores change from light brownish ( $\text{NH}_4\text{OH}$  and  $\text{KOH}$ ) to somewhat purplish brown (amyloid?). ellipsoid, and usually thickest in the middle and broadly rounded at the apex, more rarely somewhat attenuate toward the apex, rarely slightly subreniform in profile, with moderately thick wall which consists of a thin endosporium and an episporium, without germ pore and with no or very indistinct callus. Basidia 4-spored, fewere 2-spored, clavate  $30-35 \approx 9.8-10.3 \mu$ . Cheilocystidia making the edge heteromorphous, ventricose below, with a very long rostrum-like upper portion which is about  $4 \mu$  broad and rarely reduced to a short bottle-neck or extremely rarely entirely absent,  $48-69 \approx 7.5-11.7 \mu$ . Hymenophoral trama consisting of colored hyphae incrustated by pigment, regular. Epicutis of the pileus consisting of chains of rather broad pigment incrustated hyphal chains, most of them applicate to the surface of the pileus in mature material, but in some places semierect or erect and forming fascicles or singly projecting from the general level of the cuticle; these hyphae consist of cells which are strictly elongate, up to  $65 \mu$  long, and  $6.8-20 \mu$  broad, with the terminal member acute or more frequently broadly rounded at the tip. Hypodermium consisting of denser more interwoven and more strongly pigmented hyphae; trama of pileus yellowish. Dermatocystidia of the general type of the cheilocystidia numerous between the furfuraceous particles occurring at the apex of the stipe;  $6-8.3 \mu$  broad at the base, rostrum  $2.7-3.5 \mu$  thick, up to  $57 \mu$  high, perfectly hyaline. The furfuraceous particles consist of incrustated broader elements with the terminal members of the hyphae composing it often erect and versiform, sometimes even clavate, e. gr.  $41 \approx 3.5-9.5 \mu$ . All hyphae with clamp connections.

On a dead log under *Nothofagus antarctica*, solitary, fruiting in February, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego. Estancia Nueva Argentina, R. G., 17-II-1950, R. Singer, no. M 318, LIL, type.

This species is remarkable for the comparatively (in *Phaeomarasmius*) poorly developed epicutis which in our (adult) specimens is applicate to the surface for the larger part, and only occasionally showing erect chains or bunches of chains. Nevertheless the charac-



ter of this covering is very typical for *Phaeomarasmius* and it is to be expected that younger material shows a more distinctly developed trichodermium. The habit is, like in other species of the *Cortinariaceae* in Tierra del Fuego somewhat reminiscent of *Tubaria* (for example this species, *Galerina fuegiana*, and *Naucoria polytropha* yet they are not related with that genus, and no genuine *Tubarias* occur in the Magallanes region as far as is known to the author.

***Phaeomarasmius limulatellus* Sing. spec. nov.**

Pileo subcinnamomeo-alutaceo, hygrophano, pellucide striato, manifeste glabro in statu humido, minute ferrugineo-flocculoso in statu sicco, convexo, dein applanato, subumbonato vel subumbonato centroque umbonis umbilicato, 8—12 mm. lato. — Lamellis ochraceo-brunneolis, moderate latis, subconfertis, decurrentibus. — Stipite pileo pallidore, ferrugineo-fibrilloso usque ad annulum indistinctum apicalem fugacissimum, cc. 20  $\approx$  1.5 mm. — Carne hygrophana, inodora. — Sporis ferrugineo-brunneolis, callo poroque germinativo destitutis, ovoideis vel obovatis vel ellipsoideis, membrana ex endosporio et episporio distinctis consistente, 8.2—10.2  $\approx$  5.5—6.2  $\mu$ . Cheilocystidiis inconspicuis, elongato-clavatis vel subcylindricis vel anguste fusiformibus, 50—69  $\approx$  3—8.2  $\mu$ . Epicute consistente e trichodermio catenulis hypharum crasse tunicatarum incrustatarum latiuscularum efformato. — Ad lignum putridum in silva nothofaginea, Tierra del Fuego.

Pileus "topaz", hygrophanous, in dry condition pl. 10, D-4 í. e. cream-ocher, transparently striate over one half of the radius in wet condition, appearing glabrous in wet condition, but distinctly though minutely rusty flocculose in dry condition, convex then applanate, subumbonate or sometimes with a small umbilicus in the middle of a subumbonate disc, 8—12 mm. broad. — Lamellae ochraceous brownish, moderately broad, to rather broad, subclose, decurrent; spore print not obtained. — Stipe paler than the pileus, with rusty fibrils up to a very fugacious and somewhat indistinct apical annulus, about 20  $\approx$  1.5 mm. — Context hygrophanous, inodorous.

Spores 8.2—10.2  $\approx$  5.5—6.2  $\mu$  smooth, well colored (rusty brownish), without germ pore or callus, ovoid, obovate or ellipsoid, without suprahilar depression but some with a small suprahilar applanation, with distinctly double (endo- and episporium) wall. Basidia 4-spored, 28—33  $\approx$  6.5—9.5  $\mu$ . Cheilocystidia very inconspicuous, almost basidiomorphous but more elongate, narrowly clavate or subcylindric, some narrowly fusoid (rarely so), making the edge of the lamellae heteromorphous, 50—69  $\approx$  3—8.2  $\mu$ ; cystidia on the sides of the lamellae absent. Hymenophoral trama regular, consisting of hyphae with slight but distinct pigment incrustation. Epicutis

consisting of a trichodermium which is formed by hyphal chains; hyphae thick-walled (1.3—1.8  $\mu$  in diameter), strongly incrustated with an intensely and deeply rust-colored pigment, without crystalline incrustation, the terminal member of the chains e. gr.  $45 \rightleftharpoons 7 \mu$ , with rounded ends, the diameter of the other members varying between 5 and 11  $\mu$ . All hyphae with clamp connections.

On a rotten log of *Nothofagus pumilio* in the dense and shady woods of the hills fruiting in February, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, R, G., 22-II-1950, R. Singer, no. M 438, LIL, type.

This species differs from *Phaeomarasmium siparius* in slightly larger spores and more distinctly hygrophanous pileus (because of less abundantly developed covering trichodermium), decurrent lamellae and habitat.

*Phaeomarasmium chiliotrichi* Sing., Sydowia V: 475. 1951.

*Agaricus exquisitus* Berk. in Hooker, Botan. Antarct. Voyage . . . Flora Antarctica 1: 447. 1844.

Pileus ferrugineous, finely pulverulent, orbicular, thinly membranous, 2 mm. broad. — Lamellae ferrugineous-fuscous, distant (6), with broad smooth interlamellar spaces, ventricose, subfree; edge white. — Stipe concolorous with the pileus, pulverulent, the broadened disciform but irregular flexuous-membranous base floccose-membranous, otherwise filiform but thickened upwards, flexuous, short; 4 mm. high.

Spores 11.8—15  $\rightleftharpoons$  7.5—11  $\mu$ , pale melleous brownish, smooth, with indistinct callus or without callus, without germ pore, with rather thick wall; cheilocystidia (?) about 48  $\rightleftharpoons$  4.5  $\mu$ , cylindrical; epicutis of the pileus consisting of chains of hyphae, their terminal member cylindrical, clavate, or fusoid, broadly rounded at the tip, with melleous (not very deeply or intensely colored) pigment incrustation, 30—45  $\rightleftharpoons$  7.5—13  $\mu$ ; all hyphae with clamp connections.

On branches of *Chiliotrichum amelloides* (Compositae).

Material studied: Malvinas Falkland Islands: Port Louis, between April and December 1842, Officers of the ships Erebus and Terror, K, type.

This species is closely related with *P. horizontalis*.

### *Crepidotaceae* (Imai) Sing.

#### *Crepidotus* Kummer.

#### Key to the Species

- A. Spores very weakly ornamented, almost smooth, heterogeneity of spore wall difficult to observe; carpophores 2—5 mm. in diameter; habitat: horse manure; stipe central or eccentric . . . *C. stercorarius*

- A. Spores distinctly punctate because of imbedded short spinules; carpophores much larger than indicated above and never growing on dung; stipe in mature specimens either absent or very reduced  
B. Spores globose . . . . . *C. nephrodes*  
B. Spores not globose . . . . . *C. brunswickianus*  
*Crepidotus stercorarius* Sing. in Sing. & Digilio, Lilloa  
25: 409. 1952.

Pileus white, minutely pubescent, 2–5 mm. in diameter. — Lamellae “harvest” to “Martinique”, very distant, very narrow (up to 0.7 mm. broad), decurrent; spore print not obtained. — Stipe white, minutely pubescent, central or eccentric, up to 1.5  $\hat{=}$  0.5 mm. — Context white, thin, inodorous.

Spores 7.5–8.5  $\hat{=}$  6.2–7.5  $\mu$ , virtually smooth but with an extremely fine punctation which may easily escape one’s attention even with oil immersion lens in ammonia mounts, with very indistinctly heterogeneous wall, with a slight suprahilar depression, short-ellipsoid, ochraceous brown; basidia 4-spored, more or less clavate, 24–29  $\hat{=}$  8.8–9.7  $\mu$ ; cheilocystidia versiform, usually subulate or filamentous, 31–52  $\hat{=}$  4–7  $\mu$ ; subhymenium subcellular; hymenophoral trama regular; hymenopodium irregular, in some section even slightly divergent, the walls of the hyphae often slightly thickened; clamp connections present; epicutis consisting of repent strands of parallel hyphae which are hyaline and clamped, some of these strands ascendant, or some single hyphae suberect at places (hence the pubescence on pileus and stipe!), terminal members hyaline, cylindric and little differentiated, with broadly rounded tips, only rarely somewhat differentiated, e. gr. thickened in the middle and at the apex (subcapitate, up to 6–10.5  $\mu$  broad) or only in the middle, or only the apex, or else clavate and about 7  $\mu$  thick above, the thin portions about the diameter of the ordinary hyphae of the sterile surfaces, viz. 4.5–5  $\mu$ , occasionally with strange nodose outgrowths or even branched, never forming a hymeniform layer, but rather ascendant-connivent and forming pyramidal bodies which, at best, are not differentiated or separable from the tissue underneath; the structure of the surface of the stipe identical with that of the pileus; all hyphae with clamp connections.

On horse dung in the pastures, gregarious, Tierra del Fuego.

Material studied: Argentina, Tierra del Fuego, Rio Grande, Estancia Nueva Argentina, 21-II-1950, R. Singer, no. M 400, LIL, type.

This species is easily recognizable among all *Crepidoti* because of its interesting habitat and the small size coupled with central to eccentric stipe. However, its generic position is not quite so easily determined. It is of all *Crepidoti*, the one that shows some trend toward the genera *Naucoria* and *Alnicola*. It has indeed some de-

tails of the description in common with such species as *Naucoria pallidissima* Sing. and similar species with not quite uninterrupted dermatocystidial covering on the pileus, but it differs in the heterogeneous spores wall — even if this latter is not as distinctly non-homogeneous as in *C. nephrodes* etc. The cuticle is not made up by a well developed and differentiated cuticular layer with superimposed dermatocystidial layer but rather indefinite with occasionally ascendant hyphae or hyphal conglomerations forming a pubescence rather than a pruina; the terminal members of the epicuticular layer are not like dermatocystidia as they are usually found in *Naucoria*. The irregular hypodermium is also never found in species of *Naucoria* as far as our observations go. As for *Alnicola*, the covering layers are even more different, and the complete lack of a veil, the shape and size of the spores and the type of their ornamentation as well as the absence of mycorrhizal relationship in *C. stercorarius*, the eccentric stipe in many carpophores of the latter, the decurrent lamellae, remove *C. stercorarius* even more from *Alnicola* than from *Naucoria*. Under these circumstances, it seems to me that one must emphasize the lack of incrusting pigment, the size and ornamentation of the spores, the absence of mycorrhizal relationship, the eccentric attachment of the stipe in a majority of specimens, the decurrence of the lamellae, the lack of true dermatocystidia, the lack of a veil, and the partly irregular structure of the sterile tissue of the hymenophore — all of which will be in favor of *Crepidotus*. Within the family *Crepidotaceae*, one might also think of section *Thermophila* of the genus *Tubaria* (W. G. Smith) Gillet. The much smaller size of spores and carpophores, the lack of pigments in the tissues and surfaces, the frequently eccentric stipe, all this appears to be in favor of *Crepidotus*. The occasional outgrowths on terminal bodies of the surfaces reminds one of a similar phenomenon in *Tubaria*, sect. *Thermophila* but this is also often found in *Crepidotus*. One may also add that the thermophilous character of the known species of the *Tubaria* section tends to exclude *C. stercorarius* from the latter. As it is, *C. stercorarius* has its nearest relatives, next to other species of *Crepidotus*, in the section *Thermophila* of *Tubaria*, but this is to be expected since *Tubaria* and *Calathinus*, in our classification, are the genera most closely related to *Crepidotus* as a whole. *C. stercorarius* is merely an example to demonstrate how this proximity shows in detail, as far as sect. *Thermophila* of *Tubaria* and section *Echinosporae* of *Crepidotus* are concerned.

*Crepidotus nephrodes* (Berk. & Curt.) Sacc. Syll. 5: 882, 1887.

*Agaricus nephrodes* Berk. & Curt., Ann. Mag. Nat. Hist. II, **12**: 422. 1853.

*Agaricus malachus* Berk. & Curt., Ann. Mag. Nat. Hist. III, **4**: 291. 1859.

*Crepidotus malachus* (B. & C.) Peck, Ann. Rep. N.Y. State Mus. **39**: 71. 1886.

*Agaricus putrigenus* Berk. & Curt., Ann. Mag. Nat. Hist. III, **4**: 291. 1859.

*Crepidotus putrigenus* (B. & C.) Sacc. **5**: 883. 1887.

*Agaricus palmularis* Berk. & Curt., Proc. Amer. Acad. **4**: 117. 1858.

*Crepidotus palmularis* (B. & C.) Sacc., Syll. **5**: 880. 1887.

*Agaricus leucochrysus* Berk. & Curt., Proc. Amer. Acad. **4**: 117. 1858.

*Crepidotus leucochrysus* (B. & C.) Sacc., Syll. **5**: 887. 1887.

*Crepidotus hygrophanus* Murr, North Amer. Flora **10**: 150. 1917.

Pileus "Caucasia", or "tiffin" to pl. 13, K-9, or pl. 10, C-2, or "walnut", or "macaroon", or "madura", or simply sordid when wet, hygrophanus, white, or slightly yellowish, "maise", reaching "Nan-keen" or "Sarotoga" when dry, transparently striate over one tenth to three quarters of the distance between the margin and the dorsal attachment, more rarely not striate, in old specimens at places darkened and reaching occasionally a color between "chipmonk" and "raw sienna", slightly sulcate on the margin when mature and dry, more rarely completely smooth when mature and dry, white woolly tomentose in the rear portion, usually tomentose over the entire elevated portion of the pileus with the margin subglabrous or sericeous, rarely loosely fibrillose, glabrescent, with entire or sometimes crenulate margin, longer than broad in the smaller specimens, broader than long (conchate) in the larger specimens, convex, later applanate, 8—66 mm. broad (larger diameter). — Lamellae pallid or "old ivory" to "putty", then brownish (color of the spores), never yellow or orange, always broad to very broad (3—11 mm. broad, e. gr. 11 mm. for 60 mm. diameter of the pileus) broadest in the inner third, close to subdistant, concurrent towards a lateral point, and adnate to a lateral minute sterile knob-like stipe rudiment which if present is tomentose and white, or else suddenly emarginate to the flat base, more rarely attenuate gradually, inserted with numerous lamellulae, with entire edges, the sides often transversely striate and striped; spore print "olive woods" on "clove". — Stipe none, or rudimentary. — Context white, comparatively thin, rarely thicker than 1 mm., inodorous, but old specimens sometimes smelling like *Russula parazurea* (sweat), or like rotten wood when drying in an oven; taste mild.

Spores 6.2—8.2(8.5)  $\Rightarrow$  6.2—8(8.3)  $\mu$ , globose, with very short and at least partly imbedded (in the episporium) cylindrical spines and therefore distinctly punctate when seen from above, without supra-hilar depression or applanation. Basidia 4-spored, thickest somewhat above the middle, 22—29(34.5)  $\Rightarrow$  8.2—9(9.7)  $\mu$ . Cheilocystidia 24.5—48  $\Rightarrow$  9—20  $\mu$ , with the wall slightly thicker and more resistant in the upper portion than at the base, hyaline, or pale brownish, smooth, vesiculose or broadly club-shaped and pedicellate, more rarely elongate-clavate, numerous; all hyphae with clamp connections.

On decaying wood of frondose trees (*Nothofagus* in Tierra del Fuego), in small or large groups but not very densely aggregate, fruiting from October until April in the southern hemisphere. North, Central and South America, from Canada to Tierra del Fuego.

Material studied from Southern Argentina: Neuquén, San Martín de los Andes, April 1951, Cei & Tomsic, comm. R. Singer, no. M 465, LIL. — Tierra del Fuego, Rio Grande, Estancia Nueva Argentina, February 1950, R. Singer, no. M 176, LIL. — Ushuaia, Cabecera del Lago Fagnano, February 1950, R. Singer, no. M 386, LIL.

Numerous other collections are known from Argentina and from North America, among others, the type collection of *C. nephrodes* Berk.

*Crepidotus brunswickianus* (Speg.) Sacc., Syll. 9: 116. 1891.

*Agaricus brunswickianus* Speg., Bol. Acad. Nac. Cienc. Cordoba 11: 13. 1887.

Pileus pale melleous to fulvous-yellowish, hygrophanous, glabrous, entirely smooth, with entire incurved margin, dimidiate, rounded in front, behind subreniform or cuneate and protracted into the stipe. 30  $\Rightarrow$  15 mm. — Lamellae concolorous with the pileus, polydymous, rather close, rounded-acuminate in front and attenuate-decurrent behind, with entire edges; spore print unknown. — Stipe, if present, white densely and irregularly papillate-tomentose, comparatively rather thick, extremely short, evidently not separated on the upper side; basal mycelium white, scanty, somewhat hispid. — Context white, almost thin, inseparable from the hymenophore. (Macro-description according to Spegazzini's data).

Spores 7.5—9.5  $\Rightarrow$  5—7  $\mu$ , with heterogeneous wall as in *Crepidotus sphaerosporus* and *C. Cesatii*, conspicuously punctate, the punctation in some cases visible even in 15% KOH solution, with the imbedded short spines somewhat ferruginous and somewhat darker than the imbedding episporium-layer, so at least in many spores, in others the imbedded spines less contrasting in color, some spores with, some without a small supra-hilar depression. Cheilocystidia

not preserved in the available fragments. Hyphae with clamp connections.

On fallen branches of *Nothofagus antarctica* and on rotting trunks of *Maytenus*.

Material studied: Chile: Brunswick Peninsula, type, LPS. — Also material from the mountains west of Tucumán.

The above description has been made up by using Sp e g a z z i n i's data combined with the results of our own type analysis. Data on the material collected further north will be found in a combined description published elsewhere (Singer, R. & A. Digilio in Lilloa **25**: 405. 1952). May it suffice to add that the northern material is smaller than the Subantarctic material collected by Sp e g a z z i n i.

*Paxillaceae* R. Maire in Maire, Dumée & Lutz.

*Paxillus* Fr.

Key to the Species

- A. Veil present; clamp connections present . . . . . *P. boletinoides*
- A. Veil absent
  - B. Clamp connections present . . . . . *P. involutus*
  - B. Clamp connections absent . . . . . *P. defibulatus*

*Paxillus boletinoides* Sing. in Singer & Digilio, Lilloa **25**: 431. 1952.

Pileus strongly covered with brown ("burnt umber") fibrils but on margin showing an "Inca gold" colored, or "corn" colored (yellowish) background, the yellowish color eventually disappearing, and in some specimens never present, the center often reaching shades deeper than "Mandalay" and the zone between the center and the margin reaching "kis kilim" in many specimens, also near "Russian calf", the center rarely "auburn", the margin between "Alamo" and "cocoa" on the fibrils with the ground color pl. 10, E-3, in some cases, especially in age "Mandalay" all over with yellow margin (pl. 10, K-5), fibrillose all over in all caps but the fibrils so crowded in the center that the latter appears glabrous and entire to tomentose, and the margin only strongly fibrillose, or fibrillose-squamulose, under certain weather conditions also at times completely fibrillose all over, or tomentose on the margin with squamose-diffract center, the margin often short-furrowed, the veil often leaving concentric cortinoid-fibrillose ornamentations a few millimeters from the very margin of the pileus which is convex, eventually often appanate, always either subumbonate or umbonate, with initially involute margin, 34—81 mm. in diameter.

Lamellae "India buff", later "buckthorn br." to "India buff", then becoming "Antique gold" near the stipe, eventually, especially when dried, assuming the color of the spore print, forked, decurrent,

narrow, reaching 8.5 mm. in breadth, close, usually every lamellae forked twice, or at least once; spore print "coffee", in thicker layer "Mohawk" in tone but as deep as "Mandalay", after complete desiccation reaching a tone as rusty as in the *Cortinarii* and dusting the lamellae and the veil correspondingly.

Stipe usually with a pallid-yellow at apex, but sometimes the apex about "mustard" becoming paler after a while losing this yellowish tone, below the veil attachment colored with a fibrilosity which is between "Mohawk" and "cocoa", or "bure" on "beige soirée" ground, the very base reaching "Hindu" or even blackish brown in most cases, the fibrilosity often replaced by squamules, the basal portion sometimes reticulate from the descending veil, often longitudinally ribbed throughout or with descending lines from the lamellae down to the point of attachment of the veil, in age only loosely fibrillose with appressed fibrils, and if still squamulose, the squamules are concolorous with similar squamules on the pileus, ventricose or subequal, more rarely slightly tapering downward or upward, solid, sometimes eccentric  $35-53 \Rightarrow 11-19$  mm; veil pallid to "crash" or pl. 11, D-4, i. e. sordid, cortinoid but abundant and persistent sometimes showing a "French nude" colored zone beneath the point of attachment to the stipe, forming a strictly apical annulus when the pileus expands, formed by those portions of the veil that are located between the stipe and the juncture of the ascendant (toward the very apex) and the descendant (toward the middle of the stipe) half of the velar fibrils, this annulus being located about 1-3 mm. from the very apex of the stipe, eventually, especially in dried material becoming deep rusty from the spores.

Context white in pileus, whitish buff in stipe, deep brown ("Hindu") in the lower cortex of the stipe, except for this cortical zone distinctly changing color by autoxidation, and thus, including the trama of the hymenophore, assuming a pinkish tone, e. gr. "blush, peach, beige", "blush Josephine" when bruised, with a watery peripheral line in the upper portion of the stipe and above the lamellae, fleshy; odor none when quite fresh, but when drying assuming a strong pleasant odor reminiscent of certain cookies, or more rarely a strong penetrating smell.

Spores brown, ochre brown, thick-walled, without germ pore, with granulose contents in some, ellipsoid with a slight attenuation toward the apical end but rounded on both sides, strictly asymmetrically attached to the sterigmata, sometimes subcylindric but usually thicker toward the hilar end (as in many *Tylophilus*!) rarely with a slight suprahilar depression (especially young immature spores),  $8-15.7 \Rightarrow 5.5-7$   $\mu$ , sometimes as elongate as  $8.2 \Rightarrow 5.5$   $\mu$ , but usually about  $9.5-13 \Rightarrow 5.5-6.8$   $\mu$ , quite smooth with



moderately thin walls. Basidia voluminous and elongated, hyaline, rarely somewhat yellowish in dried material, clavate, tetrasporous, with long, larger sterigmata,  $41-52 \approx 8.8-11 \mu$ . Cystidia none. Hymenophoral trama bilateral, looser in the middle layer and there hyaline with subparallel hyphae, slightly melleous and more crowded in the lateral portion which is divergent in young stages, with slightly interlaced hyphae especially where it approaches the poorly individualized subhymenium. Edge of lamellae homomorphous, without cheilocystidia. Surface of pileus consisting of a trichodermium which becomes irregularly appressed and cutis-like in portions when the caps are nearly adult or when they were exposed to the rains, the hyphae making up this layer incrustated by a rusty pigment as in many *Cortinarius*; hyphae making up the veil always hyaline, thin-walled. All hyphae with clamp connections.

Chemical characters: KOH on light colored portions of context accelerating the pink discoloration which, then, reaches "blush 2", and making the brown portions of the stipe "cocoa brown" in 5 minutes, likewise reaching this color after at least 10 minutes in the lighter colored portions; same reaction on the hymenophoral trama as on the context. —  $\text{NH}_4\text{OH}$  on apex of stipe brownish and eventually almost black. —  $\text{FeSO}_4$  strongly reacting on surfaces of pileus and stipe and on the lamellae and context, reaching green (pl. 24, A-6), eventually blackish green. Other reactions with these three reagents not obtained. The KOH reactions may be somewhat more distinct when a stronger solution is used than the one at our disposal.

On the soil, usually among grasses and herbs in or near the margin of *Nothofagus pumilio* woods in February and until April, rather frequent.

Material studied: Argentina: Tierra del Fuego, Rio Grande, Estancia Nueva Argentina, R. Singer, 14-II-1950, M 264, LIL, type. — 15-II-1950, M 278, LIL. — 18-II-1950, M 342, LIL. — Neuquén, San Martín de los Andes, Cei & Tomsic, det. & comm. R. Singer, 7-IV-1951, M 456, LIL.

This species is the second species known to have a veil. It differs from the previously known veiled *Paxillus* in much larger spores. Both veiled *Paxilli* come from Argentina. *Paxillus boletinoides* has somewhat the aspect of a *Boletinus*.

*Paxillus involutus* (Batsch ex Fr.) Fr.

This species has not been collected by the author. Nevertheless, there are specimens at LPS, collected by Spegazzini and others which lack a veil, have clamp connections and cystidia, and consequently key out with *P. involutus* in spite of the fact that they have larger spores than *P. involutus* usually shows. In addition, the

specimens are macroscopically much like ordinary *P. involutus* and were identified as such by Bresadola. The distinguishing characters indicated by Spegazzini who described this species as *Flammula statuum*, are without much importance. But the larger size of the spores causes me to consider this problem as not yet solved while waiting for additional information. There is no need to give a detailed description of the typical *Paxillus involutus* since this has been done repeatedly at other occasions, and good illustrations are available in the most accessible literature. A detailed description of the southern form or species cannot be given at present, beyond the data furnished in my type studies and in the key above, cf. Lilloa **23**: 230. 1950 (1952) and a note in the present paper, after *P. defibulatus*.

*Paxillus defibulatus* Sing. in Singer & Digilio, Lilloa **25**: 434. 1952.

Pileus "Forsythia" to "smowshoe" or between "golden glow" and "cavalry", i. e. yellow, the center frequently brown ("cocoa" or "Arab"), in age or upon touching often deeper reddish brown (near "Java") especially on the scales which appear after rains sub-tomentose or tomentose, somewhat roughened, after rains often breaking up into squamules or coarse scales which may or may not be squarrose, with originally involute margin, convex, then appanate, often subumbonate, 38—45 mm. and occasionally reaching 90 mm. in diameter.

Lamellae cream to sordid cream (pl. 10, C-2 to "sombbrero"), then becoming pl. 13, G-6, when bruised changing to dirty pink, originally venose, but soon clearly lamellose and reaching 5 mm. in breadth in the largest specimens (i. e. narrow), deeply decurrent, not anastomosing, almost all forked at least once, close, often showing brownish specks; spore print in thin layer between "tortoise" and "cookie", in thick layer between "Alamo" and "cocoa".

Stipe cream color (pl. 10, C-2), glabrous or subglabrous, versiform, usually central, 25—90  $\cong$  10—25 mm.; veil none.

Context whitish, when bruised dirty pink in the pileus and in the upper portion of the stipe (reaching "beach bisque"), at least when young and fresh, in old specimens turning slowly to "raw sienna", fleshy; odor none; taste bitter.

Spores bright golden melleous, thick-walled, few deeper rust brown, smooth, with or without a slight suprahilar depression, or appanation, ellipsoid-oblong to fusoid-cylindrical, shaped much like spores of *Phylloporus rhodoxanthus*, but more strongly pigmented and with somewhat thicker walls, rounded above, 12.3—17.2  $\cong$  5.5—7.2  $\mu$ . Basidia remarkably long, tetrasporous, very few in very young specimens bisporous all hyaline, or some yellow, 35.5—68.5  $\cong$

8.2—10.3  $\mu$ ; sterigmata often remarkably obtuse; basidioles cylindrical, filamentous, then often capitate or narrowly clavate, or with obtuse horns. Cystidia and cheilocystidia none. Hymenophoral trama loose in the mediostratum, denser in the lateral stratum, divergent in the latter, somewhat like the *Phylloporus*-type, with many oleiferous hyphae intermixed. Cuticle of the pileus a trichodermial palisade which later often appears to be a cutis since its elements are depressed in certain places giving the impression of a grain field after heavy rains; cuticular layer of the pileus and hyphae of the subhymenium without clamp connections, and apparently always without them (although in one collection two dubious clamps, one underneath the basidium and one in the connective tissue of the context of the pileus, have been observed).

Chemical reactions:  $\text{FeSO}_4$  on surface of pileus and on discolored flesh and lamellae green (pl. 23, C-2 to "privet"), a weaker and slower reaction to greenish being noticed in the lower portion of the stipe and on the context before autoxidation has begun. — KOH: deeper brown where brown pigment exists —  $\text{NH}_4\text{OH}$ , no reaction.

In dense as well as in sparse woods, also along the margin of the woods, near *Nothofagus pumilio* and *N. antarctica*, on earth and humus, among grasses or on naked soil, in shady and exposed places, solitary or more often in groups, fruiting in summer, common.

Material studied: Argentina: Tierra del Fuego, Rio Grande, Estancia Nueva Argentina, R. Singer, 11-II-1950, M 181, LIL, type. — Also observed south of Lago Fagnano, district of Ushuaia. Var. *unicolor* Sing. in Singer & Digilio, Lilloa 25: 463. 1952.

Pileus p. 10, D-5 with white extreme margin, densely fibrillose, not breaking into scales, in age merely changing its color to pl. 11, F-6, with some spots reaching "Peruvian br." or "gold pheasant", dry, with somewhat involute margin, about 50 mm. broad. — Lamellae white, soon becoming "maise" to "corn", then "rattan", forked, narrow, decurrent. — Stipe white, soon becoming yellowish white, versiform, glabrous or subglabrous. — Context yellowish-whitish, becoming pinkish on exposure, eventually brown where wounded or touched, inodorous, bitter.

Spores and all other microscopical characters as in the type variety.

Chemical characters unknown.

In woods of *Nothofagus pumilio*, on humus, rare in summer.

Material studied: Argentina: Tierra del Fuego, Rio Grande, Estancia Nueva Argentina, R. Singer, 18-II-1950, M 341, LIL, type.

This variety differs merely in the characters, mainly the color, of the pileus.

*Paxillus defibulatus* may have been collected by Spegazzini in Chile, under the name of *Flammula statuum*. This latter, see note on p. 263. The Chilean material has not been revised by me, except for a macroscopical comparison with the type specimen. It is a specimen younger than the type, and has been reported and commented on in "Resultados de la Primera Expedición a Tierra del Fuego (1921), Crytogamae nonnullae Fuegianae, p. 13, Buenos Aires 1922". The material was collected near Punta Arenas in March 1921, LPS. This would also, to a certain degree, explain the divergences in the spore shape and measurements indicated by Spegazzini in his original and in his later data.

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